DMS-100 Family

Maintenance Synopsis

All Computing-module Loads

4Q97 – Standard Release 08.01 – November 1997

NORTEL

NORTHERN TELECOM

DMS-100F
Maintenance
Synopsis

4Q97 and up

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DMS-100F Maintenance Synopsis
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Introduction

This document (previously known as the *BCS Maintenance Synopsis*) has been restructured to conform with the new NTI Software Evolution replacing the BCS application process with Product Computing-Module Loads (PCLs). The *Maintenance 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 globaly and includes features for "country specific" applications (i.e., Australia, China, Japan, Mexico, U.K., etc.).

This document is primarily directed to Maintanance Engineering, ESAC, SCC, and Central Office forces and includes features applicable to these groups. It is a summary of the Maintenance-affecting items in the Product Computing-Module Load (PCL) Release Document and is intended to reduce the Maintenance 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 Traffic items. The format of this document is the same as used in the traffic 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 maintenance), 'LN' (LiNe maintenance), 'TRK' (TRunK network maintenance) and 'SF' (Service Feature). These sections may be separated and given to the appropriate maintenance 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 maintenance operations immediately upon the new software load insertion. This includes changes to Commands, Log messages, OMs, AMA and Data Tables. It also includes new maintenance features that have a significant impact on maintenance performance results.

The "LATER" sub-sections identify changes that have an indirect impact on maintenance or require activation or data fill after the new software load insertion.

Within each sub-section, the features are identified by the Feature Title and the NTI Activity Number. The type of office or service that the feature may apply to is also identified, for example, DMS-100, DMS-200, TOPS, ISDN, etc.

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 insertion and testing are completed try using any new nonservice-affecting commands; set up and review any new OMs; set up routing for new log reports; open LOGUTIL and review any new log reports.

Finally, activate any new maintenance features introduced and data fill any new tables or fields as required.

The *Maintenance 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.

For ease of reference from the *Maintenance Synopsis* to the Release Document, the NTI Feature Identification numbers are given with each feature in the *Maintenance Synopsis*.

In addition, at the end of the Release Document, a Historical Table shows when the features were introduced.

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

Executive Summary

This new release introduces several service features and improvements to the maintenance and administration of the DMS product line.

Many other features are described in this *Maintenance Synopsis* document. An attempt has been made to create as complete and accurate a *Maintenance 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 the final authority.

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

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NTI Feature Contents

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SW-NOW

This section identifies changes and/or additions to switch functions that are Maintenance 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 Maintenance activity.

LAYER   **SW-NOW**
APC 08

                                                                                       APPLICATION
ACTID   **FEATURE TITLE**   VPN
AU2342   VPN CS1-R Co-existence on the DMS SSP

Description

This feature is the APC portion of the Capability Set 1 (CS)-1R on the DMS Service
Switching Point (SSP) in APC Feature. The co-existence feature permits the World Trade
Intelligent Network (IN) CS-1R product that was developed in Maidenhead to co-exist with
Virtual Private Network (VPN) in the APC DRU.

Note: *In this context co-existence means that VPN and CS-1 can both function in the same
          load. It does not mean that VPN and CS-1 can be triggered from the same call.*

In Australia, CS-1R supports the following trunk types:
- ANSI ISUP (IBN7+)
- AISUP
- I-ISUP

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 needs the following features to function properly:
- AU2312
- AU2317
- AU2342
- AU2429

This feature is part of a group of features used by feature:
- AU2318

Restrictions/Limitations

NONE

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 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 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 SOC 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**   CEU/WT
AF7026   YR2000 Compliancy for 100E, Phase I

Description

This feature identifies the code in CEU and WT for possible exposures to Year 2000 problems and verifies whether the code in CEU and WT is using a four digit year or an offset from 1900 while calling the SOS routines.

The activities are traced using the actid AF7025 for CEU and actid AF7026 for WT.

In EUR008, Phase II is created if required based on the test results shown by system integrity in Phase I.

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

Feature AR1927, SOS Support for the Year 2000, provides SOS support for the correct representation and calculations of dates past 1999. This feature changes some of the CLOCKI procedures to accept absolute year values, 4 digit years, or an offset number from 1900. Since these changes were not NUCs, the CEU and WT code has to pass 4-digit years or offsets from 1900 greater than 75 to CLOCKI routines.

Restrictions/Limitations

The restriction placed in the CLOCKI module that 1976 is the smallest year value allowed and 2039 is the largest year value allowed in the DMS holds good for this feature also.

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
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.

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).

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.

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**   BRI
AF6645   LPIC_ISDN

Description

LPIC_ISDN is an ISDN Basic Rate Interface (BRI) feature that implements primary intra-LATA carrier (LPIC) on a directory number or call type (DN/CT) basis. The LPIC_ISDN permits the routing of intra-LATA calls on a DN/CT basis for 2B channel and NI-2 ISDN terminals.

The LPIC options allow a subscriber to choose a carrier to provide their intra-LATA toll service. This option provides the voice (VI) and circuit mode data (CMD) options on a DN/CT basis for 2B channel terminals for intra-LATA calls.

The precedence for determining the LPIC carrier from highest to lowest is DN/CT, line option, and on a customer group basis.

Command Changes

TRAVER is modified to support intra-LATA call routing on a directory number/call type (DN/CT) basis. The TRAVER displays LPIC information on the DN/CT level in the existing table DNATTRS.

Data Schema Changes

The intra-LATA carrier for routing ISDN calls on a DN/CT basis is identified in table DNATTRS (Directory Number Attributes). The LPIC in table DNATTRS overrides the LPIC from the line option. The LPIC is taken from the customer group if the line option is not datafilled.

New fields added are CTLPIC and CTLPIC CHOICE. CTLPIC provides the DN/CT carrier name. CTLPIC CHOICE determines whether or not casual access dialing is allowed.

Log Message Changes

NONE

OM Changes

NONE

Service Order

New options to SERVORD are provided for 2B and NI-2 ISDN BRI terminals to datafill custom carriers against individual 2B channel and NI-2 2B channel terminals on a DN/CT level.

SERVORD is used to assign the following options:

- CMD
- VI

The LPIC_ISDN provides the capability of routing intra-LATA ISDN VI and CMD calls on a DN/CT basis. The assignment of the options if made through SERVORD.

The options CMD_LPIC, CMD_LPIC_CHOICE, VI_LPIC and VI_LPIC_CHOICE provide the routing on a DN/CT basis for intra-LATA calls. These options are datafilled under the CMD and VI options for 2B and NI-2 ISDN terminals.

AMA Changes

NONE

Notes

The LPIC_ISDN feature for NA008 requires the XPM universal processor card. The XPM universal processor card is located on the SuperNode and BRISC CM processors.

The line group controller (LGC), ISDN line trunk controller (LTCI), and remote switching center synchronous optical network (RSC-S) are supporting the LPIC_ISDN capability for the North American market.

NA008 engineering hardware capabilities require the XPM Universal Processor Card. These capabilities are offered on the SuperNode and BRISC CM processors.

The LGC/LTCI, and RSC/S remotes support this capability for North American applications.

Alarms

NONE

Interactions

This feature needs the following features to function properly:

- AF6441 - Servord for 2B FITS, 2B NITS and 1B NITS (NA007)
- AN1811 - IntraLATA PIC Enhancements -Phase 1 (NA007)
- AF6439 -Table Control for 2B FITS, 2B NITS, and 1B NITS. (NA007)
- AF6641 - NI-1/NI-2 Interface Identification (NA008). This feature is included in the NA008 ISDN BRI Basic Call ISDN access software package.

The following sections describe the interactions between LPIC_ISDN and other functionalities.

Toll Denied Functionality

The CTD option interacts with LPIC on a DN/CT basis in the same way as the LPIC line option. The CTD option restricts carrier from routing calls.

The FCTDNTRA option interacts with LPIC on a DN/CT basis in the same way as the LPIC line option. The FCTDNTRA option restricts carriers from routing intra-LATA calls.

Call Forwarding

The following call scenario involves call forwarding to intra-LATA numbers. Certain call scenarios involve call forwarding to IntraLATA numbers. For example: Caller A makes a call to phone B using PIC. Phone B is Call Forwarded to C in the same LATA. Since the call type from phone B to C is IntraLATA, LPIC is used for this portion of the call. Since phone B has an IntraLATA carrier datafilled on a DN/CT basis, the LPIC from Table DNATTRS is used for this call.

If Caller A makes a call to phone B using LPIC and phone B is Call Forwarded to C in IntraLATA. Since phone B has a IntraLATA carrier datafilled on a DN/CT basis, the LPIC from DNATTRS is used for the second leg of the call.

If choice for LPIC is set to N or if no carrier is specified, the caller is routed to treatment as is provided today. Normally, this is Carrier Toll Denied.

Restrictions/Limitations

The following limitations and restrictions apply to LPIC_ISDN:
- The CMD and VI options are assigned to a DN with line class code (LCC) of ISDNKSET only.
- SERVORD interface using the VI and CMD options is limited to 2B channel or NI-2 ISDN terminals.
- The LPIC option on a DN/CT basis for 1B channel ISDN terminals is made by datafilling table DNATTRS directly.
- The LPIC option on a DN/CT basis for 2B channel ISDN terminals is datafilled in table DNATTRS through the Service Order System (SERVORD).
- CMD is incompatible with MADN groups.
- Inter-LATA full carrier toll denied (FCTDNTER) is not applicable to LPIC_ISDN because FCTDNTER restricts inter-LATA and International calls only.
- LPIC_ISDN is not applicable to ISDN BRI packet calls.

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**   NI-2 FIT
AF6660   B–Channel Manager Support

Description

This feature provides B-channel and associated group (AG) busy determination that is more TR (technical requirement) compliant. The Computing Module (CM) is given B-channel availability information allowing it to make a timely determination of whether or not a B-channel is available for a termination.

This feature enables support for two national ISDN 2 (NI-2) fully initializing terminals (FIT) on one integrated services digital network basic rate interface (ISDN BRI) with B-channel contention. This allows either of the two FITs to use both B-channels.

This feature also enables support for one NI-2 FIT and up to seven non-initializing terminals (NI-2 NITs) on one BRI ISDN interface with B-channel contention where either the FIT or any of the NITs can use both of the B-channels.

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 needs the following features to function properly:
- AF6692 - XPM09 XPM enhancements
- AF6656 - ISDN BRI 3-Stage Release
- AF6642 - Associated Groups
- AF6872 - XPM Support for two 2B FIT/NITs
- AF6655 - ISDN Music On Hold

This feature supports the B-channel contention between normal basic calls and electronic key telephone service (EKTS) features such as Flex Call (FC), Key Short Hunt (KSH), Call Forward (CFW) and Directory Number Hunt (DNH).

Restrictions/Limitations

Under certain race conditions when there is no B-Channel available, a call may be presented to the user using the Additional Call Offering (ACOU) procedure rather than immediately rejecting the call. This occurs even if the called user does not subscribe to ACOU.

LAYER   **SW-NOW**
NA008 PRODUCT

                                                                   APPLICATION
ACTID   **FEATURE TITLE**   LTID
AF6684   Changes to ABS Prompt

Description

This feature is provided to reflect only the bearer services supported on the logical terminal identifier (LTID) instead of reflecting the bearer services not allowed on the LTID.

Command Changes

Changes have been made to the SERVORD commands. See the description in the Service Order section.

Data Schema Changes

This feature modifies reading the data from the LTDEF table using the QLT command. See the description in the Service Order section.

Log Message Changes

NONE

OM Changes

NONE

Service Order

Changes to ABS Prompt makes SERVORD changes. The following is a summary of those changes:

- For the SLT ADD and SLT CHA commands, the list of existing valid user inputs NOVOICE, NOCMD, NOPMD and NOVBD are changed to VOICE, CMD and VBD. The PMD option has been removed from the ABS options allowed list. The PMD option is not applicable to the circuit switched BRAFS set.

- While querying the LTDEF table with QLT command, querying has been adjusted to display fields exactly as they are entered. The display shows a combination of VOICE, CMD, and VBD instead of NOVOICE, NOCMD, NOPMD and NOVBD.

- These changes take place in the SERVORD system only. The user input is then converted to the old format of the services disallowed (in LTDEF table). For example, VOICE as input equals the old (Bearer Services Restricted) format of NOCMD NOVBD, and NOPMD.

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

Since table control is not affected due to this change, call processing is not affected. All changes are made in SERVORD *Check* and *Aspect* processes only. Therefore, no potential problems occur at this point.

Restrictions/Limitations

NONE

DMS-100F Maintenance Synopsis
Release 08.01, November 1997

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** ESMA
AF6717 ESMA: ICB: CNA – ICB Line Provisioning I

Description

This feature allows table LNINV users to add and delete integrated channel bank (ICB) lines, by adding code changes needed to support changes made by feature AF6719. Please reference AF6719 in the *LN-LATER* section of this manual for the complete functional description of ICB line provisioning.

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 does not affect existing line provisioning command sequences or strategies.

This feature needs the following features to function properly:

- AF6716 - ESMA: ICB: CNA - ICB NODE PROVISIONING
- AF6718 - ESMA: ICB: CNA - ICB NODE MAINTENANCE
- AF6721- ESMA: ICB: XPM - ICB NODE PROV
- AF6719 - ESMA: ICB: CCM - ICB LINE PROVISIONING II

This feature is part of a group of features used by feature:

- AF6718 - ESMA: ICB: CNA - ICB NODE MAINTENANCE

Restrictions/Limitations

- No TR-303 messaging or object provisioning associated with other integrated digital terminal (IDT) variant types is provided for ICB variants.
- Foreign exchange subscriber end signaling (FXS) is the only protocol which may be used by ICB lines for this release. Services supported by this feature must be supported by FXS loop start/FXS ground start or voice path signaling. Integrated services digital network (ISDN) and Meridian business set (MBS) are not supported.

LAYER   **SW-NOW**
NA008 PRODUCT

                                                           APPLICATION
ACTID   **FEATURE TITLE**   ESMA
AF6718   ESMA: ICB: CNA – ICB Node Maintenance

Description

The purpose of this feature, Enhanced Subscriber Module Access (ESMA): Integrated
Channel Bank (ICB) is to provide the node, link, and line maintenance capabilities for the
ICB remote digital terminal (RDT) variant.

Command Changes

ESMA: ICB: CNA - ICB Node Maintenance does not change the user interface. However,
the following paragraphs identify the maintenance capabilities for the ICB RDT variant and
lines.

ICB maintenance

The existing IDT PM maintenance level is used to perform maintenance on the ICB RDT
variant. The following commands appear in the IDT command menu but are disabled for
the ICB.

- TRNSL {CHAN} - only the channel option is not supported.
- BSY {CSC1, CSC2, TMC1, TMC2, EOC1, EOC2} – only the channel option is not
  supported.
- RTS {CSC1, CSC2, TMC1, TMC2, EOC1, EOC2} – only the channel option is not
  supported.
- RDTALARM
- PPA
- CONT
- LOOPBK

The following message is output to the user when an attempt to perform any of the
maintenance commands in the previous list:

```
Command not supported on ICB RDTVAR
```

Line maintenance

The following line maintenance capabilities are provided:

- POST
  — allows the user to display an ICB line at the lines maintenance level of the MAP.
    Note that the secondary line state is not used for ICB lines.

- BSY
  - — allows the user to change the state of an ICB line from IDL to MB or INB.
- RTS
  - — allows the user to change the state of an ICB line from MB to IDL.
- FRLS
  - — forces a line from its current state to MB.

All other line maintenance commands that appear in the command menu are not supported.

Data Schema Changes

The IDT table has been changed. Modified commands are described in the Commands section of this feature description.

ESMA: ICB: CNA - ICB Node Maintenance data schema table impact are described in the following features:
- AF6716, ESMA: ICB: CNA – ICB Node Provisioning
- AF6717, ESMA: ICB: CNA – ICB Line Provisioning I

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

This feature is part of the feature set needed to support D4 channel banks subtending an ESMA. This feature set implements line services using the Foreign Exchange Subscriber End (FXS) signalling protocol for these channel banks. The group of features is listed below:

- AF6716, ESMA: ICB: CNA – ICB NODE PROVISIONING
- AF6717, ESMA: ICB: CNA – ICB LINE PROVISIONING I
- AF6718, ESMA: ICB: CNA – ICB NODE MAINTENANCE
- AF6719, ESMA: ICB: CCM – ICB LINE PROVISIONING II
- AF6721, ESMA: ICB: XPM – ICB NODE PROV
- AF6722, ESMA: ICB: XPM – CALL PROCESSING
- AF6723, ESMA: ICB: XPM – RBS RESOURCE MANAGER
- AF6724, ESMA: ICB: SIGP SCANNER

Restrictions/Limitations

- DMS line testing is not supported on ICB lines.
- Since there is only one DS-1 link for each ICB, busying the link at the SMA2 level is not permitted unless the ICB node is manually busy.

LAYER   **SW-NOW**
NA008 PRODUCT

                                                      APPLICATION
ACTID   **FEATURE TITLE**   ISDN
AF6733   ISDN Parameter Downloading - CM

Description

This feature contains the CNA changes associated with AF6632, ISDN Parameter Downloading - FPE and Messaging. A description of AF6632 follows.

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

NONE

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.

Service Order

The following describes new Service Order Data Entry for ISDN Parameter Downloading–CCM:

• 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 use up more than 5% of the resources under conditions where call processing requests may be delayed or rejected. This requirement must 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-CCM:

- 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-NOW**

NA008 PRODUCT

                                                                   APPLICATION

ACTID   **FEATURE TITLE**   ISDN

AF6777   ISDN Packet Shared DN

Description

ISDN Packet shared DN includes the functionality of the following features:
- ISDN Packet SERVORD Commands for Shared DN (AF6778)
- ISDN Packet Query Commands for Shared DN (AF6779)
- ISDN Packet Table Control for Shared DN (AF6780)
- ISDN Packet DNCT CPID Base (AF6781)

Feature AF6782, ISDN BRI Single DN Packet, is dependent on ISDN Packet Shared DN.

ISDN Packet shared DN feature is controlled by Software Optionality Control (SOC) NI000051. If SOC NI00051 is IDLE, then it is not possible to provision a shared DN.

ISDN Packet Shared DN permits the sharing of a directory number (DN) with different call types over multiple terminals on the DMS-100. Prior to BCS 34, Packet Mode Data (PMD) calls were handled by the Data Packet Network (DPN), a system maintained separately from the DMS. Starting in BCS 34, a DMS Packet Handler (DMS-PH) was introduced to enable the DMS-100 to handle PMD calls. PMD capability was implemented on Series 3 peripherals called X25/75 Link Interface Units (XLIU).

When using the DPN it is possible to datafill a single DN with the following three call types:
- Voice interface (VI)
- Circuit Mode Data (CMD)
- Packet Mode Data (PMD)

Previously, with the DMS-PH, two DNs are necessary to support all call types:
- one for the VI and CMD call types
- one for the PMD call type

This feature allows the use of the same DN for both PMD and VI CMD calls on fully initializing terminals (FIT) or non-initializing terminals (NIT) connected to the DMS-PH. Operating companies can migrate all packet lines from the DPN switch to the DMS-PH. ISDN Packet Shared DN saves DNs since it combines services that were offered on separate DNs.

Prior to NA008 release, only ISDN basic rate interface (BRI) D-channel access to packet services from terminals provisioned with static terminal endpoint identifiers (STEI) was allowed. Shared DN functionality overcomes this limitation by allowing the provisioning of D-channel packet service to National ISDN 2 (NI-2) compliant FITs that use dynamic TEIs (DTEI). The ability to identify NI-1 and NI-2 circuit mode interface configurations is

introduced by feature AF6641. All currently supported packet switched (PS) services and circuit switched (CS) services will continue to be supported on the new configuration.

Each FIT, NIT, or D-Packet terminal is visible to the DMS-PH as a single device with the terminal endpoint identifier (TEI). The maximum number of terminals for each ISDN interface is eight. Without the support of B-channel contention, associated groups (AGs) will be used to restrict B-channel access. Each LTID is restricted to one B-channel access by use of AG provisioning.

Command Changes

Directories LTP and CI have been modified. To access ltp, enter:

```
mapci;mtc;lns;ltp
```

LTP Commands Changes

Modified LTP commands are POST D and POST H.

POST D

Post by DN at the LTP map level is upgraded to display more information when a DN is shared. The Logical Terminal Identifier (LTID), the key and call type of the posted DN is displayed. The NEXT command is used to display the information for all call type appearances of the shared DN.

The following example at the LTP map level shows usage of the Post by DN command:

```
CM       MS      IOD     Net       PM      CCS     Lns     Trks     Ext      APPL
 CM Flt  SysB   NOSMDR    .       2LCM   2  RS      .       47 GC     .        .
   M       M      *C*                *C*     *C*             *C*
LTP
  0 Quit      POST  1     DELQ              BUSYQ           PREFIX
  2 Post_
  3             LCC PTY RNG .....LEN..........    DN    STA F S LTA  TE  RESULT
  4             ISDN LOOP   HOST 67 1 00 04     742 8401 IDL
  5 Bsy                                                   K#1 VI_CMD
  6 RTS                                          LTID    ISDN 1
  7 Diag
  8
  9 AlmStat
 10 CktLoc    post d 7428401
 11 Hold
 12 Next
 13
 14
 15
 16 Prefix
 17 LCO_
 18 Level_
   TEAM31
Time  09:54  >
```

POST H

The user interface of the Post by Hunt command is modified to include an additional option, PMD, to specify that the packet hunt group is displayed. The following example at the LTP map level shows the Post by Hunt group for a shared DN:

```
CM       MS      IOD      Net      PM      CCS      Lns      Trks     Ext      APPL
 CM Flt   SysB   NOSMDR    .      2LCM   2  RS    .      47 GC     .     .
  M        M      *C*               *C*     *C*            *C*
LTP
 0 Quit        POST  1     DELQ              BUSYQ         PREFIX
 2 Post_
 3             LCC PTY RNG .....LEN..........    DN    STA F S LTA  TE  RESULT
 4             ISDN LOOP   HOST 67 1 00 04    742 8401 IDL
 5 Bsy
 6 RTS
 7 Diag
 8
 9 AlmStat
10 CktLoc    post h 7428401 pmd
11 Hold
12 Next
13
14
15
16 Prefix
17 LCO_
18 Level_
   TEAM31
Time  09:54  >
```

Otherwise, the circuit hunt group is used by default. The command output remains the same.

If the DN is shared between circuit and packet call type, the following message is displayed if PMD is not entered:

```
DN shared across call type but call type not specified.
Assume voice as default.
```

If the PMD is entered along with the post h command, this message is shown if the DN is not shared between call types:

```
Warning: DN not shared across call type. PMD option will be ignored.
```

CI Commands Changed

Modified CI commands are:
• QDN
• QGRP
• TRAVER

ISDN Packet Shared DN enhances the output of query commands to display information about both call types of a DN.

Query commands for QDN and QGRP are modified to display information pertaining to each call type. Information is displayed from multiple terminals, each with its own call

type, key, group and other related informations. Following is an example of the QDN
result for a Shared DN configuration:

```
>qdn 7224008
-------------------------------------------------------------------
DN:     7224008
CALLTYPE: VI-CMD
TYPE: SINGLE PARTY LINE
SNPA: 613    SIG: N/A     LNATTIDX: N/A
LTID: RSCS         8
LTCLASS: BRAFS
LINE CLASS CODE:    ISDNKSET
KEY: 1
CUSTGRP:        BNR SUBGRP: 0 NCOS: 0 RING: Y
OPTIONS:
SFC
PRL PRV
CALLTYPE: PMD
TYPE: SINGLE PARTY LINE
SNPA: 613    SIG: N/A     LNATTIDX: N/A
LTID: RSCS         9
LTCLASS: BRAFS
LINE CLASS CODE:    ISDNKSET
KEY: 1
CUSTGRP:        BNR SUBGRP: 0 NCOS: 0 RING: N
OPTIONS:
NONE
-------------------------------------------------------------------
```

Following is an example using the QGRP result for a Hunt Shared DN configuration:

```
>qdn 7224008
-------------------------------------------------------------------
DN:     7224008
CALLTYPE: VI-CMD
TYPE: SINGLE PARTY LINE
SNPA: 613    SIG: N/A     LNATTIDX: N/A
LTID: RSCS         8
LTCLASS: BRAFS
LINE CLASS CODE:    ISDNKSET
KEY: 1
CUSTGRP:        BNR SUBGRP: 0 NCOS: 0 RING: Y
OPTIONS:
SFC
PRL PRV

CALLTYPE: PMD
TYPE: SINGLE PARTY LINE
SNPA: 613    SIG: N/A     LNATTIDX: N/A
LTID: RSCS         9
LTCLASS: BRAFS
LINE CLASS CODE:    ISDNKSET
KEY: 1
CUSTGRP:        BNR SUBGRP: 0 NCOS: 0 RING: N
OPTIONS:
NONE
-------------------------------------------------------------------
```

The Translation Verification (TRAVER) tool is used to verify the digit translation and
routing to/from the various DMS agents. The TRAVER L command is modified to have
an additional call type option, {VI, CMD, PMD}, that can be specified for an originating
DN that is shared among different call type. If no call type is specified, the voice call type

is used. The output remains the same. Following is a TRAVER example for a packet call type:

```
>TRAVER L 7428234 PMD 28334 B
Warning: Routing characteristics default to 64Kx25
TABLE KSETLINE
PKT 234 1 DN N 7428234 BNR 0 0 613 $
TABLE NCOS
BNR 0 0 0 KDK0 ( OHQ 0 TONE_OHQ) ( CBQ 0 3 N 2)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
BNR PXDK CXDK CXDK 0 KDK
TABLE DIGCOL
KDK 2 RPT
TABLE RTECHAR
  . PACKET ( BC 64KX25 $)$
TABLE XLAMAP
  . Tuple not found. Default is use original XLANAME.
NCOS PRELIM XLA name is NIL. Go to next XLA name.
TABLE XLAMAP
  . Tuple not found. Default is use original XLANAME.
TABLE IBNXLA: XLANAME PXDK
TUPLE NOT FOUND
Default is to go to next XLA name.
TABLE XLAMAP
  . PACKET CXDK ( XLA PKT64K)$
TABLE IBNXLA: XLANAME PKT64K
PKT64K 28 EXTN N N Y 613 742 5 $
Originator is not an AIN agent, therefore AIN info is not processed.
TABLE TOFCNAME
613 742 $
TABLE DNINV
613 742 8334 L PKT 334
613 742 $
TABLE DNINV
613 742 8334 L PKT 334
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
TUPLE NOT FOUND

+++ TRAVER: SUCCESSFUL CALL TRACE +++


DIGIT TRANSLATION ROUTES

1 LINE                    6137428334         ST

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


+++ TRAVER: SUCCESSFUL CALL TRACE +++

>
```

If the user does not provide a call type and the originating DN is a Shared DN, the voice call type is selected and the following warning is displayed.

```
WARNING: Originator is a shared DN, defaulting to VI call type
```

Data Schema Changes

The following tables are affected by ISDN Packet Shared DN:

Table KSETLINE Changed

KSETLINE is modified to allow addition, modification, and deletion of DNs shared between CS and PS services. The following error messages are displayed:

- if a system failure occurs while provisioning a Shared DN

```
ERROR: FAILED TO WRITE INTO DNCT PROTECTED DATA.
ERROR: FAILED TO READ FROM DNCT PROTECTED DATA.
```

- if the SOC option #NI000051 is not turned on and the user wants to add a DN used by one terminal to another terminal of different call type

```
ERROR: SOC #NI00051 IS NOT ON.
```

In the following example, the command is rejected because the SOC option is not turned on:

```
CI:
>TABLE KSETLINE;FORMAT PACK;OVE;VER OFF
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: KSETLINE
>ADD ISDN 401 1 DN Y 7428401 BNR 0 0 613 $
TUPLE ADDED
>ADD PKT 401 1 DN N 7428401 BNR 0 0 613 $
ERROR: SOC #NI00051 IS NOT ON.
PROCESSING ERROR
UNEXPECTED ERROR CONDITION
***ERROR*** DMO UNSUCCESSFUL
```

To continue, the SOC option #NI00051 must be turn ON. The user can also select another DN if the packet terminal does not need to share its DN with the circuit terminal.

Table KSETFEAT Changed

KSETFEAT is modified to allow provisioning of Call Forward and Series Completion features on terminals sharing their DNs with CS and PS services. A system failure due to data corruption while provisioning Shared DN will cause the following messages to be displayed.

```
ERROR: FAILED TO WRITE INTO DNCT PROTECTED DATA.
ERROR: FAILED TO READ FROM DNCT PROTECTED DATA.
```

In the following example, the DMS was unable to retrieve data to remove the circuit appearance from the Shared DN:

```
CI:
>TABLE KSETFEAT;FORMAT PACK;OVE;VER OFF
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: KSETFEAT
>DEL ISDN 401 5 CFX
ERROR: FAILED TO READ FROM DNCT PROTECTED DATA.
PROCESSING ERROR
UNEXPECTED ERROR CONDITION
***ERROR*** DMO UNSUCCESSFUL
```

Table HUNTGRP Changed

HUNTGRP is upgraded with new call type (CT) options, VI_CMD or PMDF. CT options provide support for separate hunt groups with CS services (VI CMD) and PS services (PMD), using the same pilot DN. This example shows a successful ADD operation of a Voice/Circuit hunt group:

```
CI:
>TABLE HUNTGRP;FORMAT PACK;OVE;VER OFF
MACHINES NOT IN SYNC – DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE – DMOS NOT ALLOWED
TABLE: HUNTGRP
>ADD 7 613 7428401 DLH N Y N PILOT N N N N N 2 CT VI_CMD $
TUPLE ADDED
>POS 7
>7 613 7428401 DLH N Y N PILOT N N N N N 2 (CT VI_CMD) $
>
```

The following message is displayed when an ADD/CHA is attempted on a DN-call type, already provisioned for another Hunt Group.

```
ERROR: ANOTHER HUNT GROUP ALREADY PROVISIONED ON THIS DN-CALLTYPE
```

A system failure occurring while provisioning causes this message to be shown:

```
ERROR: FAILED TO WRITE INTO DNCT PROTECTED DATA.
```

If the SOC option #NI00051 is not turned on, this message is displayed when creating a second hunt group using the same DN.

```
ERROR: SOC #NI00051 IS NOT ON.
```

Table HUNTMEM Changed

HUNTMEM allows provisioning of members of hunt groups that share their DNs with different call types.

The following messages are displayed when a system failure occurred while provisioning:

```
ERROR: FAILED TO WRITE INTO DNCT PROTECTED DATA.
ERROR: FAILED TO READ FROM DNCT PROTECTED DATA.
```

If the call type of the Hunt member in the tuple ADD/CHA is different from that of the Hunt Group, this message is displayed.

```
ERROR: CALLTYPE MISMATCH BETWEEN HUNT GROUP AND MEMBER
```

This example shows the tuple ADD rejected due to the call type mismatch between the Hunt Member and Hunt Group:

```
CI:
>TABLE HUNTGRP;FORMAT PACK;OVE;VER OFF
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: HUNTGRP
>ADD 7 613 7428401 DNH Y N N PILOT N N N N N N 3 CT VI_CMD $
TUPLE ADDED
>ADD 8 613 7428401 DLH N N N PILOT N N N N N N 3 CT PMD $
TUPLE ADDED
>TABLE KSETLINE;FORMAT PACK;OVE;VER OFF
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: KSETLINE
>ADD ISDN 401 1 DN Y 7428401 BNR 0 0 613 $
>TABLE HUNTMEM;FORMAT PACK;OVE;VER OFF
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: HUNTMEM
>ADD 8 0 N D 7428401 N
ERROR: CALLTYPE MISMATCH BETWEEN HUNT GROUP AND
MEMBER
PROCESSING ERROR
UNEXPECTED ERROR CONDITION
***ERROR*** DMO UNSUCCESSFUL
>
```

Table PREFHUNT Changed

PREFHUNT allows assigning preferences on members of hunt groups with CS services when sharing their DNs with PS services.

The following messages are displayed when a system failure, such as data corruption, occurred while provisioning member of Hunt Group:

```
ERROR: FAILED TO WRITE INTO DNCT PROTECTED DATA.
ERROR: FAILED TO READ FROM DNCT PROTECTED DATA.
```

If the call type of the Hunt member in the tuple ADD/CHA is different from that of the Hunt Group, this message is displayed. To correct the error, the hunt group and hunt member need to be re-entered with the same call type.

```
ERROR: CALLTYPE MISMATCH BETWEEN HUNT GROUP AND MEMBER
```

This example shows an invalid tuple ADD. Note that the Hunt Group already had been provisioned on a DN-call type basis, and the Hunt Member had also been provisioned.

```
CI:
>TABLE HUNTGRP;FORMAT PACK;OVE;VER OFF
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: HUNTGRP
>ADD 7 613 7428401 DNH Y N N PILOT N N N N N 3 CT VI_CMD $
TUPLE ADDED
>ADD 8 613 7428401 DLH N N N PILOT N N N N N 3 CT PMD $
TUPLE ADDED
>TABLE KSETLINE;FORMAT PACK;OVE;VER OFF
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: KSETLINE
>ADD ISDN 401 1 DN Y 7428401 BNR 0 0 613 $
TUPLE ADDED
>TABLE HUNTMEM;FORMAT PACK;OVE;VER OFF
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: HUNTMEM
>ADD 7 0 N D 7428401 N
TUPLE ADDED
>TABLE PREFHUNT;FORMAT PACK;OVE;VER OFF
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: PREFHUNT
>ADD 8 0 0 N 7428401
ERROR: CALLTYPE MISMATCH BETWEEN HUNT GROUP AND
MEMBER
PROCESSING ERROR
UNEXPECTED ERROR CONDITION
***ERROR*** DMO UNSUCCESSFUL
```

Table MDNGRP Changed

MDNGRP allows modification of attributes by CS group members sharing with PS services. This error message is displayed when a system failure has occurred.

```
ERROR: FAILED TO READ FROM DNCT PROTECTED DATA.
```

In this example, the circuit MADN member is sharing its DN with a packet terminal. The user is unable to change the attribute on the circuit terminal due to a data corruption.

```
CI:
>TABLE MDNGRP;FORMAT PACK;OVE;VER OFF
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
>POS 613 742 8401 1
613 742 8401 1 SCA SILENCE Y 30 N NONPRIVATE $
>CHA 613 742 8401 1 SCA SILENCE Y 30 N PRIVATE AUTO $
ERROR: FAILED TO READ FROM DNCT PROTECTED DATA.
PROCESSING ERROR
UNEXPECTED ERROR CONDITION
***ERROR*** DMO UNSUCCESSFUL
```

Table MDNMEM Changed

MDNMEM allows modification of attributes by group members sharing CS services with PS services. A new message is displayed when a system error has occurred while processing a table control command:

```
ERROR: FAILED TO READ FROM DNCT PROTECTED DATA.
```

In this example the circuit terminal, ISDN 401, is sharing its DN with a packet terminal. The user is unable to change the attribute on the circuit terminal due to a data corruption.

```
CI:
>TABLE MDNMEM;FORMAT PACK;OVE;VER OFF
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
>POS ISDN 401 1
ISDN 401 1 7428401 Y ALWAYS $ $
>CHA ISDN 750 4 7428401 Y NEVER $ $
ERROR: FAILED TO READ FROM DNCT PROTECTED DATA.
PROCESSING ERROR
UNEXPECTED ERROR CONDITION
***ERROR*** DMO UNSUCCESSFUL
```

Log Message Changes

NONE

OM Changes

NONE

Service Order

Supported rules and operations have been changed for the following SERVORD commands: NEW, OUT, EST, ADD, ADO, DEO, CHF, CHG/CDN, SWLT, SUS, RES, and DEL.

Two terminals can be configured for the same DN, using two SERVORD NEW commands, one terminal with PMD call type and one terminal with VI_CMD call type.

Two distinct hunt groups can be created for the same DN, using two EST commands, one for a PMD terminal and the other for VI_CMD terminal. Also, a hunt group member DN can be shared between two terminals, one terminal with PMD call type and the other with VI_CMD call type. DN sharing can be done using EST and ADD commands. However, the PMD LTID and VI_CMD LTID cannot be assigned to the same hunt group.

To remove a shared DN from service issue two OUT commands – one OUT command is issued to remove PMD call type terminal, and one OUT command to remove the VI_CMD call type terminal. When the first OUT command is issued to a shared DN, the DN is detached from the specified terminal. However, a shared DN is not put out of service and it is not routed for treatment until the OUT command is issued for the second time. Similarly, two DEL commands are required if the DN is shared, one for the VI_CMD hunt member and another for the PMD hunt member.

There are also changes in the display of error messages for various commands under different conditions. (See the error message in the example of the NEW command above.) No changes in the user interface prompting are necessary since the current prompting is sufficient to determine the call type of the DN or LTID.

The Shared DN capability is controlled by Software Optionality Control (SOC), SOC Activity for NI000051. If the SOC is IDLE, then it is not possible to provision a shared DN configuration with the NEW and EST command. For example, a second NEW command is blocked if the DN is already provisioned for another call type.

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

This feature needs the following features to function properly:
- AF6623, ISDN Layer2 Migration
- AF6641, NI-2 Interface Configurations
- AF6761, SOC Activity For NA008 BRI Functional Group, order code NI000051

This feature is part of a group of features USED BY feature:
- AF6778, ISDN Pkt Shared DN Servord
- AF6779, ISDN Pkt Shared DN Query Commands
- AF6780, ISDN Pkt Shared DN Table Control
- AF6781, ISDN Pkt Shared DN DNCT CPID Base
- AF6783, ISDN Pkt Servord Commands for Single DN
- AF6784, ISDN Pkt Query Commands for Single DN
- AF6785, ISDN Pkt Table Control for Single DN
- AF6786, ISDN Pkt Single DN CallP and MTC

ISDN Packet Shared DN is capable of coexisting with any existing voice (VI), circuit mode data (CMD), or packet mode data (PMD) feature. A hunt group can be provisioned separately for voice DNs and Packet DNs. VI CMD and PMD call types cannot belong to the same hunt group. ISDN NI-1 terminal types, static TEI D-channel and Nailed-up B-channel packet, is allowed to coexist on the same loop with NI-2 circuit terminals.

Restrictions/Limitations

- The following SERVORD commands are not supported for the packet appearance of the DN:
  — Change DN (CDN)
  — SUSPEND (SUS)
  — RESTORE (RES)
  — ADD OPTION (ADO)
  — DELETE OPTION (DEO)
  — CHANGE FEATURE (CHF)
  — SWAP LTID (SWLT)

- Change (CHG) translation or routing command is blocked for a Shared DN configuration.
- Nailup Provision B-channel (NUPB) packet terminal will be blocked from mapping to a LEN already having two NI-2 2B FIT.
- Packet terminal will not be allowed to share DN with a Multiple Appearance DN (MADN) group with non-ISDN and ISDN members and a hunt group having a non-ISDN terminal as pilot.

LAYER   **SW-NOW**
NA008 PRODUCT

                                                                          APPLICATION
ACTID   **FEATURE TITLE**   ISDN
AF6782   ISDN Packet Single DN

Description

This feature also provides functionality to the following features:
- AF6783, ISDN Packet SERVORD Commands for Single DN
- AF6784, ISDN Packet QUERY Commands for Single DN
- AF6785, ISDN Packet Table Control for Single DN
- AF6786, ISDN Packet Single DN Call Processing and Maintenance
- AF6959, New Access Privilege for ISDN Integrated Terminal

Feature AF6782 allows the use of the same directory number (DN) for both packet mode (PMD) and voice interface/circuit mode data (VI/CMD) calls for Fully Initializing Terminals (FIT) called integrated terminals (IT). ITs uses only one terminal end point identified (TEI) for all call types. With ISDN Packet Single DN, end users are able to establish PMD and VI/CMD calls independently and simultaneously from or to the same DN. On the IT, the call types are represented as different appearances of the DN on separate keys.

Feature AF6782 is dependent on ISDN Packet Shared DN feature (AF6777) which provides the ability to use the same DN for both PMD and VI/CMD calls on separate terminals.

Presently the DMS-100 supports ISDN basic rate interface (BRI) D-channel access to packet services only from terminals with provisioned static TEIs. Single DN functionality overcomes this limitation by allowing the provisioning of D-channel packet service to National ISDN 2 (NI-2) compliant FITs that use dynamic TEIs (DTEI). The ability to identify NI-1 and NI-2 circuit mode interface configurations is introduced by feature AF6641. All currently supported packet switched (PS) and circuit switched (CS) services continues to be supported on the new configuration.

Provisioning of the ISDN Packet Single DN functionality is incremental to NI-1 SERVORD provisioning. NI-1 provisioning remains unchanged. Feature AF6782 does not affect packet services for non-initializing terminals (NIT) with dynamic terminal assignment.

Command Changes

See feature AF6777 in the *SW-NOW* section of this manual for the user interface changes to QGRP, QDN, POST BY DN, and POST BY HUNT.

The PROGDIR directory has been modified with changes to the QLT, QPHF, and QLEN commands.

QLT Command Changes

QLT, when given a logical terminal id as command input, displays information about that LTID's primary DN customer group, such as LTCLASS. Additionally, it displays information about each DN on the LTID along with its corresponding key. The command is enhanced to display circuit mode (VI-CMD) and packet mode(PMD) associated with each key and DN; the call type may include packet. Additionally, the command is modified to display the customer group for the packet call type. Command response displays as follows:

```
>qlt isdn 4
--------------------------------------------------------------------------------
LTID: ISDN          4
SNPA: 613
DIRECTORY NUMBER:      7235004
LT GROUP NO: 0
LTCLASS: BRAFS    DEFAULT LOGICAL TERMINAL: N
EKTS: Y    CACH: N
BEARER SERVICE RESTRICTIONS:      N/A
CS: Y PS: Y
VERSION: FUNCTIONAL ISSUE: 2
SPID-SUFFIX:        04
LEN: HOST 01 1 00 04    TEI: DYNAMIC
CUSTGRP:              BNR SUBGRP: 0 NCOS: 0 RING: Y
LINE CLASS CODE: ISDNKSET
MAXKEYS: 64
OPTIONS:
RAG PRK LNR SFC
KEY        DN                           CALLTYPE

_ _ _      _ _                          _ _ _ _ _ _ _
1      DN                 7235004 VI
3      DN                 7235004 PMD
PMD CUSTGRP:              BNR SUBGRP: 0 NCOS: 0 RING: N
KEY      FEATURE
_ _ _    _ _ _ _ _ _
1        AFC
1        AUD N               STD
--------------------------------------------------------------------------------
>
```

QPHF LTID Command Changes

Command QPHF LTID displays the packet handler features involved with an LTID. One of the parameters displayed is the TEI of the LTID queried. For the new integrated 2BD terminal the TEI value is not available. The actual TEI type is indicated instead of the TEI value for Dynamic TEI, User Assigned TEI and User, or Network Assigned TEI. The TEI value for these three types is not maintained in table LTMAP and is not currently displayed by QPHF.

Sample command response follows:

```
>qphf ltid pkt 512
LINK INFORMATION
-----------------------------
TYPE: X.25 D          LTID: PKT 512
SAPI: 16                  TEI: USER
MAPPING
-------------
CHANNEL:  6  X.25 Bd
XSG: 100
DN: 6137238512, KEY: 2
CALL INFORMATION
-----------------------------
pvc:                    0 call
svc:                    0 call
incoming svc:    0 call
outgoing svc:     0 call
Layer 3 link status: down
```

New error messages display if an internal problem occurs while determining the terminal's TEI type:

```
ERROR - could not determine LTID

ERROR - could not get logical table id

ERROR - could not read table LTDEF
```

QLEN Command Changes

The QLEN (query line equipment number) command displays the same type of information as QDN. However, in the QLEN command, the line is identified by its LEN. QLEN is useful when the user is querying a line that does not have a unique DN such as a member of a hunt group. 2BD terminal data can now be displayed. The packet customer group information is displayed only if the LTID contains a non-primary DN that is packet. Sample command response follows:

```
>qlen HOST  01 0 00 04
--------------------------------------------------------------------------------
LEN:     HOST  01 0 00 04
ISG: 0 DCH: 0 ISG BRA CHANNEL: 1
CARDCODE:  BX27AA    PADGRP: NPDGP
PM NODE NUMBER      :    34
PM TERMINAL NUMBER :    5
TEI           LTID               CS     PS     BCH/ISG Bd
-------       ----------------   --     --     ----------------
DYNAMIC   NI2       200   NI2    D     ISG Bd: 28
--------------------------------------------------------------------------------
```

Data Schema Changes

The following tables are modified by ISDN Packet Single DN:
- LTDEF
- KSETLINE
- KSETFEAT
- LTMAP

Table LTDEF Changes

Support for a new access privilege 2BD has been added, in order to provision the new ISDN fully initialized (FIT) integrated terminal. For a 2BD terminal, the terminal must have the BRAFS option; the NITYPE option must be specified with a value of NI2. One of the dynamic TEI options must also be specified. If the PVC option is not specified, it is added by default as PVC Functional 2. In addition, attempts to change an existing access privilege to 2BD are blocked. Following is sample datafill in this table:

```
LTKEY   LTAP    CLASSREF
IT 40   2BD     BRAFS (NITYPE NI2) (PVC FUNCTIONAL 2) (DTEI) (EKTS) (SPIDSFX 1) $
```

Table KSETLINE Changes

This table contains the modified field LINE_OPTION, which allows PMD and DFDN as valid line options for an integrated terminal.

```
KSETKEY   FORMAT   DNRESULT
IT 40 1   DN       Y 2220000 IBNTST 0 0 613 (RAG) (PRK) (LNR) (SFC) (CFX) (MWT)
IT 40 2   DN       N 2220000 IBNTST 0 0 613 (PMD)
IT 40 3   DN       N 2220001 IBNTST 0 0 613 (PMD) (DFDN)
```

The following new error messages are also supported:

```
ONLY THE DN FORMAT IS SUPPORTED FOR INTEGRATED TERMINALS PMD OPTION

CANNOT ASSIGN PMD TO A PDN KEY

THE RINGING OPTION MUST BE SET TO NO FOR INTEGRATED TERMINALS PMD OPTION

THIS DN IS ALREADY IN USE BY A PMD.
```

Table KSETFEAT Changes

This table is modified to filter out the PMD key from the key list while assign the KSH - key short hunt, CFX - call forward to an integrated terminal. Following is sample datafill in this table:

```
FEATKEY        FEATURE        KVAR
IT 40 KSH      KSH            N ( 1) ( 4)(5)$
```

New error messages are displayed.

```
**WARNING**: KSH - KEY SHORT HUNT FEATURE HAS ONLY ASSIGNED TO CIRCUIT KEYS IN
KEYLIST.
```

Table LTMAP Changes

This table provides dynamic TEI support for an integrated terminal. Following is sample datafill in this table:

```
LTKEY      MAPPING               OPTION
IT 40      LEN HOST 67 1 03 17   (DCHCHNL 12) $
```

Some new error messages are also supported as follows:

```
PHI OPTION NOT ALLOWED FOR A 2BD TYPE TERMINAL

BCH OPTION NOT ALLOWED FOR A 2BD TYPE TERMINAL

MUST SPECIFY DCHCHNL OPTION FOR A 2BD TYPE TERMINAL

A 2BD TYPE TERMINAL CAN NOT BE ATTACHED TO AN ILD LEN
```

Log Message Changes

NONE

OM Changes

NONE

Service Order

ISDN BRI Packet Single DN allows the user to define a new IT terminal with the 2BD access privilege. SERVORD command set up logical terminal (SLT) ADD, with CS = NI-2 and PS = D, adds 2BD service to an IT. Nailed up B-channel packet (NUPB) calls are blocked on NI-2 terminals. SERVORD command SLT ADD with CS = NI-2 and PS = B are rejected. A nailed up B-channel packet terminal can be defined on the same ISDN loop if it is not defined as a NI-2 terminal.

With feature AF6782, SERVORD allows provisioning of NI-2 compliant ITs to the following configurations:

- Two keys with different call types appear on the same terminal for the same DN, one key with PMD and the other with VI/CMD.
- Two hunt groups using two EST commands for the same DN appear on the same terminal but on two different KEYS, one for PMD call type and the other for VI/CMD call type.
- Hunt group member DN can also be shared between two keys on the same terminal, one with a packet call type and the other with a circuit call type.
- To remove a DN from service requires the user to specify a KEY so that the DN appearance on that KEY is removed. If the OUT command is issued the first time, only the DN is detached from KEY, but the DN is not put out of service and it is not routed for treatment. Only when the OUT command is issued for the second time is the DN removed from service and routed for treatment.

SERVORD and table control activation of ISDN BRI Single DN Packet configuration features on ITs display error messages if not compliant with the above list.

SERVORD command Query logical terminal (QLT) displays LTID configuration information for the LTID's primary DN. This includes LTGROUP number, LTCLASS, and bearer service restrictions. Following the LTID's primary DN output is a list of all the DNs that appear on the LTID, along with their corresponding key numbers. Additionally, the display indicates whether the DN is a normal DN or a MADN.

The IT supports multiple appearances of the same DN on different keys with different call types. With feature AF6782 the SERVORD QLT command displays not only what it currently does, but also the call type associated with each DN and its corresponding key. This includes DN/key pairs for the packet call type. The customer group information is repeated for packet call types. See the Commands section in this feature description for additional information. For changes to SERVORD commands QDN and QGRP, refer to AF6777 in the *SW-NOW* section of this manual.

AMA Changes

NONE

Notes

ISDN Packet Single DN functions on the DMS-100 packet handler (DMS-PH).

Alarms

NONE

Interactions

This feature needs the following features to function properly:
- AF6777, ISDN Pkt Shared DN HLD
- AF6778, ISDN Pkt Shared DN Servord
- AF6779, ISDN Pkt Shared DN Query Commands
- AF6780, ISDN Pkt Shared DN Table Control
- AF6781, ISDN Pkt Shared DN DNCT CPID Base
- AF6623, ISDN Layer2 Migration
- AF6641, NI-2 Interface Configurations
- AF6761, SOC Activity For NA008 BRI Functional Group, order code NI000051

The Single DN feature is dependent on Shared DN (feature AF6777) and NI-2 Interface Configurations (feature AF6641). Integrated terminals must support both circuit and packet features as before.

The following system interactions apply to ISDN Packet Single DN:
- Table control supports provisioning of ITs with
  — access privilege of two B-channel and one D-channel (2BD) service on one DN.
  — DTEIs and usage of a Default DN (DFDN) key for the primary DN instance of PMD service. The Primary DN (PDN) key of the VI/CMD instance is assigned to the first key.

- Call Processing (CALLP) subsystem enhancements to support DN sharing required changes in processing permanent virtual circuit (PVC) and switched virtual circuit (SVC) ISDN calls when accessing DFDNs.
- SERVORD enhancements support access privilege 2BD, DN options DFDN and PMD. SERVORD Query commands include the addition of the integrated terminal (IT) and associated keys.

Restrictions/Limitations

The following terminal types may coexist on a single ISDN loop by the Single DN development effort:

- Single DN, single dynamic TEI with different CT's on an integrated FIT (2BD access privilege)
- Static TEI, D channel packet terminal (D access privilege)
- Nailed up B channel packet terminal (PB access privilege)
- NI-2 FIT (2B access privilege with NITYPE option set to NI-2)

A maximum of two B channel devices may co-exist on a single ISDN loop. The maximum number of D channel packet NITs is limited to eight minus the number of B channel terminals on the loop.

It is required that the introduction of this new functionality does not impact existing NI-1 services and interface configurations. This functionality is incremental to NI-1. Note, however, that the Single DN Integrated terminal is not allowed to co-exist on the same loop as NI-1 circuit mode terminals (which includes both voice and circuit mode data call types). See AF6641 in the *SW-NOW* section of this manual.

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NA008 PRODUCT

APPLICATION

ACTID **FEATURE TITLE** ISDN
AF6785 ISDN Packet Table Control for Single DN

Description

This feature contains the table control changes associated with AF6782, ISDN Packet Single Directory Number (DN). See feature AF6782 for a full description of the interaction with this feature.

Command Changes

NONE

Data Schema Changes

The following tables ar affected by ISDN Packet Single DN:
- LTDEF
- KSETLINE
- LTMAP

See feature AF6782 in the *SW-NOW* section of this manual for information pertaining to table control and data distribution changes.

Log Message Changes

NONE

OM Changes

NONE

Service Order

The following SERVORD functionalities are affected by ISDN Packet Single DN.

ISDN BRI Packet Single DN allows the user to define a new IT terminal with the 2BD access privilege. SERVORD command sets up logical terminal (SLT) ADD, with CS = N12 and PS = D, adds 2BD service to an IT. Nailed up B-channel packet (NUPB) calls are blocked on NI-2 terminals. SERVORD command SLT ADD with CS = N12 and PS = B is rejected. A nailed up B channel packet terminal can be defined on the same ISDN loop if it was not defined as a N12 terminal.

See feature AF6782 in the *SW-NOW* section of this manual for a full description of SERVORD changes and additions.

AMA Changes

NONE

Notes

ISDN Packet Single DN functions on the DMS-100 packet handler (DMS-PH).

Alarms

NONE

Interactions

The following system interactions apply to ISDN Packet Single DN:

- Table control supports provisioning of ITs with:

    — access privilege of two B-channel and one D-channel (2BD) service on one DN.

    — DTEIs and usage of a Default DN (DFDN) key for the primary DN instance of PMD service. The Primary DN (PDN) key of the VI/CMD instance is assigned to the first key.

- Call Processing (CALLP) subsystem enhancements to support DN sharing required changes in processing permanent virtual circuit (PVC) and switched virtual circuit (SVC) ISDN calls when accessing DFDNs.

SERVORD enhancements support access privilege 2BD, DN options DFDN and PMD. SERVORD Query commands include the addition of the integrated terminal (IT) and associated keys.

Restrictions/Limitations

NONE

LAYER   **SW-NOW**
NA008 PRODUCT

                                         APPLICATION

ACTID   **FEATURE TITLE**   ISDN
AF6786   ISDN Packet Single DN Call Processing and
                 Maintenance

Description

The feature contains the call processing and maintenance associated with AF6782. A description of AF6782 follows.

Feature AF6782 allows the use of the same directory number (DN) for both packet mode (PMD) and voice interface/circuit mode data (VI/CMD) calls for Fully Initializing Terminals (FIT) called integrated terminals (IT). ITs use only one terminal end point identified (TEI) for all call types. With ISDN Packet Single DN, end users are able to establish PMD and VI/CMD calls independently and simultaneously from or to the same DN. On the IT, the call types are represented as different appearances of the DN on separate keys.

Feature AF6782 is dependent on ISDN Packet Shared DN feature (AF6777) which provides the ability to use the same DN for both PMD and VI/CMD calls on separate terminals.

Presently the DMS-100 supports ISDN basic rate interface (BRI) D-channel access to packet services only from terminals with provisioned static TEIs. Single DN functionality overcomes this limitation by allowing the provisioning of D-channel packet service to National ISDN 2 (NI-2) compliant FITs that use dynamic TEIs (DTEIs). The ability to identify NI-1 and NI-2 circuit mode interface configurations is introduced by feature AF6641. All currently supported packet switched (PS) and circuit switched (CS) services continue to be supported on the new configuration.

Provisioning of the ISDN Packet Single DN functionality is incremental to NI-1 SERVORD provisioning. NI-1 provisioning remains unchanged. Feature AF6782 does not affect packet services for non-initializing terminals (NIT) with dynamic terminal assignment.

Please see AF6782 in the *SW-NOW* section of this manual.

Command Changes

NONE

Data Schema Changes

The following tables are affected by ISDN Packet Single DN:
- LTDEF
- KSETLINE
- LTMAP

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Log Message Changes

NONE

OM Changes

NONE

Service Order

The following SERVORD functionalities are affected by ISDN Packet Single DN.

ISDN BRI Packet Single DN allows the user to define a new IT terminal with the 2BD access privilege. SERVORD command set up logical terminal (SLT) ADD, with CS = N12 and PS = D, adds 2BD service to an IT. Nailed up B-channel packet (NUPB) calls are blocked on NI-2 terminals. SERVORD command SLT ADD with CS = N12 and PS = B is rejected. A nailed up B channel packet terminal can be defined on the same ISDN loop if it was not defined as a N12 terminal.

With feature AF6782 SERVORD allows provisioning of NI-2 compliant ITs to the following configurations:

- Two keys with different call types appear on the same terminal for the same DN, one key with PMD and the other with VI/CMD.
- Two hunt groups using two EST commands for the same DN exist on the same terminal but on two different KEYS, one for PMD call type and the other for VI/CMD call type.
- Hunt group member DN are shared between two keys on the same terminal, one with a packet call type and the other with a circuit call type.
- To remove a DN from service requires the user to specify a KEY so that the DN appearance on that KEY is removed. If the OUT command is issued the first time, only the DN is detached from KEY, but the DN is not put out of service and it is not routed for treatment. Only when the OUT command is issued for the second time is the DN removed from service and routed for treatment.

SERVORD and table control activation of ISDN BRI Single DN Packet configuration features on ITs display error messages if not compliant with the above list.

SERVORD command Query Logical Terminal (QLT) displays LTID configuration information for the LTID's primary DN. This includes LTGROUP number, LTCLASS, and bearer service restrictions. Following the LTID's primary DN output is a list of all the DNs that appear on the LTID, along with their corresponding key numbers. Additionally, the display indicates whether the DN is a normal DN or a MADN.

The IT supports multiple appearances of the same DN on a different key with different call types. With feature AF6782 the SERVORD QLT command displays not only what it currently does, but also the call type associated with each DN and its corresponding key. This includes DN/key pairs for the packet call type. The customer group information is repeated for packet call types. For changes to SERVORD commands QDN and QGRP, refer to feature AF6777, ISDN Packet Shared DN, in the *SW-NOW* section of this manual.

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

NONE

LAYER   **SW-NOW**
NA008 PRODUCT

                                                             APPLICATION
ACTID   **FEATURE TITLE**   MBS
AF6825   Patch Source Inclusion III

Description

Patch Source Inclusion III helps the operating company to record an authorization code of up to 14 digits in the authorization code field of an AMA record. The 14 digits are comprised of 10 authcode digits plus 4 security code digits. This functionality is activated and deactivated by introducing new option AUTHSECT in table CUSTSMDR.

Option AUTHSECT requires option MDRRAO as a prerequisite because authcode digits are recorded in the AMA record only when option MDRRAO is datafilled for a tuple (customer group) in table CUSTSMDR.

Patch Source Inclusion III also implements Fast Call Transfer (FXR) for MBS on top of the existing Three–Way Calling (3WC) feature and Call Transfer (CXR) feature. Both features require third party involvement and optionally transfer the call to the third party. But 3WC and CXR features need more key strokes than FXR and are required to have conference before transferring the call.

Command Changes

NONE

Data Schema Changes

Fields in tables CUSTSMDR and KSETFEAT have been modified by this feature.

Table CUSTSMDR Changes

Field OPTIONS in table CUSTSMDR is modified to add AUTHSECT in its options list. Option AUTHSECT allows the recording of security digits with authorization code digits in the AMA record. Option MDRRAO must be datafilled in table CUSTSMDR for option AUTHSECT to be implemented. An example follows:

```
TABLE CUSTSMDR
CUSTNAME     BUSNSID      OPTIONS
--------------------------------------------------------
TSTCUST1     12345        (MDRRAO) (AUTHSECT)\
TSTCUST2     310366       (MDRRAO)\
```

Table KSETFEAT Changes

Field FEATURE in table KSETFEAT is modified to add option FXR. This option provides Fast Call Transfer on top of the 3WC/CXR feature. This FXR option has

subfields FXRRCL and TIMER. Subfield TIMER is datafilled if FXRRCL is set to YES. An example follows:

```
TABLE KSETFEAT
FEATKEY FEATURE KVAR
-------------------------------------------------------
HOST 0 0 16 4 5 FXR FXR Y 45
HOST 0 0 16 5 6 FXR FXR N
```

Log Message Changes

NONE

OM Changes

NONE

Service Order

Line option FXR is introduced for MBS by datafilling through SERVORD. Prompts OPTKEY, OPTION, FXRRCL, and TIMER are added.

AMA Changes

Security digits with authcode digits can now be recorded in the AMA record. Thus, the total number of authcode digits that can be recorded in the AMA record is 14. The 14 digits are comprised of 10 authcode digits plus 4 security digits. Optionality for recording security digits with authcode digits in the AMA record is provided by datafilling new option AUTHSECT for a tuple in table CUSTSMDR.

Notes

Engineering features that are required are:
- Recording of security digits with authcode digits in the AMA record
  — This feature needs Authcode For MDR (message detail recording) feature to function properly.
- Implementing Fast Call Transfer feature for MBS
  — This feature needs 3WC/CXR features to function properly.

Alarms

NONE

Interactions

The FXR feature, combined with DSD/BLF and/or Station Camp On features, provides an enhanced functionality to the business set.

All feature interactions that occur with the existing 3WC/CXR feature apply to FXR. When using the DSS/BLF key to set up the second leg of the call, all feature interactions that are presently defined through the terminating party remain unchanged. When FXR interacts with the MBS Camp On feature, all Camp On feature interactions remain unchanged. The Transfer Recall functionality remains unchanged and acts just as it does with the 3WC/CXR feature.

When a call is transferred using the FXR feature, the caller and destination MBS set is updated to show the same reason display as call transfer through the regular 3WC or CXR features.

Restrictions/Limitations

The following limitations and restrictions apply to Patch Source Inclusion III:

- Option MDRRAO must be datafilled in table CUSTSMDR to record security digits with authcode digits in the AMA record. Sample call dump follows:

```
HEX ID:AA
STR
CALL CODE:006C
SENSOR TYPE:036C
SENSOR ID:0250250C
REC OFFICE TYPE:036C
REC OFFICE ID:0250250C
DATE:20416C
TIMING IND:00000C
STUDY IND:0000000C
CLD PTY OFF-HK:0C
SERVICE OBSERVED:0C
SIG DIGITS NEXT FIELD:010C
ORIG OPEN DIGITS 1:00212002000C
ORIG OPEN DIGITS 2:FFFFFFFFFF
ORIGINATING CHARGE INFO:FFFF
DOMESTIC/INTL INDICATOR:1C
SIG DIGITS NEXT FIELD:004C
TERM OPEN DIGITS 1:00000002001C
TERM OPEN DIGITS 2:FFFFFFFFFF
CONNECT TIME:1706143C
ELAPSED TIME:000000019C
MODULE CODE:102C
SIG DIGITS NEXT FIELD:005C
AUTHORIZATION CODE:000000000012345C
MODULE CODE:000C
```

- All feature restrictions and limitations that occur with the existing 3WC/CXR feature apply to FXR. All the restrictions and limitations that apply to the Direct Station Select/ Busy Lamp Field (DSS/BFL), MBS Camp On, and Recall features also apply when they are used in conjunction with FXR to transfer a call.

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**   ISDN
AF6959   New Access Privilege for ISDN Integrated Terminal

Description

This feature contains the new access privilege two B-channel and one D-channel (2BD) for ISDN Integrated Terminals. AF6959 is associated with AF6782, ISDN Packet Single Directory Number (DN), in the *SW-NOW* section of this manual. A description of AF6782 follows:

Feature AF6782 allows the use of the same directory number (DN) for both packet mode data (PMD) and voice interface/circuit mode data (VI/CMD) calls for Fully Initializing Terminals (FITs) called integrated terminals (ITs). ITs use only one terminal end-point identifier (TEI) for all call types. With ISDN Packet Single DN, end users are able to establish PMD and VI/CMD calls independently and simultaneously from or to the same DN. On the IT, the call types are represented as different appearances of the DN on separate keys.

Feature AF6782 is dependent on ISDN Packet Shared DN feature (AF6777) which provides the ability to use the same DN for both PMD and VI/CMD calls on separate terminals.

Presently the DMS-100 supports ISDN basic rate interface (BRI) D-channel access to packet services only from terminals with provisioned static TEIs. Single DN functionality overcomes this limitation by allowing the provisioning of D-channel packet service to National ISDN 2 (NI-2) compliant FITs that use dynamic TEIs (DTEIs). The ability to identify NI-1 and NI-2 circuit mode interface configurations is introduced by feature AF6641. All currently supported packet switched (PS) and circuit switched (CS) services will continue to be supported on the new configuration.

Provisioning of the ISDN Packet Single DN functionality is incremental to NI–1 SERVORD provisioning. NI-1 provisioning remains unchanged. Feature AF6782 does not affect packet services for non-initializing terminals (NITs) with dynamic terminal assignment.

Command Changes

See AF6782: ISDN Pkt Single DN in the *SW-NOW* section of this manual for man-machine interface details

Data Schema Changes

The following tables are affected by ISDN Packet Single DN:
- LTDEF
- KSETLINE
- LTMAP

See AF6782: ISDN Pkt Single DN in the *SW-NOW* section of this manual for data schema changes.

Log Message Changes

NONE

OM Changes

NONE

Service Order

The following SERVORD functionalities are affected by ISDN Packet Single DN.

ISDN BRI Packet Single DN allows the user to define a new IT terminal with the 2BD access privilege. SERVORD command set up logical terminal (SLT) ADD, with CS = NI2 and PS = D, adds 2BD service to an IT. Nailed up B-channel packet (NUPB) calls are blocked on NI-2 terminals. SERVORD command SLT ADD with CS = NI2 and PS = B is rejected. A NUPB terminal can be defined on the same ISDN loop if it was not defined as a NI-2 terminal.

With feature AF6782 SERVORD allows provisioning of NI-2 compliant ITs to the following configurations:

- Two keys with different call types appear on the same terminal for the same DN, one key with PMD and the other with VI/CMD.
- Two hunt groups using two EST commands for the same DN appear on the same terminal but on two different KEYS, one for PMD call type and the other for VI/CMD call type.
- Hunt group member DN can also be shared between two keys on the same terminal, one with a packet call type and the other with a circuit call type.
- To remove a DN from service requires the user to specify a KEY so that the DN appearance on that KEY is removed. If the OUT command is issued the first time, only the DN is detached from KEY, but the DN is not put out of service and it is not routed for treatment. Only when the OUT command is issued for the second time is the DN removed from service and routed for treatment.

SERVORD and table control activation of ISDN BRI Single DN Packet configuration features on ITs display error messages if not compliant with the above list.

SERVORD command Query logical terminal (QLT) displays Logical Terminal Identifier (LTID) configuration information for the LTID's primary DN. This includes LTGROUP number, LTCLASS, and bearer service restrictions. Following the LTID's primary DN output is a list of all the DNs that appear on the LTID, along with their corresponding key numbers. Additionally, the display indicates whether the DN is a normal DN or a Multiple Appearance Directory Number (MADN).

The IT supports multiple appearances of the same DN on a different key with different call types. With feature AF6782 the SERVORD QLT command displays not only what it

currently does, but also the call type associated with each DN and its corresponding key. This includes DN/key pairs for the packet call type. The customer group information is repeated for packet call types. For changes to SERVORD commands QDN and QGRP refer to the feature ISDN Packet Shared DN feature description (AF6777) in the *SW-NOW* section of this manual.

AMA Changes

NONE

Notes

ISDN Packet Single DN functions on the DMS-100 packet handler (DMS-PH).

Alarms

NONE

Interactions

The following system interactions apply to ISDN Packet Single DN:

- Table control supports provisioning of ITs with:
  — access privilege of 2BD service on one DN.
  — DTEIs and usage of a Default DN (DFDN) key for the primary DN instance of PMD service. The Primary DN (PDN) key of the VI/CMD instance is assigned to the first key.
- Call Processing (CALLP) subsystem enhancements to support DN sharing required changes in processing permanent virtual circuit (PVC) and switched virtual circuit (SVC) ISDN calls when accessing DFDNs.
- SERVORD enhancements support access privilege 2BD, DN options DFDN and PMD. SERVORD Query commands include the addition of the IT and associated keys.

Restrictions/Limitations

NONE

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

AJ4505   AIN 0.2 Events Enhancements

Description

Advanced intelligent networks (AIN) Service Enablers (0.2) Events Enhancements provides support for Network_Busy, T_Busy, and T_No_Answer events.

Events can be specified as requests or notifications. Notifications communicate events to the service control point (SCP) or Adjunct but do not intervene in the call. The SCP or Adjunct does not send a response to a notification message. Requests communicate events to the SCP or Adjunct and allow the SCP or Adjunct to intervene the call.

As requested by the SCP or Adjunct in the Request_Report_BCM_Event (RRBCME) message, the service switching point (SSP) arms the O_Answer event as a notification and the following events as requests:

- O_Called_Party_Busy (supported in NA007)
- Network_Busy (new for NA008)
- O_No_Answer (supported in NA007)
- T_Busy (new for NA008)
- T_No_Answer (new for NA008)

The Network_Busy event is armed by the RRBCME message received with an Analyze_Route response to an originating trigger detection point-request (TDP-R) message. The T-Busy and T_No_Answer events are armed by the RRBCME message received with an Authorize_Termination response to a Termination_Attempt TDP-R message. The T_No_Answer event can also be armed by the RRBCME message received with a Continue response to the T_Busy event detection point-requests (EDP-R) message.

Support of the AIN Service Enablers Network_Busy event, T_Busy event, and T_No_Answer event includes the addition of the following:

- Enhancements to RRBCME (to decode and arm the three events)
- Event detection points for Network_Busy, T_Busy, and T_No_Answer
- Encoding the switch for call-related EDP-R messages: Network_Busy, T_Busy, and T_No_Answer.
- Response processing after the SCP sends a reply to the EDP-R message

Command Changes

AINTRACE is a command interpreter (CI) tool available to users through the maintenance and administrative position (MAP) terminal. The tool enables tracing of messages sent to

---

and from an SCP. AINTRACE is enhanced so that it can trace and display new and changed messages and parameters introduced by NA008 Service Enablers.

When unrecognized messages or parameters occur, the reason is one of the following:
- The message or parameter is not supported in NA008.
- The message, or parameter, or contents is not part of the GR 1299 protocol.

AINTTRACE treats the previous two scenarios the same. It dumps the unrecognized values in hexadecimal (HEX), displays an error message, and continues decoding. AINTRACE detects inconsistencies during decoding that are attributable to length inconsistencies. For example, many unrecognized parameters can be caused by an incorrect length value in the transaction capabilities application part (TCAP) message. AINTRACE then prints an error message indicating that a length inconsistency has been found.

Note: *AINTRACE continues to allow local exchange carrier (LEC) personnel at an operations channel (for example, a craft terminal) to schedule an AINTRACE session. The session occurs at a specific time and for a specific duration, using the existing maintenance and administration position command interface (MAP CI) scheduling functions.*

Data Schema Changes

AIN 0.2 Events Enhancements introduces the office parameter AIN_T_NO_ANSWER_EVENT_TIMER. When the T_No_Answer EDP-R is armed by a RRBCME message the T_No_Answer timer is activated. When the T_No_Answer timer parameter is not present in the RRBCME message, the value of the AIN_T_NO_ANSWER_EVENT_TIMER office parameter is used by the AIN event processing logic for the associated call. The value of the parameter indicates the number of seconds before the timer expires. GR-1298 CORE Issue 3 requires that this timer value be provisionable on an office-wide basis; therefore, table OFCENG is used to provision the value.

Log Message Changes

The number of medium feature data blocks (FDB) (of size 32 bytes) is increased. The increase is necessary because only one time-compressed multiplex (TCM) next event list (NEL) FDB is allocated per call (that encounters TCM NEL functionality). The number of TCM NEL FDBs required is equal to the proportion of AIN Service Enablers calls that encounter TCM NEL functionality, due to the receipt of an RRBCME message from the SCP.

OM Changes

NONE

Service Order

NONE

AMA Changes

A sub-set of AIN Service Enablers and their automatic message accounting (AMA) requirements have been implemented in feature AF6840, AINSSP: AIN 0.2 AMA. See the *SW-NOW* section of the Maintenance or Traffic manual.

Notes

The number of 32-byte medium feature data blocks (FDBs) is increased because only one time-compressed multiplex (TCM) next event list (NEL) FDB is allocated per call that encounters TCM NEL functionality. The number of TCM NEL FDBs required is equal to the proportion of AIN Service Enabler calls that encounter TCM NEL functionality, due to the receipt of an RRBCME message from the SCP.

Alarms

NONE

Interactions

AIN 0.2 Events Enhancements interacts with the equivalent set of features supported in AIN Essentials (and therefore with AIN Service Enablers-Phase 1).

This feature needs the following features to function properly:
- AJ4582 AIN Events Enhancements - CCM
- AJ4585 AIN Events Enhancements - SHR
- AJ4584 AIN Events Enhancements - TL
- AJ2259 - AIN 0.2 Messaging
- AJ4103 - AIN 0.2 Events Phase I
- AJ4099 - AIN 0.2 BASE
- AJ2309 - AINTRACE
- AJ2306 - AIN 0.2 Operational Measurements
- AR2305 - AIN 0.2 SOC Usage

Restrictions/Limitations

The following limitations and restrictions apply to AIN 0.2 Events Enhancements:
- NEL transaction is closed on any forwarding or redirection that occurs, including the following:
  — AIN Essentials forward call
  — Virtual facility groups (VFG)
  — Conferencing of any type

- Busy indication is provided to the caller when a continue response is received following a T_Busy EDP-R, call waiting, or call forward busy is not encountered.
- T_Busy event takes precedence over the following switch-based features:
  — Call forward busy
  — Call waiting/call waiting incoming only
  — Integrated services digital network (ISDN) additional call offering

When a busy event is detected and any of the above features are active, T_Busy sends the EDP-R message to the following:
- SCP or Adjunct
- Call Forward Busy (CFB)
- Call Waiting (CWT)
- Additional Call Offering (ACO)

The CFB, CWT, and ACO features are not encountered while the T_Busy event is active, or when a response is received. When T_Busy is not armed, the features CFB, CWT, and ACO can be detected.

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

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Release 08.01, November 1997

LAYER   **SW-NOW**
NA008 PRODUCT

                                                                 APPLICATION
ACTID   **FEATURE TITLE**   AIN
AJ4589   Increase PRI FIE Size (CCM)

Description

The current software supports facility information element (FIE) messages 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**   AIN
AJ4591   Increase PRI FIE size

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, feature AJ4591 is 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

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LAYER   **SW-NOW**
NA008 PRODUCT

                                                                     APPLICATION
ACTID   **FEATURE TITLE**   ESMA
AN5003   MVI IDT/DCH Management – CNA

Description

Multi-Vendor Interface Integrated Digital Terminal (MVI IDT) /D-Channel Handler (DCH) Management provides the ability to simultaneously support seven remote digital terminals (RDTs) and integrated services digital network (ISDN) on an Expanded Subscriber Carrier Module-100 Access (ESMA). With this feature, a maximum of seven RDTs can be datafilled when from one to four enhanced D-channel handlers (EDCHs) are also datafilled on an ESMA. Additionally, when six RDTs are datafilled, a maximum of eight EDCHs can be datafilled. The maximum of eight RDTs are allowed when no EDCHs remain unchanged.

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 needs features AN5002 and AN5004 to function properly.

Restrictions/Limitations

MVI EISP/DCH Dynamic Channel Allocation has the following limitations:

- When eight RDTs subtend from an ESMA, no EDCHs can be provisioned.
- When seven RDTs subtend from an ESMA, a maximum of four EDCHs can be provisioned.
- When six RDTs subtend from an ESMA, a maximum of eight EDCHs can be provisioned.
- When one to five RDTs subtend from an ESMA, a maximum of ten EDCHs can be provisioned.

LAYER   **SW-NOW**
NA008 PRODUCT

                                                                 APPLICATION
ACTID   **FEATURE TITLE**   MVI IDT
AN5004   MVI IDT/DCH Management - CCM

Description

Please refer to the related feature AN5003, Multi-Vendor Interface Integrated Digital
Terminal (MVI IDT) /D-Channel Handler (DCH) Management - CNA, for information
about this feature in the *SW-NOW* section of this manual.

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 needs features AN5002 and AN5003 to function properly.

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
AQ1590   AIN 0.1: Routing to FGC/OTC Carriers

Description

Advanced Intelligent Networks (AIN) Essentials (0.1) allows for routing over Feature Group C (FGC) and Operating Telephone Company (OTC) carriers when a Carrier Identification Code (CIC) or CONT message is received from the SCP.

This feature gives the ability to provide the proper billing for calls routed to a querying switch, such as Equal Access End Office (EAEO) or Access Tandem (AT), over a Feature Group D (FGD) carrier and instructed by AIN0.1 response to redirect the call over Feature Group C (FGC)/Operating Telephone Company (OTC) carrier. For example, it ensures that an AMA record with Call Code (CC) 110 or CC 006 is generated on the querying switch.

The FGC CIC is contained within the response for Analyze_Route messages. The CIC is obtained through one of its built-in carriers: primary, secondary, or second alternate.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

No new records are created by this feature. This feature ensures that the correct AMA records are generated under certain AIN 0.1 call conditions.

The CALLDUMP utility is unaffected and supports records generated as a result of this feature.

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

NONE

LAYER   **SW-NOW**
NA008 PRODUCT

                                                APPLICATION

ACTID   **FEATURE TITLE**   DCR
AQ1602   DCR Utility to Handle Non-DCR Calls

Description

This feature, Dynamically Controlled Routing (DCR) Utility to Handle Non-DCR Calls, provides a generic mechanism to bypass the DCR logic for special calls that are not to be routed by DCR but do use route lists that contain DCR selectors. It enables skipping the DCR route elements for non-DCR calls.

For a call that is defined as a non-DCR call by the product load, the feature skips DCR selectors as if Software Optionality Control (SOC) were idle for DCR. In the absence of a non-DCR call definition in the product load, all calls that encounter DCR route elements in the route list are treated as DCR calls.

Command Changes

This feature is a utility. When not combined with a product feature, it does not impact the Human-Machine Interface. When a companion product feature is used, TRAVER output is adjusted accordingly, so that it does not show any trace information under DCRT and NODE selectors if a call skips them.

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

The feature does not require new OMs, nor does it modify the meaning of existing OMs. This feature is a utility. When not combined with a product feature, it does not impact OM pegging.

When a companion product feature is used, calls that skip DCRT or NODE selector do not participate in pegging DCR OMs.

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

The following restrictions and limitations apply to DCR Utility to Handle Non-DCR calls:

- The utility does not verify the validity of the non-DCR call identification provided by the product.
- The definition of non-DCR calls must be the same for all switches in the DCR network.

LAYER **SW-NOW**

NA008 PRODUCT

APPLICATION

ACTID **FEATURE TITLE** NXX

AR2230 Duplicate NXX Support

Description

This feature allows the same office code (NXX) to exist in a split Numbering Plan Area (NPA) office, enabling the DMS-100 to provide support for non-unique 7-digit Directory Number (DN) entries.

Example of the areas affected by duplicate NXX are:
- SERVORD
- Call Processing
- Operations, Administration, and Maintenance (OAM)
- CI Commands

Command Changes

Commands modified by this feature allow the provisioning and querying of non-unique 7-digit DNs:
- CLTG (SERVORD COMMAND: DN_OR_LEN prompt for SERVORD command modified to allow up to a 15 digit entry
- QLEN: Input for the QLEN command is modified to allow up to 15 digit DNs (in addition to the LEN)
- TRAVER: Used with the line option (TRAVER L), the <LINE> input allows inputs of up to 15 digit entries
- NBCQUERY: DIRECTORY NUMBER prompt modified to accept up to 15 digits
- FINDBLK: DIRECTORY NUMBER entries modified to screen for an ambiguous DN entry
- DATAVER: <DN> entries in the DATAVER;START;L command modified to screen for an ambiguous DN entry
- SHOWTIDS: <DIRNUM> entries in the SHOWTID;DN prompt modified to screen for an ambiguous DN entry
- QMADN: Used to query on multiple appearance directory numbers
  — <DN> entries under the DISPLAY prompt modified to screen for an ambiguous DN entry
  — <DN> entries under the DISPCA prompt modified to screen for an ambiguous DN entry

— <DN> entries under the GRPNUM prompt modified to screen for an ambiguous DN entry

— <DN> entries under the VERIFY prompt modified to screen for an ambiguous DN entry

- NETRAG: Network Ring Again testing

  — <DN> entries after the RECALL prompt modified to screen for an ambiguous DN entry

  — <DN> entries after the CANCEL prompt modified to screen for an ambiguous DN entry

  — <DN> entries after the RESPONSE prompt modified to screen for an ambiguous DN entry

  — <DN> entries after the MODIFY prompt modified to screen for an ambiguous DN entry

  — <DN> entries after the TRIGGER prompt modified to screen for an ambiguous DN entry

  — <DN> entries after the SET prompt modified to screen for an ambiguous DN entry

- TCAPRAG: Network Ring Again TCAP testing command

  — <DN> entries after the SETUP prompt modified to screen for an ambiguous DN entry

  — <DN> entries after the ACCEPT prompt modified to screen for an ambiguous DN entry

- ACBART: Automatic Callback/Automatic Recall TCAP testing command

  — <CALLING DN> entries after the SETUP prompt modified to screen for an ambiguous DN entry

  — <CALLED DN> entries after the SETUP <CALLING DN> prompt modified to screen for an ambiguous DN entry

  — <CALLING DN> entries after the TSREQ prompt modified to screen for an ambiguous DN entry

  — <CALLED DN> entries after the TSREQ <CALLING DN> prompt modified to screen for an ambiguous DN entry

  — <CALLING DN> entries after the BISI prompt modified to screen for an ambiguous DN entry

  — <CALLED DN> entries after the BISI <CALLING DN> prompt modified to screen for an ambiguous DN entry

  — <CALLING DN> entries after the TSRESP prompt modified to screen for an ambiguous DN entry

  — <CALLING DN> entries after the ENDORIG prompt modified to screen for an ambiguous DN entry

  — <CALLED DN> entries after the ENDORIG <CALLING DN> prompt modified to screen for an ambiguous DN entry

- QSCMP: Command to review the structure of a series completion list
    - <DN> prompt entries modified to screen for an ambiguous DN entry

- MWQ: Allows end user to interact with messaging service capabilities of specified station
    - <REQUESTEE> entries at the DEQ; <REQUESTEE> prompt modified to screen for an ambiguous DN entry
    - <REQUESTEE> entries at the QUEUE;<REQUESTEE> prompt modified to screen for an ambiguous DN entry
    - <LINE> entries at the QUEUE;<REQUESTEE>L; prompt modified to screen for an ambiguous DN entry
    - <LINE> entries at the DEQ;<REQUESTEE>L; prompt modified to screen for an ambiguous DN entry
    - <REQUESTEE> entries at the STATUS;<REQUESTEE> prompt modified to screen for an ambiguous DN entry
    - <REQUESTEE> entries at the RESET;<REQUESTEE> prompt modified to screen for an ambiguous DN entry

- CLOG: accesses the switch-based Incoming Callers List which provides the subscriber with information pertaining to a limit of thirty-one of their incoming calls
    - <REQUESTEE> entries at the STATUS <REQUESTEE> prompt modified to screen for an ambiguous DN entry
    - <REQUESTEE> entries after the RESET<REQUESTEE> prompt modified to screen for an ambiguous DN entry
    - <REQUESTEE> entries at the DEQ;<REQUESTEE> prompt modified to screen for an ambiguous DN entry
    - <REQUESTEE> entries at the QUEUE;<REQUESTEE> prompt modified to screen for an ambiguous DN entry
    - <LINE> entries at the QUEUE;<REQUESTEE>L; prompt modified to screen for an ambiguous DN entry
    - <LINE> entries at the DEQ;<REQUESTEE>L; prompt modified to screen for an ambiguous DN entry

When an ambiguous DN is entered under the prompt for any of the commands above, the user is prompted to enter a Serving Numbering Plan Area (SNPA). For example, if the second DN in the QUEQUE or DEQ option of the CLOG command is ambiguous, the modified interface displays the warning:

```
The REQUESTOR DN Entered is Ambiguous - Include NPA
```

This feature uses the OFCENG parameter ACTIVE_DN_SYSTEM to control digit length entries. When this parameter is set to NORTH_AMERICAN, or set to the new proposed ENHANCED_NORTH_AMERICAN, 7 or 10 digit DN entries are enforced. When the parameter ACTIVE_DN_SYSTEM is set to UNIVERSAL, the 7 or 10 digit DN entry enforcement is removed.

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

The SERVORD command CLTG has been modified. See the *Commands* section for details.

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

NONE

LAYER   **SW-NOW**
NA008 PRODUCT

                                                                            APPLICATION
ACTID   **FEATURE TITLE**   EADAS
AR2247   EADAS/DC Buffer Size Expansion

Description

This feature increases the size of the Engineering and Administrative Data Acquisition
System/Data Collection (EADAS/DC) 30 minute, 60 minute, and 24 hour data collection
buffers. This feature increases capacity to 18 words to 256,000 words. The store allocation
method changes to accommodate this new range of values.

Command Changes

NONE

Data Schema Changes

The following EADAS/DC (OFCENG) parameters range of values change.
- EADAS30M_BUFFER_SIZE
- EDAS60M_BUFFER_SIZE
- EDAS24H_BUFFER_SIZE

Currently, the minimum value is 12 words and the maximum value is 32,000 words. This
feature changes the minimum value to 18 words and the maximum value to 256,000 words.
this feature eliminates the restart requirement.

Log Message Changes

A new log (EAD109) is generated when there is more data being collected than is allowed
given the current SOC state and/or OFCENG buffer size parameters. In such a case, the
outgoing EADAS message is truncated to the nearest whole section as reported in the log.
An example follows:

```
EAD109 MAY05 12:00:00 1534 INFO EADAS/DC BUFFER OVERFLOW TRUNCATED AT CLASS EADAS30M
SECTION 98
```

The operating company's response is to increase the corresponding OFCENG buffer parm.
To increase a parm beyond 32000, Software Optionality Control (SOC) option OAM00007
must be turned ON first.

Alternately, the office can choose to reduce the amount of data being collected by removing
datafill in table EADAS, or via the EADSECTS and EADASKEY CI commands. This
requires co-ordination with all downstream Operations System Support (OSS) machines.

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

EADAS/DC Buffer Size Expansion needs the following feature to function properly: AU2334, SOC of the EDAS/DC Buffer Size Expansion.

Restrictions/Limitations

The following Operations Systems Support (OSS) network switch-related limitations apply to EADAS/DC Buffer Size Expansion:

- **Enabling this feature makes the DMS switch incompatible with existing unmodified downstream OSS machines!**

- There is a limit to the amount of data that can be transmitted to the OSS machine at a given MPC port speed. For example, 256,000 words of 30-minute data can not be sent at 2400 bit/s because the required transmission time is greater than 30 minutes. Offices with excessive amounts of data will need to negotiate a higher port speed with the downstream OSS machine.

- TR-TRY-000740 (paragraph 3.1.5.10) specifies that the maximum length of the data within each section is 16,000 words. The maximum message size is 75,000 bytes. If the downstream OSS machine complies with these limits, it will not be able to receive the expanded 256,000 byte data that this feature provides.

- The current DMS switch header and byte order message formats are non-FSD complaint. The extended section pointer, the addition of the office's CLLI, and the removal of the one "spare" byte create a new non-FSD compliant header. The downstream OSS machine must be able to interpret this new header correctly.

The following DMS switch-related limitations apply to EADAS/DC Buffer Size Expansion:

- Offices that introduce EADAS for the first time (currently have the OFCENG buffer size parameters set to zero) require a restart to initialize the EADAS functionality. Once initialized, the buffers can be increased without the need for further restarts.

LAYER   **SW-NOW**
NA008 PRODUCT

                                                                    APPLICATION
ACTID   **FEATURE TITLE**   AIN
AR2305   AIN SE Usage Based SOC Support

Description

This feature, Advanced Intelligent Network (AIN) Service Enabler (SE) Usage Based
Software Optionality Control (SOC) Support, provides support for usage based pricing of
AIN SE product. The required SOC counters are implemented to count messages between
Service Switching Point (SSP) and Service Control Point (SCP). In addition, it also provides
the required support to retain these counters over software upgrades, One Night Process
(ONP).

The NA008 Advanced Intelligent Network (AIN) Service Enablers (SE) Software
Optionality Control (SOC) feature provides the following:

- Creates an event-usage controlled SOC Option AIN00211, AIN SE Counter - Office, to
  contain the office-based counts for all office-based messaging
- Creates an event-usage controlled SOC Option AIN00212, AIN SE Counter - Subscriber,
  to contain the subscription-based counts for all subscription-based messaging
- Creates an event-usage controlled SOC Option AIN00213, AIN SE Counter - NCR, to
  contain the Non-Call Related (NCR) based counts for all NCR-based messaging
- Creates a state controlled SOC Option AIN00220 to control AIN SE Release 2
  functionality
- Provides Nortel marketing and in turn the customer with the flexibility to share the risk
  of developing and delivering AIN services by counting the occurrences of incoming and
  outgoing AIN SE messages

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

Traver

Traver appropriately annotates each of the following NA008 AIN SE SOC controlled functionality:

- Specific_Feature_Code trigger
- Toll-Free Service
- SDS Escape List

If the SOC option that controls the above functionality is IDLE, a warning message is displayed indicating that the simulated path is different than the call processing path.

AINTrace

AINTrace annotates SOC controlled AIN SE messages and parameters appropriately. If the SOC option that controls a message or parameter is IDLE, a warning message is displayed indicating that the applicable SOC Option is in the IDLE state.

Restrictions/Limitations

The following restrictions and limitations apply to AIN Service Enablers Usage Based SOC Support:

- A message that is received and passed protocol errors checking but is later discovered to contain an error is still counted.
- A message from the SCP that is received and validated (no protocol errors), but is later discovered to be SOC controlled is still counted.
- Outgoing messages that result in an SCCP return on error message are still counted.
- During an ONP, counts which result from message processed between the datamove and SWACT stages of the ONP are lost.

- Default Routing operations are not counted.
- The usage-based billing option requires Nortel and Telco cooperation.

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**

NA008 PRODUCT

                                                                    APPLICATION

ACTID   **FEATURE TITLE**   AIN

AR2309   AIN TRACE Service Enablers (0.2) (CNA)

Description

AINTRACE is a command interpreter (CI) tool available to users through the maintenance and administrative position (MAP). The tool enables tracing of messages sent to and from a service control point (SCP).

This feature provides the following tracing functionality in the TEXT format output of AINTrace:

- display of new and changed call-related messages and parameters introduced by NA008 AIN Service Enablers
- a warning when an incoming (from the SCP) message and/or parameter is controlled by a software optionality control (SOC) option and that SOC option is idle (the message name, parameter value, and contents are still displayed in text format)

The following is a list of the new call-related messages supported by AinTrace in NA008:

- O_CALLED_PARTY_BUSY trigger detection point (TDP) request
- O_NO_ANSWER TDP request
- NEWTORK_BUSY event detection point (EDP) request
- T_NO_ANSWER EDP request

AINTrace in NA008 has the ability to perform the following:

- display the parameters marked as new
- display the new range values for parameters marked as changed
- for those parameters that are marked as unchanged but have a field name change (for example, GlobalTitleAddress parameter) AINTrace makes the corresponding change in the field name in the display of that parameter

Command Changes

The OPEN, BACK command in the AINTRACEDIR directory has been modified.

The trace output includes warnings when a message or parameter is SOC-idle (a message or parameter is controlled by a SOC option and that SOC option is idle), for example:

```
Operation Code
(** warning: message is associated with SOC-option AIN002X0 which is
currently in IDLE state **)
Connection Control
Future Message
HEX VALUE (65 DD)
```

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

New outgoing call related messages supported by AinTrace include two new parameters: AMAMeasure and AMAMeasurement.

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

The usage restrictions of AIN TRACE Service Enablers (0.2) (CNA) are:

- AINTRACE is a single user tool
- the maximum number of terminal identifiers (TID) that can be selected at any one time is 40
- AINTRACE message buffer size is 200 messages
- AINTRACE has no facility for tracing calls or retaining data over a restart (on a restart, all data is lost and the tool is reinitialized)
- when an non call-related errors occur while building a query message or a protocol error occurs AINTRACE does not capture a message
- AINTRACE does not capture error messages that are not part of a transaction

- when an agent's TID is mapped to virtual identifiers (VID), as is the case when there is more than one directory number (DN) per line equipment number (LEN), then the TID itself cannot be traced (information can be collected against the VIDs)
- AINTRACE has the capability of tracing VIDs that are associated with a TID; however, AINTRACE cannot trace feature keys even when the feature key has a VID assigned to it. AINTRACE can only trace lines or trunks.

LAYER   **SW-NOW**

NA008 PRODUCT

                                                     APPLICATION

ACTID   **FEATURE TITLE**   EADAS

AU2334   SOC of the EADAS/DC Buffer Size Expansion

Description

Software Optionality Control (SOC) of the Engineering and Administrative Data Acquisition System/Data Collection (EADAS/DC) Buffer Size Expansion contains buffer changes associated with AR2247 EADAS/DC Buffer Size Expansion in the *SW-NOW* section of the *Maintenance Synopsis* manual. A description of AR2247 follows.

This feature increases the size of the EADAS/DC 30 minute, 60 minute, and 24 hour data collection buffers. Currently, the range of the buffers is 12 words to 32,000 words. This feature increases capacity to 18 words to 256,000 words. The store allocation method changes to accommodate this increased range of values.

Command Changes

NONE

Data Schema Changes

The following EADAS/DC (OFCENG) parameters range of values change:
* EADAS30M_BUFFER_SIZE
* EADAS60M_BUFFER_SIZE
* EADAS24H_BUFFER_SIZE

Currently, the minimum value is 12 words and the maximum value is 32,000 words. This feature changes the minimum value to 18 words and the maximum value to 256,000 words. This feature eliminates the restart requirement.

Log Message Changes

A new log (EAD109) is generated when more data is being collected than is allowed given the current SOC state and/or OFCENG buffer size parameters. In such a case, the outgoing EADAS message is truncated to the nearest whole section as reported in the log.

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

The following Operations System Support (OSS) network switch-related limitations apply to EDAS/DC Buffer Size Expansion:

- **Enabling this feature makes the DMS switch incompatible with existing unmodified downstream OSS machines!**
- There is a limit to the amount of data that can be transmitted to the OSS machine at a given MPC port speed. For example, 256,000 words of 30-machine data can not be sent at 2400 bit/s because the required transmission time is greater than 30 minutes. Offices with excessive amounts of data will need to negotiate a higher port speed with the downstream OSS machine.
- TR-TSY-000740 (paragraph 3.1.5.10) specifies that the maximum length of the data within each section is 16,000 words. The maximum message size is 75,000 bytes. If the downstream OSS machine complies with these limits, it will not be able to receive the expanded 256,000 byte data that this feature provides.
- The current DMS switch header and byte order message formats are non-FSD compliant. The extended section pointer, the addition of the office's CLLI, and the removal of the one "spare" byte create a new non-FSD compliant header. The downstream OSS machine must be able to interpret this new header correctly.

The following DMS switch-related limitation applies to EADAS/DC Buffer Size Expansion:

- Offices that introduce EADAS for the first time (currently have the OFCENG buffer size parameters set to zero) require a restart to initialize the EADAS functionality. Once initialized, the buffers can be increased without the need for further restarts.

LAYER
NA008 PRODUCT

SW-NOW

APPLICATION

ACTID   **FEATURE TITLE**   ICCM
AU2341   CompuCALL Basic ICCM-Selective Queueing

Description

The CompuCALL Basic Integrated Call Center Manager (ICCM)-Selective Queueing feature provides the capability to route a call that comes into a queue to a destination specified by the host computer. This feature affects subscription to CompuCALL messages, pricing control, and CompuCALL operational measurements.

The service version value for the stream of CompuCALL messages related to this feature is SCAI10. The service version is upwardly compatible, which means the functionality that was enabled and provided with earlier versions of CompuCALL service versions is provided with SCAI10.

Command Changes

NONE

Data Schema Changes

The Selective Queueing feature modifies datafill tables SCAISSRV and SCAIPROF. A new office parameter has been added to table OFCOPT.

Table SCAIPROF Changes

Table SCAIPROF is being changed to include maintaining the link-in use levels set out in CompuCALL Pricing Control for the new subservices added to table SCAISSRV which are datafilled in this table.

Table SCAISSRV Changes

Table SCAISSRV adds the new message set Third-Party Queue Control (category TPQC) to support the ability to subscribe to the new queue control message dv-Route-Call (function ROUTECALL).

Following is an example of table SCAISSRV:

```
                    SUBSERV
                                                                SPROFILE
      -------------------------------------------------------------------
                    SCAI3WC1
      SCAI3WC (ADDPTY Y N Y) (CONFPTY Y) (DROPPTY Y N) (TRANPTY Y) $

                    MYEVENT
      RESEVENT (SETOFFHK Y Y) (CALLOFFR Y Y Y Y Y Y Y Y Y Y Y Y)
      (CALLANSWR Y Y Y Y Y Y Y Y Y Y Y Y Y) (CALLREL Y Y Y) $

                    3WC1
      SCAI3WC (ADDPTY Y Y Y) (CONFPTY Y) (DROPPTY Y Y) (TRANPTY Y) $

                       MWTI1
      SCAIMWTI (MSGWAIT Y Y Y) $

                       DNQRY1
      DNQUERY (DNQUERY) $

                       TPQC10$
      TPQC (ROUTECALL))$

                    DNQUERY2
      DNQUERY (DNQUERY) $

                    MAKECALL1
      CALLINIT (MAKECALL N N) $
```

Table OFCOPT Parameter

The new office parameter MAX_NUM_ECM_TPQC has been added to table OFCOPT to provide continuing CompuCALL pricing control methods. This parameter governs the maximum number of CompuCALL service categories (specifically: TPQC) that can be provisioned in a DMS-100 switch.

Log Message Changes

NONE

OM Changes

OM Group changed: SCAISRV2

CompuCALL Transport Enhancements modifies the OM group SCAISRV2 with the following registers:
- RTECLLRR
  — counts the number of times the switch sends a RETURN RESULT reply to the host computer in response to the dv-Route-Call message
- RTECLLRE
  — counts the number of times the switch sends a RETURN ERROR reply to the host computer in response to the dv-Route-Call message

Every time the switch sends out a response message related to the new services provided by this feature on the Switch Computer Application Interface (SCAI), the appropriate register is pegged.

Following is an OMSHOW example of this OM group:

```
>omshow scaisrv2 active scai_grp1
SCAISRV2
CLASS:   ACTIVE
START:1997/02/15 13:45:00 SAT; STOP: 1997/02/16 13:51:08 SAT;
SLOWSAMPLES:         14 ; FASTSAMPLES:        138 ;
      KEY (SCAI_GROUP)
LINAGRR           LINAGRE        LOUTAGRR        LOUTAGRE
RDYAGRR           RDYAGRE        NRDYAGRR        NRDYAGRE
SETFTRRE          SETOFFHK       MSGWAITU        DNQRYRR
DNQRYRE           ANSCLLRR       ANSCLLRE        HLDCLLRR
HLDCLLRE          UNHLDRR        UNHLDRE         UNHELDU
RELCLLRR          RELCLLRE       CONSULTO        CONFU
TRANSFER          RTECLLRR       RTECLLRE

0  SCAI_GRP1
                     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

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

When SCAI redirection functionality is subscribed, incoming calls to the corresponding ACD group do not go into the ACD queue. Since routing functionality routes a call from an ACD queue, SCAI Redirection and Routing are mutually exclusive. dv-Route-Call does not interfere with other CompuCALL messages.

The message dv-Call-Queued-U has an additional CallHistory information of ReturnedToQueue which does not interfere with the existing functionality.

Restrictions/Limitations

The following limitations and restrictions apply to Selective Queueing:

- If the CompuCALL SCAI Redirection functionality is subscribed to, all incoming calls to an ACDGRP do no go into the ACD queue. Because the CompuCALL Routing functionality routes a call from an ACD queue, SCAI Redirection and this feature are mutually exclusive.

- The dv-Route-Call message does not interfere with other CompuCALL messages.

- The dv-Call-Queued message does not interfere with other CompuCALL messages.

This feature is only available for ACD groups. RES and Centrex customers cannot use this feature.

LAYER   **SW-NOW**
TELECOM 08

                                                          APPLICATION
ACTID   **FEATURE TITLE**   BERT
AR2253   Supporting WLC in BERP

Description

Bit Error Rate Performance (BERP) testing is used to assess the bit error rate performance of the DMS switch and its hardware component. BERP test is composed of many individual Bit Error Rate Tests (BERT). A craftsperson performs a BERT by connecting an Integrated Bit Error Rate Tester (IBERT) to a selected endpoint such as POTS line card and then transmitting a known bit pattern. This bit pattern is reflected back to the IBERT card and compared to what was sent. Any difference between the sent and received pattern is considered as an error. The results of these individual BERTs comprise the result of the BERP test.

This feature is to make World Line Card (WLC)-type line card recognized in BERP so that a WLC can be selected for BERP testing.

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

DMS-100F Maintenance Synopsis
Release 08.01, November 1997

LAYER   **SW-NOW**
TELECOM 08

                                                          APPLICATION
ACTID   **FEATURE TITLE**   SSP
AR3036   8-Bit SLS for SSPs

Description

This feature provides the capability to generate all 8 bits in the Signaling Link Selection (SLS) field of a Message Transfer Part (MTP) message for the Service Switching Point (SSP) in Common Channel Signalling number 7 (CCS7) networks. It provides the following functionality on an SSP:

- 5-bit SLS routing and load balancing within Digital Trunk Controllers (DTCs)

- 8-bit SLS routing on Link Interface Unit CCS7 (LIU7s) / external routers

- 8-bit SLS routing and load balancing without external routers

- Audit of SLS data on LIU7s and DTCs

- Activation/deactivation of this feature by using the SLS8BIT Command Interface (CI) command

Command Changes

The SLS8BIT CI command is used to enable and disable the feature for the 8-bit SLS routing and load balancing on the SSP. This command was introduced in feature AR1466, ANSI STP 8-Bit SLS Support and Optionality, in TELECOM 04.

Data Schema Changes

NONE

Log Message Changes

New AUDT logs created by this feature are: 608, 609, 617, and 618.

AUDT608

AUDT608, the 8-Bit SLS Feature State Mismatch Log, reports a mismatch found between the CM and LIU7 versions of the 8-bit SLS feature activation state during the Linkset SLS audit. An example follows:

```
BESSP14AO CM AUDT608 JAN20 10:15:48 7865 INFO
LIU7 100
8 BIT SLS Feature State Mismatch
Master State : 8 Bit SLS Activated
Slave State : 8 Bit SLS Deactivated-to-Activated Transition
Action : Feature State and Routing Tables corrected by audit.
No craft action necessary.
```

No action is needed because the mismatch is corrected by audit.

Typically, this log is not expected if no feature state change is issued by the 8-bit SLS Feature Activation CI. In case of an 8-bit SLS feature activation, this log may be seen once for an LIU7 where the activation state is different from the CM's state due to update failure.

AUDT609

AUDT609, 8-Bit SLS Feature State Reset Log, reports an invalid 8-bit SLS Feature Activation state transition, when the linkset SLS sanity audit detects that the feature state has been in an exceptionally long transition. The log also reports that the feature state has been reset to IDLE, and no craft action is necessary. An example follows:

```
CM AUDT609 JAN20 10:15:48 7865 INFO
DDM Host Node
8 BIT SLS Feature State Reset
State : Transition
Problem : Feature State Transition Failed
Action : Feature State on CM Reset to 8 Bit SLS Deactivated
No craft action necessary
```

No action is necessary because the invalid 8Bit SLS Feature Activation state transition is corrected by the Linkset SLS sanity audit, by resetting the CM's state to IDLE.

Typically, this log is not expected if no feature state change is issued by the 8-bit SLS Feature Activation CI. In case of an 8 Bit SLS feature activation, this log may be seen once if the feature activation is in a persistent transition state.

AUDT617

AUDT617, Linkset SLS Data Correction Log, reports the detection and correction of either a corruption on the CM's linkset SLS data found during the Linkset SLS sanity audit, or a mismatch between the CM's and an LIU7's linkset SLS data found during the Linkset SLS CM/LIU7 consistency audit. An example follows:

```
BESSP14AO CM AUDT617 JAN20 10:15:48 7865 INFO
LIU7 101
Linkset SLS Data Correction
Linkset : LN201005001
Problem : SLS to Link Table Mismatch
Action : Mismatch Corrected by Audit
No craft action necessary
```

No action is necessary because the corruption or mismatch is already being corrected by the audit.

Typically, this log is not expected. However, after multiple link events which happen in close intervals, different LIU7s may have inconsistent SLS-to-link and Slots tables, which may also be different from the CM's tables. In that case, AUDT617 logs can be expected, when the Linkset SLS audit comes around and corrects the mismatches based on CM's data.

AUDT618

The AUDT618, Combined Linkset SLS Data Correction Log, reports the detection and correction of either a corruption on the CM's combined linkset SLS data found during the Combined Linkset SLS sanity audit, or a mismatch between the CM's and an LIU7's combined linkset SLS data found during the Combined Linkset SLS CM/LIU7 consistency audit. An example follows:

```
BESSP14AO CM AUDT617 JAN20 10:15:48 7865 INFO
Combined Linkset SLS Data Correction
LIU7 101
Linkset 0: LN20100500
Linkset 1: LN201006001
Problem : SLS to Link Table Mismatch
Action : Mismatch Corrected by Audit
No craft action necessary
```

No action is necessary because the corruption or mismatch is already being corrected by the audit.

Typically, this log is not expected. However, after multiple link events which happen in close intervals, different LIU7s may have inconsistent SLS-to-link and Slots tables, which may also be different from the CM's tables. In that case, AUDT618 logs can be expected, when the Combined Linkset SLS audit comes around and correct the mismatches based on CM's data.

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

Engineering hardware required by this feature is MX77 or AX74 based DTC peripherals.

Alarms

NONE

Interactions

This feature is the umbrella feature for features:
• AR1622 - 5-bit SLS Load Balance for Combined Linksets in the DTC

- AR3037- 8 Bit SLS Generation in the DTC
- AR3038 - 8 Bit SLS Routing in the DTC

The purpose of these features is to expand the 5-bit SLS capabilities of the DMS-SSP products in order to enhance their current load sharing function.

This feature builds on the following features developed for 8-bit SLS load balancing on the STP:

- AR0929 - SLS Load Balance for Combined Linksets in the CCS7 Network
- AR1406 - 8-bit SLS Field Code Expansion
- AR1466 - Software Optionality Control (SOC) For 8-bit SLS
- AR1467 - 8-bit SLS Load Balancing
- AR1492 - C7TU SLS 8-bit Enhancements
- AQ1461 - SLS 8-bit Enhancements
- AR3007 - TL Feature Propagation From STP03 To STP04
- AR1764 - ANSI 8-bit SLS for SSP

Restrictions/Limitations

This feature is applicable only to the ANSI network for ED709 or greater load in DTCs. Only ANSI networks may be provisioned when 8-bit SLS is activated.

LAYER TELECOM 08	**SW-NOW**
	APPLICATION MNA7 INode

ACTID	**FEATURE TITLE**
AR4001	STP_SOC on MNA7 INODE

Description

MNA7 INode on Communication Service Platform, release 06 (CSP06) provides support for both Signal Transfer Point (STP) and Service Switching Points (SSP) functions. It provides internal Integrated Node (INode) customers (e.g. MTX, GSM) with the option to release their products on one software load. The internal INode customer, or client, is no longer required to release separate SSP and INode products to their customers.

This feature, Signal Transfer Point Software Optionality Control (STP_SOC) on Multiple CCS7 Network Address (MNA7) INode, uses SOC to enable or disable Basic STP functionality. The following functionalities are controlled via the STP SOC option:

• STP link activation
• Common Channel Signaling System 7 (CCS7) table limits
• DMS-Core CPU real time
• Restart warning messages

This feature applies to both Single Network Address (SNA7) and MNA7 INodes.

Command Changes

Changes include:
• Display of option codes
• SOC transition for STP SOC
• Warning messages

Display of Option Codes

Order codes related to the STP are visible via the SOC level commands. Information regarding the STP SOC option codes can be displayed from the SOC CI command. On-line help for the SOC is available.

SOC Transition for STP SOC to ON or IDLE

From the SOC CI command (type SOC on a CI window), the STP SOC option's state can be activated to ON and deactivated to IDLE with a given SOC password specific to the office in question.

Warning Messages

When the STP SOC option is transitioned to ON from IDLE and vice versa, the following warning message types are displayed:

- A warning message is displayed concerning the change in CCS7 table limits and CallP capacity.
- The restart message is altered.
  — When the STP SOC state is IDLE, the SSP restart warning message is used, for example:

  ```
  WARNING: This action will result in a CALL PROCESSING OUTAGE.
  ```

  — When the STP SOC state is ON, the INode restart warning message is used.

  ```
  WARNING: All restarts from command will result in a CALL PROCESSING OUTAGE.

  A restart WARM or COLD will not affect message handling capability, but will
  suspend network management functions until the restart is complete.

  A restart RELOAD will reinitialize all peripherals causing an extended SS7
  isolation from the network.
  ```

- An error message is displayed if the C7TRKMEM table size is not within the INode limit when an attempt to set the STP SOC state to ON is made. The STP SOC state remains IDLE.
- An error message is displayed if the C7GTT table size is not within the SSP limit when an attempt to set the STP SOC state to IDLE is made. The STP SOC state remains ON.
- When the STP SOC state is transitioned from IDLE to ON, a warning message is displayed. The user needs to ensure that call processing capacity is reduced to the INode limit before making the transition.

Data Schema Changes

Enhanced Cluster Routing (ECR) functionality is now included by default in the INode loads. The ECR function is active when cluster routes are datafilled in the C7RTESET table.

Note: ECR is valid for ANSI networks only.

Although this feature does not introduce any datafill changes, existing STP datafill is now visible on an SSP when the STP software is added. The following describes the datafill impact on the SSP:

- Tuples with the node type STP can be datafilled in table C7NETWRK. Consequently, the C7LINK, C7LKSET, and C7RTESET tables can be datafilled with STP-related tuples (however, STP elements, such as STP links) can only be activated once the STP SOC option is set to ON). If the STP SOC option is IDLE, then a warning message is generated when these tuples are datafilled.

- The C7ALIAS table, which is used to provision capability codes, is now visible on an SSP (however, its functionality is only available once the STP SOC option is set to ON). If the STP SOC option is IDLE, then a warning message is generated when these tuples are datafilled.
- ECR becomes active when cluster routes are datafilled in the C7RTESET table otherwise the ECR functionality remains inactive.

For changes to the C7NETWRK table, see feature AR2008 in the ***SW-LATER*** section of this manual.

Log Message Changes

Standardized SOC logs are generated so that the user can tell which options are activated and deactivated. This feature adds new text to the existing SOC logs. In certain error conditions, when the daily SOC audit runs, new CCS logs are generated.

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

STP functionality is not supported on XA-Core processors; therefore, this feature is not supported on the XA-Core platform in CSP08.

The DMS-Core memory requirements for STP software on an SSP are applicable to both 68K- and 88K-based processors. Total memory usage is:
- 1.4 Mbytes for 68K STP memory requirements
- 1.7 Mbytes for 88K STP memory requirements

Real-time critical STP modules have been added to the BASE and TL fast memory priority files. Approximately 100KB of fast memory is required.

When C7GTT delta file functionality is active, approximately 240K additional data store is required. When STP SOC is ON, this additional GTT data store is allocated.

Multiple Base Compile techniques are required as the method for building INode loads.

Alarms

Prior to transitioning the STP SOC state from IDLE to ON, the craftsperson needs to ensure that the call processing traffic level has been reduced to the INode specifications. This operation must take place to account for 20% of the DMS-Core CPU that is reserved for CCS7 network management during network recovery operations.

If the CallP traffic level is *not* adjusted, then once the STP SOC state is set to ON (and the amount of available DMS-Core CPU capacity specifically reserved for Callp is reduced), then an overload alarm is generated if the Callp level exceeds the reduced CallP CPU limit. The CallP overload alarm appears on the alarm banner under 'CM'.

Interactions

STP SOC on INode functionality is provided under the following features:
- AR4001 STP SOC on MNA7 INode, TL layer hooks
- AU2450 C7TRKMEM table control hooks for STP SOC on INode, SHR layer hooks
- AR2008 STP SOC on INode, STP layer SOC functionality

This feature interacts with the 8 BIT Signaling Link Selection (SLS) feature (AR3036) which provides 8-BIT SLS functionality to SSPs. 8-BIT SLS is supported on an office with the INode load when the STP SOC state is IDLE (i.e.: When the INode is acting as an SSP).
- When 8-BIT SLS is active the transition from STP SOC IDLE to ON is prevented and an error message is output to the user.
- When STP SOC is ON 8-BIT SLS functionality can not be activated. The 8-BIT SLS CI informs the user that STP SOC is active.

From a purely functional perspective, the following additional interactions take place:
- Activation of the STP SOC option causes a stand-alone SSP office to become an INode office.
- Addition of STP software on an SSP creates non-service impacting differences when the STP SOC option is IDLE.
- On an INode office, all STP-related SOC options are dependent on the STP SOC option.

The C7GTT table delta file functionality is disabled when the STP SOC state is IDLE and activated when the STP SOC state is ON. The C7GTT_DELTA_FILE_ACTIVITY_STATE office parameter in the OFCENG table is automatically updated when the STP SOC state transition takes place.

Restrictions/Limitations
- There is no restriction on the de-activation of the STP SOC option.
- STP functionality is currently not supported on XA-Core processors.
- SEAS in no longer supported on INodes.
- The STP functionality known as CCS7 Message Detail Recording (MDR7) is not supported on either the SSP or the INode products.
- This feature is only supported for 8 Mg LIU7s.

- There is no restriction on the type of DMS products (e.g. DMS-100/200, Global 100) that can use this feature to build their releases.
- The C7GTT delta file functionality is only active when STP SOC is ON. Delta files can not be activated when the office is behaving as a standalone SSP

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 User Part Unavailable (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 message waiting indication (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
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 Signaling Connection Control Part (SCCP)/Transaction Capabilities Application Part (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

DMS-100F Maintenance Synopsis
Release 08.01, November 1997

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.

LAYER   **SW-NOW**
XPM 81

                                                                               APPLICATION
ACTID   **FEATURE TITLE**   PRL
AF6373   PRL: XPM: Loadfile Support for AX74

Description

This feature provides the XPM local software changes to support loadfiles on Peripheral Remote Loader (PRL) for the AX74 processor, an XPM processor upgrade providing additional real time and memory for increased call processing capacity. This feature provides the XPM portion of the PRL for the AX74 circuit pack.

PRL purpose is to reduce the time required to perform an XPM loading action, such as:
- the time an XPM spends operating in simplex (non-redundant) mode while software is being loaded in one unit
- the recovery down time when neither unit of an XPM can be returned to service without being loaded.

PRL uses both hardware and software to support the local storage of XPM loads in a nonvolatile, non-mechanical based memory. PRL requires the provision of the NT7X05 circuit pack which contains solid-state memory.

Command Changes

This feature uses the LOADPM and QUERYPM commands in the NPMDIR directory modified by feature AF6030 in the TELECOM 04 layer.

Data Schema Changes

The following XPM inventory tables are modified to allow the new optional card to be equipped on AX74 peripherals:
- LTCINV
- RCCINV
- LTCRINV

Subscriber Carrier Module Access (SMA) is the only North American XPM which currently cannot be configured with the NT7X05.

Log Message Changes

Changes have been made to the following logs: PM181, PM128, PM180, and PM185.

The existing PM181 log generated at the end of loading is changed to indicate:
- when the XPM unit is loaded from NT7X05
- when the NT7X05 on the unit has been loaded

The existing PM128 log indicates new inservice trouble conditions that are related to the NT7X05.

The existing PM180 and PM185 logs indicate NT7X05 related failures that are reported by the XPM.

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

PRL is only available for XPMs datafilled with an NT7X05 card. Both units of an XPM must contain an NT7X05 card to support PRL. No settings for jumpers or switches exist on the NT7X05 circuit pack.

Alarms

NONE

Interactions

The following associated Computing Module (CM) features must be present to activate the PRL on the AX74:

- AF6231
- AF6405

No interactions occur with call processing or subscriber services.

Restrictions/Limitations

AX74 limitations are more extensive than the MX77 limitations as imaging is not supported. A complete list of AX74 limitations is given below.

- XPM processor support
  - XPM processor support is provided for AX74 (CAP), BX01 ISDN-Signalling Processor (ISP), 6X78 (CMR) and MX73 Signaling Processor (SIGP) loadfiles; AX74 images and BX02 D-Channel Handler (DCH) loadfile support are not provided.
  - AX74 loads supported are WDT, WGI, WRI, XLI, XRI; XSC and XM2 are <u>not</u> supported. XPM loads converted to AX74 during XPM08 and XPM81 are supported.

- Datafill support
  — 7X05 datafill must be performed manually; automatic detection and datafill of the 7X05 is not supported.
  — 7X05 is supported in the same option slots in the AX74 as in the MX77, which are:
    – Host: 13, 15, 16, 17, 19
    – Remote: 13
    – CPM: 5, 7, 21, 23
  — 7X05 is datafilled on a per node basis and must be present in both units.
  — 7X05 can only be inserted into manual-busy (ManB) units; insertion into in-service (InSv) units is not supported.
  — Multiple instances of the 7X05 are not currently supported; only one 7X05 is used.
- Static Data and Patch Support
  — Static data and patches must be downloaded after recovering an AX74-based XPM.
  — Pre-Patched XPM Loads (PPXL) are supported for file transfers to 7X05.
  — Independent storage of static data or patches on 7X05 are not currently supported.
- File Transfer
  — Single and multi-unit transfer of XPM loadfiles to inactive, active and both units of a post set are supported.
  — Transferring XPM loadfiles to 7X05 at ROM level is not supported.
  — Loading XPM RAM and 7X05 simultaneously is not supported.
  — Remote enhanced loading is not supported for file transfers to Remote Cluster Controlers (RCCs).
- Loading/Recovery
  — RSL is not stored as a file on any CM device; it is a Protel module loaded into CM memory and converted into load records which are sent to the XPM during recovery.
  — The CI command *recover* does not invoke PRL capabilities at this time; manual LOADPM LOCAL and RTS are used on XPMs configured with a 7X05.
  — The default recovery option for AX74-based XPMs is to load all processors from local loadfile. The only other option available is to load all processors from the CM.
  — It is not possible to load core processors from different sources. The CMR is not a core processor, so it can be loaded by the RSL from 7X05 or by the CM from System Load Module (SLM).
  — All core processors present in an XPM unit must be loaded for recovery to succeed.
  — A CM audit ensures that the method of recovery is viable before using it again if recovery is necessary.
  — Manual loading aborts if an XPM fails to load on the first attempt.
  — In the event that recovery from 7X05 fails, detailed failure reasons are provided after the unit is successfully RTSed.
  — Time to load S-records from the CM is not reduced.

— Autonomous recovery without CM intervention is not supported.

— Loading from mate unit's 7X05 is not supported.

- File Management
  — One loadfile is supported for each processor present; backup files are not maintained.

  — Recovery files are not maintained for subtending nodes, e.g. (E)DCH, LCM, OPM, Remote LCM (RLCM), RCC, Subscriber Carrier Module SLC-96 Remote (SMSR).

  — Firmware loads are not supported.

  — Non-contiguous storage is provided to facilitate bad block management.

  — Load files for individual processors are stored separately on 7X05.

- Firmware
  — 7X05 is an optional card and as such no firmware changes are required.

  — The RSL is used to load processors from 7X05 eliminating the need for firmware changes.

  — Firmware cannot be loaded from the 7X05.

- Maintenance/Diagnostics
  — 7X05 presence and operation is periodically tested

  — 7X05 file integrity is periodically verified

  — 7X05 error handling supports levels of severity. Only catastrophic failures result in the 7X05 being unusable.

  — No explicit diagnostics exist; the CI command *QUERYPM Files* can be used to exercise the board.

  — 7X05 audit failures do not result in an outage, instead the affected units are marked as in-service trouble (ISTb).

This feature is also affected by the MX77 limitations documented in feature AF6026 in the XPM 05 layer.

LAYER   **SW-NOW**
XPM 81

                                                                APPLICATION
ACTID   **FEATURE TITLE**   ESMA
AF6721   ESMA: ICB: XPM – ICB Node Provisioning

Description

This feature, Expanded Subscriber Carrier Module-100 Access (ESMA): Integrated Channel Bank (ICB): XPM - ICB Node Provisioning, is responsible for providing static data handling in the ESMA for ICBs, and for handling all Node and Carrier maintenance requests received by the ESMA for the ICB nodes. It provides the ESMA with the functionality to allow ICBs to be provisioned in the ESMA.

To support the ICB on the ESMA, a subset of the provisioning data entered in the CM for the ICB must also exist in the ESMA. The existence of ICB provisioning data in the ESMA is provided by this feature through two main functions:

- Supporting the download of ICB static data to the ESMA
- Enhancement of the current provisioning storage facilities in the ESMA in order to accommodate ICB related data

The ESMA provisioning data required for the ICB falls into two categories: line/terminal and node.

The data required per line includes:

- signaling type supported for that line, such as Foreign Exchange Subscriber End (FXS) loop and ground start, Foreign Exchange Office End (FXO) loop and ground start, and so forth
- type of the line/terminal; for example, Plain Old Telephone Service (POTS), Integrated Services Digital Network (ISDN), and so forth

The data required per ICB node includes:

- ESMA port number that the ICB is using
- Node number for the ICB in the DMS system
- Remote Digital Terminal (RDT) variant type, such as ICB

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 needs the following features to function properly:
- AF6716 - ESMA: ICB: CNA - ICB Node Provisioning
- AF6717 - ESMA: ICB: CNA - ICB Line Provisioning I
- AF6718 - ESMA: ICB: CNA - ICB Node Maintenance
- AF6719 - ESMA: ICB: CCM - ICB Line Provisioning II
- AD9754 - ESMA: ICB: XPM - ICB MTC
- AF6722 - ESMA: ICB: XPM - Call Processing
- AF6723 - ESMA: ICB: XPM - RBS Resource Manager
- AF6724 - ESMA: ICB: SIGP Scanner

This feature is part of a group of features that use this feature:
- AD9754 - ESMA: ICB: XPM - ICB MTC
- AF6722 - ESMA: ICB: XPM - Call Processing
- AF6723 - ESMA: ICB: XPM - RBS Resource Manager

Restrictions/Limitations

NONE

LAYER   **SW-NOW**
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                                                 APPLICATION
ACTID   **FEATURE TITLE**   SIGP
AF6724   ESMA: ICB: SIGP Scanner

Description

This feature, Expanded Subscriber Carrier Module-100 Access (ESMA): Integrated Channel Bank (ICB): Signalling Processor (SIGP) Scanner, implements tools required in the XPM for the ICB program.

The SIGP has been modified to scan for either ABCD or AB bit pattern changes. The scanning routine waits for specific events on a port and channel as defined by commands from the ESMA. If the event is detected a message is sent back to the ESMA. For D4 channel banks, this message is sent to the RBS Resource Manager for processing. For more details, see feature AF6723 - ESMA: ICB: XPM - RBS Resource Manager in the **TRK-NOW** section of this document.

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 part of the feature set needed to support D4 channel banks subtending an ESMA. This feature set implements line services using the Foreign Exchange Subscriber End (FXS) signalling protocol for these channel banks. The group of features is listed below:

- AF6716 - ESMA: ICB: CNA - ICB Node Provisioning
- AF6717 - ESMA: ICB: CNA - ICB Line Provisioning I
- AF6718 - ESMA: ICB: CNA - ICB Node Maintenance
- AF6719 - ESMA: ICB: CCM - ICB Line Provisioning II
- AF6721 - ESMA: ICB: XPM - ICB Node Provisioning
- AD9754 - ESMA: ICB: XPM - ICB MTC
- AF6722 - ESMA: ICB: XPM - Call Processing
- AF6723 - ESMA: ICB: XPM - RBS Resource Manager
- AF6724 - ESMA: ICB: SIGP Scanner

Restrictions/Limitations

- All channels on a DS1 must use the same bit scanning algorithm.
- ICB call processing does not support functionality for RDTLSG Line Class Code 'PBX'.

LAYER   **SW-NOW**
XPM 81

                                                                 APPLICATION
ACTID   FEATURE TITLE   PRI
AF6869   PRI MTC

Description

This feature provides the general Primary Rate Interface (PRI) Maintenance (MTC) for
XPM changes for the NA 008 release. The details of this feature are documented in features
AF6860-AF6864. For further information, see features AF6860, AF6862, AF6863 in the
TRK-LATER section of this document, and AF6864 in the **SW-LATER** section of this
document.

See feature AF6777 in the **SW-NOW** section of this document for the complete description
of 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 needs the following features to function properly:

- Basic Table Control utilities
- CI Command utilities
- AJ4142 NI-2 PRI Maintenance

Restrictions/Limitations

NONE

DMS-100F Maintenance Synopsis
Release 08.01, November 1997

LAYER   **SW-NOW**
XPM 81

                                                        APPLICATION

ACTID   **FEATURE TITLE**   PRI
AF6874   TR-1268 PRI Status Message Support - XPM

Description

This feature provides compliance of DMS with respect to status messages when a link reset occurs or when invalid messages are received.It addresses TR-NWT-1268 protocol compliancy issues that are directly related to the XPM sending a status message to the user side of the National Integrated Services Digital Network (NI) Primary Rate Interface (PRI). This feature also verifies that the XPM correctly processes status messages that are sent by Customer Premises Equipment (CPE).

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 following limitations apply to this feature. It is supported only on the DMS-100 North American product. It does not support:

- NI PRI user side
- Status Message Requirements documented in TR-NWT-0444 (PRI /ISUP Interworking).
- Status Message Requirements documented in TR-NWT-1187 (Calling Line Identification Services
- Sending a Status Message with Cause Code #43, "Access Information Discarded"
- Sending a Status Message with National-standardized Cause #11, "Excessive digits received, call is proceeding".

LAYER   **SW-NOW**
XPM 81

                                                                            APPLICATION
ACTID   **FEATURE TITLE**   EDDS
AF6878   EDDS Remote Inclusion

Description

This feature converts several remote loads from legacy data sync to Enhanced Dynamic Data Sync (EDDS). This allows these loads to take advantage of the increased error checking capability and transfer reliability provided by the new table transfer mechanism. Configuration Data Management (CDM) interacts with the EDDS engine to transfer tables during Bulk Data Sync without involvingTerminal Processing Task (TPT) SWitch of ACTivity (SWACT).

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 binds TPT ISDN and other application tables into the CDM system (features AN1290, AF6436), which acts as an interface for the TPT to interact with the EDDS engine (feature AF6039) to transfer table data to the inactive unit during Bulk Data Sync. It also depends on the existing TPT terminal sync as defined in CallP SWACT Restructure (feature AN1547).

Restrictions/Limitations

NONE

LAYER   **SW-NOW**
XPM 81

                                                                             APPLICATION
ACTID   **FEATURE TITLE**   MTC Arb
AF6947   Migration of MTC Arbitrator to ED7 Loads

Description

This feature adds Mtc Arbitrator functionality for the CCS7 Digital Trunk Controller
(DTC7) type peripheral to the ED7 platform XPM software loads. The XPM Maintenance
Arbitrator introduces a maintenance infrastructure with mechanisms to trigger immediate
investigation of anomalies that can result in outages. The XPM Maintenance Arbitrator also
determines which unit has activity based on the level of service each unit can provide. The
XPM Maintenance Arbitrator notifies other maintenance and applications of significant
maintenance events. XPM Maintenance Arbitrator uses this infrastructure to handle several
major classes of XPM faults.

For more information regarding the basic functionality of the XPM Maintenance Arbitrator,
please refer to feature AF6949 in the *TRK-NOW* section of this document.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

This feature provides the additional functionality required to handle the following optional cards for the DTC7 peripheral:

- Continuity - 6X70 circuit pack
- DCTAX78 - AX78 circuit pack
- Echo Canceller Control - CX50 circuit pack

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

NONE

LAYER   **SW-NOW**
XPM 81

                                                                APPLICATION
ACTID   **FEATURE TITLE**   PBX
AJ4599   XPM Modifications for Black Box Fraud

Description

The purpose of this feature is to prevent the fraudulent use of outgoing trunks to Private
Branch eXchanges (PBXs), a form of "Black Box Fraud." In this type of fraud, the PBX
suppresses or delays answer supervision signals from being transmitted from the PBX to the
DMS switch. The answer supervision signal is used in the DMS switch to initiate billing.
Fraud results if the answer supervision signal suppression or delay is used to avoid being
properly billed for the call. The results are a loss of revenue for the DMS switch.

To prevent Black Box Fraud, the DMS 100/200 switch sets up a one-way (incoming only)
speech path to the PBX until the answer supervision signal is received. When the answer
supervision is received, the outgoing speech path is enabled to allow two-way conversation.

The Software Optionality Control (SOC) of this feature is password protected. This feature
is assigned on a per trunk group basis. Operator originated calls are exempt from this feature.

This feature is available only to Two-way Digital PBX, Integrated Business Network
Outgoing (IBNTO)/Integrated Business Network Two-Way (IBNT2), and Outgoing End
Office (TO)/Two-way End Office (T2) type trunks supported on the Line Trunk Controller
(LTC), ISDN LTC (LTCI), Digital Trunk Controller (DTC), and DTC7 XPM peripheral
family supported in North America (XPM Plus versions only).

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

ServOrd allows this feature to be assigned on a per trunk group basis.

AMA Changes

No change has occurred in the content of the billing record, but rather generated billing records are available that were either not generated or had incorrect connection times previous to this feature.

Notes

NONE

Alarms

NONE

Interactions

Feature AJ4532 in the TELECOM 08 section needs this feature to work.

Restrictions/Limitations

NONE

LAYER   **SW-NOW**
XPM 81

                                                                  APPLICATION
ACTID   **FEATURE TITLE**   ISDN
AN1959   XPM Fault Isolation Expansion (ISDN)

Description

This feature improves the XPM Diagnostic Isolation System on all ISDN loads to aid customers in determining the location of faulty hardware by providing an ordered card list.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

The card list provided by XPM Diagnostics is ordered such that the most likely suspect card appears at the top of the card list.

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

This feature does not interact with any feature outside the XPM Diagnostics System.

Restrictions/Limitations

This feature does not cause any restrictions or limitations in invoking the ISDN diagnostics. An outside request to run diagnostics does not change.

LAYER   **SW-NOW**
XPM 81

                                                         APPLICATION
ACTID   **FEATURE TITLE**   XPM Diagnostics System
AN1960   XPM Fault Isolation Expansion (CPM)

Description

This feature expands new fault isolation into all CPM loads, increases the accuracy of card lists generated by the diagnostics, and enhances the maintainability of the diagnostic isolation code.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

The card list provided by XPM Diagnostics is ordered such that the most likely suspect card appears at the top of the card list.

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

This feature does not interact with any feature outside the XPM Diagnostics System.

Restrictions/Limitations

NONE

LAYER   **SW-NOW**
XPM 81

                                                                      APPLICATION
ACTID   **FEATURE TITLE**   MBS
AN3004   MVI MBS Automatic Lamp Refresh - XPM

Description

This feature provides the XPM portion of the interface which RDTs can use to request lamp settings for individual MBS sets or all sets on the RDT whenever the access vehicle detects a loss and subsequent restoration of power to one or more loop-powered MBS sets. It allows Multi-Vendor Interface (MVI) Remote Digital Terminals (RDTs) and Access Nodes to request and receive lost lamp status information for subtending Meridian Business Sets (MBS), also known as Electronic Business Sets (EBS) and P-phones.

The actual lamp data is received by the Enhanced Subscriber Module Access (ESMA) and sent to the RDT on the call processing messaging channel. The routing of this lamp data through the ESMA is the responsibility of feature AN3003, MVI MBS Call Processing, in the *TRK-LATER* section in this manual.

Command Changes

Previously, the MAPCI command "IDTLAMPS" was invoked at the PM level of the MAP to restore lamp settings to Access Node MBS sets after line card software upgrades. This feature allows the Access Node to request this lamp data automatically, thus obsoleting the existing MAP command. However, the MAP command has been left in place as a failsafe mechanism for Access Node.

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

This feature restores MBS lamp settings based on MBS power loss scenarios detected and reported by access vehicles. One such scenario occurs today whenever Access Node line card software is upgraded.

This feature needs the following features to function properly:
- AN3002- MVI MBS Provisioning
- AN3003 - MVI MBS Call Processing
- AN3005 - MVI MBS Automatic Lamp Refresh - CM

This feature is part of a group of features used by an AccessNode feature being planned for future release.

Restrictions/Limitations

This feature's effectiveness depends totally upon the ability of the access vehicles to detect the need for lamp refresh and to request it correctly.

LAYER   **SW-NOW**
XPM 81

                                                                      APPLICATION
ACTID   **FEATURE TITLE**   ESMA
AN5002   MVI ISDN EISP/DCH Dynamic Channel Allocation

Description

This feature, Multi-Vendor Interface (MVI) Enhanced Integrated Services Digital Network
(ISDN) Signaling Processor (EISP)/D-Channel Handler (DCH) Dynamic Channel
Allocation, in conjunction with features AN5003 and AN5004 in the *SW-NOW* section,
changes the ISDN Signaling Processor (ISP)/DCH channel allocation from a fixed to a
dynamic allocation scheme. This change in conjunction with its CM counterpart feature
enables the TR303 Expanded Subscriber Carrier Module Access (ESMA) product to support
a maximum of seven Integrated Digital Terminals (IDTs) with a maximum of four Enhanced
D-Channel Handlers (EDCHs) assigned (three active and one spare), supporting up to 324
ISDN Basic Rate Interface (BRI) lines simultaneously. The Remote Digital Terminals
(RDTs) can be either TR303 and/or Access Node.

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 does not interact with any existing features. The changes as a result of the feature are present and active in all ISDN based peripherals. Engineering and provisioning rules of ISDN peripherals other than the Expanded Subscriber Carrier Module Access (ESMA) have not been modified.

Restrictions/Limitations

The maximum number of EDCHs that can be datafilled for a given number of RDTs subtending an ESMA with this feature capability in place are:

- 0 EDCHs for 8 RDTs
- 4 EDCHs for 7 RDTs
- 8 EDCHs for 6 RDTs
- 10 EDCHs for 1-5 RDTs

SW-LATER

This section identifies changes and/or additions to switch functions that are Maintenance 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.

LAYER	**SW-LATER**
BASE 09	

APPLICATION
SW Delivery

ACTID   **FEATURE TITLE**

SD0814   SW Delivery Site Readiness

Description

SW Delivery Site Readiness improves the product polling procedure (data collection) on the DMS-100 switch. This feature ensures that the polling data is current before a software upgrade on the DMS-100 switch. Also, this feature makes the product polling procedure easier to use and maintain.

SW Delivery Site Readiness also provides software tools that assist operating company personnel to prepare the DMS-100 switch for a software upgrade. These software tools assist operating company personnel to perform a check on the DMS-100 switch before a one night process (ONP).

Command Changes

SW Delivery Site Readiness adds the POLL command and the SWUPGRADE READY command.

New Command: POLL

The group indicates what type of poll you wish to run (LONG, SHORT, USAGE, or MEMCALC).

The input device lets you select a device for finding the user sos execs.

The option states whether you want to list the steps, compress the output file, or not compress the file. If you specify compress, the poll file is compressed and the uncompressed file is deleted.

The output device specifies where the data file, POLLDATA, goes.

```
POLL                     <group>        <device>          <option>
<device>
                         {LONG}         {inputdevice}     {LISTSTEPS}
                         {SHORT}                          {COMPRESS}
{outputdevice}
                         {USAGE}                          {UNCOMPRESS}
                         {MEMCALC}
```

Examples

POLL LONG SFDEV COMPRESS SFDEV polls group LONG, gets the user sosexecs from SFDEV, stores the output to SFDEV, compresses the POLLDATA file down to POLLDATAZ, and deletes the original POLLDATA file.

POLL LONG SFDEV LISTSTEPS lists all of the steps POLL LONG runs and gets the user sosexecs from SFDEV.

POLL SHORT SFDEV UNCOMPRESS SFDEV writes the POLLDATA file to SFDEV and leaves it uncompressed. It also gets the user sosexecs from SFDEV.

The LISTSTEPS option

This option outputs to the screen. It prints the group to be polled and the base version for the poll utility. It then scans the selected input device for all $PI files and displays the filename and their version numbers. These are user-added polling SOS execs. Duplicate version numbers are marked, and gaps in version numbers are identified. After this is done, the individual steps are listed.

A sample of the LISTSTEPS output:

```
>poll LONG liststeps
*****************************************************************
*****************************************************************
*****************************************************************
*** List POLL steps for CO: BCSLAB_BENCHMARK
*** Polling Group Type: LONG                    Version: 8000
***     File: BILLCI           added Version: 8001
***     File: JONCI            added Version: 8002
***     File: HCI              added Version: 8003
***     File: DCI              added Version: 8003 * duplicate version
***     File: BCI              added Version: 8008 * Missing versions
*****************************************************************

These are the POLL steps
----------------------------
List  Table ACDMISPL.

Finished listing steps for group: LONG.
*****************************************************************
```

The POLL option

A POLL first grabs the polling resources. This prevents anyone else from doing a POLL. It prepares to output to the specified device and creates the POLLDATA file on that device (unless you print to the screen). You print the same user CI information as the LISTSTEPS does. Then you run the normal poll steps, and then you CI step. If you select the compress option, you compress the file to POLLDATAZ and delete the POLLDATA file.

Following is a sample of the POLL output to the screen that is uncompressed.

```
>poll LONG screen uncompress
*****************************************************************
*****************************************************************
*****************************************************************
*** NTI Polling for CO: BCSLAB_BENCHMARK
*** Polling Group Type: LONG Version: 8000
***     File: BILLCI           added Version: 8001
***     File: JONCI            added Version: 8002
***     File: HCI              added Version: 8003
***     File: DCI              added Version: 8003 * duplicate version
***     File: BCI              added Version: 8008 * Missing versions
*** Date: MAR 20, 1997  09:36:54
*****************************************************************
*****************************************************************
*****************************************************************


=================================================================
========= Listing Table: ACDMISPL                 ============
POOL PASSWORD PROTOCOL OUTEVENT BUNDLING
------------------------------------
POOL1 POOL1 BCS24 110 N
POOL2 POOL2 BCS25 110 N
POOL3 POOL3 BCS26 110 N
POOL4 POOL4 BCS27 110 N
Table: ACDMISPL                    Size:      4


*****************************************************************
*****************************************************************
*****************************************************************
*** Polling Group Type LONG has been completed ***
*** Date: MAR 20, 1997  09:36:56
*****************************************************************
*****************************************************************
*****************************************************************
```

Files created by this process can be large. If saving to a device other than SFDEV, you must make sure that you have at least 1 MEG available to run the poll. If saving to SFDEV, the process checks the available space for you and allows you to fix any size limitations.

If not enough memory is free in SFDEV you receive the warning:

```
SFDEV only has 23453 bytes free. We need to increase it by 342221.
Do you wish continue by increasing store?
```

If you enter YES, the store is increased. If you enter no, a warning is printed but the process still continues.

New Command: SWUPGRADE READY

The new command SWUPGRADE is in the SYSDIR directory.

Changed Commands

The following commands in the SWUPGRADE Directory have been changed:

START

This command starts the Software Upgrade by executing the steps in the active step list in a sequential fashion starting with the first one.

The START command is only used to initially start the process. To continue after the process has paused, use GO or CONTINUE.

START has no parameters.

Sample START command syntax follows:

```
>START
Enter the value for LOGS [TRAP SWERR CM CMSM MS NET ENET].
Enter the value for TRACE_DEVICE [(no default)].
ERROR: The variable cannot be set to blank.
TRACE_DEVICE variable
--------------------
```

This command holds the device name on which output messages are printed. Changing the value of this variable causes the output to be redirected to the new device. Value: <trace device name> - a string, such as MAP.

Note: *For clarity purposes, it is recommended to set this variable to a device other than the terminal currently logged onto.*

```
>MAP
Enter the value for ACT_TERMINAL [TTY0].
Enter the value for TO_CSP_CM_LOAD [0].
>8
Enter the value for PRINTER [SINK].
>
Enter the value for PAUSE_ENABLED [NO].
>
SWUPGRADE variables for target READY:
Variable Name                      Value
-------------------------------------------------------------------
LOGS              =   TRAP SWERR CM CMSM MS NET ENET
TRACE_DEVICE      =   MAP
ACT_TERMINAL      =   TTY0
TO_CSP_CM_LOAD    =   8
PRINTER                   =    SINK
PAUSE_ENABLED     =   NO

Setup completed.
Enter GO to begin execution of steps.
```

Note: *The START command must be entered as a precondition to running the complete SWUPGRADE READY process.*

OVERRIDE

The OVERRIDE/OVE command overrides the execution of a single step or a subset of steps.

The options are:

- UPTO <step> - Overrides from the current step up to the specified step.
- <step>   - Overrides a single step.

Sample OVERRIDE command syntax is:

```
OVERRIDE Parms: <override option> {UPTO <upto step> STRING, (otherwise) <step
name> STRING}
```

Displayed below are OVERRIDE command response examples:

```
>override check_memory
WARNING: Do you really wish to OVERRIDE step CHECK_MEMORY?
>y
Step CHECK_MEMORY has been overridden.

>override upto check_memory
WARNING: Do you really wish to OVERRIDE from step SETUP_ENV_VARS UPTO step
CHECK_MEMORY?
>y
All steps FROM SETUP_ENV_VARS UPTO CHECK_MEMORY have been overridden.
```

The OVERRIDE option is only used to temporarily bypass the execution of a SWUPGRADE READY step.

RESET

This command resets a single step or multiple steps, i.e. sets the status to NEEDED, so the step(s) can be re-executed.

The options are:

- ALL – Resets all the steps, including the PRESWACT steps.
- FROM <step> – Resets the specified step and all the subsequent steps.
- <step> – Resets a single step.

Sample RESET command syntax is:

```
RESET
Parms: <reset option> {ALL,
                       FROM <from step> STRING,
                       (otherwise) <step name> STRING}
```

Displayed below are OVERRIDE command response examples:

```
>reset check_memory
WARNING: Do you really wish to RESET step CHECK_MEMORY?
>y
Step CHECK_MEMORY has been reset.

>reset from check_memory
WARNING: Do you really wish to RESET FROM step CHECK_MEMORY?
>y
All steps FROM CHECK_MEMORY to the end have been reset.
```

Reset is only used to re-execute any failed steps. Step status is set to NEEDED when a reset is performed on the step.

STATUS

This command displays SWUPGRADE status information, such as whether the driver is running or not and which step or table is being processed.

Displayed below is a STATUS command response example:

```
>status
--------------------------------------------------
Current SWUPGRADE target is: READY

The driver is paused.
Current step: SETUP_ENV_VARS
Next step:    CHECK_MEMORY
PROMPTING is: OFF.
--------------------------------------------------
```

DISPLAY

This command displays pauses, steps, variables or logs as specified.

The options are:
*   LOGS [ACT or INACT] – Displays the counts of the logs specified in the LOGS variable, either for the active or inactive CM. (The default is: INACT)
*   PAUSES – Displays all pauses in the active step list.
*   STEPS – Displays all steps and their associated status.
*   VARS – Displays all variables and their corresponding value. If no value is allocated, a blank is displayed.

Sample DISPLAY command syntax is:

```
DISPlay Parms: <entity>
{LOGS [<ActInact> {ACT, INACT}],
PAUSES,
STEPS,
VARS}
```

Parameter definitions
*   LOGS (ACT, INACT)
    — ACT is the only applicable option. This parameter displays a counts of logs listed in current environment variable LOGS.

*   PAUSES
    — This parameter displays all manually inserted pauses.

*   STEPS
    — This parameter displays all steps which makeup the READY platform.

*   VARS

— This parameter displays the current environment variables. {SETUP_ENV_VARS}

Displayed below are DISPLAY command response examples:

```
>display logs inact
ERROR: Mate CM not accessible.
>display logs act

Logs on ACTIVE CM:
    TRAP    : 0
    SWERR   : 5
    CM      : 14
    CMSM    : 0
    MS      : 33
    NET     : 2
    ENET    : 0

>disp steps

SWUPGRADE steps for target READY:

    SETUP_ENV_VARS                  Completed   Perm  Setup
    DISPLAY_PEC_INFO                Overridden  Perm  Act Proc
    CHECK_LOGS                      Overridden  Perm  Act Proc
    CHECK_MEMORY                    Needed      Perm  Act Proc
    DEVICE_CHECK                    Needed      Perm  Act Proc
    DISPLAY_DEVICE_AND_USER         Needed      Perm  Act Proc
    TABAUDIT_VERIFY_TABLES          Needed      Perm  Act Proc
    DISPLAY_PERIPHERAL_LOAD_NAMES   Needed      Perm  Act Proc
    CHECK_ISN_PM_LOADS              Needed      Perm  Act Proc
    LIUINV_CHECK                    Needed      Perm  Act Proc
    C7LINK_CHECK                    Needed      Perm  Act Proc
    CHECK_LTCINV                    Needed      Perm  Act Proc
    DISPLAY_DNC_USERS               Needed      Perm  Act Proc
    DISPLAY_DPP_VERSION             Needed      Perm  Act Proc
    CHECK_LCMINV                    Needed      Perm  Act Proc
    E911SRDB_CHECK                  Needed      Perm  Act Proc
    READY_STATUS                    Needed      Perm  Act Proc

>disp vars

SWUPGRADE variables for target READY:

Variable Name                   Value
----------------------------------------------------------------------
LOGS                                   =    TRAP SWERR CM CMSM MS NET ENET
TRACE_DEVICE                           =    MAP
ACT_TERMINAL                           =    TTY0
TO_CSP_CM_LOAD                         =    0
PRINTER                                =SINK
PAUSE_ENABLED                          =    NO
```

EXIT

This command halts the setup step currently executing. Upon issuing the START command again, you are prompted for the last variable requested before the EXIT was issued.

NOTE: This command is valid ONLY when a setup step is executing.

Displayed below is an EXIT command response example:

```
>EXIT
NOTE: This command is valid ONLY when a setup step is executing.
```

RUNSTEP

The RUNSTEP command runs or executes a specific step.

Sample RUNSTEP command syntax is:

```
RUNSTEP [Parms: <step name> STRING]
```

See "DISPLAY STEPS" responses above for valid step names.

Displayed below is a RUNSTEP command response example:

```
>RUNSTEP CHECK_MEMORY
**WARNING: Step CHECK_MEMORY will be run out of sequence.
          Do you really wish to run this step?
>Y
```

The output from the execution of these steps is displayed on the specified TRACE_DEVICE or PRINTER.

SET

This command sets a variable to a given value.

- SET <variable> - variable to set.
- <value>   - value to assign to the specified variable.

   NOTE: A <value> consisting of more than one word must be enclosed in quotes.

Sample OVERRIDE command syntax is:

```
SET Parms: <variable> STRING <value> STRING
```

Displayed below is a SET command response example:

```
SET LOGS          'TRAP SWERR'
SET TRACE_DEVICE MAP
```

QUIT

Quit from the SWUPGRADE level and return to the last increment entered before going into SWUPGRADE. You are prompted to "QUIT" out of the SWUPGRADE increment once CANCEL has been issued. See the CANCEL command.

CANCEL

The CANCEL command cancels the Software Upgrade. You must follow the instructions outlined in the ONP MOP for the 'Revert to old load procedure' in order

to revert the switch back to its original state. This command is also used to switch from one SWUPGRADE platform to another platform.

Displayed below is an example response of the CANCEL command:

```
>cancel

************************************************************
**                      WARNING!!
** The CANCEL command permanently ends the Ready upgrade.
** The step list and READY upgrade plan will be lost.
** To halt temporarily, use the PAUSE command. Type:
**       HELP PAUSE
** for more information.                                  **
**                                                        **
** Do you wish to CANCEL the SWUPGRADE?                   **
************************************************************

>y

************************************************************
**                      WARNING!!                        **
**                                                        **
** The CANCEL command permanently ends the Ready upgrade. **
** Are you sure you wish to cancel the Ready upgrade?     **
************************************************************

>y
SWUPGRADE CANCEL is completed.
You may now QUIT out of the SWUPGRADE increment.

>quit
The S/W upgrade is completed or CANCEL has been issued.
Exiting the SWUPGRADE increment...
```

The following sequence must be followed to completely exit the SWUPGRADE increment and platform:

```
>CANCEL
>YES (or Y )
>YES (or Y)
>QUIT
```

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

The SWUPGRADE READY command interacts with feature AR1803: AutoONP Phase II - Automation of ONP Steps.

Restrictions/Limitations

NONE

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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

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- 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).

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Release 08.01, November 1997

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 is 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.

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

This feature needs the Message Protocol and Downloadable Tones (MPDT) Circuit Pack, NT6X69LA and onwards, to function.

This feature only promises the generation of the tones. Some feature specific tones may cause the computing module (CM) to override the downloaded tones residing in XPM.

Downloadable tones do not provide the Physical Ringing tone.

This feature needs the following features to function properly:
- AE0396 - Downloadable Tones (XPM Part)
- AE0397 - Downloadable Tones (CC Part)
- AE0398 - Static Audit on Downloadable Tones
- AN1562 - XPM Downloadable Tones XPM Decoupling

LAYER   **SW-LATER**
CEU 08

                                                         APPLICATION
ACTID   **FEATURE TITLE**   TONFRMT/TONFRMFC
AJ4791   France Tones

Description

This feature provides the French tone sets on DMS switches to meet the tone requirements of the France market.

The French tone set is selected by setting the TONESET field in table LTCINV to TONFRMF and/or TONFRMFC.

TONFRMF tone set contains the following tones:
- Dual Tone Multi Frequency (DTMF) tones
- Multi Frequency (MF) tones
- Supervisory tones
- Test and Diagnostic tones

TONFRMFC tone set contains the following tones:
- Multi Frequency Compelled (MFC) tones
- Supervisory tones
- Test and Diagnostic tones

The French tone sets are then downloaded from the computing module (CM) as part of the XPM's static data on an Return To Service (RTS). The tone-making process then generates the tone samples required by the France market.

Command Changes

NONE

Data Schema Changes

Table Name:LTCINV

The LTCINV is being modified by this feature to allow the datafill of French tone sets for the PLGC, GPP and PDTC.

TONESET field of table LTCINV is modified to allow tone set variables of TONFRMF for PLGC, GPP and PDTC type XPMs, and TONEFRMFC for PDTC type XPMs.

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

This feature needs the Message Protocol and Downloadable Tones (MPDT) Circuit Pack, NT6X69LA and onwards, to function.

This feature only promises the generation of the tones. Some feature specific tones (eg. call waiting, etc.) can cause the computing module (CM) to override the downloaded tones residing in XPM.

Downloadable tones do not provide the Physical Ringing tone.

This feature needs the following features to function properly:
- AE0396 - Downloadable Tones (XPM Part)
- AE0397 - Downloadable Tones (CC Part)
- AE0398 - Static Audit on Downloadable Tones
- AN1562 - XPM Downloadable Tones XPM Decoupling

LAYER   **SW-LATER**

CEU 08

                                                                     APPLICATION

ACTID   **FEATURE TITLE**   DUTCHMF/DUTCHMFC

AJ4796   Dutch Tones

Description

This feature provides the Dutch tone sets on the DMS to meet the tone requirements of the Holland market.

The Dutch tone sets are selected by setting the TONESET field in table LTCINV to DUTCHMF and/or DUTCHMFC.

DUTCHMF tone set contains the following tones:
- Dual Tone Multi Frequency (DTMF) tones
- Multi Frequency (MF) tones
- Supervisory tones
- Test and Diagnostic tones

DUTCHMFC tone set contains the following tones:
- Multi Frequency Compelled (MFC) tones
- Supervisory tones
- Test and Diagnostic tones

The Dutch tone sets are then downloaded from the computing module (CM) as part of the XPM's static data on a Return To Service (RTS). The tone-making process then generates the tone samples required by the Holland market.

Command Changes

NONE

Data Schema Changes

Table Name:LTCINV

The LTCINV is being modified by this feature to allow the datafill of Dutch tone sets for the PLGC, GPP and PDTC.

TONESET field of table LTCINV is modified to allow tone set variables of DUTCHMF for PLGC, GPP and PDTC type XPMs, and DUTCHMFC for PDTC type XPMs.

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

This feature needs the Message Protocol and Downloadable Tones (MPDT) Circuit Pack, NT6X69LA and onwards, to function.

This feature only generates the toneset required for Holland. However some features tones (i.e., Call Waiting Tone) may cause the computing module (CM) to override the downloaded tones residing in XPM.

Downloadable tones do not provide the Physical Ringing tone.

This feature needs the following features to function properly:
- AE0396 - Downloadable Tones (XPM Part)
- AE0397 - Downloadable Tones (CC Part)
- AE0398 - Static Audit on Downloadable Tones
- AN1562 - XPM Downloadable Tones XPM Decoupling

LAYER   **SW-LATER**
CEU 08

                                                            APPLICATION
ACTID   **FEATURE TITLE**   BELMF/BELMFC
AJ4797   Belgium Tones

Description

This feature provides the Belgium tone sets on the DMS to meet the tone requirements of the Belgium market.

The Belgium tone sets are selected by setting the TONESET field in table LTCINV to BELMF and / or BELMFC.

BELMF tone set contains the following tones:
* Dual Tone Multi Frequency (DTMF) tones
* Multi Frequency (MF) tones
* Supervisory tones
* Test and Diagnostic tones

BELMFC tone set contains the following tones:
* Multi Frequency Compelled (MFC) tones
* Supervisory tones
* Test and Diagnostic tones

The Belgium tone sets are then downloaded from the computing module (CM) as part of the XPM's static data on a Return To Service (RTS). The tone-making process then generates the tone samples required by the Belgium market.

Command Changes

NONE

Data Schema Changes

Table Name: LTCINV

The LTCINV is being modified by this feature to allow the datafill of Belgium tone sets for the PLGC, PDTC and GPP.

TONESET field of table LTCINV is modified to allow tone set variables of BELMF for PLGC, PDTC and GPP type XPMs, and BELMFC for PDTC type XPMs.

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

This feature needs the Message Protocol and Downloadable Tones (MPDT) Circuit Pack, NT6X69LA and onwards, to function.

This feature only promises the generation of the tones. Some feature specific tones (eg. call waiting, etc.) can cause the CM to override the downloaded tones residing in XPM.

Downloadable tones do not provide the Physical Ringing tone.

This feature needs the following features to function properly:
• AE0396 - Downloadable Tones (XPM Part)
• AE0397 - Downloadable Tones (CC Part)
• AE0398 - Static Audit on Downloadable Tones
• AN1562 - XPM Downloadable Tones XPM Decoupling

Offices affected by this feature are offices used in the Belgium market, running EUR007 or higher software releases.

LAYER   **SW-LATER**
CEU 08

                                                             APPLICATION
ACTID   **FEATURE TITLE**   ISDN/PRI
AJ4995   ETSI ISDN Primary Rate Interface (PRI) Development -
                   Numeris

Description

This development is to introduce a new variant in the Integrated Digital Services Network (ISDN) PRI software for VN4 European Telecommunications Standards Institute (ETSI) ISDN PRI Numeris development.

In order for a Numeris VN4 PRI connection to be established between a DMS-100 and an adjacent node, the link has to be first provisioned on both the DMS and the adjacent node. The PV is datafillable on a per interface basis with a VARIANT value and an ISSUE value in table LTDEF.

The Numeris VN4 variant exists in parallel to other International PRI variants on the International PRI Base.

Command Changes

NONE

Data Schema Changes

No tables are structurally changed; however, an additional valid entry is available in field VARIANT and ISSUE of tables LTDEF and PRIPROF.

The variant is defined through datafill for each interface in table LTDEF using the following two fields:

- The VARIANT field is a mandatory field that indicates the protocol version for that interface. EVN4PRI is added to the existing ETSI ISDN PRI range of variants.

- The ISSUE field is a mandatory field indicating the issue of the corresponding variant. There is only one valid entry for EVN4PRI variant, EVN4V1. Should subsequent release of VN4 be released, the ISSUE number will be incremented accordingly.

- The PROFNAME field is a third mandatory field and is used to customize the variant on a per-interface basis, so that if a CPE does not fully conform to Nortel's implementation of VN4, then a profile can be created to account for the differences. The profile is datafilled in table PRIPROF using pre-defined function switches, which are features developed to account for small protocol discrepancies. It must be noted, however, that the profile must be created using the existing function switches. If no profile is required this field may be datafilled as the default value, NIL. The profile name must be datafilled in table PRIPROF prior to being datafilled in table LTDEF.

Table PRIPROF contains the profiles that can be used to customize individual primary rate interfaces. In order to datafill a profile in table LTDEF against an interface, the profile name must first be defined in this table against the particular version of the variant. For example, if a craftsperson wanted to datafill an EVN4PRI (ISSUE EVN4V1) logical terminal definition with a specific profile, the profile must also be defined for EVN4PRI with ISSUE EVN4V1. A profile defined in this table can be used for multiple interfaces.

In defining a profile, the craftsperson must datafill the following fields in the table: PROFNAME, VARIANT, ISSUE, and SWITCH.

- PROFNAME - A user-defined key of up to 8 characters. A maximum of 255 profiles can be datafilled on any one switch.
- VARIANT - Identical to field VARIANT in table LTDEF.
- ISSUE - Identical to field ISSUE in table LTDEF.
- SWITCH - A pre-defined feature assignable to a particular profile. A feature switch may change functionality from the default profile for the particular issue of the variant specified previously in the tuple. Although the craftsperson is presented with some values for the SWITCH field, none of the options are valid now when EVN4PRI and EVN4V1 are chosen for the VARIANT and ISSUE fields respectively. They can be used in the future feature development, but for the time being, the only valid choice for this field is "$" indicating no entry.

Craftspersons are not allowed to datafill a Numeris VN4 PRI trunk as user side. If a craftsperson tries to datafill a Numeris VN4 PRI trunk as user side in table TRKSGRP and LTDEF, an error message is displayed when trying to datafill table LTMAP and the craftsperson is prevented from datafilling the EVN4PRI trunk as user side. The following error message appears:

```
"USER IFCLASS is not supported on EVN4PRI"
"change IFCLASS in TABLE TRKSGRP or select"
"a new protocol variant in TABLE LTDEF"
```

Although the craftsperson is presented with 9 values for the SWITCH field in table PRIPROF, none of the options are valid when EVN4PRI and EVN4V1 are chosen for the VARIANT and ISSUE fields respectively. If one of the options are chosen, the craftsperson is presented with an error message and told to enter the $value indicating no entry.

These restrictions may be removed if user side is supported on EVN4PRI and the SWITCH option is required for EVN4PRI in the future.

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

This feature must work with the following features:
- AJ4994 - XPM ETSI ISDN PRI DEVELOPMENT - NUMERIS
- AJ4996 - SHR ETSI ISDN PRI DEVELOPMENT - NUMERIS
- AJ5008 - WT ETSI ISDN PRI DEVELOPMENT - NUMERIS

Restrictions/Limitations

Although this feature allows the craftsperson to datafill a PRI as Numeris VN4 specific, the interface requires additional feature work to be Numeris VN4 compliant. This means that calls may not work and links may not come in service for VN4 PRI interface.

This variant is valid for network side only. Customer is not allowed to datafill a VN4 PRI trunk as user side.

The SWITCH field in table PRIPROF is not applicable to this feature. None of the options are valid when EVN4PRI and EVN4V1 are chosen for the VARIANT and ISSUE fields respectively.

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**   ISDN

AF6649   MADN/EKTS CACH Call Appearance Reservation

Description

The purpose of Multiple Appearance Directory Number (MADN) Electronic Telephone Set (EKTS) Call Appearance Call Handling (CACH) Call Appearance Reservation, is to provide the SERVORD, table control (TC), call processing, and query commands functionalities necessary for implementing Call Appearance Reservation (CARES). The CARES feature gives the operating companies the capability to designate MDN CACH groups as non-reserved, originating only, terminating only, or originating and priority incoming only.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

MADN/EKTS CACH Call Appearance Reservation impacts SERVORD with two new functional areas:

- the SERVORD functionality necessary for provisioning a MADN with a call arrangement of CACH
- a new SERVORD command (CAPSORD) to change the MADN/EKTS call appearance terminating selection order

See Feature AF6647, CACH Service Orders, in the *SW-NOW* section of this manual for further details.

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

MADN/EKTS CACH Call Appearance Reservation has no functionality interactions. Refer to AF6647-MADN/EKTS CACH-Service Order in the *SW-NOW* section of this manual for interactions with the MADN CACH capability features.

This feature needs the following features to function properly:
- AF6646: CACH Table Control
- AF6638: CACH Call Processing
- AF6647: CACH Servord
- AF6648: CACH Query
- AF6633: Parameter Downloading

This feature is part of a group of features used by this feature:
- AF6638: CACH Call Processing.

Restrictions/Limitations

The following limitations and restrictions apply to MADN/EKTS CACH Call Appearance Reservation:
- To have more than one call appearance (CA) on a telephone set, the set must be a basic rate access functional signaling (BRAFS) ISDN EKTS CACH set.
- The following sets support a maximum of one call appearance of a directory number:
  — IBN 2500
  — MBS (Meridian business set)
  — ISDN BRAFS EKFTS non-CACH (EKTS basic ISDN terminal).
- When utilizing the ADO SERVORD command, SERVORD does not allow the CA_NUM to exceed the total number of CAs for the MADN or EKTS CACH group.
- The CA numbering assignment is in sequential order (1-16). Any holes in the order due to the deletion of an assigned CA are filled by new CA assignments before going higher in the order. For example, if CAs have been assigned to CA numbers 1-5 and CA 2 is deleted, a newly assigned CA fills number 2 before numbers 6-16 are assigned.
- A SERVORD user cannot change a multiple appearance directory number (MADN)EKTS CACH call appearance number.
- The Primary CA (CA 1) cannot be removed until all secondary CAs have been removed by the OUT command.

- In release NA008, the ability to change the existing MADN non-CACH call arrangement: Single Call Appearance (SCA), Multiple Call Arrangement (MCA), Extension Bridging (EXB) to CACH, is blocked. In addition, the ability to change the CACH call arrangement to either SCA, MCA or EXB is blocked. Listed below are the CACH call arrangement changes that are blocked:

  — changing from CACH to SCA

  — changing from CACH to MCA

  — changing from CACH to EXB

  — changing from SCA to CACH

  — change MCA to CACH

  — change from EXG 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 the CACH controller.

  — The CACH controller cannot be deleted unless there is another ISDN member (and controller) for this CA.

    Note: *The ISDN secondary member must be in the same CA as the CACH controller.*

  — The CACH controller can be EKTS Basic ISDN Terminal or EKTS CACH 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 1-digit DN. However, an EKTS ISDN Terminal with CACH uniquely identifies its DN assignments by the Key Number. Therefore, an EKTS Basic ISDN Terminal cannot uniquely distinguish between multiple CAs.*

  — In NA008, call appearance 1 is the primary CA. The CACH controller is located in the Primary CA.

- The SERVORD user cannot change a MADN/EKTS CACH call appearance's number.

- The primary CA (CA 1) cannot be removed until all secondary CA(s) have been removed (by the OUT command).

- 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.

Note: *See feature AF6638-MADN/EKTS CACH Call Processing and feature AF6646-MADN/EKTS CACH Table Control for further details of SERVORD restrictions/ limitations required by the MADN/EKTS CACH capability*

The following features are incompatible with MADN/EKTS CACH:
- Additional Functional Call
- ACOU-Notification Busy Limit
- Auto Answer Back
- Automatic Call Distribution
- ACD-Answer Agent
- Bridged Night Number
- Secondary Member CF Programming
- Call Logging
- Call Pickup
- Directed Call Pickup
- Directed Call Pickup with Barge-in
- Customer Originated Trace
- Denied Malicious Termination
- Do Not Disturb
- Executive Busy Override
- Extended Call Management
- Directory Number Hunt
- Distributed Line Hunting
- Key Short Hunt
- MultiLine Hunting
- Multiple Position Hunting
- Preferential Hunting
- Stop Hunt
- Individual Business Line
- Message Waiting Indicator
- Calling Name Delivery
- Private Business Line
- Random Make Busy
- Automatic Call Back
- Automatic Recall
- Network Ring Again
- Call Back Queueing
- Selective Call Rejection
- Selective Call Forwarding

- Selective Call Acceptance
- Distinctive Ringing/Call Waiting
- Series Completion
- Service Analysis for Meridian Digital Centrex
- Single Line Queuing
- Single Line Variety Pack
- Speed Call Group
- Station Originations Restrictions & Station Originations Restrictions Controller
- Station-Specific Authorization Code Customer Data Change Enhancement
- Station-Specific Authorization Codes
- Teen Services Second ND
- Uniform Call Distribution
- Wake Up Call

LAYER   **SW-LATER**
NA008 PRODUCT

                                                             APPLICATION
ACTID   **FEATURE TITLE**   ESMA
AF6716   ESMA: ICB: CNA – ICB Node Provisioning

Description

This feature is responsible for modifications to the table control system to support the integrated channel bank (ICB) nodes, and modification of the computing module (CM) portion of the static data system to support ICB nodes.

Command Changes

The following error messages have been added to RDTINV Table Control procedures:

- ICB Integrated Digital Terminals (IDTs) are only supported on the Expanded Subscriber Module Access (ESMA) if the craftsperson datafills an ICB on an SMA:

  ```
  Error: Host XPM must be of type SMA2 for ICB IDTs.
  ```

- Due to a limit of 15 ICBs when 8 Remote Digital Terminals (RDTs) are datafilled, if the craftsperson tries to go beyond that limit:

  ```
  Error: Cannot have more than &$ RDTs and more than &$ ICBs on the same ESMA.
  ```

- If the craftsperson tries to datafill a CLAPDFLT value of NA for a GENTMC or RFT RDT:

  ```
  Error: CLAPDDEF can not be set to NA for non-ICB IDTs
  ```

- If the craftsperson tries to datafill a CLAPDFLT value other than NA for an ICB IDT:

  ```
  Warning: ICB IDTs do not support LAPD, CLAPDDEF has been set to NA.
  ```

- If the NTTOPT field is set to Y for an ICB IDT:

  ```
  Warning: ICB IDTs do not support an NTT, the NTTOPT field has been set to N.
  ```

- If anything is put into the MTSTACPT field for an ICB IDT:

  ```
  Warning: Exceeds the maximum limit of Metallic Test Access Points.
  The number of Metallic Test Access Points has been set to 0 for this ICB IDT.
  ```

- If anything is put into the SDPOINTS field for an ICB IDT:

  ```
  Warning: SC/SD points not valid for ICB IDTs.
  Warning: the number of SC/SD points has been set to 0.
  ```

- If more than one DS1 is datafilled for an ICB IDT:

  ```
  Error: ICB IDTs only support a single DS1 link.
  ```

- If the EOC field is not set to N for an ICB IDT:

  ```
  Warning: ICB IDTs do not support an EOC, the EOC field has been set to N.
  ```

- If the procvar call to add_connection_data fails:

  ```
  Error: allocation failure in connection manager
  ```

Data Schema Changes

Changed table: RDTINV

ESMA: ICB: CNA - ICB Node Provisioning changes the RDTINV table. Changed fields are RDTVAR and CLAPDFLT. ON_HOOK is a new field.

- A new variant type, ICB, is added to field RDTVAR of table RDTINV.
  — Field CLAPDFLT of table RDTINV is changed from an enumerated type ("Y", "N", "NA"). ICB remote digital terminals (RDT) are only able to use the "NA" option, while other RDTs are restricted to "Y" or "N".

An example of the table follows:

```
RDTNAME        ADNUM    IDTNAME    NENAME    PRIMOPC    BACKOPC    VARTYPE
RDT1 02 0      3        SMA 0 1    MYNE      MYOPC      MYOTHER    RFT 1 7 1 96
RDT1 02 1      4        SMA 0 2    $         $          $         GENTMC 2 2048 Y N
RDT1 02 2      5        SMA2 0 2   $         $          $         ICB N

CLAPDFLTMTSTACPT                        LINKTAB                     PROT        POTSPADG EOC
Y        (TBP MAPIF 10 TBPP N) $ (1 4) (2 5) $             N           STDLN
Y        N 5 5 5 45 200          (TBP MAPIF 10 TBPP N ) $(1 6) (2 7) $N        STDLN
Y        NA                      $                       (1 8) $     N         STDLN
N

SDPOINTS       RDTDN
$              (NETWORK_ID 1) (SYSTEM_ID 1)
               (NETWORKELEMENT_ID 12)
               (EQUIPMENT_ID 1) $
$              (NETWORK_ID 5) (NETWORKELEMENT_ID 51) $
               $
               $
```

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

This feature needs the following features to function properly:
- AF6717, ESMA: ICB: CNA - ICB LINE PROVISIONING I
- AF6718, ESMA: ICB: CNA - ICB NODE MAINTENANCE
- AF6719, ESMA: ICB: CCM - ICB LINE PROVISIONING II
- AF6906, ESMA: ICB: TL - ICB TID Allocation
- AF6721, ESMA: ICB: XPM - ICB NODE PROV
- AF6722, ESMA: ICB: XPM - CALL PROCESSING
- AF6723, ESMA: ICB: XPM - RBS RESOURCE MANAGER
- AF6724, ESMA: ICB: SIGP SCANNER
- AD9754, ESMA: ICB: XPM - ICB MTC

Restrictions/Limitations

The following limitations and restrictions apply to ESMA: ICB: CNA - ICB Node Provisioning:
- The ESMA is limited to 48 ICBs.
- ICBs cannot be provisioned on SMA peripherals, only ESMA peripherals.
- This feature will use the software optionality control (SOC) state-controlled variant. SOC will prevent ICB datafill unless the SOC option SMA00012 is paid for.

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**   PRI
AF6864   PRI Call-By-Call

Description

Primary rate interface (PRI) Call-By-Call (CBC) provides the DMS-100 switch with functionality to be compliant to TR-NTW-1270. PRI CBC includes functionality for foreign exchange (FX), tie trunks (TIE), inward wide-area telecommunications service (INWATS), outward WATS (OUTWATS), and public (PUB) call service.

PRI CBC is an alternative to providing services on dedicated interfaces or a dedicated group of ISDN B-channels. Any B-channel on a PRI can be used to offer provisioned services on a per-call basis. PRI CBC provides services to customer premises equipment (CPE) without the use of dedicated circuits; for example, dedicated ISDN interfaces or nailed-up B-channels (NUPB). The PRI CBC service conveys signaling information over an ISDN PRI trunk that indicates, on an individual call basis, the specific service type required to complete the call.

CBC service selection feature supports the following call types:

- PUBLIC calls connect the CPE to the DMS in the case of direct outward dialling (DOD) and DMS-100 to CPE in the case of direct inward dialing (DID). PUBLIC calls pass through the public switched telephone network (PSTN). Dialed digits of PUBLIC calls conform to E.164 standards. PUBLIC calls are translated by screening the called party number (CDN) digits, specifically the numbering plan area (NPA) and NXX digits, to determine the destination of the call.

- OUTWATS is a service provided by operating companies, which permits a customer to originate calls to telephones in a specific geographical area, called a zone or band. A flat monthly charge is provided for such services. The CPE may request a specific outwats zone/banding number.

- FX trunks connect a subscriber's location to a remote exchange. FX service provides the equivalent of local service for the distant exchange.

- TIE trunks are private incoming and outgoing lines that are between private branch exchanges (PBX).

PRI CBC Signaling

A PRI interface on a DMS-100 switch extended peripheral module (XPM) sends and receives call control signaling in the form of Q.931 messages. In the incoming direction, the XPM receives and parses a Q.931 SETUP message to extract CBC signaling information. After the parsing activity, the XPM generates internal DMS messages to convey the CBC signaling information to the DMS-100 computing module (CM) where PRI or PRI supplementary services process the information.

In the outgoing direction, PRI or PRI supplementary services in the CM generate internal DMS-100 messages to send CBC signaling information to the XPM. The XPM receives and parses the messages, and then generates a Q.931 SETUP message containing the necessary CBC signaling information.

CBC information is carried in an information element called the Network-Specific Facilities (NSF). The NSF is built into Q.931 SETUP messages and contains the following components:

- A service selector component (facility coding value) specifies the type of service requested. Services include FX, TIE Trunk, INWATS, and OUTWATS.
- A service parameter specifies the actual facility to use to route the call.
- A network identification plan component contains the InterExchange Carrier (IEC) code for identifying inter-LATA and intra-LATA carriers. Normally, the IEC/Carrier Identification Code (CIC) comes to the DMS-100 switch as part of the transit network selector (TNS) information element. When the CBC service is involved, the CIC in the NSF IE is used to identify the IEC.
- The length of network-specific facilities and length of network identification components are used to control the message parsing mechanisms.

Command Changes

NONE

Data Schema Changes

PRI Call-By-Call modifies the following tables: LTCALLS and LTDEF. The tables used to provision Call-by-Call service are:

- VIRTGRPS: defines the virtual facility groups (VFGs) used by Call-by-Call service types to achieve throttling.
- Routing tables: route the calls to a PRI node; mainly for terminating PRI calls. The routing tables are OFRx, IBNRTx, and HNPACONT:RTEREF.

  Note: *The IBNRTx tables are also used to point to the VFGs defined in table VIRTGRPS for originating PRI and terminating PRI.*

- ISAXLA: defines the services related data associated with CBC calls in which a service parameter is used to determine translations and routing for calls data-filled in table LTCALLS.
- LTCALLS: sets the routing on Call-by-Call service types and numbering plan. A tuple must exist for every CBC service type; otherwise, the call is rejected. This table allows different routing based on the CBC service type.

  Note: *The SIDXLA option is used to index into table ISAXLA to provide service parameter routing.*

Table LTCALLS Changes

Table LTCALLS (logical terminal calls) stores service-related data, such as translations, that are associated with the call type. Table LTCALLS is accessed by a multipart key and logical terminal identifier (LTID) in field LTID. The LTID consists of three parts: subfield LTGRP (logical terminal group), subfield LTNUM (logical terminal number), and subfield CALLTYPE (call type). An attempt to datafill subfield CALLTYPE, in table LTCALLS, as PVT service on an NIPRI is rejected. In table LTDEF (logical terminal definitions), if the tuple defining a PRI is datafilled with subfield VARIANT - NIPRI, no PVT call types are allowed. The following datafill shows all the valid service types for NI Call-by-Call.

```
KEY                     DATA                    OPTDATA
ISDN 500 PUB            XLALEC 1                $
ISDN 500 TIE            XLAIBN 1BNRGRP 0 0      $
ISDN 500 FX             RTEREF IBNRTE 500       $
ISDN 500 INWATS         XLAIBN 11BNRGRP 0 0     $
ISDN 500 WATS           XLAIBN 11 BNRGRP 0 0    $
```

The LTID ISDN 500 is defined in table LTDEF as a NIPRI variant.

```
Table LTDEF:
LTKEY           LTAP   CLASSREF
-------------------------------------------------------------------------------
ISDN 500        B      PRA 24 24 5 5 NIPRI NI2V1 NIL (NOPMD) $
```

If the craftsman tries to add the service type private "PVT" for the LTID ISDN 500, the system rejects the entire data tuple and generates the appropriate error message. The following table modification depicts the possible action and resulting error message:

ADD ISDN 500 PVT XLAIBN 1 BNRTST 0 0 $

ERROR: Private service type is not supported nor defined for NI Call-by-Call

Table LTDEF Changes

Table LTDEF defines the service profile of an ISDN LTID. The key to this table is an LYKEY. An LTKEY consists of a logical terminal group (LTGRP) from table LTGRP and a logical terminal number (LTNUM) in a range of 1 to 1022. This table must be datafilled to provision primary rate interface (PRI) and basic rate interface (BRI) services. The type of service requested is distinguished by the LTCLASS subfield. Based on the type of service, specific options can be datafilled against a particular LTID. If, in table LTDEF, the PRI LTKEY is datafilled with subfield LTCLASS = PRA and VARIANT = NTNAPRI, a PVT call type can be provisioned in table LTCALLS. If a PVT call type is provisioned on the PRI in table LTCALLS, an attempt to change subfield VARIANT to NIPRI in table LTDEF, is not allowed.

A new error message is being added to table LTDEF when a craftsman tries to change the PRI interface variant from any variant to NIPRI when table LTCALLS has private service type datafilled against the same PRI trunk.

```
ERROR: delete Private service type ENTRY from table LTCALLS for this INTERFACE
BEFORE changing the LTDEF variant to NIPRI
```

The following datafill shows two PRI interfaces; the first is defined as a NTNAPRI variant while the second is defined as NIPRI variant:

```
Table LTCALLS:
KEY                     DATA                OPTDATA
---------------------------------------------------------------------------
ISDN 500 PVT            XLAIBN 1BNRGRP 0 0        $
```

If the craftsman tries to change the variant of the ISDN 500 PRI interface from the NTNAPRI variant to the NIPRI variant while a Private service type is still datafilled against this interface (shown above in table LTCALLS example), the system rejects the command. The following table modifications depicts the possible scenario:

```
CHA ISDN 500 PVT XLAIBN 1 BNRTST 0 0 $
LTAP: B
>
LTCLASS: PRA
>
NUMBCHNL: 24
>
NUMCALLS: 24
>
INCCALLS: 5
>
OUTCALLS: 5
>
VARIANT: NTNAPRI
>NIPRI
ISSUE: V1
>NI2V1
PROFNAME: NIL
>
OPTION: NOPMD

ERROR: delete Private service type ENTRY from table LTCALLS for this INTERFACE
BEFORE changing the LTDEF variant to NIPRI
```

Table VIRTGRPS

VFGs simulate finite resources (lines or trunks) in software. When a facility group is accessed from the table IBNRTx, the switch checks if there are any virtual facility available. If none are available, the call is blocked. If a virtual facility is available, it is marked as used. The call is then retranslated. Table VIRTGRPS defines VFGs. VFGs are used by CBC for throttling.

Log Message Changes

NONE

OM Changes

NONE

Service Order

Although service order is not applicable for the Call-by-Call feature, virtual facility groups can be set up through service order. Please refer to NTP 297-8021-350R 4.02, *North America DMS-100 Translations Guide*, Volume 27, for more information on VFG translation.

AMA Changes

NONE

Notes

PRI Call-By-Call is dependent on the DMS-100 switch with ISDN equipped XPMs.

Alarms

NONE

Interactions

This feature provides functionality for the following features:
- AF6786, PRI NA008 Development (CCM)
- AF6787, PRI NA008 Development (Shared)

PRI Call-By-Call requires the following features to function properly:
- AF6871 - XPM PRI CAll-by-Call
- AJ4144 - NI-2 PRI Basic Call (NA007 release)
- AF6862 - NI-2 PRI Basic Call (NA008 release)

The usage of VFGs for throttling causes lot of interactions issues for Call-by-Call.

ISDN Calling Number Identification Services (CLID)

The CLID or calling number delivery feature provides a display of the calling party number at the terminating interface. The calling number is delivered as a defined information element. The number is not delivered if it is restricted or not available.

No technical interaction issues occur between CBC and CLID because the CLID design is done based on the PRI interface and not on service types. Thus, the procedure defined in TR-NWT-001268 and TR-NWT-001187 for CLID is applied to all Call-by-Call service types. Please refer to AF6863, PRI Call Screening and CLID, in the ***TRK-LATER*** section of this manual for more information on call screening and CLID design for the NA008 release.

Note: *Table LTCALLS controls incoming CLID. Default allows presentation. Option INCLID SUPPRESS suppresses presentation while option INCLID NTWKOVRD applies only when the PRI trunk terminates directly to a line agent with display capabilities. CLID restriction defined in table CUSTNTWK are overridden, for the option INCLID NTWKOVRD. This option could have different values for*

every CBC service type.

Table LTDATA controls outgoing CLID, default (ALWAYS) allows presentation, NEVER restricts presentation, and SCREENED checks with the far end to see if presentation is allowed.

Two B-Channel Transfer

The requirements for the interactions between the Call-By-Call service and the Two B-Channel Transfer (TBCT) service are defined in GR-2865. The following requirements are in line with the general philosophy of the Call-By-Call service. Specifically, a call in a VFG may use one or no B-channels on the PRI. For example, when a call in a VFG is transferred to, forwarded to, or picked up at a destination that is outside of the definition of the VFG, the call is still included in the VFG although the call may not use any B-channels on the PRI.

The only interaction between TBCT and CBC is when the calls being transferred required:
- The use of the Network-Specific Facilities information element for service request on call origination or call termination,
- VFGs were defined for the services requested.

TBCT has to make sure that the associated VFG is transferred when bridging the Two Calls. Please note that the associated VFG is decremental only when the transferred call is cleared.

Advanced Intelligent Networks (AIN)

AIN triggering can be assigned to a specific ISDN PRI B-channel for incoming calls only. That is, specific B-channels can be dedicated to AIN such that, in the event that the CPE originates a call that uses a B-channel dedicated for AIN, the switch initiates AIN triggering procedures for the call. It is the responsibility of the CPE to select the appropriate B-channel based on whether or not the call requires AIN triggering.

The Call-By-Call services uses an arbitrary B-channel selection scheme for outgoing calls. That is, the Call-By-Call service selects a B-channel without considering whether or not a given B-channel is used for AIN triggering. A known deficiency of this approach is that a pool of AIN B-channels could be used by non-AIN outgoing calls. This is a general AIN-related PRI issue that is beyond the scope of this feature.

For Virtual Facility groups interactions with AIN, please refer to *AIN Feature Interactions*, NTP 297-5161-107.02.02.

VFG interactions
- Call Forwarding: When a call reaches a station with call forwarding active and a VFG is encountered on the forwarded-to route, the call needs to gain access to a VFG member before proceeding.

- Call Park/Directed Call Park: An attendant or station may park a party and encounter a VFG while dialing the directory number to park against. The call gains access to the VFG before continuing. However, the VFG members encountered is released when the PARK feature is activated. This applies when a parked call is retrieved.

- ACB/AR: A party is allowed to activate ACB on calls that required access to a VFG. Once ACB/AR has been activated, the system rings the activator when the called party becomes idle. When the ACB/AR activator picks up the receiver, the system causes the call to retranslate. If no VFG members are available, the call is blocked.

- 3WC: If a VFG is encountered, the VFG will stay on the CCB till the end of the call.

- NI PRI Billing: The billing number provided by the VFG overrides the billing number provided by the NI PRI billing (BN on the PRI interface) if a VFG encountered had billing number. This interaction is only valid for Outwats service type.

Restrictions/Limitations

PRI Call-By-Call has the following limitations and restrictions:

- A PRI variant cannot be changed from Northern Telecom North American PRI (NTNAPRI) to the National ISDN (NIPRI) variant if subfield CALLTYPE in table LTCALLS is private (PVT). The following error message with provisioning information is issued if subfield VARIANT is changed to NIPRI:

```
ERROR: Delete private service type ENTRY from table LTCALLS for this INTERFACE BEFORE
changing the LTDEF VARIANT to NIPRI
```

- A PVT service type cannot be datafilled in table LTCALLS, subfield CALLTYPE, if the PRI VARIANT in table LTDEF is NIPRI. The following error message with provisioning information is issued if PVT CALLTYPE is defined for the NIPRI:

```
ERROR: Private service type is not supported nor defined for NI Call-By-Call.
```

- When using CBC service in the outgoing direction, from the DMS-100 switch to the CPE, the service parameter range of values is limited to a four digits instead of five digits as specified in TR-NWT-1270.

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

AQ1576   AIN 0.2 O_CPB and O_NOA Triggers

Description

The Advanced Intelligent Networks (AIN) Service Enablers (0.2) O_Called_Party_Busy (O_CPB) and O_No_Answer (O_NOA) Triggers, allow telephone companies to provide AIN O_CPB and O_NOA subscribers with the AIN Service Enablers AIN O_CPB and O_NOA triggers functionality. The AIN originating call model (OCM) architecture is extended to support the two triggers introduced by this feature.

During call processing, when an O_CPB trigger is detected, call processing is suspended and a query is launched to the service control point (SCP) requesting further instructions.

Note: *When the O_NOA trigger is detected during call processing, the processing continues. When the trigger encountered is an O_CPB trigger, and O_CPB trigger detection point-request (TDP-R) query is sent. A busy indication is not provided by the service switching point (SSP) to the calling party (it waits for instructions provided in the AIN SCP response). When the trigger encountered is an O_NOA triggers, an O_NOA TDP–Request query is sent and the called party audible ringing tone, already in progress, is not interrupted by the service switching point (SSP).*

To launch an O_CPB TDP–R the called party has to match AIN busy conditions. To launch an O_NOA TDP–R the T–ONoAnswer timer has to elapse and the called party should not have answered.

O_CPB and O_NOA triggers are provisioned on a line and trunk subscription basis. The T–ONoAnswer timer subscription is provisioned on an office wide basis. The T–ONoAnswer timer is used by each line or trunk that subscribes to the O_NOA trigger. The timer determines the time (in seconds) between the indication of the called party ringing and the detection of the O_NOA triggers. When applicable, one timer is started per O_NOA trigger subscriber. The timer value is the same for each subscriber.

The O_CPB trigger provides the ability to control routing on the AIN busy cause. It is useful in any service in which the call has to be rerouted busy on the originating side. The O_NOA trigger can be used to provide any service where the call has to provide alternatives to the user on originating no answer call conditions.

The AIN services that can use the functionality of these triggers include:
* Personal communication services such as follow me, originator imposed voice mail, message notification, service bureau
* Enhanced centrex and private virtual network (PVN) such as guaranteed delivery, ring again replacement, network hold, and complete

- Speech-activated intelligent dialing that give specific instructions associated with originator-imposed voice mail, or to add a number to an originating hunt group list.

When the AIN Service Enablers O_CPB or O_NOA trigger is active and one of the following redirection features activates, the O_CPB and O_NOA triggers are not detected:

- Call forwarding features (CFW)
- Virtual facility group (VFG)
- HUNT group overflow routing, line overflow directory number (LOD), line overflow route (LOR), and key-set short-hunt (KSH) group
- Virtual directory number (DN) based features:
  — Direct inward system access (DISA)
  — Network facility remote access (NFRA)
  — Call forward remote access (CFRA)
  — Remote call forwarding (RCF)
- Simplified message desk interface (SMDI)
- AIN Essentials forward call

Command Changes

NONE

Data Schema Changes

The range of values that can be datafilled in the TDP sub-field of the KEY field in the existing table TRIGGRP is expanded to include the following triggers:

- O_CPB
- O_NOA

These values indicate the type of TDP that is part of AIN Service Enablers. Below is an example of the format in which the tuple added into table TRIGGRP is represented in the table:

```
Table TRIGGRP:
                        KEY     TRIGDATA
--------------------------------------------
ocpb_group          OCPB
(OCPB $ AINSIM) $
```

AIN O.2 O_CPB and O_NOA Triggers introduces the new office parameter, AIN_O_NO_ANWER_TRIGGER_TIMER in table OFCENG. This parameter specifies the office default for the duration in seconds that the O_NOA timer must run before detecting the O_NOA trigger. The range of this parameter is 1 to 120 seconds in increments of 1. The default is set to 18 seconds.

Log Message Changes

NONE

OM Changes

For OM information, refer to the related feature AR2306, in the ***SW-NOW*** section of this manual.

Service Order

O_CPB and O_NOA triggers can be subscribed to by assigning these options to a line using SERVORD, or they can be subscribed to by assigning these options to a trunk group using table control commands in table TRKAIN. These triggers cannot be subscribed office-wide.

AMA Changes

A sub-set of AIN Service Enablers and their AMA requirements have been implemented in previous DMS-100 software releases. AINSSP: AIN 0.2 AMA, adds the AMA requirements for the following new Service Enablers triggers:

- O_Called_Party_Busy
- O_No_Answer
- Specific Feature Code

The DMS-100 switch currently produces Bellcore AMA format (BAF) records for AIN calls as specified by the AMA requirements for AIN Primer, Essentials, Service Enablers and normal switch-based requirements. 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) is mapped into the AIN AMA structure (structure codes 0220 and 0221). Additional AMA information provided by the SCP and 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.

For additional information, refer to the related feature AF6840, ***SW-NOW*** section of this manual.

Notes

NONE

Alarms

NONE

Interactions

This feature needs the following features to function properly:

- AIN 0.1 base software
- AIN 0.2 base software

This feature is part of a group of features used by AIN 0.2 Service Enablers.

The following paragraph describes the interactions between AIN 0.2 O_CPB and O_NOA Triggers and other functionalities. It is assumed that the O_CPB and O_NOA triggers are added to the subscriber's line or specific trunk.

The feature interactions for AIN 0.2 O_CPB and O_NOA Triggers are similar to the interactions for AIN Service Enablers O_CPB and O_NOA events developed in NA007 (feature AJ4103). This feature has to support the interaction between the O_BNA triggers and events. Generally, feature interactions occur in the following cases:

- detecting the busy condition
- detecting the no-answer condition with a timer
- termination of the redirecting feature, conference feature or virtual facility group (VFG)
- feature precedence between events, triggers, or switch-based features

Restrictions/Limitations

The following limitations and restrictions apply to AIN 0.2 O_CPB and O_NOA Triggers:

- These triggers are not detected when terminating to a virtual DN.
- In NA008 these triggers are only assigned on a subscribed basis and then the exclusion list of the calling party DNs is not applicable.
- In the case of fault handling (for example, aT1 timer expires) the processing continues to alert rather than provide final treatment
- In NA008 the timer value is administered on an office-wide basis only (this timer is different from the existing event office-wide timer)
- O_BNA triggers are not supported when the call forwarding (CFW) feature is activated on the terminating agent
- O_BNA triggers are not supported with conference call

The implementation of AIN 0.2 O_CPB and O_NOA Triggers does not allow the special delivery service feature to intervene on the call when the O_NOA trigger receives a continue response from the SCP.

LAYER   **SW-LATER**

NA008 PRODUCT

                                                  APPLICATION

ACTID   **FEATURE TITLE**   AIN

AR2219   Toll-Free Service on AIN 0.2

Description

Toll-free service on advanced intelligent network (AIN) Service Enablers (0.2) allows the originating switch to perform the following:

- identify calls that require toll-free processing
- query an external database for call routing information
- identify in billing, that toll-free processing occurred and verify where the call was routed

> *Note:* *Until recently toll free numbers in North America were handled in accordance with the Bellcore TR-533 (IN) specification. Bellcore GR-2892 defines toll-free service based on AIN.*

Toll-free service on AIN Service Enablers allows operating companies to intercept a call and provide a service to that call. When a call is intercepted by AIN, the service switching point (SSP) sends information about the call to an off-board processor which determines the necessary service. The off-board processor sends a message back to the SSP with instructions on how to proceed with the call. AIN Service Enables calls are handled in accordance with the GR-1298 specification.

To build toll-free service on AIN Service Enabler, the following functionality is provided:

- identification of GR-2892 calls using table TFSSCRN
- tagging a GR-2892 call with POTUSE=TFS (potential use=toll free service) in table TRIGDIG
- building a query with GR-2892 specific parameters
  — when an automatic number identification (ANI) fails or there are missing ANI digits in a GR-2892 toll-free call, this feature assigns a 3, 6, or 10-digit ANI as the ChargeNumber in the query message, based on trunk datafill.
  — in the case of single digit station information received in a GR-2892 toll-free call, this feature converts it to automatic numbering identification (ANI) II as a ChargePartyStationType in the query message.
- GR-2892 specific routing
  — toll-free routing on ANI Service Enablers is enhanced to provide equivalence to existing E800 routing functionality.

Toll-free service on AIN Service Enablers is a part of Release 2 of the AIN Service Enablers product, and is not part of the AIN Essentials product. Therefore, toll-free

service on AINService Enablers takes on all the attributes of Service Enablers unless otherwise stated.

Note: *Toll-free service is controlled by AIN Service Enablers Release 2 software optionality control (SOC) option AIN00220.*

Command Changes

Translation verification (TRAVER) is enhanced to support table TFSSCRN. TRAVER displays table TRFSSCRN content and simulates the path of a GR-2892 call.

Data Schema Changes

The new TFSSCRN table has been added and table TRIGDIG modified.

New Table TFSSCRN

Table TFSSCRN is created to allow customers to specify the numbers subject to GR-2892 processing. Table TFSSCRN must be datafilled after table TRIGDIG. There must be an entry in table TRIGDIG for every number subject to AIN toll-free processing. An example follows:

```
TABLE TFSSCRN
800 622 733
```

New fields are: TFSCODE, FRMNXX, and TONXX.
- TFSCODE describes toll-free code in use.
- FROMNXX describes lower bound of the range of the numbers belonging to GR-2892.
- TONXX describes upper bound of the range of the numbers belonging to GR-2892.

Table TRIGDIG Modified

Option POTUSE in table TRIGDIG is altered to identify toll-free calls. A new attribute for POTUSE is defined as TFS. GR-2892 entries in the table TRIGDIG are identified with POTUSE=TFS. After the exception check in TFSSCRN, a call continues, hits the trigger criteria checking, and verifies the tuple in the TRIGDIG table:

```
TABLE TRIGDIG
PODPDIG PODP 800811 PODP EVENT TCAP R02 SS7 AINJAZZ DFLT (POTUSE TFS)$
```

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

The following features are needed to implement the requirements specified in Bellcore GR-2892-CORE "Switching and Signaling Generic Requirements for Toll-Free Service Using AIN:

- AR2219: Toll Free Service on AIN 0.2 (Base)
- AR2220: CCM Support for Toll Free Service on AIN 0.2
- AR2266: Toll Free Query Building on AIN 0.2
- AR2267: Toll Free Response Processing on AIN 0.2
- AU2406: Support for All Toll Free Service in TRAVER

Toll-Free service on AIN 0.2 interacts with the following funcationalities:

- switch-based services
  — GR-2892 calls interact with switch-based services in the same manner as AIN Service Enablers.
- E800
  — it is possible to encounter E800 before or after AIN toll-free processing
- AIN Service Enablers
  — all AIN Service Enablers attributes are accessible on AIN toll-free calls.
- Coin lines
  — AIN toll-free service is similar to E800 and returns the coin on toll-free calls.

Restrictions/Limitations

The following limitations and restrictions apply to Toll-Free Service on AIN 0.2:

- 10-digit segregation is not implemented in NA008 (it is being considered for post-NA008 releases)

- three operational measurements (OM) specified in GR-2892 are not supported for NA008; announcement number unavailable, return error or reject component, and abandon after outpulsing.

- 30-second engineering and administrative data acquisition system (EADAS) and 5-minute clock intervals) is not implemented in NA008.

- Bellcore specifications indicate that when the overflowing control arrived in a package that also contained a send notification message, an indication of the overflow is included in the subsequent termination notification. This requirement is not supported. However, a unidirectional automatic call gapping (ACG) overflow message is sent.

- the following agents are not supported:

  — eight-party flat rate (8FR) and ten-party flat rate (10FR)

  — attendant console

  — traffic operator position system (TOPS)

  — prepay or coin first (CCF) coin lines

  — origination from wide area telephone service (WATS) lines

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**
NA008 PRODUCT

                                                                APPLICATION
ACTID   **FEATURE TITLE**   ACD
AU2337   CompuCALL Transport Enhancements

Description

The CompuCALL application provides a data communications channel, the CompuCALL link, to integrate computer and telephony applications. The CompuCALL Transport Enhancements feature provides a switched computer application interface (SCAI) link between the switch and the host computer using Transmission Control Protocol (TCP)/ Internet Protocol (IP) transport protocol through the Ethernet interface unit (EIU). The EIU enables Ethernet physical connectivity between the DMS-100 switch and host computer.

The SCAI link is a signaling interface provided by the DMS-100 switch to the host computer. The information carried across the signaling link allows applications running in the DMS-100 switch to communicate with applications running in the host computer. The two-way information flow allows the DMS-100 switch and host computer to provide enhanced services to an Automatic Call Distribution (ACD) customer.

The TCP/IP SCAI link that this feature provides can be used as an alternative to the Multi Protocol Controller (MPC) X.25 SCAI link.

Command Changes

NONE

Data Schema Changes

Changed table: SCAICOMS

CompuCALL Transport Enhancements makes the following changes to table SCAICOMS:
* adds TCP as a valid value for field LNKSEL
* adds subfield IPADDR to field LNKSEL

The operating company uses table SCAICOMS to define the CompuCALL links. Sample datafill for table SCAICOMS follows:

```
LINKSET LNKSEL IPADDR
TCP_LINKSET1 TCP 47 239 67 193
```

Log Message Changes

Currently all the existing SCAI logs are supported only for X.25 SCAI transport. The feature enhances the related SCAI logs to support TCP/IP transport.

The following existing SCAI logs are supported and generated by this feature in the new format. The IP Address and the linkset name is included in logs generated for TCPIP.

- SCAI100: This log is produced whenever an association with wrong parameter is attempted.
- SCAI101: This log is generated after 3 times association to a link with wrong password is attempted.
- SCAI102: This log is produced whenever a session is disassociated either by orderly disassociation or by abort. It contains the session association start time and the disassociation time stamp.
- SCAI200:This log is produced whenever a Host does not respond to a DV-APPL-CONTINUITY-TEST message sent by the switch within a predetermined time period.

New Log Report: SCA1311

The new log SCAI311 is generated for this implementation. It is analogues to SCAI301 Log for X.25 implementation. This log is produced whenever no room is available to enqueue a new message on the incoming or outgoing work queue.

The other existing transport layer logs which are generated at TCP level are:
- End point allocation failed
- Remote Abort
- Service Failure
- Remote Time-out
- Remote Error
- SYN in TCP Header
- Cannot allocate TCP connection

OM Changes

New OM Group: SEIUTRAN

CompuCALL Transport Enhancements creates the new OM group SEIUTRAN with the following registers:
- SEIUMSGI
- SEIUMSGO
- SEIUQINC
- SEIUQOUG

SEIUTRAN provides measurements for total incoming or outgoing messages and incoming or outgoing work queue attempts failed. To measure the SCAILINK usage for each SCAI TCP/IP and UDP/IP LINKSET, table SCAICOMS must be data filled and a connection must be made to a suitable application. OMs are pegged against the SCAICOMS table whenever a LINKSET is added to the table whose LNKSEL (Link Selector) is TCP.

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

The CompuCALL Transport Enhancements interacts with the following functionalities:
- all SCAI-based applications that use TCP/IP transport protocol
- SCAI X.25 transport through table control

Restrictions/Limitations

The following limitations and restrictions apply to CompuCALL Transport Enhancements:
- The maximum number of TCP/IP connections is 96. No more than 96 service nodes and switches can be connected to a single switch, assuming no other applications are using TCP/IP connections from the computing module (CM). A maximum of 16 CompuCALL sessions are permitted using TCP/IP.
- TCP throughput on the EIU is low when processing short messages.
- Use of a TCP stack on CM poses a significant real time impact to CM call processing. This is due to the nature of TCP processing. TCP requires error checking, acknowledgments, and retransmissions of messages in case of lost messages.

LAYER	**SW-LATER**
NA008 PRODUCT	

APPLICATION

ACD

ACTID	**FEATURE TITLE**
AU2339	CompuCALL Integration with ICCM

Description

The CompuCALL Integration with Incoming Call Center Manager (ICCM) feature enhances CompuCALL services to Automatic Call Distribution (ACD) customers through DMS integration with ICCM.

This feature provides:
- CompuCALL messages to allow the host computer to specify treatments and announcements to calls in a queue
- CompuCALL messages to route calls held in a queue
- mechanisms to communicate with the ICCM applications using basic required principles of ICCM
- switch-host connectivity through Ethernet

Note: *This feature allows the time necessary for the host computer to specify treatments and route calls held in a queue. However, the CompuCALL Basic ICCM Functionality–Call Treatments (AU2441) feature applies treatments and announcements to the calls. The CompuCALL Basic ICCM Functionality–Selective Queueing (AU2341) feature routes the calls. Refer to feature AU2341 in the* **SW-NOW** *section of this manual and feature AU2441 in the* **SW-LATER** *section of this manual.*

Command Changes

NONE

Data Schema Changes

CompuCALL Integration with ICCM modifies datafill tables ACDGRP, SCAISSRV, and SCAIPROF. A new office parameter has been added to table OPCOPT.

Table ACDGRP Changes

The OPTION field in table ACDGRP includes the new Controlled Directory Number (CDN) with refinements DEFAULTGRP and RESPTM. Option CDN identifies an ACDGRP by holding incoming calls in a queue so that routing instructions or call treatments can be applied to them. Refinement DEFAULTGRP allows calls in the CND queue to route to a default ACD group if no routing or treatment instructions are received from the host ICCM in a specified amount of time. Refinement RESPTM defines the

amount of time in the queue that call have to receive routing or treatment instructions from the host ICCM.

Table SCAISSRV Changes

Table SCAISSRV includes a new category ICCM and service category ICCM10$. Category ICCM contains function SETCDNST (for message dv-Set-CDN-State), which allows ICCM to change the state of a CDN queue. Datafill changes have been made to the SPROFILE and CATEGORY fields. Table SCAISSRV must be filled before table SCAIPROF; table SCAIPROF uses the subservice names defined in table SCAISSRV. An example follows:

```
TABLE SCAISSRV:

SUBSERV SPROFILE
------------------------------------------------------------
ICCM1 ICCM (SETCDNST) $
```

Table SCAIPROF Changes

Table SCAIPROF recognizes the new subservice name, ICCM10$, for this feature. Table OFCOPT needs to be filled first, then tables SCAISSRV and SCAICOMS, and finally table SCAIPROF. An example follows:

```
TABLE SCAIPROF:

PROFKEY PROFILE
----------------------------------------------------
SET1 1 (EVENT1) (ROUTE1) (TPCC1) (ICCM1)$
```

New Office Parameter

MAX_NUM_ECM_ICCM is a new office parameter in table OFCOPT. This parameter governs the maximum numbers of CompuCALL service category ICCM and CompuCALL links that can be provisioned in a DMS-100 switch.

Log Message Changes

NONE

OM Changes

OM Group changed: SCAIRV3

CompuCALL Integration with ICCM adds two registers: SETCNDRR and SETCDNRE in OM group SCAIRV3. Register SETCDNRR counts the number of times the switch sends a Return-Result reply to the host computer in response to the message dv-Set-CDN-State. Register SETCDNRE counts the number of times the switch sends a Return-Error reply to the host computer in response to the message dv-Set-CDN-State.

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

The following limitations and restrictions apply to CompuCALL Integration with ICCM:

- An ACD agent position ID can be associated only if option AGTASSN is assigned to the agent's ACD group in table ACDGRP.
- To associate a CDN, option CDN must be present in table ACDGRP.
- The ACD position can have the following type of sets:
  - 2500 set terminal type
  - Meridian Business Set (MBS) terminal type, which includes the following:
    - Aries
    - Meridian Feature Transparency (MFT) Integrated Voice and Data (IVD)
- For an ACDGRP with option CDN, the ACD DN must be datafilled in table DNROUTE. In addition, the default ACD group should be defined before it is referenced along with option CDN.
- Option CDN is not compatible with other ACDGRP options except option AUDIO.
- No entries are needed in table ACDRTE for a CDN ACDGRP. Warning messages appear if tuples are entered in table ACDRTE for a CDN ACDGRP. In addition, a CDN ACDGRP cannot be in table NACDGRP.

LAYER   **SW-LATER**
NA008 PRODUCT

APPLICATION

ACTID   **FEATURE TITLE**   ACD
AU2441   CompuCALL Basic ICCM–Call Treatments

Description

The Integrated Call Center Manager (ICCM) Call Treatment provides Treatment Request
and Response Messaging capabilities to call centers. With this feature, call centers can direct
the application of specific treatments on a call that is located in an Automatic Call
Distribution (ACD) incoming or overflow call queue.

Valid call treatments are as follows:
* Recorded Announcement (RAN)
* Music
* Busy
* Fastbusy
* Disconnect
* Ringback
* Silence

Busy, Fastbusy, and Disconnect treatment requests remove the call from the incoming or
overflow call queue prior to the application of the treatment. Recorded Announcements
(RAN), Music, Ringback, and Silence allow the call to remain in the queue to receive
treatment.

This feature enhances the ACD CompuCALL interface. This feature is available to any call
center that subscribes to the set or subset of capabilities under the ACD CompuCALL
Options that include this feature. This feature adds the ACD CompuCALL application
service capabilities by adding Treatment Request and Response Messaging capabilities.

Command Changes

NONE

Data Schema Changes

This feature changes table SCAISSRV and table SCAIPROF. Call Treatments adds a new
office parameter MAX_NUM_ECM_TPQC in table OFCOPT and modifies datafill tables
SCAISSRV and SCAIPROF.

Table SCAISSRV Modified

Table SCAISSRV adds the new message set Third-Party Queue Control (category
TPQC) to support the ability to subscribe to the new mandatory message dv-Give-

Treatment and dv-Treatment-Complete-U (functions GIVETRMT and TRMTCOMP). An example follows:

```
SUBSERV
                                                                       SPROFILE
----------------------------------------------------------------------

                        TPQC10$
TPQC   (GIVETRMT Y Y Y) (TRMTCOMP Y Y Y) $

                        DNQUERY07$
DNQUERY (DNQUERY) $

                        CALLINIT07$
CALLINIT (MAKECALL N N) $
```

Table SCAIPROF Modified

The write verification of table SCAIPROF is being changed to include maintaining the link-in use levels set out in CompuCALL Pricing Control for the new subservices added to table SCAISSRV that are datafilled in this table.

Log Message Changes

NONE

OM Changes

Call Treatments modifies OM group SCAISRV2 and adds the new OM group SCAISRV3. Every time the switch sends out a response message related to the new services provided by this feature on the Switch Computer Application Interface (SCAI), the appropriate register is pegged.

Modified SCAISRV2 OM Group

Call Treatments adds the following registers to OM group SCAISRV2:

- TRTCOMPU
    - counts the number of times the switch sends a dv-Treatment-Complete-U message to the host computer

- TRTRANRR
    - counts the number of times the switch sends a RETURN RESULT reply to the host computer in response to the dv-Give-Treatment message requesting RAN

- TRTRANRE
    - counts the number of times the switch sends a RETURN ERROR reply to the host computer in response to the dv-Give-Treatment message requesting RAN

- TRTMUSRR
    - counts the number of times the switch sends a RETURN RESULT reply to the host computer in response to the dv-Give-Treatment message requesting Music

- TRTMUSRE
  - counts the number of times the switch sends a RETURN ERROR reply to the host computer in response to the dv-Give-Treatment message requesting Music

New SCAISRV3 Group

Call Treatments adds the following registers to the new OM group SCAISRV3:

- TRTRNGRR
  - counts the number of times the switch sends a RETURN RESULT reply to the host computer in response to the dv-Give-Treatment message requesting Ringback

- TRTRNGRE
  - counts the number of times the switch sends a RETURN ERROR reply to the host computer in response to the dv-Give-Treatment message requesting Ringback

- TRTSILRR
  - counts the number of times the switch sends a RETURN RESULT reply to the host computer in response to the dv-Give-Treatment message requesting Silence

- TRTSILRE
  - counts the number of times the switch sends a RETURN ERROR reply to the host computer in response to the dv-Give-Treatment message requesting Silence

- TRTDSCRR
  - counts the number of times the switch sends a RETURN RESULT reply to the host computer in response to the dv-Give-Treatment message requesting Disconnect

- TRTDSCRE
  - counts the number of times the switch sends a RETURN ERROR reply to the host computer in response to the dv-Give-Treatment message requesting Disconnect

- TRTBUSRR
  - counts the number of times the switch sends a RETURN RESULT reply to the host computer in response to the dv-Give-Treatment message requesting Busy

- TRTBUSRE
  - counts the number of times the switch sends a RETURN ERROR reply to the host computer in response to the dv-Give-Treatment message requesting Busy

- TRTFBYRR
  - counts the number of times the switch sends a RETURN RESULT reply to the host computer in response to the dv-Give-Treatment message requesting Fastbusy

- TRTFBYRE
  - counts the number of times the switch sends a RETURN ERROR reply to the host computer in response to the dv-Give-Treatment message requesting Fastbusy

- TRTMSGRE
  - counts the number of times the switch sends a RETURN Error reply to the host computer in response to any dv-Give-Treatment message with validation errors

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

Music On Hold applies only to an agent's set and must be assigned to a key on that set. No interaction occurs between the currently available Music On Hold feature and the new messaging capabilities.

Treatment requests for Busy and Fastbusy can be sent by the host computer to force a call that is located in an ACD incoming or overflow call queue to be routed only if the datafill in table ACDGRP indicates that the incoming or overflow call queue needs to follow those instructions. Refer to feature AU2339 in the *SW-LATER* section of this manual on information on table ACDGRP datafill to indicate whether or not switch datafill instructions have to be followed.

Restrictions/Limitations

The following limitations and restrictions apply to Call Treatments:
- This feature does not support network ACD (NACD) groups within the same call center that are spread among different switches.
- Treatment requests do not work on any other ACD resource.
- This capability is limited to applying treatment to a call in an ACD incoming or overflow call queue.
- Option AUDIO in table ACDGRP must be datafilled to enable the RAN and Music audio treatment requests.

LAYER   **SW-LATER**
TELECOM 08

APPLICATION

ACTID	**FEATURE TITLE**	PRL
AF6231	CM PRL Support for AX74 Configuration	

Description

This feature, Computing Module (CM) Peripheral and Remote Loader (PRL) Support for AX74 Configuration, gives the AX74 peripheral processor the ability to use two features of the PRL:

- Copying files from a CM storage device to the PRL card
- Reloading the XPM from the PRL card

The changes fall into three main categories: table control, PRL access, and error message update.

- The table control changes allow AX74 and PRL to co-exist in XPM inventory tables.
- The PRL access changes allow AX74-controlled XPMs to perform local loading (booting from the PRL card) and also allow load files to be copied from a storage device on the CM to the PRL card. The changes do NOT allow imaging to take place on AX74 controlled peripherals.
- The error message updates involve changing some error messages to reflect the fact that AX74 now works with PRL.

Command Changes

This feature alters the error messages output to the user when attempts are made to use PRL with either of the NT6X45 or NTAX74 peripheral processors to reflect that PRL now works with the NTAX74.

Two commands from NPMDIR directory are used in this feature: LOADPM and XPMSTOR.

LOADPM Command

LOADPM is an existing command used to apply software (and XPM firmware) loads to a variety of PM types, including XPMs, Series 1 PMs, such as an Maintenance Trunk Module, and to subtending nodes such as Line Concentrating Modules.

This command uses the parameters and the capabilities provided via the NT7X05 local storage device. Having stored a loadfile on the NT7X05, the unit may be placed in ManBusy and the local file can be loaded into the XPM in a much shorter timeframe than has been possible to load from the CM. This has the benefit of reducing the simplex time required for reloading of a unit. The LOADPM command now supports loading the XPM from the local loadfile to the RAM.

Parameters used are: DEVICE, SOURCE, FORCE, NOWAIT, and ALL.

The craftsperson response to either of the following error messages:

```
Local Loading requires NT7X05 and either MX77 or AX74
Both units must have NT7X05 and either MX77 or AX74.
```

is to datafill the tables and/or have the cards inserted into the XPM.

Sample commands are:
- LOADPM UNIT 0 LOCAL LOADFILE
- LOADPM PM LOCAL LOADFILE

XPMSTOR Command

The XPMSTOR command is a command with a device selection parameter and three optional parameters. This command provides loadfile transfer functionality specific to the in-service NT7X05AA card. File transferal can only be done when the unit is in-service, in contrast to many existing maintenance capabilities which require a busy unit.

The PRL MAP progress message associated with the XPMSTOR command is:

```
The Peripheral Loader is performing a loadfile transfer to the NT7X05 card.
```

In addition, new potential responses are:
- XPMStor passed
- XPMStor failed
- XPMStor in progress

This simply indicates that the XPM is actively transferring files to the NT7X05. While the loadfile is being dumped, the loadfile is not usable.

If Peripheral Loader file transferal has been requested for the PM and the configuration does not support this capability, either from the processor cards being used or from lack of the NT7X05 cards, the craftsperson response to the following message:

```
XPMStor mode requires NT7X05 and either MX77 or AX74
```

is to datafill the cards and/or have them inserted within the XPM. The active unit must be in-service.

Sample commands are:
- XPMSTOR ACTIVE NOWAIT
- XPMSTOR PM

Data Schema Changes

This feature removes the mutual exclusion rules between AX74 and PRL in tables LTCINV and RCCINV and either of the following changes to take place in table LTCINV:

- Allow a 7X05 to be added to a tuple that already contains an AX74 entry
- Allow adding an AX74 to a tuple that contains a 7X05 entry

Feature AF4605, which is considered a part of this feature, provides the same functionality for table RCCINV.

Table RCCINV Changes

The OPTCARD field has changed in this table. One entry is required in the OPTCARD list for the per-unit appearance of the NT7X05AA in the XPM frame. An entry consists of two subfields which includes the PEC code and the provisioned slot number. Note that the PEC and the slot number are separate subfields.

The 7X05 card is supported within the same option slots in the AX74 as in the MX77, which are:

- Host: 13, 15, 16, 17, 19
- Remote: 13
- CPM: 5, 7, 21, 23

Example

```
LTCNAME
              ADNUM  FRTYPE FRNO SHPOS  FLOOR  ROW FRPOS  EQPEC      LOAD
                                                                        EXECTAB
                                                                        CSLNKTAB
                                                                        OPTCARD
      TONESET          PECS6X45
                                  E2LOAD
                                                                        OPTATTR
      PEC6X40                                        EXTINFO
   ------------------------------------------------------------------------

LTC   1
         1003     LGE    0    51      1    G    4 6X02AA   ECL
          (POTS POTSEX) (KEYSET KSETEX) (ABTRK   DTCEX)$
  (0 14 1 0) (0 14 1 1) (0 14 1 2) (0 14 1 3) (0 14 1 4) (0 14 1 5)
  (0 14 1 6) (0 14 1 7) (0 14 1 8) (0 14 1 9) (0 14 1 10) (0 14 1 11)
  (0 14 1 12) (0 14 1 13) (0 14 1 14) (0 14 1 15) $
          (UTR16) (MSGMX76 HOST) (CMR13 CMR07A) (NT7X05AA 17)$
      NORTHAM NTAX74AA
                   UPFWNJ02
                                                                           $
      6X40CA                                          N
```

The inclusion or exclusion of the NT7X05AA and/or NTAX74AA PEC code and corresponding slot number entry in the OPTCARD list is the only craftsperson action needed to invoke or disable interaction with the peripheral loader capabilities provided by the card.

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

Engineering hardware entities involved with this feature are the:
- NTAX74AA Peripheral Processor card
- NT7X05AA Peripheral and Remote Loader card

The essential configuration covered by this feature is that of a PRL card configured in an XPM unit that is controlled by an AX74 processor.

Alarms

NONE

Interactions

This feature needs the following features to function properly:
- AF6405
- AF6373

This feature affects the PM loading step of system recovery because of the differences between the AX74 use of PRL and the MX77 use of PRL.

Since the AX74 does not support the imaging function of PRL, only two options exist for loading during system recovery:
- If the PM does not support imaging or a valid image does not exist on the PRL card, the craftsperson needs to load the PM with the load file from the PRL card and then patch it, if necessary.
- If no valid image or load files exist on the PRL card, the craftsperson needs to load the PM with the load file stored on SLM disk and then patch it, if necessary.

One other impact to consider is that, if this feature is not implemented, recovery time increases because any AX74-based XPMs are not able to use the PRL card.

Restrictions/Limitations

Due to concerns about the sizes of some of the AX74 loads versus the limited capacity of the PRL card, PM imaging is not supported by the AX74.

LAYER   **SW-LATER**

TELECOM 08

                                                                       APPLICATION

ACTID   **FEATURE TITLE**   SDM

AF6912   SDM Billing Enhancements

Description

Supernode Data Manager (SDM) billing enhancements include:

- Supporting multiple streams
- Support for XACore processes
- Line up MAP displays
- SDMBIL state behavior

This feature enhances the Computing Module (CM) side of the SDM Billing Application which was first introduced for TL07. The SDM Billing Application allows for the storage of billing data and provides an interface to download the stored data to the Revenue Accounting Offices (RAOs). In the DMS the data server functionalities of the Automatic Message Accounting Data Networking System (AMADNS) are implemented in the SDM. The CM provides the SDM Billing Application in the SDM with the formatted (or at some later time unformatted) billing data.

Enhancements to the functionality include:

- Enhanced communications and messaging between CM and SDM
- Stricter state transition checking and Introduction of "Remote Busy" (RBSY) state
- Improved log and alarm functionality and more detailed log information
- Improved performance of Buffer System
- Improved Backup/Recovery over restarts and swacts
- Improved MAP screen user interface

Command Changes

A new system state of RBSY is introduced by this feature. This state is entered on the CM whenever the SDM shuts off receiving of billing data.

Modified commands are: POST, CONF_, QUERY, and SDMBCTRL.

POST Command Changes

This feature removes the restriction of only allowing a craftsperson to post a stream that is BCFMT (i.e. AMA stream). The only advisable action is to check on the state of the billing application on the SDM and take appropriate action on the SDM.The users can post any stream that is defined in table SDMBILL.

A posted stream can display the new state RBSY. RBSY is the state to which a stream transitions if its associated client requests that the stream stop sending buffers. The client in the SDM billing application is the SDM Communication client. The stream remains in RBSY state until the client indicates its readiness to start receiving buffers again, or the stream goes through a transition of its own where it can no longer assume that the client is not ready to receive data (i.e. restart, etc.).

CONF_ Command Changes

Modifications to errors and warnings for the CONF_ command are:
- New warning for changing volumes configured
- New error for entering the same volume name twice
- Low space errors changed to warnings

Changing Volumes Configured Warning

This feature introduces a new warning during the CONF command. If the user changes the volumes configured, a warning explains that a potential for files becoming unrecoverable exists:

```
WARNING: You are removing at least one volume from the current configuration for
AMA. If the system continues to run successfully, any files on unconfigured volumes
will be recovered.  However, if errors occur, files on an unconfigured volume might
become unrecoverable. Proceed?
```

The user answers Y or Yes to complete the volume configuration change. The user answers N or No to cancel the volume configuration change.

The errors that can currently occur include a reload restart and the file information becoming unusable (specifically the internal system file identifier).

Ideally, the user needs to cancel the configuration request and ensure that no backup files exist on the volumes that are being unconfigured. If no backup files exist, the user can ignore this warning.

Entering the Same Volume Name Twice Error

In addition, this activity introduces a new error. The volumes can no longer be the same name. If the same name is entered for both volumes, the following error is produced.

```
ERROR: Volume names cannot be the same. If you intended only to enter the single
volume, enter a $ for one of the volumes.
```

The user has to reenter the command if this error is produced making an appropriate adjustment.

Low Space Errors Changed to Warnings

The following warnings were previously errors. The user is left to decide whether to cancel the configuration request or not.

```
WARNING, Volume1 has no space or is out of service
WARNING, Volume1 has less than 4Mbyte of free space
WARNING, Volume2 has no space or is out of service
WARNING, Volume2 has less than 4Mbyte of free space
```

Parameter Change

The FORCE optional parameter has been removed. The user is no longer allowed to have no volumes configured for an active stream.

QUERY Command Changes

This feature modified the responses that the three subsystems (Buffer, Backup and Recovery, and SDM Communication) provide. Each of the subsystems and their responses are listed below. This list contains all the possible responses.

Buffer System
- Buffer System is in service.
- Buffer System is out of service pending.
- Buffer System is out of service.
- Buffer System is attempting to start a backup.
- Buffer System is manually busy.
- Buffer System is remotely busy.

Backup and Recovery System
- Backup System is in service.
- Backup System is out of service.
- Backup System is out of service pending.
- Backup System is currently active.
- Backup System is recovering files.
- Backup System is in an unknown state.

SDM Communication System
- SDM Communication is out of service.
- SDM Communication Port is available.
- SDM Communication Port not available.
- SDM Communication is attempting to get a port.
- SDM Communication is manually busy.
- SDM Communication is in an unknown state.

SDMBCNTRL Command Changes

New errors and warnings are introduced for the SDMBCNTRL command:
*   New error when attempting to change a stream from ON to BOTH or OFF
*   New error when activating a stream with no backup volumes configured
*   New warning when a stream is turned on

Error When Attempting to Change a Stream from ON to BOTH or OFF

This feature introduces a new error to the SDMBCTRL command. Once a stream is successfully turned ON, it cannot be changed to BOTH or OFF. In other words, once a stream is ON, the following error message is given in response to SDMBCTRL <stream> OFF or SDMBCTRL <stream> BOTH.

```
You are not allowed to change a stream from ON. Once a stream is ON, it cannot be
changed to OFF or BOTH.
```

The SDMBCTRL command is not allowed.

Error When Activating a Stream With No Backup Volumes Configured

This feature adds a new warning when a stream is activated (i.e. ON or BOTH) and no backup volumes are currently configured for the stream. For example, the warning given when the stream is turned ON and no backup volumes have been configured reads:

```
WARNING: You are trying to activate SDM Billing for AMA without having backup
volumes configured! This might result in loosing billing data if a problem with
the SDM occurs!
```

Ideally, the user cancels the activation request and configures backup volumes for the stream. After backup volumes are configured, the ON or BOTH activation attempt can be repeated and the warning is not given.

Warning When Turning a Stream ON

This feature adds a new warning when a stream is turned ON. For example, the warning given when the stream is turned ON and no backup volumes have been configured reads:

```
WARNING: You will not be able to turn this stream to OFF or BOTH once it has been
turned ON!
```

Data Schema Changes

Table SDMBILL is extended to include the current system status of a stream. This feature adds a new field called SDMBSTATUS. This is a four character vector that contains the current status of the stream: Insv, ManB, Bkup, Rcvy, RBSY, Off, OffP, or SysB. This field is updated as the status of the stream is changed by the application.

Table SDMBILL is automatically datafilled. Currently, it is datafilled as Table CRSFMT is datafilled. A craftsperson is not allowed to edit the content of this table.

Log Message Changes

The SDMB100 and SDMB200 log categories defined by feature AF6525 were deleted and replaced by a more refined set of logs. All logs are of type SDMB.

The following new SDM Billing log categories are defined for logs generated on the CM side. The category range for CM generated logs is from x00 to x49.

Backup Logs

- SDMB320: Backup related problem with SDM Billing that affects more than one file

```
***SDMB320 AUG19 17:51:24 1234 TBL SDM BILLING BACKUP
STREAM= AMA: NO BACKUP AVAILABLE
```

- SDMB321: Backup related problem with SDM Billing that affects a specific file

```
***SDMB321 AUG19 17:51:24 1234 FLT SDM BILLING BACKUP
STREAM= AMA: WAS UNABLE TO CREATE FILE FOR BACKUP
VOLUME= S00DAMA FILE= BACK12AMA_01
```

- SDMB620: Backup related problem with SDM Billing resolved

```
SDMB620 AUG19 17:51:24 1234 INFO SDM BILLING BACKUP
STREAM= AMA: BACKUP ALARM CLEARED
```

- SDMB621: New backup file started

```
SDMB621 AUG19 17:51:24 1234 INFO SDM BILLING BACKUP
STREAM= AMA: BACKUP STARTED TO RECORD TO
VOLUME= S00DAMA FILE= BACK12AMA_01
```

- SDMB820: Backup hits threshold

```
SDMB820 AUG19 17:51:24 1234 THR SDM BILLING BACKUP
STREAM= AMA: 30% OR LESS FREE BACKUP SPACE ON
VOLUME1= S00DAMA AND VOLUME2= $
```

Communications Logs

- SDMB310: Communication related problem with SDM Billing

```
***SDMB310 AUG19 17:51:24 1234 FLT SDM BILLING COMMS
STREAM= ALL: COMMUNICATION TO SDM CANNOT BE
ESTABLISHED
```

- SDMB610: Communication related problem with SDM Billing resolved

```
SDMB610 AUG19 17:51:24 1234 INFO SDM BILLING COMMS
STREAM= ALL: COMMUNICATION TO SDM ESTABLISHED
```

Configuration Logs

- SDMB330: Invalid attempt to configure SDM Billing

```
*SDMB330 AUG19 17:51:24 1234 FAIL SDM BILLING CONFIG
STREAM= AMA: CONFIGURATION FAILED
CONFIGURATION= AMA s12dnew $
```

- SDMB530: Successful configuration change for SDM Billing

```
SDMB530 AUG19 17:51:24 1234 INFO SDM BILLING CONFIG
STREAM= AMA: CONFIGURATION CHANGE
OLD= AMA ON       NEW= AMA BOTH
```

- SDMB531: Successful configuration change for SDM Billing

```
SDMB531 AUG19 17:51:24 1234 INFO SDM BILLING CONFIG
STREAM= AMA: CONFIGURATION CHANGE
NEW VOLUME1= S00DLOAD    NEW VOLUME2= S00DTEST
OLD  VOLUME1= S01DTEST    OLD  VOLUME2= $
```

File Recovery Logs

- SDMB625: Recovery file started

```
SDMB625 AUG19 17:51:24 1234 INFO SDM BILLING BACKUP
STREAM= AMA: RECOVERY STARTED FOR
VOLUME= S00DAMA FILE= BACK12AMA_01
```

Process Death Logs

- SDMB316: SDM Billing related process was manually killed

```
**SDMB316 AUG19 17:51:24 1234 FLT SDM BILLING PROC DEATH
STREAM= ALL: PROCESS BUFRECI WAS KILLED
```

Software Error Logs

- SDMB315: Software related problem with SDM Billing that cannot be further specified

```
**SDMB315 AUG19 17:51:24 1234 TBL SDM BILLING SOFT ERROR
STREAM= ALL: FAILED TO START RECOVERY
```

- SDMB615: Typical information log for the overall SDM Billing system produced after resolution of software related error condition

```
SDMB615 AUG19 17:51:24 1234 INFO SDM BILLING SOFT ERROR
STREAM= ALL: SOFTWARE ALARM CLEARED
```

Summary Logs

- SDMB400: Generated for every active stream every hour; lists all the active alarms currently raised

```
SDMB400 AUG19 17:51:24 1234 SUMM SDM BILLING SUMMARY
STREAM= ALL: THE FOLLOWING ALARMS ARE ACTIVE
***ALL: NOCOM: COMMUNICATION TO SDM CAN'T BE ESTABLISH
**AMA: NOVOL: NO BACKUP VOLUMES CONFIGURED
```

System Logs

- SDMB300: Memory allocation failure

```
**SDMB300 AUG19 17:51:24 1234 FLT SDM BILLING SYSTEM
STREAM= AMA: RECOVERY IS UNABLE TO GET BUFFERS
```

- SDMB600: Typical information log for the overall SDM Billing system

```
SDMB600 AUG19 17:51:24 1234 INFO SDM BILLING SYSTEM
STREAM= AMA: RECOVERY ALARM CLEARED
```

The following new log categories are defined for logs generated on the SDM side. The category range for SDM generated logs is from x50 to x99.

Communications Logs

- SDMB360

```
***SDMB360 AUG19 17:51:24 1234 TBL SDM BILLING COMMS
...
```

- SDMB660

```
SDMB660 AUG19 17:51:24 1234 INFO SDM BILLING COMMS
...
```

Configuration Logs

- SDMB380

```
*SDMB380 AUG19 17:51:24 1234 FAIL SDM BILLING CONFIG
...
```

- SDMB680

```
SDMB680 AUG19 17:51:24 1234 INFO SDM BILLING CONFIG
...
```

Control Logs

- SDMB350

```
**SDMB350 AUG19 17:51:24 1234 FLT SDM BILLING CONTROL
...
```

- SDMB550

```
SDMB550 AUG19 17:51:24 1234 INFO SDM BILLING CONTROL
...
```

- SDMB650

```
SDMB650 AUG19 17:51:24 1234 INFO SDM BILLING CONTROL
...
```

Disk Logs

- SDMB355

```
***SDMB355 AUG19 17:51:24 1234 TBL SDM BILLING DISK
...
```

- SDMB655

```
SDMB655 AUG19 17:51:24 1234 INFO SDM BILLING DISK
...
```

- SDMB855

```
SDMB855 AUG19 17:51:24 1234 THR SDM BILLING DISK
...
```

File Transfer Logs

- SDMB375

```
* SDMB375 AUG19 17:51:24 1234 TBL SDM BILLING FILE TRANSFER
...
```

- SDMB675

```
SDMB675 AUG19 17:51:24 1234 INFO SDM BILLING FILE TRANSFER
...
```

Management Information Base (MIB) Logs

- SDMB367

```
*SDMB367 AUG19 17:51:24 1234 TBL SDM BILLING MIB
...
```

- SDMB667

```
SDMB667 AUG19 17:51:24 1234 INFO SDM BILLING MIB
...
```

Software Error Logs

- SDMB365

```
**SDMB365 AUG19 17:51:24 1234 TBL SDM BILLING SOFT ERROR
...
```

- SDMB665

```
SDMB665 AUG19 17:51:24 1234 INFO SDM BILLING SOFT ERROR
...
```

Stream Logs

- SDMB370

```
***SDMB370 AUG19 17:51:24 1234 TBL SDM BILLING STREAM
...
```

- SDMB570

```
SDMB570 AUG19 17:51:24 1234 INFO SDM BILLING STREAM
...
```

- SDMB670

```
SDMB670 AUG19 17:51:24 1234 INFO SDM BILLING STREAM
...
```

OM Changes

NONE

Service Order

NONE

AMA Changes

The SDM Billing Application supports AMADNS as described in Bellcore's GR-1343.

Notes

Needed engineering hardware for support of the Fault Tolerant version of the SDM is:

- CM
- MS with DS512 connectivity to SDM
- SDM with DS512 card directly attached to the MS

Alarms

The feature modifies CM generated alarms, some updated from feature AF6525 in TELECOM 07.

Critical Alarms

Critical alarms include: NOCOM, NOBAK, BAK90, NOFL, NOVOL, NOCLNT, and NOSTOR.

- NOCOM: No SDM communication

```
SDM Communication cannot be established
```

- NOBAK: Less than 1 percent of free space on configured disk volumes, or no volumes configured

  ```
  ERROR, no space on Backup volumes
  ```

- BAK90: Less than 10 percent of free space on configured disk volumes

  ```
  WARNING, less than 10% free space for Backup
  ```

- NOFL: On startup of the backup system the file system was unable to create a file for the Backup System.

  ```
  Backup System was unable to create file
  ```

- NOVOL: On startup of the backup system the file system was unable to find a volume to create file on, possibly because all configured volumes are out of service or have insufficient space.

  ```
  Backup System was unable to find volume
  ```

- NOCLNT: No client buffers could be accessed. This is a critical software error.

  ```
  No destination registered to receive buffers
  ```

- NOSTOR: No memory storage is available for the buffers. This is a critical software error.

  ```
  No memory available to buffer records
  ```

Major Alarms

Major alarms are: BAK70, NOREC, and BAKUP.

- BAK70: Less than 30 percent of free space on configured disk volumes

  ```
  WARNING, less than 30% free space for Backup
  ```

- NOREC: Failed to create a recovery stream; this is a major software error.

  ```
  Recovery failed to startup
  ```

- BAKUP: System is sending billing data to backup for more than 10 minutes.

  ```
  Backup time exceeds 10 minutes
  ```

Minor Alarm

The minor alarm BAK50 displays when less than 50 percent of free space is available on configured disk volumes:

```
WARNING, less than 50% free space for Backup
```

Interactions

This feature enhances the existing SDM Billing Application on the CM as described by the TL07 features:

- AF6522 SDM Billing Communication Framework
- AF6523 Billing Buffering System to Support SDM Billing Platform
- AF6524 Auxiliary Storage System
- AF6525 AMADNS OAM&P

Software development on the SDM side of SDM Billing is affected by this feature because it uses the communication interface for data receiving as well as for sending of log and alarm messages.

Restrictions/Limitations

NONE

LAYER   **SW-LATER**
TELECOM 08

                                                                             APPLICATION
ACTID   **FEATURE TITLE**   PRL
AF6916   Support for New XPM Processor Power PC

Description

This feature supports all CM aspects of the new Power PC (PPC) SX05 processor card with on-board Peripheral Recovery Loader (PRL), providing table control, commands, and logs.

Command Changes

While the following commands themselves have not changed, some responses are updated:
- QueryPM
- QueryPM cntrs
- QueryPM flt
- QueryPM files

QueryPM Command

The exact name of the SX05 EEPRom load file is provided by the loadbuilders. A suggested name is SPPCxxnn, where xxnn is the version code, starting at SA01. A sample display follows:

```
QueryPM
PM Type: LTC  PM No.: 2  PM Int. No.: 0  Node_No.: 11
PMs Equipped: 18  Loadname: ECL03AQ1  EEPRom Load: SPPCSA01
WARM SWACT is supported but not possible: node redundancy lost.
LTC 2 is included in the REX schedule.
REX on LTC 2 has not been performed.
Node Status: {MAN_BUSY, FALSE}
Unit 0 Inact, Status: {MAN_BUSY, FALSE}
Unit 1   Act, Status: {MAN_BUSY, FALSE}
Site Flr RPos  Bay_id   Shf  Description    Slot     EqPEC
HOST  02  B02  LTE   02  18  LTC : 002               6X02AD
```

QueryPM cntrs Command

The name of the EEPROM load in the response to the "QueryPM cntrs" command includes **only** the version code, starting at SA01. The processor's name is not included in the EEPROM load name. Both the executable and the loadable EEPRom loads are displayed in response to the QueryPM cntrs command even when the unit is at ROM level. The new value SX05AA is displayed next to the UP: title when the PM is equipped with this new card. An example display follows:

```
QueryPM  cntrs
Unsolicited MSG limit = 250, Unit 0 = 0, Unit 1 = 0
Unit 0:
QueryPM CNTRS command may take up to 2 minutes
Unit at ROM level
EEPRom Load: Loadable: SA01, Executable: SA01
```

```
UP:SX05AA
IP:BX01
Unit 1:
Ram Load: ELI07BG
EPRom Version: AC01
EEPRom Load: Loadable: SA01, Executable: SA01
UP:SX05AA
IP:BX01
```

QueryPM flt Command

Strings which described non-critical faults related to the NT7X05 card are updated and now refer to the flash memory. The modified strings are:
- Flash fault detected
- Unusable or missing local image file on flash
- Unusable or missing load files on flash

QueryPM files Command

The internal flash memory of SX05 can store more than one load file for the UP processor and more than one load file for the CMR processor, currently two files of each of these file types. If the load files on the flash memory are bad or missing, the response is:
```
Unusable load file or file not found. Reload flash.
```

Other responses are not changed. A command display follows:

```
QueryPM files
Unit 0:
Flash Load  File: ECL07BI
Flash Load  File: ECL07BA
Flash Image File: ECL07BI
Flash CMR File: CMR06A
Flash CMR File: CMR07A
Unit 1:
Flash Load  File: ECL07BI
Flash Load  File: ECL07BA
Flash Image File: ECL07BI
Flash CMR File: CMR06A
Flash CMR File: CMR07A
```

Data Schema Changes

Tables modified by this feature are:
- LTCINV
- RCCINV

Table Control Changes

Similar changes applying to both tables include:
- PECS6X45 field renamed to PROCPEC
- SX05 card datafilled in the PROCPEC field in table LTCINV for LTC, LTCI and ICP and in table RCCINV for RCC2, and not allowed in other peripherals
- PRL packlet for each unit datafilled in the PROCPEC field in table LTCINV for LTC, LTCI and ICP and in table RCCINV for RCC2; datafilled for SX05AA only

- New or modified error messages displayed in cases of invalid datafill
- Upgrade from 6X45 (MP/SP) directly to SX05 not allowed
- Downgrade from SX05 directly to 6X45 (MP/SP) not allowed
- Datafilling SX05 processor in one unit not allowed if the mate unit datafilled with 6X45
- Some configurations of SX05-based peripherals not allowed

Following are the new or modified error messages displayed for invalid configurations:
- For SX05 on peripherals other than LTC, LTCI or ICP in table LTCINV:

```
The SX05 processor is not allowed on this PM.
```

- For SX05 on peripherals other than RCC2 (e.g.: RCC) in table RCCINV:

```
SX05AA IS NOT VALID FOR RCC.
```

- For upgrade from 6X45 to SX05:

```
Upgrade from 6X45 to SX05 is not allowed.
```

- For downgrade from SX05 to 6X45:

```
Downgrade from SX05 to 6X45 is not allowed.
```

- When mate unit is datafilled with 6X45:

```
SX05 is not allowed in combination with 6X45.
```

- When datafilling NT7X05AA as optcard while an SX05 processor is datafilled in both units:

```
SX05 does not support NT7X05AA.
```

PROCPEC Field

A new added value in PROCPEC field is SX05AA. SX05AA must be datafilled with a PACKLET value. A PACKLET value cannot be datafilled for other processors. The valid PACKLET values are:
- $ for filler packlet (no functionality)
- SX06BA for 32 Mb PRL memory packlet
- SX06CA for 64 Mb PRL memory packlet
- SX06DA for 128 Mb PRL memory packlet

An example of a tuple in LTCINV is:

```
LTCNAME
          ADNUM  FRTYPE FRNO SHPOS  FLOOR  ROW  FRPOS  EQPEC     LOAD
                                                                       EXECTAB
                                                                       CSLNKTAB
                                                                       OPTCARD
       TONESET              PROCPEC
                                  E2LOAD
                                                                       OPTATTR
       PEC6X40                                        EXTINFO
--------------------------------------------------------------------------
     LTC   2
             1    LTE    2    18     2    B    2 6X02AD ECL03AQ1
        (POTS POTSEX) (KEYSET KSETEX) (ABTRK  DTCEX)$
 (0 32) (0 33) (0 34) (0 35) (0 36) (0 37) (0 38) (0 39) (0 40) (0 41)
 (0 42) (0 43) (0 44) (0 45) (0 46) (0 47) $
          (UTR15) (UTR16) (MSGMX76 HOST) (CMR13 CMR33AI5) $
     NORTHAM     SX05AA SX06BA SX05AA SX06BA
                              SPPCSA01
                                                                       $
       6X40AC                                        N
```

An equivalent sample tuple in RCCINV is:

```
RCCNAME
          ADNUM  FRTYPE FRNO SHPOS  FLOOR  ROW  FRPOS  EQPEC     LOAD
                                                                       EXECTAB
          CSPM
                                                                       CSLNKTAB
ESA INTRASW ADDLMSGL
                                                                       OPTCARD
  TONESET
                          PROCPEC
                          E2LOAD                            EXTINFO
--------------------------------------------------------------------------
REM1       RCC2   6
             7    CRSC   6    18     4    A    23 MX85AA  CRI08BC
 (POTS POTSEX) (KEYSET KSETEX) (ABTRK DTCEX) (RMM_TERM RSMEX)
 (ESALINES ESAEX) $
     LTC   11
 (0) (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) $
  N       Y      N
     (UTR6) (MSGMX76  REM DMSX) (ISP16)$
 NORTHAM
SX05AA SX06BA SX05AA SX06BA
                     SPPCSA01                           N
```

Log Message Changes

Logs PM181 and PM128 have been changed:

PM181

The two PM181 logs that have been modified are:
- E2loader log
- XPM-Imager failure log

E2loader Log

The E2loader log that indicates the success/failure of the SX05 EEPROM loading process no longer indicates the number of rewrite/reerase trials. Following is an example:

```
CPM4B PM181 MAY21 06:28:07 3369 INFO LTC 0 Unit 0
                Node: ManB, Unit0      : ManB, Unit1       : ManB
                ERASE EEPROM # 0 COMPLETED SUCCESSFULLY.
                # OF REERASES : 185   #  OF REWRITES : 0
```

XPM-Imager Failure Log

The SX05 processor card contains a flash memory on board. If this card is used, XPM images are dumped into the internal flash memory of the SX05 processor card and not to the NT7X05 flash card (which is not allowed in combination with SX05). The reference to the NT7X05 card is updated. An example follows:

```
CPM1A             PM181 FEB09 06:28:07 3369 INFO LTC 0 Unit 0
                  Node: ManB, Unit0      : ManB, Unit1       : ManB
                  Unit 0 XPM image dump failed.
                  Reason: NT7X05 Card Failure.
```

PM128

The logs referred to the NT7X05 card are updated and now refer to the flash memory on board the new SX05 card. This internal flash memory is responsible for the PRL function (the 7X05 card is not installed in combination with the SX05 card). The logs which referred to the 7X05 card are therefore updated and refer to the FLASH memory instead. The updated fault strings are:

- FLASH card flt
- No flash files

An example follows:

```
CPM1A   *   PM128 MAY22 02:44:05 5700 TBL  ISTB LTC  3
Node       : ISTb (Inact OOS, Unit ISTb, PSLink OOS)
Unit0 Act: ISTb (No flash files)
Unit1 Inact: ManB
```

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

Engineering hardware requirements are:
- SX05 card inserted in UP card slot
- SX05AA slot for optional packlet
- Optional PRL memory packlets defined as follows:

— SX06AA: filler (no functionality)
— SX06BA: 32 Mb PRL memory packlet
— SX06CA: 64 Mb PRL memory packlet
— SX06DA: 128 Mb PRL memory packlet

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

NONE

LAYER   **SW-LATER**
TELECOM 08

                                             APPLICATION
ACTID   **FEATURE TITLE**   900FP
AJ4375   900 Fraud Prevention

Description

The 900 Fraud Prevention (900FP) feature allows the prevention of a type of 1-900 fraud, which is perpetrated by directly dialing a client ten-digit directory number (DN) instead of the 900 number associated with it.

In the Canadian network, the 900 numbers are translated to 800/888 numbers prior to being translated into a real ten-digit DN. Through the related feature AJ4374, the end user is prevented from directly dialing the 800/888 number associated with the 900 number through datafill in the originating office.

This feature enhances the data schema for feature AJ4374 in the **LN-LATER** section of this manual. It adds the new value B900 into range of value for the TREATMT field of subtable TREAT in table TMTCNTL.

Command Changes

NONE

Data Schema Changes

Table TMTCNTL (Treatment Control) is a routing table. Its subtable lists all fixed treatment names and defines their dispositions. These dispositions can be tones or announcements. In the DMS, a treatment can be described as an intercept condition. Any time a call goes to treatment, the switch indexes into table TMTCNTL to see how the treatment has been defined.

Subtable TREAT contains a list of all treatments except Undefined Treatment (UNDT). This subtable is accessed when calls originate from a line and are sent to treatment. The key field TREATMT contains a list of treatment names.

The new B900 value is introduced in the range of value for the TREATMT field of subtable TREAT of table TMTCNTL.

Following is an example of B900 treatment datafill for a line:

```
> table tmtcntl
TABLE: TMTCNTL
pos lnt;sub treat
> lis all
TOP
TREATMT LOG             FSTRTE
-------------------------------
B900    Y    S          BLDN
```

Following is an example of B900 treatment datafill for a trunk:

```
> table tmtcntl
TABLE: TMTCNTL
pos PXTRKGRP;sub treat
> lis all
TOP
TREATMT LOG           FSTRTE
----------------------------
B900   Y    S         BLDN
```

Log Message Changes

NONE

OM Changes

NONE

Service Order

The new SERVORD DN CLNT900 option is available to this feature through feature AF4374. It is added to the existing field OPTLIST of table DNFEAT. The AINDN option cannot be assigned in conjunction with the CLNT900 option.

The CLNT900 line option can be added to the following agents:

- 1FR/RES (1FR/POTS line converted to RES)
- 1MR/RES (1MR/POTS line converted to RES)
- ZMD/RES (ZMD/POTS line converted to RES)
- ZMZPA/RES (ZMZPA/POTS line converted to RES)
- IBN (analog business sets)
- PSET (key business sets)
- PBX and PBM lines
- INWATS lines
- Hunt groups
- ISDN lines

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

NONE

LAYER   **SW-LATER**
TELECOM 08

                                                      APPLICATION

ACTID   **FEATURE TITLE**   DRAM
AR1811   Non-table Data to Tables (DRAMS)

Description

This feature eliminates the non-table data transferred during a software upgrade. The non-table data referred to in this feature is the telco-defined Digital Recorded Announcement Machine (DRAM) phrase information. The DRAM phrase information consists of DRAM number, phrase name, card, block number, internal phrase number, start, length, phrase_recorded boolean, and pad_in_use boolean. The craftsperson can display this by invoking 'ASSIGNDUMP COMMANDS' from the DRAMREC command increment.

This feature improves the speed and eliminates the use of SFDEV by creating a table around the existing DRAM phrase information data structures. This allows the use of the standard table control interface around the existing DRAM phrase information data structures to transfer the data. The telco-defined DRAM phrase information can then be transferred during a One Night Process (ONP) with the standard table transfer tool TABXFR.

Command Changes

Only a new system response has been added to the following DRAMREC commands: ASSIGN, ASSIGNDUMP, CONNECT, DEBUG, DISPLAY, ERASE, FIND, PLAYBACK, POSITION, and RECORD. The system response is:

```
DRAMREC OR TABLE DRAMPHRS IN USE, TRY AGAIN LATER. RC = <return code value>
```

With the introduction of table DRAMPHRS, the physical data which the table references is the same data modified by the DRAMREC commands. To prevent a possible conflict when the data is being modified, controls are in place to prevent changing the data when another process is reading from or writing to that data. This system response occurs very infrequently, only when table DRAMPHRS is being used excessively.

Data Schema Changes

This feature introduces the new table DRAMPHRS into the Telecom (TL) Development Release Unit (DRU). This table is not intended to be a replacement for the DRAMREC command increment. Rather, it is intended to provide a standard table control interface to the DRAM phrase information for software upgrade purposes.

Table DRAMPHRS depends on the datafill of table DRAMS. Tables DRAMTRK and DRMUSERS depend on the datafill of table DRAMPHRS. Table DRAMPHRS is datafilled immediately after DRAMS during a software upgrade. Following is an example:

```
dram phrsname       phraseno block  length   recorded
0 BLDNANNC          24       5      15       Y N 24
0 THANK_YOU         13       1      1        N
```

New fields for this command are: DRAM, PHRSNAME, PHRASENO, BLOCK, LENGTH, RECORDED, PADINUSE, and START.

- DRAM: Part one of the two part key to the table. Indicates on which DRAM the phrase is located. This field is dependent of the DRAM being datafilled in table DRAMS.
- PHRSNAME: Part two of the two part key. Up to 16-character string identifying the phrase.
- PHRASENO: The internal phrase number as known by the firmware.
- BLOCK: Identifies on which block of the DRAM the phrase is located.
- LENGTH: Indicates the length of the phrase in seconds.
- RECORDED: Indicates whether the phrase was recorded or assigned.
- PADINUSE: For recorded phrases only. Indicates whether a PAD is being used with this phrase.
- START: For recorded phrase only. The start location of the phrase in seconds.

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

The functionality of the DRAMREC command increment has not changed with the implementation of table DRAMPHRS.

Restrictions/Limitations

The software upgrade benefits of this feature are not functional until the table is available in both loads of a software upgrade. Until this time, the DRAM phrase information is restored by the existing file transfer method.

LAYER   **SW-LATER**
TELECOM 08

                                                                             APPLICATION
ACTID   **FEATURE TITLE**   INODE
AR2008   STP SOC on INODE

Description

This feature, Signaling Transfer Point (STP) Software Optionality Control (SOC) on Integrated Node (INODE), adds functionality to feature AR4001 in the ***SW-NOW*** section of this manual.

Command Changes

Command changes occur in link activation and the STP SOC functionality.

Link Activation

A warning message has been added to CCS;CCS7;C7LKSET, the link activation command at the MAP. If the user attempts to activate links containing STP functionality (STP or SSP_STP links) and the STP SOC option state is IDLE, the following warning message is output to the MAP:

```
Option STP SOC must be turned ON before this link can be activated because this
link has STP functionality.
```

SOC

The STP SOC functionality (INode capability) is enabled via the SOC interface. The user enters the following sequence to activate the feature:

```
CI> soc
SOC:
SOC> assign rtu xxxxxxxxxxxxxxx to STPE0300
Done.
SOC> assign state on to STPE0300
Done.
```

The user sees the one of following error messages if the transition from IDLE to ON cannot be performed:

```
ERROR: The number of tuples in the C7GTT table must be reduced to the SSP limit
before STP functionality can be disabled.
```

```
ERROR: Links with STP capability are active. These links must be deactivated before
STP functionality can be disabled.
```

The user sees a warning message when the transition from ON to IDLE is performed:

```
WARNING: CPU allocation for call processing is reduced when INode is enabled.
Please ensure that the CPU occupancy displayed at the MAPCI;MTC;CPSTATUS;PARMS map
during regular call processing activity is not above the INode specifications,
otherwise a SERVICE OUTAGE may occur in CCS7 network recovery situations.
```

The user sees one of the following different error messages if the transition from ON to IDLE cannot be performed:

```
ERROR: The number of tuples in the C7TRKMEM table must be reduced to the INode
limit before STP functionality can be enabled.
```

```
ERROR: 8 BIT SLS must be disabled using the SLS8BIT CI command before STP
functionality can be enabled.
```

Data Schema Changes

Changes have been made to table C7NETWRK and table OFCENG. An error message has been added to table C7NETWRK and a parameter changed in table OFCENG.

Table C7NETWRK Changes

The C7NETWRK table has been modified. The transition between the Service Switching Point (SSP) and SSP_STP node type in the C7NETWRK table tuples is prevented when the STP SOC state is IDLE. When the STP SOC state is ON, the transition is allowed. The user sees the following error message when the transition is restricted:

```
The node type change is not a valid transition.
```

Table OFCENG Changes

The office parameter C7GTT_Delta_File_Activity_State in table OFCENG has been modified. Currently, the user cannot change GTT Delta file office parameter. The STP SOC feature automatically changes this office parameter based on the STP SOC state. If the SOC state is ON (acting as an INode office), the delta file office parameter is set to ON, and if the SOC state is IDLE (acting as an SSP office), the delta file office parameter is set to OFF.

Global Title Translation (GTT) Delta file is supported on an INode office.

Log Message Changes

New logs added by this feature are: CCS650, CCS651, and CCS652. These logs are output when the daily SOC audit runs. They report on situations which are not normal, but in which the craftsperson can perform a corrective action.

CCS650

An example of log CCS650 follows:

```
WMAP8AJ      CCS650 APR17 08:11:51 3800 INFO INode - STP SOC Audit
STP SOC Audit has counted too many tuples in the C7GTT table. Craft Action is
required. The number of tuples in the table must be reduced to 25000.
```

The log indicates that STP SOC Audit has counted too many tuples in a particular table, such as the C7GTT table. Action of a craftsperson is required. The first field in the 650 log identifies the DMS table name which is up to 8 characters long.

The number of tuples in the table must be reduced to a certain number, such as 25000 shown in the example above. The second field is an unsigned double integer which represents the table limit.

The craftsperson needs to contact ETAS to report the problem. Extra tuples beyond the table limit need to be removed.

CCS651

An example of log CCS651 follows:

```
WMAP8AJ      CCS651 APR17 08:11:51 3800 INFO INode - STP SOC Audit
STP SOC Audit has detected active links with STP capability. Craft Action is
required. The office is operating as an SSP, therefore, the links in question
should be deactivated.
```

The craftsperson needs to contact ETAS to report the problem. The STP or SSP_STP links needs to be deactivated or the STP SOC state set to ON.

CCS652

An example of CCS652 follows:

```
WMAP8AJ      CCS652 APR17 08:11:51 3800 INFO INode - STP SOC Audit
STP SOC Audit has detected that 8 BIT SLS is active.  Craft Action is required.
The office is operating as an INode and the active feature is not supported.  Either
the feature state or the node type must be changed.
```

STP SOC Audit has detected that a feature mutually exclusive with STP SOC is active. Action of a craftsperson is required. The office is operating as an INode and the active feature is not supported. Either the feature state or the node type must be changed.

The field in this log describing a feature which is mutually exclusive with STP SOC is 30 characters long.

The craftsperson needs to contact ETAS to report the problem. Either the STP SOC feature or the other feature needs to be disabled.

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

STP SOC on INode functionality is provided under the following features:
- AR4001 STP SOC on MNA7 INode, TL layer hooks
- AU2450 C7TRKMEM table control hooks for STP SOC on INode, SHR layer hooks
- AR2008 STP SOC on INode, STP layer SOC functionality

Restrictions/Limitations

NONE

LAYER   **SW-LATER**

TELECOM 08

                                                                                              APPLICATION

ACTID   **FEATURE TITLE**   ISN

AR2215   ISN Auto Imaging - Infrastructure and ASU Portion

Description

This feature provides the software infrastructure for the Intelligent Switch Network (ISN) Auto Imaging as well as the Application Service Unit (ASU) specific work. The infrastructure defines interfaces and utilities to be used by all applications/nodes to be auto imaged (Enhanced NETwork (ENET), LMS, Network Interface Unit (NIU), ASU). The feature also provides the ASU node maintenance functions to select which ASUs to use when imaging, with the node maintenance functions for Link Interface Module (LIM), NIU, and ENET being implemented in other features.

This feature automates imaging of ISN nodes after Post Release Software Unit (PRSUs) have been applied/removed or after CCS7 datafill has sufficiently changed the data store on the Link Interface Units #7 (LIU7s).

Command Changes

Two commands have been modified in table PROGDIR:
- AUTODUMP
- STOPDUMP

AUTODUMP Command Changes

The AUTODUMP command is modified so that the craftsperson can manually request ISN images as well as Computing Module (CM) and MS images. A craftsperson is able to provide the options ALL or ISN.
- When the ALL option is used, AUTODUMP first images the CM and MS and then invokes IAI_initiate_dump, which sends a request to IAI to image ISN nodes.
- When the ISN option is used, AUTODUMP bypasses imaging the CM and MS and invokes the IAI_initate_dump, which sends a request to IAI to image ISN nodes.
- When no optional parameter is used, AUTODUMP images only the CM and MS.

Optional numeric parameters are: ALL, ISN, and FILE. FILENAME is a mandatory variable parameter.

The following error message is displayed to the craftsman when AUTODUMP is invoked to display a history file that was not created by AUTODUMP and the number of characters in the passing parameter is less than 4 characters. The hints provide additional information what to look for. The craftsperson finds the correct AUTODUMP history file name and tries to execute the command again.

```
The file name specified is not a history file
Hint: The history file should be more than 3 characters
Hint: The history file name ends with HIS or ISN.
```

The following error message is displayed to the craftsman when autodump is invoked to display a history file that was not created by autodump. The hints provide additional information about what to look for when selecting a history autodump history file.

```
This file is not a history file.
Hint: The file specified may not be a file created by AUTODUMP.
Hint: The history file name ends with HIS or ISN.
```

The following response is displayed after the 5-minute time-out period to the craftsman when AUTODUMP was manually invoked to image ISN nodes only (AUTODUMP MANUAL ISN). For any complication in imaging ISN nodes, ISN AUTOIMAGE process records it in its history file.

```
Sending request to ISN Autoimage process
```

When AUTODUMP MANUAL ISN is invoked and the ISN AUTODUMP code is not available, the following message is displayed. The craftsperson determines if ISN AUTOIMAGE process software is available. If ISN AUTOIMAGE software is available, the craftsperson contacts the next level of support.

```
ISN Autoimage initiate process not bound in
```

To manually dump the CM and MS, invoke:

```
> autodump manual
```

To manually dump only the ISN nodes, invoke:

```
> autodump manual isn
```

To manually dump the CM, MS, and ISN nodes, invoke:

```
> autodump manual all
```

AUTODUMP HISTORY and DEBUG commands are modified to accept an optional parameter:
- When the ISN option is used, it enables the craftsperson to display the ISN autoimaging history file.
- When the FILE option is used, it enables the craftsperson to specify an old autodump history file name to be displayed to the craftsperson's screen.

Command STOPDUMP Changes

STOPDUMP has been changed to indicate that it stops any imagedump initiated by autodump or ISN autoimage process.

Node maintenance BUSY

Prior to taking down a node on a busy command, node maintenance verifies whether the node in question is being imaged or not. If so, then a message informs the craftsperson. The busy without force command is aborted at this point. The busy force command prompts whether to proceed. If the craftsperson wants to proceed, the image is aborted and the busy command proceeds as normal; otherwise, the busy command is aborted. The busy command for LIM, NIU, and ENET is provided similarly in other features.

Data Schema Changes

The scheduling of the ISN auto imaging process is selectively controlled by the Autodump process. The Autodump scheduling table IMGSCHED is modified as in the following example:

```
TABLE: IMGSCHED
          DAY   DUMPHOUR  DUMPMIN  CM/MS    ISN     ACTIVE
     -------------------------------------------------------
       MONDAY       21        0       N       Y        Y
      TUESDAY       21        0       Y       Y        Y
    WEDNESDAY       21        0       Y       N        Y
     THURSDAY       21        0       Y       Y        Y
       FRIDAY       21        0       Y       Y        Y
     SATURDAY       21        0       Y       Y        Y
       SUNDAY       21        0       Y       Y        Y
```

The above example shows when AUTODUMP is active and whether it is imaging the CM and MS nodes. Note that even though table IMGSCHED is not dependent on table IMAGEDEV to change the datafill, the AUTODUMP is depending on IMAGEDEV to schedule the autodump.

The new datafill for table IMGSCHED allows end-users to image their ISN nodes without having to image their CM and MS.

Two new fields added to the table are: CMMS and ISN.

- CMMS activates or deactivates imaging of CM and MS. This new field is the fourth field in the table.
- ISN field activates or deactivates imaging of ISN nodes. This new field is the fifth field in the table located before the ACTIVE field.

Log Message Changes

The Autodump history file is modified to include all the ISN auto imaging reports. The corresponding SOS logs are modified accordingly.

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

The CCS7 function has two existing alarms associated with ISN auto imaging.This function monitors the CCS7 delta file and issues a major alarm after the file exceeds 500 entries. It issues a critical alarm after the file exceeds 2000 entries.

Post Release Software Manager (PRSM) does not issue alarms if an image request failed, nor does it issue alarms at a certain PRSU threshold.

Interactions

This feature is intended to replace the LIU7 auto imaging feature, AR1929, introduced in STP03 and CSP07, which was tailored specifically to the LIU7 and only responds to CCS7 data changes, not PRSM transactions.

This feature needs the following features to function properly: PRS BY56432.

This feature is part of a group of features used by features: AS6992, AU2408, AU2386, and AR2214 and PRS BY56191.

Restrictions/Limitations

During PMCC, ISN auto imaging needs to be disabled since it takes an image of the ISN node regardless of the load on that node. For example, the node might be datafilled as having a CSP06 load while in fact it contains a CSP07 load.

The LIU7 node selector selects only an LIU7 that does not have gateway screening. This is to avoid interaction between the gateway screening code in the LIU7 and the dump process.

In the STP product, ISN auto imaging needs to be disabled prior to making changes to table C7DCIS6 to avoid interaction between the imaging process and data changes on the LIU7.

LAYER   **SW-LATER**

TELECOM 08

                                                   APPLICATION

ACTID   **FEATURE TITLE**   ISN

AU2386   ISN Auto Imaging - LMS/NIU Support for ISN Auto
Imaging

Description

This feature, Intelligent Switch Network (ISN) Auto Imaging: Local Measured Service/
Network Interface Unit (NIU) Support for ISN Auto Imaging, provides the node selection
capability to enable auto imaging for the ISN Nodes: Link Interface Module (LIM) and NIU.
It provides the local software required to support the ISN autoimaging facility to be used on
the LIM and NIU.

Please see feature AR2215 in the **SW-LATER** section of this manual for a complete
description of the ISN Auto Imaging 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 requires feature AR2215.

Restrictions/Limitations

NONE

LAYER	SW-LATER
TELECOM 08	

APPLICATION

ACTID	**FEATURE TITLE**	IAI
AU2408	ISN Auto Imaging - ENET Part	

Description

This feature provides all the required Enhanced Network (ENET) services for the Intelligent Switch Network (ISN) Auto Imaging (IAI) capability of the DMS family of switches. Please see feature AR2215, also in the *SW-LATER* section of tthis manual, for the overall description of the ISN Auto Imaging 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

NONE

Restrictions/Limitations

NONE

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 registers name: 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 always comes 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 Call Type for Queuing (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 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, the restricted billing index used for DA calls comes 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 increases 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 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 differs; i.e., new displays are not 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.

LAYER	**SW-LATER**
XPM 81	

APPLICATION
SwAct

ACTID   **FEATURE TITLE**
AF6879   SwAct Back Propagation

Description

The purpose of this feature is to incorporate the XPM Switch Activity (SwAct) enhancements introduced by AF5007, XPM PreSwAct/PostSwAct Audit, and AF6670, ISDN_SWBK.

This feature brings AF5007 to the ETM, EUT, ODT, and WDT loads enhancing XPM SwAct. This feature denies the SwAct if the inactive unit is deemed unreliable and by having the XPM Swact Back if the newly active unit cannot communicate with the Central Control (CC).

These enhancements reduce the risk of an eXtended Peripheral Module (XPM) SwActing to a unit that immediately goes out of service. Without these functions, both units of the node are taken out of service resulting in an outage.

Enhancements to the existing pre-SwAct audit are:
- Addition of intelligence in the decision-making process of whether to deny or allow a SwAct
- Use of the pre-SwAct audit for SwActs initiated by the XPM

SwAct Back Propagation extends the SwAct back capability to the originally active unit when the newly active unit fails two-way communication with the CC during the SwAct of an XPM or post-SwAct diagnostic suite.

Command Changes

This feature affects the Busy (Bsy) and SwAct commands at the PM;POST level of the MAP, changes introduced previously by feature AF5007.

Data Schema Changes

NONE

Log Message Changes

The PM181 log is enhanced to include references to SwAct Back SwActs.

OM Changes

NONE

Service Order

> NONE

AMA Changes

> NONE

Notes

> NONE

Alarms

> NONE

Interactions

This feature interacts with the following features:
- AF5006 PM Diagnostic History
- AF5008 Routine EXercise (REX)/SwAct Improvements

Restrictions/Limitations

The SwAct enhancements for this propagation are supported on the following XPMs:
- LTC+
- DTC+
- PDTC
- TMS

Other restrictions/limitations were described previously in AF5007.

LN-NOW

This section identifies changes and/or additions to line functions that are Maintenance 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 Maintenance activity.

NA008 PRODUCT

XPM 81

DMS-100F Maintenance Synopsis
Release 08.01, November 1997

LAYER   **LN-NOW**
NA008 PRODUCT

                                                          APPLICATION
ACTID   **FEATURE TITLE**   MADN/EKTS
AF6648   MADN/EKTS Call Appearance Call Handling-Queries

Description

This feature modifies the following query commands to provide the user with call
appearance information for Multiple Appearance Directory Number Call Appearance Call
Handling (MADN CACH): QLT, QDN, QGRP, QLEN, QMADN, and QCUST.

Command Changes

This feature modifies the following query commands to provide the user with call
appearance information for MADN CACH groups:

- QLT - Query Logical Terminal
- QDN - Query Directory Number
- QGRP - Query Group
- QLEN - Query Line Equipment Number
- QMADN - Query MADN
- QCUST - Query Customer Data

QLT

The QLT command displays information about the LTID requested, although the
functionality of the command is not changed.

This feature introduces the ability to display CACH / CARES information for the
specified logical terminal. This includes:

- MADN CACH call arrangement
- Call appearance number
- Call appearance reservation type
- CACH controller indication

The QLT command is only valid for ISDN logical terminals.

The QLT command requires two parameters:

- LTGRP, the string representing the logical terminal group
- LTNUM, the LTID member associated with the logical terminal group (a value from
  1 to 1022)

Following is a sample of the QLT display of a MADN CACH configuration on a CACH terminal, with the bold type indicating new functionality:

```
>qlt ekts 1
-------------------------------------------------------------
LTID:  EKTS        1
SNPA: 613
DIRECTORY NUMBER:      6215961     (NON-UNIQUE)
LT GROUP NO: 5
LTCLASS:   BRAFS    DEFAULT LOGICAL TERMINAL: N
EKTS: Y    CACH: Y
BEARER SERVICE RESTRICTIONS:      NOPMD
CS: Y PS: N
VERSION: FUNCTIONAL   ISSUE: 1
SPID-SUFFIX:       1
LEN: HOST  01 1 12 03    TEI: DYNAMIC
CUSTGRP:         IBNTST  SUBGRP: 0  NCOS: 0  RING: Y
LINE CLASS CODE: ISDNKSET
MAXKEYS: 64
MADN MEMBER INFO:
EKTS        1
EKTS        2
EKTS        3
HOST  00 0 18 05
HOST  00 0 19 05
OPTIONS:
LNR SFC NAME PUBLIC MADN1 5317
PRL PRV
KEY       DN
---       --
1       MDN            6215961  CACH CA  1 DOR CONTROLLER
2       MDN            6215961  CACH CA  2 NULL
3       MDN            6215961  CACH CA  3 DTM PRIMARY
4       MDN            6215965  SCA      PRIMARY
5       GIC       1       TESTGIC
KEY     FEATURE
---     -------
6        ICM EKTS       1     6 N N
7        PRL
8        PRV
24        RLS
-------------------------------------------------------------
```

QDN

The QDN command displays information about the hardware and software associated with the DN requested. The QDN command line syntax requires a directory number as its sole parameter.

This feature introduces the ability to display CACH / CARES information for the specified DN. This includes:

- Call appearance number
- Call appearance reservation type
- Number of members in the group
- LTID or LEN of the primary member of each call appearance
- CACH controller indication

The following example shows the QDN display of a MADN CACH provisioned DN:

```
>qdn 6215961
----------------------------------------------------------------
DN:    6215961    (NON-UNIQUE)
TYPE: MULTIPLE APPEARANCE DIRECTORY NUMBER
SNPA: 613   SIG: N/A     LNATTIDX: N/A
LTID: EKTS
LTCLASS:  BRAFS
PRIMARY LEN:  EKTS          1
LINE CLASS CODE:   ISDNKSET
KEY:  1
CUSTGRP:            IBNTST  SUBGRP: 0  NCOS: 0  RING: Y
MADN INFO -  TYPE: CACH
MADN GROUP INFO - DENIAL_TRMT:SILENCE   BRIDGING:Y
CONF_SIZE:30  BRIDGE_TONE:N  INIT_STAT:   PRIVATE
PRL_MODE:MANUAL
OPTIONS:
LNR SFC NAME PUBLIC MADN1 5317 GIC TESTGIC 1 N N
PRL PRV
MADN CACH INFO:
CA CARES Members Primary Member
-----------------------------------------------------------------
CA 7        NULL     1        HOST  00 0 18 04
CA 2        NULL     4        EKTS        2    KEY 1
CA 1        DOR      5        EKTS        1    KEY 1    CTLR
CA 6        DOR      1
CA 10       DTMEPI   2        HOST  00 0 19 04 KEY 1
CA 3        DTM      3        EKTS        1    KEY 3
-----------------------------------------------------------------
```

QGRP

The QGRP command displays call appearance and member information for a CACH DN, LTID, or LEN.

The existing functionality of the QGRP command has not changed, although additional CACH functionality is added. This feature introduces the ability to display CACH/CARES information for a specified group. The QGRP command requires a group type as the first command line parameter. In the case of a MADN CACH Query Group (QGRP) call, the first parameter must be 'MDN'. Following is an example of the CACH QGRP LEN display:

```
>qgrp mdn 0 0 18 5
MDN Call Appearance: 1 CARES: DOR
----------------------------------------
EKTS        1    KEY 1    CONTROLLER
EKTS        2    KEY 2
EKTS        3    KEY 2
HOST  00 0 18 05
HOST  00 0 19 05 KEY 1
MDN DN 6215961
The CACH Controller has the following options :
LNR SFC NAME PUBLIC MADN1 5317
PRL PRV
The number of members in the Call Appearance is 5.
```

QGRP MDN <LEN or LTID> <KEY>

The QGRP display for a given LEN or LTID and key provides CA and CARES information of the CA. All members of the CA are displayed and the primary

member is indicated by appending the word 'PRIMARY' or 'CONTROLLER' to the LEN or LTID of the primary member or CACH controller. The options for the CACH controller are also displayed.

QGRP MDN <LEN>

This command line syntax is used for an IBN LEN where a keyset is not involved. This function displays the same information as is described in the description above.

QGRP MDN <DN> BRIEF

The command line syntax is modified by this feature. The QGRP display for a given DN provides CA number, CARES type, number of members, and primary member information. The CACH controller for the DN is denoted with the letters 'CTLR' to the right of the primary member LTID. Following is an example of the CACH QGRP DN BRIEF display:

```
>qgrp mdn 6215961 BRIEF
CA              CARES  Members Primary Member
----------------------------------------------------
CA 7        NULL      1        HOST  00 0 18 04
CA 2        NULL      4        EKTS       2    KEY 1
CA 1        DOR       5        EKTS       1    KEY 1   CTLR
CA 6        DOR       1
CA 10       DTMEPI    2        HOST  00 0 19 04 KEY 1
CA 3        DTM       3        EKTS       3    KEY 1
The CACH Controller has the following options :
LNR SFC NAME PUBLIC MADN1 5317
PRL PRV
```

QGRP MDN <DN> CA <CA#>

This command line syntax is new. It provides member information for a particular CA of a DN. All members of the CA are displayed and the primary member is indicated by appending the word 'PRIMARY' or 'CONTROLLER' to the LEN or LTID of the primary member or CACH controller. The options for the CACH controller are also displayed. Following is an example of the CACH QGRP DN call appearance display:

```
>qgrp mdn 6215961 CA 2
MDN Call Appearance: 2        CARES: NULL
-----------------------------------------
EKTS        2     KEY 1       PRIMARY
EKTS        1     KEY 2
EKTS        3     KEY 3
HOST  00 0 20 05 KEY 3
The number of members in the Call Appearance is 4.
The CACH Controller has the following options :
LNR SFC NAME PUBLIC MADN1 5317
PRL PRV
```

QGRP MDN <DN> FULL

This command line syntax is new. It provides member information for all call appearances of a DN. All members of each CA are displayed and the primary members are indicated by appending the word 'PRIMARY' to the LEN or LTID of

the primary member. The CACH controller is indicated by appending the word 'CONTROLLER' to the LEN or LTID of the CACH controller. The options for the CACH controller are also displayed. Following is an example of the CACH QGRP DN FULL display:

```
>qgrp mdn 6215961 FULL
MDN Call Appearance: 2      CARES: NULL
----------------------------------------
EKTS       2    KEY 1     PRIMARY
EKTS       1    KEY 2
EKTS       3    KEY 3
HOST  00 0 20 05 KEY 3
The number of members in the Call Appearance is 4.
MDN Call Appearance: 1      CARES: DOR
----------------------------------------
EKTS       1    KEY 1     CONTROLLER
EKTS       2    KEY 2
EKTS       3    KEY 2
HOST  00 0 18 05 KEY 2
HOST  00 0 19 05 KEY 1
The number of members in the Call Appearance is 5.
MDN Call Appearance: 3      CARES: DTM
----------------------------------------
EKTS       3    KEY 1     PRIMARY
EKTS       1    KEY 3
EKTS       2    KEY 3
The number of members in the Call Appearance is 3.
The CACH Controller has the following options :
LNR SFC NAME PUBLIC MADN1 5317
PRL PRV
```

QLEN

The QLEN command displays call appearance and member information of an MBS or IBN LEN provisioned for CACH.

The display of all MADN types of a keyset has changed. This feature introduces the ability to display CACH/CARES information for a specified LEN.

An example of the CACH QLEN IBN display follows:

```
>qlen 0 0 18 5
---------------------------------------------------------------
LEN:    HOST  00 0 18 05
TYPE: MULTIPLE APPEARANCE DIRECTORY NUMBER
SNPA: 613
DIRECTORY NUMBER:    6215961    (NON-UNIQUE)
LINE CLASS CODE: IBN
IBN TYPE:  MADN
MADN INFO - TYPE:CACH  PRIMARY:N  RING:ALWAYS
MADN GROUP INFO - DENIAL_TRMT:SILENCE   BRIDGING:Y
CONF_SIZE:30  BRIDGE_TONE:N  INIT_STAT:   PRIVATE
PRL_MODE:MANUAL
CALL_APPEARANCE:1  CARES: DOR
CUSTGRP:         IBNTST  SUBGRP:0  NCOS: 0
SIGNALLING TYPE:  DIGITONE
CARDCODE: 6X17AA   GND: N  PADGRP: STDLN  BNV: NL MNO: N
PM NODE NUMBER    :    40
PM TERMINAL NUMBER :   582
OPTIONS:
MDN CACH N Y DGT NAME PUBLIC MADN1 5317
---------------------------------------------------------------
```

Following is an example of the CACH QLEN MBS display:

```
>qlen 0 0 19 5
---------------------------------------------------------------
LEN:    HOST  00 0 19 05
TYPE: MULTIPLE APPEARANCE DIRECTORY NUMBER
SNPA: 613
DIRECTORY NUMBER:    6215961    (NON-UNIQUE)
LINE CLASS CODE: P_PHONE
CUSTGRP:         IBNTST  SUBGRP: 0  NCOS: 0  RING: Y
ADDONS: NONE    EXTENSION: N
MADN INFO -  TYPE: CACH
MADN GROUP INFO - DENIAL_TRMT:SILENCE   BRIDGING:Y
CONF_SIZE:30  BRIDGE_TONE:N  INIT_STAT:   PRIVATE
PRL_MODE:MANUAL
CARDCODE: 6X21AC   GND: N  PADGRP: PPHON  BNV: NL MNO: Y
PM NODE NUMBER    :    40
PM TERMINAL NUMBER :   614
OPTIONS:
NAME PUBLIC MADN1 5317
CWT Y Y N 1
KEY    DN
---    --
1   MDN   6215961  CACH CA:1   PRIM:N  CARES:DOR    NCOS:0
4   MDN   6215965  SCA PRIM:N  RING: ALWAYS  NCOS:0
KEY    FEATURE
---    -------
2     CWT Y Y N  1
---------------------------------------------------------------
```

An example of the CACH QLEN DN display follows:

```
>qlen 6212000
-------------------------------------------------------------
LEN:      HOST  01 0 07 04
TYPE: SINGLE PARTY LINE
SNPA: 613
DIRECTORY NUMBER:      6212000
LINE CLASS CODE:  M5312 SET
CUSTGRP:          IBNTST  SUBGRP: 0  NCOS: 0  RING: Y
CARDCODE:  6X21AC    GND: N  PADGRP: PPHON  BNV: NL MNO: Y
PM NODE NUMBER     :    42
PM TERMINAL NUMBER :    229
OPTIONS:
LNR NAME PUBLIC IBNTST PRIVATE BOB
PRL PRV
KEY    DN
---    --
1    DN    6212000
2    MDN   6212500  SCA PRIM:Y  RING: ALWAYS  NCOS:0
3    MDN   6212600  MCA PRIM:Y  RING: ALWAYS  NCOS:0
4    MDN   6215966  CACH CA:1  PRIM:N  CARES:DOR    NCOS:0
KEY     FEATURE
---     -------
5       PRL
6       PRV
-------------------------------------------------------------
```

An associated error message for CACH QLEN DN display is:

```
>qlen 6215961
MADN SPECIFIED.  LEN OUTPUT IS FOR PRIMARY.
TYPE: ISDN LOGICAL TERMINAL, USE QDN COMMAND
```

Query MADN (QMADN)

The QMADN command is a CI command used to query information about a MADN DN/Group and its members. The QMADN command is invoked at a CI prompt using the command 'qmadn' followed by 1 of 10 operations:

QMADN   DISPLAY <dn> [CA <ca#>]

DISPGRP <group#>

DISPCA <dn>

DISPALL

DISQUICK

LCMCNT [<site>] <frame> <unit>

OFCCNT

GRPNUM <dn> [CA <ca#>]

VERIFY <dn> [CA <ca#>]

VERIFYALL

To display a DN configured for MADN CACH, the QMADN command has been modified to display multiple Call Appearance groups associated with the MADN DN.

QMADN DISPLAY <DN>

The QMADN DISPLAY command displays information about the MADN group and each member assigned to the group for a specified DN. For a MADN CACH configuration, a DN can be associated with 1 to 16 Call Appearances and each Call Appearance can have 1 to 32 members. Therefore, the QMADN DISPLAY for a MADN CACH configuration can be quite extensive.

For a MADN CACH configuration, the QMADN DISPLAY command is modified to also include display of each MADN group's Call Appearance number (CA), CA Reservation (CARES) type, and the call arrangement type of CACH. The member which is the CACH Controller for the DN is labelled with '<CACH Controller>' as part of that member's display. The command line syntax if CACH QMADN DISPLAY is:

QMADN DISPLAY <DN> [CA <CA#>]

Sample command display for the MADN CACH configuration follows:

```
>qmadn display 6215961

=================================================
Group:5992  Type:CACH CA:7 CARES:NULL Size:1
State:IDLE   -> Act :1
PRL  :Off    -> Ctlr:1  -> Mode:Man
MDN_3WC  : ON     -> CTLR:62
MRF:N
BRG:Y -> Tone:N -> Size:30
DNL:N    CFW :N    SSC :N
EHLD:N
MREL:N
MLAMP:N


=================================================
<Member#1>
LEN HOST 00 0 18 04   DN 6215961
TID - NN: 52    TN: 406
Prim:Y    XPM :Y  Type :2500 set   Map :Y
Ring:RNG  Name:N  CFMDN:N
Chnl:N    RNOC:N  WORT :N  Asso:N  Mtc :N
.................................................

=================================================
Group:14  Type:CACH  CA:2  CARES:NULL  Size:4
State:IDLE   -> Act :1
PRL  :Off    -> Ctlr:1  -> Mode:Man
MDN_3WC  : ON     -> CTLR:62
MRF:N
BRG:Y -> Tone:N -> Size:30
DNL:N    CFW :N    SSC :N
EHLD:N
MREL:N
MLAMP:N


=================================================
<Member#1>
LTID EKTS      2    DN 6215961  KEY  1
TID - NN: 23    TN: 160
Prim:Y    XPM :Y  Type :ISDN Func  Map :Y
Ring:RNG  Name:N  CFMDN:N
Chnl:N    RNOC:N  WORT :N  Asso:N  Mtc :N
.................................................
<Member#2>
LTID EKTS      1    DN 6215961  KEY  2
TID - NN: 23    TN: 188
Prim:N    XPM :Y  Type :ISDN Func  Map :Y
Ring:RNG  Name:N  CFMDN:N
Chnl:N    RNOC:N  WORT :N  Asso:N  Mtc :N
.................................................
<Member#3>
LTID EKTS      3    DN 6215961  KEY  3
TID - NN: 23    TN: 681
Prim:N    XPM :Y  Type :ISDN Func  Map :Y
Ring:RNG  Name:N  CFMDN:N
Chnl:N    RNOC:N  WORT :N  Asso:N  Mtc :N
.................................................
<Member#4>
LEN HOST 00 0 19 05   DN 6215961  KEY  3
TID - NN: 40    TN: 614
Prim:N    XPM :Y  Type :ISDN Func  Map :Y
Ring:RNG  Name:N  CFMDN:N
Chnl:N    RNOC:N  WORT :N  Asso:N  Mtc :N
.................................................
```

```
LTID EKTS      1    DN 6215961  KEY  3
TID – NN: 15    TN: 108
Prim:N    XPM :Y  Type :ISDN Func  Map :Y
Ring:RNG  Name:N  CFMDN:N
Chnl:N    RNOC:N  WORT :N  Asso:N  Mtc :N
.................................................
>
```

A sample error message is as follows:

```
> qmadn display 6215971

    NON MADN LINE
```

QMADN DISPLAY <DN> CA <CA#>

The QMADN DISPLAY command can display information about a single Call Appearance group and its members by specifying the Call Appearance number after the DN on the command line. The optionality of the Call Appearance number as part of the QMADN DISPLAY command is created by this feature. The inclusion of the Call Appearance number on the QMADN DISPLAY command line is limited to DN's configured for MADN CACH. Specifying a Call Appearance number on a QMADN DISPLAY command line for a DN configured for MADN SCA/MCA/ EXB will result in an error message.

Note: *The Call Appearance specified may/may not include the member which is the CACH Controller for the DN; hence, the CACH Controller member is displayed only when the Primary Call Appearance group is specified. The Primary Call Appearance group is the call appearance group (MDN CACH group) whose primary member is assigned the features which apply to the entire CACH DN.*

Sample command display for the MADN CACH configuration follows:

```
>qmadn display 6215961 CA 3

=================================================
Group:16394  Type:CACH CA:3 CARES:DTM Size:3
State:IDLE   -> Act :1
PRL  :Off    -> Ctlr:1  -> Mode:Man
MDN_3WC  : ON      -> CTLR:62
MRF:N
BRG:Y -> Tone:N -> Size:30
DNL:N    CFW :N     SSC :N
EHLD:N   MREL:N   MLAMP:N


=================================================
<Member#1>
LTID EKTS       3    DN 6215961  KEY  1
TID - NN: 15    TN: 10
Prim:Y    XPM :Y  Type :ISDN Func  Map :Y
Ring:RNG  Name:N  CFMDN:N
Chnl:N    RNOC:N  WORT :N  Asso:N  Mtc :N
...................................................
<Member#2>
LTID EKTS       2    DN 6215961  KEY  3
TID - NN: 15    TN: 521
Prim:N    XPM :Y  Type :ISDN Func  Map :Y
Ring:RNG  Name:N  CFMDN:N
Chnl:N    RNOC:N  WORT :N  Asso:N  Mtc :N
...................................................
<Member#3>
LTID EKTS       1    DN 6215961  KEY  3
TID - NN: 15    TN: 108
Prim:N    XPM :Y  Type :ISDN Func  Map :Y
Ring:RNG  Name:N  CFMDN:N
Chnl:N    RNOC:N  WORT :N  Asso:N  Mtc :N
...................................................
>
```

A sample error message for invalid call appearance is:

```
> qmadn display 6215961 CA 5

  ERROR: Invalid Call Appearance. The CA must exist for the given
         DN and the DN must be a MADN CACH call arrangement.
```

QMADN DISPGRP <GROUP#>

The QMADN DISPGRP command displays information about a MADN group and
each member assigned to the group, by specifying the group number. Every MADN
group is assigned a unique group number by the DMS-100 switch at the time the
group is created. The QMADN DISPGRP command uses this unique group number
to identify the specific MADN group to display information about.

The DISPGRP and the DISPLAY operations display the same information. The
difference between the 2 operations is that DISPLAY is used when the DN is known
and DISPGRP is used when the group number is known.

For a MADN CACH configuration, the QMADN DISPGRP command is modified to
also include display of each MADN group's Call Appearance number (CA), CA
Reservation (CARES) type, and the call arrangement type of CACH. If a member of

the group is the CACH Controller for the DN, then the label <CACH Controller> appears as part of that member's display.

The command line syntax is:

QMADN DISPGRP <GROUP#>

Sample output for the MADN CACH configuration follows:

```
>qmadn dispgrp -24570

=================================================
Group:-24570  Type:CACH CA:1 CARES:DOR Size:5
State:IDLE   -> Act :1
PRL  :Off    -> Ctlr:1  -> Mode:Man
MDN_3WC  : ON     -> CTLR:62
MRF:N
BRG:Y -> Tone:N -> Size:30
DNL:N    CFW :N    SSC :N
EHLD:N   MREL:N    MLAMP:N


=================================================
<Member#1>         <CACH Controller>
LTID EKTS       1    DN 6215961  KEY  1
TID - NN: 43    TN: 388
Prim:Y    XPM :Y  Type :ISDN Func  Map :Y
Ring:RNG  Name:N  CFMDN:N
Chnl:N    RNOC:N  WORT :N  Asso:N  Mtc :N
...................................................
<Member#2>
LTID EKTS       2    DN 6215961  KEY  2
TID - NN: 43    TN: 100
Prim:N    XPM :Y  Type :ISDN Func  Map :Y
Ring:RNG  Name:N  CFMDN:N
Chnl:N    RNOC:N  WORT :N  Asso:N  Mtc :N
...................................................
<Member#3>
LTID EKTS       3    DN 6215961  KEY  2
TID - NN: 43    TN: 68
Prim:N    XPM :Y  Type :ISDN Func  Map :Y
Ring:RNG  Name:N  CFMDN:N
Chnl:N    RNOC:N  WORT :N  Asso:N  Mtc :N
...................................................
<Member#4>
LEN HOST 00 0 18 05   DN 6215961
TID - NN: 40    TN: 582
Prim:N    XPM :Y  Type :2500 set   Map :Y
Ring:RNG  Name:N  CFMDN:N
Chnl:N    RNOC:N  WORT :N  Asso:N  Mtc :N
...................................................
<Member#5>
LEN HOST 00 0 19 05   DN 6215961  KEY  1
TID - NN: 40    TN: 614
Prim:N    XPM :Y  Type :EBS        Map :Y
Ring:RNG  Name:N  CFMDN:N
Chnl:N    RNOC:N  WORT :N  Asso:N  Mtc :N
...................................................
>
```

A sample error message for an invalid group number is:

```
> qmadn dispgrp 15

 *** MADN is corrupted or bad input!! ***
```

QMADN DISPCA <DN>

The QMADN DISPCA command displays for a given DN the MADN group numbers, the Call Appearance numbers (CA), the Call Appearance Reservation (CARES) type, the number of members in each Call Appearance, and the LTID of the primary member for each Call Appearance. The Call Appearances are displayed in the order of call offering on termination as determined by the Call Appearance Reservation type and Call Appearance selection (CAPS). See the CACH CARES feature AF6649 for more information regarding the order of call offering.

The QMADN DISPCA command is created by this feature. The command line syntax for this command is:

QMADN DISPCA <DN>

Sample display for the MADN CACH configuration is:

```
>qmadn dispca 6215961

=======================================================
Order of call offering to CA on termination:

 Group# CA CARES Members Primary Member
 -------------------------------------------------------
 5992    CA 7   NULL    1   LTID HOST 00 0 18 04  DN 6215961
 14      CA 2   NULL    4   LTID EKTS       2     DN 6215961 Key 1
 -24570  CA 1   DOR     5   LTID EKTS       1     DN 6215961 Key 1   CTLR
 19      CA 6   DOR     1
 -424    CA 10  DTMEPI  2   LTID HOST 00 0 19 04  DN 6215961 Key 1
 16394   CA 3   DTM *   3   LTID EKTS       3     DN 6215961 Key 1

*DTM members are included in the display for completeness.
=======================================================
>
```

A sample error message for an unassigned DN follows:

```
> qmadn dispca 6215971
   NON MADN LINE
```

A sample error message for a non-MADN DN is:

```
> qmadn dispca 6215963
   ERROR: DN is not assigned to a MADN CACH Group.
```

QMADN DISPALL

The QMADN DISPALL command displays information about every MADN group and each member assigned to each group for the entire switch. This can be an extensive display. A warning is displayed to the user that the process to display all MADN groups may take some time to complete. The display format used is the same as the QMADN DISPLAY command. The MADN groups are displayed in no particular order.

For a MADN CACH configuration, the QMADN DISPALL command is modified to also include display of each MADN group's Call Appearance number (CA), CA

Reservation (CARES) type, and the call arrangement type of CACH. The member which is the CACH Controller for the DN is labelled with <CACH Controller> as part of that member's display.

The command line syntax for CACH is:

QMADN DISPALL

QMADN DISQUICK

The QMADN DISQUICK command displays the same information as the QMADN DISPALL command, but in an abbreviated form. This can be an extensive display since information about every MADN group and the members assigned to each group for an entire switch is displayed. A warning is displayed to the user that the process may take some time to complete.

The command line syntax for CACH is:

QMADN DISQUICK

Sample QMADN DISQUICK command output for a switch, showing a MADN CACH follows:

```
>qmadn disquick
WARNING - THIS PROCESS MAY TAKE SOME TIME TO COMPLETE
G#5992 CACH CA7 NUL 1 IDLE    1 PRL:Off 1 Man 3ON 62 N      BR:Y N 30 N N N N N N
 M#1 LEN HOST 00 0 18 04    DN 6215961 Y Y 2500 Map:Y RNG N N N N N N
G#14 CACH CA2 NUL 4 IDLE    1 PRL:Off 1 Man 3ON 62 N      BR:Y N 30 N N N N N N
 M#1 LTID EKTS         2    DN 6215961  KEY  1 Y Y I Fun Map:Y RNG N N N N N N
 M#2 LTID EKTS         3    DN 6215961  KEY  3 N Y I Fun Map:Y RNG N N N N N N
 M#3 LTID EKTS         1    DN 6215961  KEY  2 N Y I Fun Map:Y RNG N N N N N N
 M#4 LEN HOST 00 0 20 05    DN 6215961  KEY  3 N Y EBS  Map:Y RNG N N N N N N
G#-24570 CACH CA1 DOR 5 IDLE    1 PRL:Off 1 Man 3ON 62 N      BR:Y N 30 N N N N N N
 M#1 LTID EKTS         1    DN 6215961  KEY  1 C Y I Fun Map:Y RNG N N N N N N
 M#2 LTID EKTS         2    DN 6215961  KEY  2 N Y I Fun Map:Y RNG N N N N N N
 M#3 LTID EKTS         3    DN 6215961  KEY  2 N Y I Fun Map:Y RNG N N N N N N
 M#4 LEN HOST 00 0 18 05    DN 6215961 N Y 2500 Map:Y RNG N N N N N N
 M#5 LEN HOST 00 0 19 05    DN 6215961  KEY  1 N Y EBS  Map:Y RNG N N N N N N
G#19 CACH CA6 DOR 1 IDLE    1 PRL:Off 1 Man 3ON 62 N      BR:Y N 30 N N N N N N
 M#1 LTID EKTS         4    DN 6215961  KEY  1 N Y I Fun Map:Y RNG N N N N N N
G#-424 CACH CA10 EPI 2 IDLE    1 PRL:Off 1 Man 3ON 62 N      BR:Y N 30 N N N N N N
 M#1 LEN HOST 00 0 19 04    DN 6215961  KEY  1 Y Y EBS  Map:Y RNG N N N N N N
 M#2 LTID EKTS         5    DN 6215961  KEY  1 N Y I Fun Map:Y RNG N N N N N N
G#16394 CACH CA3 DTM 3 IDLE    1 PRL:Off 1 Man 3ON 62 N      BR:Y N 30 N N N N N N
 M#1 LTID EKTS         3    DN 6215961  KEY  1 Y Y I Fun Map:Y RNG N N N N N N
 M#2 LTID EKTS         2    DN 6215961  KEY  3 N Y I Fun Map:Y RNG N N N N N N
 M#3 LTID EKTS         1    DN 6215961  KEY  3 N Y I Fun Map:Y RNG N N N N N N

 G#-1088 SCA 2 IDLE    1 PRL:Off 1 Man 3ON 62 N      BR:Y N 30 N N N N N N
 M#1 LTID EKTS         1    DN 6215965  KEY  4 Y Y I Fun Map:Y RNG N N N N N N
 M#2 LEN HOST 00 0 19 05    DN 6215965  KEY  4 N Y EBS  Map:Y RNG N N N N N N
 >
```

QMADN GRPNUM <DN>

The QMADN GRPNUM command displays the unique group number assigned to the MADN group associated with a given DN.

For a MADN CACH configuration, 1 to 16 Call Appearance groups can be associated with a DN. Therefore, the QMADN GRPNUM command display for a DN configured as MADN CACH has 1 to 16 group numbers. In addition, the QMADN GRPNUM command is modified to include display of each MADN group's Call Appearance number (CA).

The command line syntax for CACH is:

QMADN GRPNUM <DN> [CA <CA#>]

Sample output for the MADN CACH configuration follows:

```
>qmadn grpnum 6215961
 GROUP NUM = 5992     CA:7
 GROUP NUM = 14       CA:2
 GROUP NUM = -24570  CA:1
 GROUP NUM = 19       CA:6
 GROUP NUM = -424     CA:10
 GROUP NUM = 16394    CA:3
```

A sample error message for an unassigned or non-MADN DN is:

```
> qmadn grpnum 6215971
   NON MADN LINE
```

QMADN GRPNUM <DN> CA <CA#>

The QMADN GRPNUM command can display the group number for a single Call Appearance group by specifying the Call Appearance number after the DN on the command line. The optionality of the Call Appearance number as part of the QMADN GRPNUM command is created by this feature. The inclusion of the Call Appearance number on the QMADN GRPNUM command line is limited to DN's configured for MADN CACH. Specifying a Call Appearance number on a QMADN GRPNUM command line for a DN configured for MADN SCA/MCA/EXB arrangements results in an error message.

Sample output for the MADN CACH configuration is:

```
>qmadn grpnum 6215961 CA 1
 GROUP NUM = -24570
```

A sample error message for an unassigned or non-MADN DN is:

```
> qmadn grpnum 6215971
   NON MADN LINE
```

A sample error message for an invalid call appearance is:

```
> qmadn grpnum 6215961 CA 5
  ERROR: Invalid Call Appearance. The CA must exist for the given
         DN and the DN must be a MADN CACH call arrangement.
```

QMADN VERIFY <DN> CA <CA#>

The CACH Query feature adds the option to verify a single call appearance of the given DN.

Query Customer Data (QCUST)

The QCUST command retrieves information about all the lines associated with one or more customer groups. It takes up to five customer groups as parameters to upload line data information about the specified customer groups. It can also accept a LEN or LTID if the data on a single line is required. QCUST ALL retrieves all of the line data associated with all the customer groups on the switch.

This feature introduces the ability to display CACH information for MADN CACH groups.

Data Schema Changes

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

Log Message Changes

See feature AF6638, CACH CallP, in the *SW-NOW* section of this manual, for log changes for the MADN CACH capability.

OM Changes

See feature AF6638, CACH CallP, in the *SW-NOW* section of this manual, for OM changes required by the MADN CACH capability.

Service Order

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

AMA Changes

See feature AF6638, CACH CallP, in the *SW-NOW* section of this manual, for AMA changes required by the MADN CACH capability.

Notes

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

Alarms

NONE

Interactions

The following paragraphs describe the interactions between MADN/EKTS Call Appearance Call Handling-Queries and other functionalities.

This feature is one of five features that create the MADN CACH capability. The other four areas are as follows:

- AF6638-MADN/EKTS CACH-Call Processing
- AF6646-MADN/EKTS CACH-Table Control
- AF6647-MADN/EKTS CACH-SERVORD
- AF6715-MADN/EKTS CACH-CNA Enhancements

Restrictions/Limitations

NONE

LAYER   **LN-NOW**
NA008 PRODUCT

                                                           APPLICATION
ACTID   **FEATURE TITLE**   ISDN
AF6658   Busy Determination Parameter Enhancement

Description

This feature also provides functionality to feature AF7027, Interface Configuration Changes for CNA changes.

Busy Determination Parameter Enhancement increases the number of calls that may be concurrent for ISDN sets from 5 for each directory number (DN) to 16 for each directory number call type (DNCT). As part of the enhancement, the option ACOU (additional call offering unrestricted) and its notification busy limit (NBL) parameters are assigned on a DNCT basis. The possible NBL range for NI-2 sets is increased from four to one less than the value assigned to the CRBL (call reference busy limit) option for the same call type (CT), except when the CRBL value is set to 1.

The maximum number of calls that a user can originate and hold is equal to the CRBL value of calls for each DNCT. If option ACOU has been assigned, the total number of active originating and terminating calls is the sum of the CRBL values assigned to the DNCTs.

Command Changes

Modified commands are QDN, QLT, and NBCQUERY.

- QLT and QDN are modified to display the new CRBL, ACOU, NBL and DBC information.

  — QDN output is changed to show that CRBL had been assigned as an option to the DN, and that the NBL and ACOU are assigned on a call type basis, as shown in the following example:

  ```
  >QDN 7455164
  --------------------------------------------------------
  DN: 7455164
  TYPE: SINGLE PARTY LINE
  SNPA: 613   SIG: N/A    LNATTIDX: N/A
  LTID: ISDN 1
  LTCLASS:  BRAFS
  LINE CLASS CODE:   ISDNKSET
  KEY:  1
  CUSTGRP:             BNR  SUBGRP: 0  NCOS: 0  RING: Y
  OPTIONS:
  SFC
  AFC  CRBL 2 2
  ACOU 2 1 1 FC 6 CPU 0 ISDN 7 $
  --------------------------------------------------------
  ```

  — QLT output is changed to show that CRBL had been assigned as an option to a DN key. It is also changed to reflect the DBC value for each DN-related key, as shown in the following example:

```
>QLT ISDN 1
LTID: ISDN          1
SNPA: 909
DIRECTORY NUMBER:      7455164
LT GROUP NO: 10
LTCLASS:  BRAFS    DEFAULT LOGICAL TERMINAL: N
EKTS: N CACH: N
BEARER SERVICE RESTRICTIONS:      NOPMD
CS: NI2 PS: N
VERSION: FUNCTIONAL   ISSUE: 2
SPID-SUFFIX:         1
LEN: SLCM  02 0 00 18    TEI: DYNAMIC
CUSTGRP:              BNR  SUBGRP: 0  NCOS: 0  RING: Y
LINE CLASS CODE: ISDNKSET
MAXKEYS: 64
OPTIONS:
MSB $ SFC
ACOU 1 1 HLD FC 6 CPU 0 RCC2 81 $ CFU N $ I 1

    KEY       DN
    ---       --
                1       DN 7455164 NCPA 4

              KEY     FEATURE
    ---     -------
                1       CRBL 2 2
                1       ACOU 1 1 1
                1       DBC SPEECH
                2       AFC DBC 3_1_KHZ
                3       AFC DBC 56KDATA
                4       AFC DBC 64KDATA
               14       CPU     0 RCC2        81     $
               16       CFU N                                    $ I  1
               17       FC      3
               21       FC      6
               22       MSB $
               24       RLS
               25       HLD
```

- The NBCQUERY command is modified to output the NBC on the basis of CT for NI2 sets. The following shows the changes in the output for NBCQUERY:

```
>nbcquery 7455164
Notification Busy Status:
NBL (VI) =  1     NBC (VI)=  0
NBL (CMD) =  1     NBC (CMD)=  0
```

- The POST DK maintenance command can hold up to 10 DN appearances in its buffer. Any DN that has more than 10 DN appearances is prompted to display the information by key, not with the "all" option.

Data Schema

Table KSETFEAT is modified to extend the AFC assignment and ACOU/NBL assignment on a call type basis. The assignment of CRBL values for each call type creates the appropriate number of AFC keys, as is similarly done for the NUMC option. Table KSETFEAT is also modified to store the DBC information for each DN appearance key.

Fields modified are FEATURE and KVAR. Values DBC and CRBL have been added to the FEATURE field. The KVAR field is changed to accommodate ACOU call type assignment

and two NBL values--one for each call type. The KVAR field is also changed to accommodate the DBC (default bearer capability) assignment for each AFC provisioned and to accommodate the new line options CRBL and DBC. The following example shows the changes to KSETFEAT for ACOU and DBC:

```
>pos isdn 7 1 acou
ISDN 7 1 ACOU ACOU 2 1 1
>pos isdn 7 1 DBC
ISDN 7 1 DBC DBC SP
>list 7
FEATKEY FEATURE KVAR
-------------------
ISDN 7 1 ACOU ACOU 2 1 1
ISDN 7 1 CRBL CRBL 2 2
ISDN 7 1 DBC DBC DBC_SP
ISDN 7 2 AFC AFC 1 DBC_3_1K
ISDN 7 3 AFC AFC 1 DBC_56K
ISDN 7 4 AFC AFC 1 DBC_64K
ISDN 7 5 CPU CPU ISDN 7 $
ISDN 7 14 FC FC 6
ISDN 7 25 RLS RLS
ISDN 7 64 RLS RLS
```

Log Message Changes

This feature creates a new audit that checks for a mismatch between the notification busy counter and the actual number of calls in a waiting state for each call type (AUDT680) for NI-2 sets. An example follows:

```
AUDT680 <date> <time> INFO ACOU CT COUNTER MISMATCH
                      Audited-DN = <dn-digits>
                      NBC (VI) = <VI nbc> Audited-COUNT (VI) = <audited-count>
                      NBC (CMD) = <CMD nbc> Audited-COUNT (CMD) = <audited-count>
```

OM Changes

NONE

Service Order

The following changes in the Service Order system are introduced by Busy Determination Parameter Enhancement:

- Option CRBL is permitted for NI-2 sets only. It is assigned using the NEW command. It is used instead of option AFC or NUMC. The CHF (change feature) command is disallowed for CRBL. In order to change the CRBL values for a DN, the DN must be deleted and re-entered using SERVORD.

Following is an example of a service order using the NEW command to assign CRBL:

```
>new
SONUMBER:     NOW  96 10 26 AM
>
DN:
>6214040
LCC_ACC:
>isdnkset
GROUP:
>bnr
SUBGRP:
>0
NCOS:
>0
SNPA:
>613
KEY:
>1
RINGING:
>y
LATANAME:
>nillata
LTG:    0
>
LEN_OR_LTID:
>wits 80
OPTKEY:
>1
OPTION:
>CRBL
VI:
>2
CMD:
>1
OPTKEY:
>1
OPTION:
>DBC
DBC:
>DBC_SP
OPTKEY:
>2
OPTION:
>DBC
DBC:
>DBC_3_1K
OPTKEY:
>3
OPTION:
>DBC
DBC:
>DBC_56K
OPTKEY:
>$
```

- Option DBC is permitted for NI-2 FIT sets. It is automatically assigned to a DN or AFC key during service order activity. The CHF command is used to change the DBC value for a DN or AFC key.

This example uses the CHF command to change the DBC value for key number 2 from 3_1_KHZ to SPEECH:

```
>chf
SONUMBER:      NOW  96 10 26 AM
>
DN:
>6214040
OPTKEY:
>2
OPTION:
>DBC
DBC:
>DBC_SP
OPTKEY:
>$
```

- SERVORD prompts for option ACOU have been modified as follows:
  — For NI-1 sets, SERVORD only prompts for a value for the NBL for voiceband information (VI) call type. The prompt for the NBL value for VI call types is VI_NI1_NBL.
  — For NI-2 sets SERVORD prompts for the NBL value for Circuit Mode Data (CMD) calls as well as the VI_NI1_NBL value. The prompt for the NBL value for CMD call types is CMD_NBL. The CMD_NBL prompt only applies to NI-2sets.

  This example uses the ADO command to assign ACOU.

```
>ado
SONUMBER:      NOW  96 10 26 AM
>
DN:
>6214040
OPTKEY:
>1
OPTION
>ACOU
VI_NI1_NBL:
>1
CMD_NBL:
>0
OPTKEY:
>$
```

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

This feature needs the following feature to function properly: AF6641, NI-1/NI-2 Interface Identification. This feature is part of a group of features used by feature: AF6632, ISDN Parameter Downloading, FPE and MSGING.

The CRBL and the DBC data is downloaded to the customer premises equipment (CPE) using the functionality created by feature AF6632, ISDN Parameter Downloading.

In NA008, the ISDN idle notification trigger condition is enhanced. The enhancement is based on the notification busy condition for each separate call type. The enhanced trigger occurs when the notification busy condition is cleared, and then notifies the feature involved. This enhancement applies to the following features:

- Automatic Call Back (ACB)
- Automatic Recall (AR)
- Ring Again (RAG)
- CAll Forwarding (CFX)
- Call Park (PRK)
- Key Short Hunt (KSH)

Restrictions/Limitations

The following limitations and restrictions apply to Busy Determination Parameter Enhancement:

- The simultaneous alerting of calls presented to the user is limited to the NBL for each DNCT.
- Option CRBL is assignable only to NI-2 sets.
- Logs that include a key number as part of their output (for example LINE138 and AMAB17) might output a report that identifies a key number that is different from the actual key used by the set. This occurs because the DMS switching system is unable to control which key number is used by the NI-2 set. The NI-2 set uses its own intelligence to determine which key to present the call. However, the output report for the key does associate the key with the correct DN.

LAYER   **LN-NOW**
NA008 PRODUCT

                                                                                                   APPLICATION
ACTID   **FEATURE TITLE**   ISDN
AF6688   Multipoint EOC Performance Monitoring

Description

This feature, Multipoint Embedded Operations Channel (EOC) Performance Monitoring,
provides the computing module (CM) funtionality to offer multipoint EOC performance
monitoring (PM) capabilities for integrated services digital network (ISDN) Basic Rate
Interface (BRI) service.

An mp-eoc configuration on an ISDN BRI U-LOOP has intermediate line units (for example,
LULT, LUNT) between the 2B1Q line card and the network terminating equipment type 1
(NT1). One to six intermediate line units can be used to extend the existing U-loop range
beyond the 18,000 feet from the DMS central office (CO). This feature enhances PM
capabilities to monitor and maintain intermediate line units from the DMS maintenance and
administration position (MAP) or Transaction Language 1 (TL1) operations system (OS)
interfaces.

Command Changes

Multipint EOC Performance Monitoring has the following effect on the MAP user interface.
The MAP LTPISDN commands have additional parameters and display additional
information. Sample command responses follow:

- QLAYER

```
>qlayer l1 mplu 2
Line contains no line units.
```

- RLAYER

```
>rlayer l1 mplus
Line unit(s) requested not in sync.
```

- DET

```
>det mplu 6
Line only contains 2 in-sync MPLUs
```

- THR

```
>thr mplu 2
Failed to get U-sync status.
```

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- L1BLMALM

```
>l1blmalm qryalrm
LOOP Alarm Reporting Status:
LOSW   LOS    LOSDG   NTM    MPLUFAIL TSYNC   PERF
ON     ON     ON      OFF    ON       ON      ON

OFFICE Alarm Reporting Status:
LOSW   LOS    LOSDG   NTM    MPLUFAIL TSYNC   PERF
ON     ON     ON      OFF    ON       ON      ON
```

The TL1 commands: RTRV-PM-TOTS, TST-PM, TST-THRS, and RTRV-TRNSL have additional or modified parameters and/or display information.

Data Schema Changes

Multipoint EOC Performance Monitoring has the following effect on tables:
- adds fields PMODE and MPLUFAIL to table LNTHRSH
- adds office parameter ISDN_MPLU_NODE_FAILURE to table OFCVAR

The LNTHRSH table is active if the ISDN line maintenance software is packaged into the CM load. Following is an example:

```
LEN                     BLMIDX PMODE LOSW   LOS   LOSDG  NTM  TSYNC  PERF  MPLUFAI
----------------------------------------------------------------------------------
HOST 00 0 8 14     0      PATH        ON    ON    ON     OFF  ON     ON    ON
```

Log Message Changes

Multipoint EOC Performance Monitoring has the following affect on logs:
- LINE131 is modified to include the mp-eoc line unit that exceeds the threshold when the PM mode is segmented. Following is an example:

```
RTP5    LINE131 MAY24 13:37:49 5334 INFO Performance Monitoring (PM) Alert
        LEN HOST 01 0 14 20   DN 7235012
        Report Type PERFORMANCE ALERT
        Source MPLU 5 -   NE  SES CURR HR   THRESHOLD OF      6 EXCEEDED
```

- LINE145 is modified to generate the log when the mp-eoc line unit has an internal failure. An example follows:

```
RTP5    LINE145 JUN20 04:52:10 0321 INFO ISLC SIGNAL Alarm
        LEN HOST 01 0 15 20   DN 7225005
        mp-eoc node failure report  at MPLU 1     : LOOP state remains IDL
```

- LINE148 is modified to generate the log when a mismatch is detected between the LCME PM mode static data and the mode in sub-tending line units. An example follows:

```
RTP5    LINE148 MAY25 00:00:10 7253 INFO Layer1 BLM Parameters Refreshed
        LEN HOST 01 0 08 20   DN 7235011
        PM MODE MISMATCH REPORTED IN MPLU 1
        LU VALUE= SEG   CM VALUE= PATH  LCD VALUE=PATH
```

- ISDN202 is modified to generate the log when Layer 1 is reset. An example follows:

```
ISDN202  DEC10  20:53: 4200  INFO  Layer 1 Pegs reset
LEN  HOST  01 0 00 04   REASON: RLAYER command issued
```

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

This feature needs the following features to function properly:
- AF6748 - Multipoint EOC Performance Monitoring (XPM portion)
- AF6687 - Multipoint EOC Performance Monitoring (LCME portion)

The following paragraphs describe the interactions between Multipoint EOC Performance Monitoring and other functionalities.
- Feature AF6650, BRI Layer 2/3 Surveillance Monitoring, is changing some of the same LTPISDN MAP Level commands.
- Development for the Multipoint EOC Performance Monitoring feature is a combination of three features: CM (AF6688–CCM08), XPM (AF6748–XPM09), and LCME (AF6687–XPM09).

Restrictions/Limitations

The following limitations and restrictions apply to Multipoint EOC Performance Monitoring:
- The functionality provided by this feature is not available to the subscriber carrier module-100 access (SMA), enhanced to subscriber carrier module urban (ESMU), remote carrier urban (RCU), and remote digital terminal (RDT) peripherals.
- The functionality provided by this feature is not available to international line drawer (ILD) ISDN implementations.

- This feature is not applicable to S/T ISDN line card.

- If an hourly threshold is exceeded, it must be reported within 3 minutes (TR-821), but an ISDN enhanced line concentrating module (LCME) with 480 2B1Q lines could require 8 minutes to report the threshold exceeded.

- Based on TR-829, the Notify of Corrupted CRC message is an optional requirement and is not implemented by this activity.

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**   EKTS
AF6752   Non-EKTS to EKTS Changes

Description

This feature addresses the SERVORD design changes to provide the capability to change an integrated services digital network (ISDN) logical terminal identified (LTID) from non-EKTS to EKTS without removing the line from service or rebuilding the service.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

The Non-EKTS to EKTS Changes feature modifies the SLT ADD command to prompt EKTS as an option and a parameter. The SLT CHA command is modified to allow users to set EKTS as an option at the attribute setting. This modification enables the user to change the LTID from non-EKTS to EKTS by using the SLT CHA command.

The following options are modified.
- The SLT_ADD_OPTION is modified to include EKTS as follows:
  — TYPE is SLT_ADD_OPTION {SPIDSFX,PVC,CACH,EKTS}

- The SLT_CHA_OPTION is modified to include EKTS as follows:
  — TYPE is SLT_CHA_OPTION {SPIDSFX,ABS,PVC,EKTS,CACH}

The new prompt for the SLT CHA command is as follows:
- Prompt SET_ATTRIBUTE is modified to include EKTS. The new SLT_CHA_OPTION becomes*{SPIDSFX,ABS,PVC,CACH,**EKTS**}.*

The new prompt for the SLT ADD command is as follows:

- Prompt OPTION is modified to include EKTS. The new SLT_ADD_OPTION becomes {*SPIDSFX,PVC,CACH,**EKTS***}.

After this feature is implemented, the SLT_ADD_OPTION will be any of SPIDSFX,PVC,CACH,EKTS options. The EKTS LTID can be provisioned the way it was possible before changes.

Note: The SLT_ADD_OPTION now includes EKTS as SLT_ADD_OPTION.

The LTID cannot be provisioned if the EKTS parameter is entered 'N' but the EKTS option is added.

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

Since, the DMS table is not affected by this change, there is no impact on call processing. It affects only the CCM layer.

This feature should be able to interwork with all NA007/NA008 new features and NI-2 agent developments.

Restrictions/Limitations

The change from EKTS ISDN LTID to non-EKTS ISDN LTID will not be supported in the NA008 release.

LAYER	**LN-NOW**
NA008 PRODUCT	
	APPLICATION
ACTID **FEATURE TITLE**	CLN
AF6754 Change LEN (CLN) Enhancement	

Description

This SERVORD CLN command enhancement allows the command to be used on lines that have either the Call Pickup (CPU) or Speed Calling User (SCU) option, or both.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

Change LEN (CLN) Enhancement makes changes to the CLN SERVORD command to allow the command to be used on lines that have the CPU or SCU options, or both.

Example of service order

Currently if CLN is attempted on a line with CPU option present, the following error message is received:

```
' CANNOT CLN A LINE THAT HAS CPU FEATURE'
```

If CLN is attempted on a line with SCU option present, the following error message is received:

```
' CANNOT CLN A LINE THAT HAS SCU FEATURE'
```

The above error message will not appear after implementing the enhancement to the CLN command and will also allow the function of CLN to be performed on this line having CPU and SCU option.

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

NONE

LAYER   **LN-NOW**
NA008 PRODUCT

                                                                         APPLICATION
ACTID   **FEATURE TITLE**   LINEATTR/LTG
AF6755   LINEATTR Expansion–Part III

Description

LINEATTR (Line Attributes) Expansion–Part III increases the maximum number of tuples in table LINEATTR from 4096 to 32,000. LINEATTR Expansion–Part III also increases the number of Line Treatment Groups (LTG) from 512 to 9,999.

Command Changes

NONE

Data Schema Changes

Changed Table: LINEATTR

Field LNATTIDX in table LINEATTR has a new range of 0 to 31,999. Field LTG in table LINEATTR has a new range of 0 to 9,998.

Example

The datafill procedure for Table LINEATTR is not changed. The datafill procedure is the same as defined in NTP 297-2001-350. Example below shows a range increase for Table LINEATTR.

```
TABLE: LINEATTR
>add
LNATTIDX:
TYPE OF LNATTIDX IS LINEATTR_KEY
TYPE IS LINEATTR_KEY MULTIPLE WITH
      LAI         {0 TO 31,999}
>25
...
LTG:
TYPE OF LTG IS LINE_TREATMENT_GROUP
TYPE IS LINE_TREATMENT_GROUP {0 TO 9998}
>
```

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

NONE

LAYER   **LN-NOW**
NA008 PRODUCT

                                                                            APPLICATION
ACTID   **FEATURE TITLE**   ILDR
AF6811   ILDR Overload Control

Description

This feature also provides functionality to the feature AF6809, ILDR Overload Control
(XPM), for XMS-based performance module (XPM) changes.

The purpose of this feature is to implement the ISDN line drawer for remote (ILDR) flow
control (FC), to generate relevant logs and operational measurements (OM) reports in the
computing module (CM), and to throttle some maintenance actions that might cause an
outage. This feature eliminates the possible stoppage of the ILDR call process caused by the
too high packet frame traffic, that is, overload in the ILDR. The main conditions for this
overload are:

• lack of the HDLC protocol implementation (LAPD) buffers

• real time congestion

The following list describes the CM and ILDR behavior related to the ILDR FC state
changes:

• ILDR

— recognize congestion or overload state entry or exit and handle it internally toward
its P-side

— send relevant messages to the CM

— update OM statistic information

• CM

— print relevant log

— abort some maintenance actions on the ILDR

— reflect augmented fields of the congestion or overload statistics when displaying OM
information

Command Changes

The reason for transition to the ILD ISTB state is revealed when the QUERY FLT command
is executed. That reason is "Overload."

The following maintenance actions, which are executed from the MAP (maintenance and
administration position) terminal, are prevented during the ILD overload:

• ILD inactive bank loading

• ILD MATE loading

- ILD INservice test
- ILD QUERY CNTRS

Note: *When these maintenance actions are generated by the CI process, the following message appears on the MAP terminal: "No action is taken: ILD is in overload."*

In addition, the following maintenance actions are avoided during the ILD overload:
- ILD audit
- ILD OM collection

Data Schema Changes

NONE

Log Message Changes

ILDR Overload Control generates the existing PM181 log in the following instances:
- when ILDR enters the overload state, for example:

```
PM181 MAR5 15:03:56 7300 INFO LCM REM1 06 0
Node: InSv, Unit0 : InSv, Unit1 : ISTb
Drawer 8 : ISTb from InSv
Reason : Overload
```

- when ILDR exists the overload state
- when ILDR enters the congestion state, for example:

```
PM181 MAR15 11:25:01 1099 INFO SPX3
ILDcongestion state - Entry/Exit
```

- when ILDR exits the overload state

OM Changes

ILDR Overload Control adds a new OM group, ILDOVLD. This group is similar to the existing ISGOVLD group.

Group ILDOVLD provides the following OMs, for each sampling time, concerning the ILDR congestion or overload state:
- Register CONGENTR counts the number of ILDR entries to the congestion state.
- Register CONGEXIT counts the number of ILDR exits from the congestion state.
- Register CONGTIME counts the total time spent by ILDR in the congestion state.
- Register OVLDENTR counts the number of ILDR entries to the overload state.
- Register OVLDEXIT counts the number of ILDR exits from the overload state.
- Register OVLDTIME counts the total time spent by ILDR in the overload state.

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

The following limitations and restrictions apply to ILDR Overload Control:

- During the overload, it is recommended to execute only the necessary maintenance actions.
- As with the line concentrating module (LCM), line maintenance actions are also not recommended while in overload.

LAYER

NA008 PRODUCT

LN-NOW

APPLICATION

ACTID	**FEATURE TITLE**	SMA
AF6828	Flexlines: CMRDTINV Table Control Changes	

Description

This feature is one of a set of features that provides a Subscriber Module 100 - Access (SMA) with the capability to support Remote Digital Terminals (RDTs) of different line capacities. In addition, this feature provides the capability to increase the line capacity of an existing RDT with a minimal service outage, with no service loss on a line capacity decrease.

Command Changes

This feature removes the Query SMA Size tool, which is used to determine the size of all RDTs on an SMA, because an SMA is no longer limited to a single size RDT.

In addition, the following other command changes have been made:

* ADD: When an MVI RDT node is added, the MAXLINES sub-field accepts any number from a minimum of 96 to a maximum of 2048 lines. Subsequent RDT node additions no longer require that the number of lines on any new RDT match that of any existing RDT.

* CHANGE: When an existing MVI RDT node is being resized (line size increase/ decrease), the MAXLINES sub-field accepts any number from a minimum of 96to a maximum of 2,048.

Data Schema Changes

This feature adds new warning messages to data schema tables for changes to line capacity:

If the line capacity of an RDT is upsized by fewer than 96 lines, a warning message is displayed informing operating company personnel that the action is not recommended because small increments can cause fragmentation, for example:

```
Warning: Increments of 96 lines or greater are recommended. Refer to NTPs for details.
```

If the line capacity of an RDT is being downsized, a check is performed to determine if any line equipment numbers (LEN) are present above the new (lowered) MAXLINES value in table RDTINV. If any LENS are present above the new value, an error message is displayed informing operating company personnel that the RDT cannot be downsized because there are currently LENS provisioned above the new provisioned value, for example:

```
Error: This RDT can not be downsized because there are LENS provisioned above <line
number>.
```

Changes to other fields in RDTINV are not allowed while changing field MAXLINES. If other changes are entered in table RDTINV while MAXLINES is being changed, an error

message is displayed informing the operating company personnel that field MAXLINES cannot be changed while other fields are being changed, for example:

```
Error: MAXLINES field may not be changed while other fields are being changed.
```

Since an SMA must be in a manually busy or off-line state while increasing the line capacity of an RDT, attempting to increase the line capacity of an RDT while the SMA is in any other state results in error message being displayed, which informs operating company personnel that the SMA must be manually busy or offline to change field MAXLINES, for example:

```
Error: MAXLINES field may not be increased while SMA is INSV.
       Busy the SMA or delete and re-add the IDT
```

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

The Flexlines feature interacts with the SMA Integrated Channel Bank (ICB) variant node feature AF6716 in that Flexlines supports ICB nodes.

Restrictions/Limitations

The following limitation applies to Flexlines: CM RDTINV Table Control Changes.

The Flexlines capability allows each RDT subtending an SMA to have a different line size from a minimum of 96, to a maximum of 2048 within the existing capacities of the SMA, such as

• RDT line size cannot exceed 2048 lines

- total number of RDT lines that an SMA supports cannot exceed 5376
- total number of RDTs connecting to each SMA cannot exceed eight or seven when supporting integrated services digital network (ISDN) lines

Fragmentation is the result of numerous size changes to MVI RDTs on the same SMA. Each time a specific MVI RDT is UPSIZED or DOWNSIZED, it can cause holes in the terminal number map that cannot be reused. With the existing algorithm for terminal number management, the new ability to RESIZE an MVI RDT can cause excessive terminal number fragmentation. The result requires the SMA to be off-lined more than necessary to compress the terminal table. Once the terminal table is compressed the RESIZE of that MVI RDT is guaranteed to fit.

The Flexlines feature reduces how often an SMA might be required to go offline for terminal number compression. The following example shows how fragmentation is created by RDT upsizing, increasing the lines available, without ICBs assigned. TIDS used are:

- $8 * (671+2) = 5384$
- $4 * (672+2) = 2696$
- $2 * (673+2) = 1350$
- $1 * (674+2) = 676$

for a total of 10,106. Terminals used are:

- $4 * 671 = 2684$
- $2 * 672 = 1344$
- $1 * 673 = 673$
- $1 * 674 = 674$

for a total of 5375. This example is based on using the First Fit Algorithm. It also shows that when upsizing is not managed by quantities, fragmentation can become critical, and the SMA needs to be off-lined for terminal number compression.

In the worst case representation, seven upsizes use 5375 lines and a 10,106 TID space total. Any resize that is initiated after this reclaims an existing hole. For example, a resize to 675 terms requires a RDT to be deleted, which creates a minimum open area of $671 + 671 = 1342$ lines. With only MVI RDTs the fragmentation is manageable, and compression is not required.

The following example shows how fragmentation is created by RDT upsizing with ICBs assigned using 96 increments. TIDS used are:

- $8 * (480+2) = 3856$
- $8 * (24+1) = 200$
- $8 * (576+2) = 4624$
- $4 * (672+2) = 2696$
- $2 * (768+2) = 1540$

for a total of 12,916. Terminals used are:

- $8 * 24 = 192$

- 4 * 647 = 2304
- 2 * 648 = 1344
- 1 * 649 = 768

for a total of 4578. This example shows that by upsizing in increments of 96 the ITID space of 13,604 is not exceeded. The next upsize has to be accompanied by the deletion of a existing RDT. Once this deletion occurs, the new RDT fills an existing hole. Thus by using increments of 96 or greater, fragmentation does not become a issue.

LAYER   **LN-NOW**
NA008 PRODUCT

                                                             APPLICATION
ACTID   **FEATURE TITLE**   SMA
AF6829   Flexlines: CM Flex Change Command Interface

Description

This feature is one of a set of features that provides operating company personnel with the capability to support remote terminals (RDTs) of different line capabilities, on the same Subscriber Carrier Module–100 Access (SMA) or Expanded Subscriber Carrier Module–100 Access (ESMA). In addition, this feature provides operating company personnel with the capability to increase the line capacity of an existing RDT with a minimal service outage and no service loss on a line capacity decrease.

Command Changes

This feature creates three new non–menu Command Interpreter (CI) command at the IDT directory sublevel of the PM MAP level: RESOURCE, RESIZEBSY, and RESIZERTS.

The RESOURCE command performs a query function to display the number of lines of a posted integrated digital terminal (IDT) (GENTMC/CSC, ICB/ RFT) and the total number of lines (GENTMC/CSC + RFT + ICB) that are allocated on the host SMA or ESMA.

Commands RESIZEBSY and RESIZERTS are used to make IDT state changes for implementing the MVI IDT up-sizing. The RESIZEBSY command are processed only when the IDT is in the INSV state. The following error message is displayed when the RESIZEBSY command is entered and the IDT is not in the INSV state:

```
Request Invalid: No action taken.
IDT must be in the INSV state to use the RESIZEBSY command.
```

Similarly, the RESIZERTS command is accepted only when the IDT is in the ManB state.The following error message is displayed when the RESIZERTS command is entered and the IDT is not in the ManB state:

```
Request Invalid: No action taken.
IDT must be in the ManB state to use the RESIZERTS command.
```

The following error messages are issued in case the user enters the RESIZEBSY or RESIZERTS command when an ICB/RFT IDT is posted.

```
RESIZEBSY - This command is only supported for MVI RDTs.


RESIZERTS - This command is only supported for MVI RDTs.
```

In the case of a size increase where service will be effected, a warning message is displayed informing the craftsperson that all calls in the talking stage will be dropped and the posted IDT will go out-of-service.

```
WARNING! IDT yy will be taken out-of-service to a ManB state
for a RESIZE operation. To return the IDT to an InSv state
use the RESIZERTS command.
xx call(s) on the IDT will be affected.
Please confirm ("YES", "Y", "NO", "N")
```

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

Existing features supported by the TR303 interface peripheral will continue to be supported after the introduction of the Flexlines for TR303.

This feature is one of a set of features that provides the customer with the capability to support RDTs of different line capacities, on the same SMA XPM. The group of features associated with the Flexline capability are listed below:

- AF6828 - Flexlines: CM RDTINV Table Control Changes
- AF6830 - Flexlines: CM Change Command Automation/Lockout
- AF6812 - Flexlines: SMA/SMA2 XPM Table Expansion

- AF6834 - Flexlines: CM Dynamic Node Update and Memory Reclamation
- AF6836 - Flexlines: CM Flexlines Integration

This feature needs the following features to function properly:
- AF6828 - Flexlines: CM RDTINV Table Control Changes
- AF6830 - Flexlines: CM Flex Change Command Automation/Lockout

Restrictions/Limitations

NONE

LAYER   **LN-NOW**
NA008 PRODUCT

                                                                        APPLICATION
ACTID   **FEATURE TITLE**   CNA
AF7027   Interface Configuration Changes to CNA

Description

This feature implements the CNA portion of feature AF6658, Busy Determination Parameter Enhancement. Please see AF6658 in the *LN-NOW* section of this manual.

The CNA portion of AF6658 is the implementation of the CRBL option and DBC keylists. The CRBL extends the current AFC functionality for NI-2 sets to be able to have 16 functional calls per call type per DN assigned to a set. The DBC keylists assign data to be used by Parameter Downloading for downloading to NI-2 sets. DBC keylists are not used by call processing whatsoever.

Command Changes

The following user interface changes are created by the Busy Determination Parameter Enhancement feature:

- The NBCQUERY command is modified to output the notification busy count (NBC) on the basis of call type (CT) for NI-2 sets.
- The post directory number key (DK) maintenance command can hold up to 10 DN appearances in its buffer. Any DN with more than 10 DN appearances is prompted to display the information using the parameter KEY instead of ALL.
- The QLT (query logical terminal) command response display is modified to include new ACOU, CRBL, DBC, and NBL information.
- The query directory number (QDN) command response display is modified to include new ACOU, CRBL, DBC, and NBL information.

Data Schema Changes

Changed table: KSETFEAT

The following changes are made in table KSETFEAT:
- Entries for CRBL and ACOUN/NBL assignments are made on a call type basis.
- Entries reflect the appropriate number of alternate function code (AFC) keys for the CRBL values for each call type.
- The default bearer capability (DBC) information for each DN appearance key is stored in table KSETFEAT.

Log Message Changes

Log report AUDT680 is added by this feature.

OM Changes

NONE

Service Order

Busy Determination Parameter Enhancement introduces the following changes in SERVORD:

- Option CRBL is permitted for NI-2 sets only. It is assigned using the NEW command. It is used instead of option AFC or NUMC. The CHF (change feature) command is disallowed for CRBL. In order to change the CRBL values for a DN, the DN must be deleted and re-entered using SERVORD.

- Option DBC is permitted for NI-2 fully initializing terminal (FIT) sets. It is automatically assigned to a DN or AFC key during service order activity. The CHF (change feature) command is used to change the DBC value for a DN or AFC key.

- SERVORD prompts for ACOU (additional call offering unrestricted) have been modified as follows:

    — For NI-1 sets, SERVORD only prompts for a value for the notification busy limit (NBL) for voiceband information (VI) call type. The prompt for the NBL value for VI call types is VI_NI1_NBL.

    — For NI-2 sets, SERVORD prompts for the NBL value for Circuit Mode Data (CMD) calls as well as the VI_NI1_NBL value. The prompt for the NBL value for CMD call types is CMD_NBL. The CMD_NBL prompt only applies to NI-2 sets.

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

The CRBL and the DBC data is downloaded to the customer premises equipment (CPE) using the functionality created by feature AF6632, ISDN Parameter Downloading.

In NA008, enhancement is made to the notification trigger for the busy condition. The enhancement is based on the notification busy condition for each separate call type. The enhanced trigger occurs when the notification busy condition is cleared. The enhancement to the notification trigger for the busy condition applies to the following features:

- Automatic Call Back (ACB)
- Automatic Recall (AR)

- Call Forwarding (CFW)
- Call Park (PRK)
- Key Short Hunt (KSH)
- Ring Again (RAG)

Restrictions/Limitations

- The simultaneous alerting of calls presented to the user is limited to the NBL for each DNCT.
- Option CRBL is assignable only to NI-2 sets.
- Logs that include a key number as part of their output (for example LINE138 and AMAB17) might output a report that identifies a key number that is different from the actual key used by the set. This occurs because the DMS switching system is unable to control which key number is used by the NI-2 set. The NI-2 set uses its own intelligence to determine which key to present the call. However, the output report for the key does associate the key with the correct DN.

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.

LAYER
NA008 PRODUCT

LN-NOW

APPLICATION

ACTID   **FEATURE TITLE**
AR2216   Enhanced Line Card Monitor for HASU Lines

Line Card Monitor

Description

This feature makes Line Card Monitor functionality available for Hardware Assigned Software Unassigned Status in Table LNINV (HASU) lines.The Line Card Monitor feature currently supports the detection of hazard and ring-ground faults on working lines. This feature enhances Line Card Monitor to detect hazard and ring-ground faults on HASU lines.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

A LINE132 log is generated without a Directory Number (DN) for HASU lines diagnosed with a Hazard Fault.

A LINE133 log is generated without a DN after a Hazard Fault has been cleared by the Hazardous Line Condition (HAZ) audit. The Line 133 log can also be generated by a manual diagnostic after a hazard fault has been cleared.

A LINE134 log is generated without a DN for HASU lines diagnosed with a Ring-Ground Fault.

A LINE135 log is generated without a DN after a Ring-Ground Fault has been cleared by the Ring-Ground Audit (part of the HAZ Audit).

Permanent Signal Partial Dial (PSPD) and Permanent Lock Out (PLO) treatment logs are not generated for HASU lines: line 105, line 106, line 108, line 138.

OM Changes

The following Trouble Queue and Hazard OMs are pegged for HASU lines: TRBQATT, TRBQOVFL, HAZDET, and HAZCLR.

The TRBQATT OM is pegged for each HASU line put in the shower queue. This is the same as for working lines. If the shower queue is full, this OM is not pegged.

The TRBQOVFL OM is pegged when a HASU line cannot be put in the shower queue because the queue is full. This OM is also pegged when a working line cannot be put in the shower queue because it is full.

The OM HAZDET is pegged in the LINEHAZ OM group when a HASU line is diagnosed as being hazardous. This pegging is done after the Line Hazard Test when the Shower Queue diagnostic is run on the line.

The OM HAZCLR is pegged in the LINEHAZ OM group when the HASU line is diagnosed as having its hazardous condition cleared. This pegging is done after the Line Hazard Test of a diagnostic is run on a line which no longer has a hazardous condition. For example, when the HAZ Audit puts a HASU line back in the shower queue after the hazard condition has been cleared, the subsequent Shower Queue diagnostic pegs this OM.

To detect hazard and ring-ground conditions on a HASU line, a call process is now used to process call originations on HASU lines. This means that OMs which can be pegged during the normal maintenance of a call process, can be pegged while processing HASU line originations.

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

This feature interacts with and expands the functionality of the existing Line Card Monitor (NC0109) and Enhanced Permanent Signal (AG3884) features.

It also interacts with the two other Enhanced Line Card Monitor features introduced in NA008:
- Enhanced Line Card Monitor Logs and Alarms Setting (AR2217)
- Enhanced Line Card Monitor Test Suspending Command (AR2268)

The hazard alarm banner is incremented and decremented when hazard conditions are diagnosed and cleared on HASU lines (feature AR2217). Shower queue and HAZ audit testing is suspended for HASU lines when the Line Card Monitor Suspend Timer is activated (feature AR2268).

Restrictions/Limitations

The functionality of this feature is available only on HASU lines with the Nortel Line Cards with the following Product Engineering Codes and Line Card Types:

- NT2X17, Type "A" North American Domestic
- NT2X18, Type "B" North American Domestic
- NT6X17AC, Type "A" North American Domestic
- NT6X18AA and AB, Type "B" North American Domestic
- NT6X19, Message Waiting Line Card

World Line Cards, ISDN and MBS are not supported.

LAYER
XPM 81

LN-NOW

APPLICATION
ESMA

ACTID	**FEATURE TITLE**
AD9754	ESMA: ICB: XPM – ICB MTC

Description

This feature provides the Expanded Subscriber carrier Module Access (ESMA) with the functionality to support maintenance actions on the Integrated Channel Bank (ICB) node, the ICB lines, and the ICB DS1.

This feature provides the ESMA with the functionality that supports maintenance actions on the ICB node, the ICB lines, and ICB DS1. The maintenance actions supported in the ESMA for each ICB component are as follows:

- ICB node: return-to-service (rts), busy (bsy)
- ICB lines: rts, bsy
- ICB DS1: rts, bsy

In this ESMA to channel bank configuration, a DS1 can be connected directly from the customer premises channel bank to an ESMA peripheral. This connection allows channel bank connectivity without incurring additional equipment costs of purchasing Line Concentration Module (LCM)/Enhanced LCMs (LCMEs) and central office side channel banks.

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 part of the feature set needed to support D4 channel banks subtending an ESMA. This feature set implements line services using the Foreign Exchange Subscriber End (FXS) signalling protocol for these channel banks. The group of features is listed below:

- AF6716 - ESMA: ICB: CNA - ICB Node Provisioning
- AF6717 - ESMA: ICB: CNA - ICB Line Provisioning I
- AF6718 - ESMA: ICB: CNA - ICB Node Maintenance
- AF6719 - ESMA: ICB: CCM - ICB Line Provisioning II
- AF6721 - ESMA: ICB: XPM - ICB Node Provisioning
- AD9754 - ESMA: ICB: XPM - ICB MTC
- AF6722 - ESMA: ICB: XPM - Call Processing
- AF6723 - ESMA: ICB: XPM - RBS Resource Manager
- AF6724 - ESMA: ICB: SIGP Scanner

Restrictions/Limitations

NONE

LAYER   **LN-NOW**
XPM 81

                                                                            APPLICATION
ACTID   FEATURE TITLE   BRI
AF6623   Integrated Services Digital Network (ISDN) Layer 2
               Migration

Description

This feature enables delivery of National ISDN Two (NI2) capabilities with the NA 008
Basic Rate Interface (BRI) offering by supporting a configurable number (default 8) of
logical links per BRI interface.

An ISDN XPM, upon receiving datafill for a line, brings that line into service without having
a logical terminal datafilled against that line. This datafill is received when the ISDN line
card is placed in the working state.

The major areas that this feature introduces, changes, or improves include:

- Static data download: New static data is delivered to the XPM to distinguish interface
  configurations.
- Seamless upgrade: Once an office is fully upgraded to NA008, the new Logical Link
  Manager (LLM) is activated without any interruptions to service.
- Direct Memory Access (DMA) recovery: 39464 bytes of DMA memory are recovered.
- Babbler audit: The layer2 babbler audit is implemented in the National ISDN (NI) LLM.
- Congestion: Controls for Service Access Point Identifier 16 (SAPI16) calls are fully
  implemented in the NI LLM.
- Packet Services: This feature provides support for packet services in the NI LLM.

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 dependent upon AF6641 - NI1/NI2 Interface Configurations.

NA 008 features dependent upon this feature are:
- AF6689 - ISDN BRI I/F Configurations Phase 1 XPM Base
- AF6663 - XPM Default Services
- AF6782 - ISDN Packet (PKT) Single DN
- AF6785 - Table Control for ISDN PKT Single DN

Restrictions/Limitations

- NI-1 lines are still restricted to two SAPI 0 Terminal Endpoint Identifiers (TEIs), while NI-2 lines may have up to eight SAPI 0 TEIs.
- Once the XPM has upgraded to the NI LLM, it can NOT be converted back to support the Legacy LLM.

LAYER   **LN-NOW**
XPM 81

                                                                                         APPLICATION
ACTID   **FEATURE TITLE**   ISDN
AF6666   Flex Call Channel Identification Support

Description

This feature enhances the Flexible Calling (FC) feature for Integrated Services Digital Network (ISDN) terminals capable of establishing two simultaneous voice calls to examine the channel information element in the Q.931 RETrieve message when bridging calls. This change makes Flex Call signalling compliant to Bellcore standards.

Flexible Calling is a set of capabilities that allows an ISDN user to control calls as follows:

• Designate an established call to be a conference call

• Hold a conference call and later retrieve the conference call from hold

• Bridge a basic call onto a conference call

• Release the last call added to the conference call

• Transfer the conference call to another member

• Release the conference circuit

• Release the entire conference call

This feature has enhanced the bridging capabilities for National ISDN-2 (NI-2) terminals and for 2B Fully Initializing and Non-Initializing Terminal devices (2B FIT/NITs). Flexible Calling for single B channel devices (BRIFS) is not affected by this activity.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

DMS-100F Maintenance Synopsis
                                          Release 08.01, November 1997

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

Flex Call may be activated once per Terminal Endpoint Identifier (TEI). Activation of Flex Call on multiple B channels, on the same TEI, is a future National ISDN (NI) enhancement and is not a requirement of TR-TSY-000858

LN-LATER

This section identifies changes and/or additions to line functions that are Maintenance 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

TELECOM 08

XPM 81

DMS-100F Maintenance Synopsis
Release 08.01, November 1997

LAYER

NA008 PRODUCT

ACTID   **FEATURE TITLE**

AF6472   1 Meg Modem Service – Ethernet on the LCM

LN-LATER

APPLICATION

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 is 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 is done to determine if the Drawer of the LCM supports XNET; a warning message with a confirmation request is 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 Integrated Services Digital Network (ISDN) 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 FC provided that the maximum conference size of each appearance is unique. When a user tries to provision more than one instance of FC 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 FC 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 Initial Program Load (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 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 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 Unrestricted (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 - Directory Hunt (DNH), Multiline Hunt (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 (CRR) and Call Request (CAR) 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.

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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**   ESMA
AF6719   ESMA: ICB: CCM – ICB Line Provisioning II

Description

Expanded Subscriber Carrier Module-100 Access (ESMA): Integrated Channel Bank (ICB):
CCM – ICB Line Provisioning II enables ICB lines to be provisioned on an ESMA. The
following changes are introduced by this feature:

- Add definitions for the new line card type for ICB lines, RDTICB

- Provide LNINV consistency checks for the new line card type. RDTICB is allowed only
  for lines associated with ICB IDTs

- For the LEN field of LNINV, add a line equipment number (LEN) definition for the ICB
  variant, and provide consistency checking on the values entered for the ICB LEN

- For the CARDINFO field of LNINV, add a new CARDINFO_TYPE definition to allow
  foreign exchange subscriber end signaling (FXS) to be specified as the signaling type for
  ICB lines

- Allow service provisioning using DMS SERVORD for the line class codes supported by
  the new ICB line card code, RDTICB

Command Changes

NONE

Data Schema Changes

ESMA: ICB: CCM - ICB Line Provisioning II affects data schema tables as described in the
following paragraph:

Data schema changes are made to table LNINV. No fields in LNINV are added or deleted.
The LEN (LNINV_KEY) field and the CARDINFO field are modified to add support for
ICB lines.

An example of an LNINV entry for an ICB line is:

```
LEN                 CARDCODE    PADGRP  STATUS  GND  BNV   MNO      CARDINFO
RDT1 20 0 01 02     RDTICB      STDLN   HASU    N    NL    N        ICB FXS
```

In this example, the ICB line is on channel 2 of RDT1 20, link 1.

LNINV LEN

The LEN is modified to allow ICB lines to be datafilled. For the ICB variant type, the
LEN definition is shown below:

- Site <4 characters>
- Frame {0 to 511}
- Unit {0 to 9}
- RDTLINK {1 to 28}; restricted to 1
- CHANNEL {1 to 24}

Values for the Unit and RDTLINK subfields should match the RDTLINK value datafilled in the associated RDTINV tuple. The Channel indicates the timeslot assigned to the line.

LNINV CARDINFO

The CARDINFO field of LNINV is modified to allow the ICB signaling type to be specified as FXS.

Log Message Changes

NONE

OM Changes

NONE

Service Order

Minor modifications to RDT specific error responses are made. AccessNode flow-through provisioning is not supported for ICB lines.

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

This feature does not affect existing line provisioning command sequences or strategies. Line calling features which require a reversal are not supported by this feature as it is incompatible with the FXS protocol.

This feature is part of the feature set needed to support line appearances on a D4 channel bank subtending an ESMA. This feature set implements line services using the Foreign

Exchange Subscriber End (FXS) signalling protocol for these channel banks. The group of features is listed below:

- AF6716, ESMA: ICB: CNA – ICB NODE PROVISIONING
- AF6717, ESMA: ICB: CNA – ICB LINE PROVISIONING I
- AF6718, ESMA: ICB: CNA – ICB NODE MAINTENANCE
- AF6719, ESMA: ICB: CCM – ICB LINE PROVISIONING II
- AF6721, ESMA: ICB: XPM – ICB NODE PROV
- AF6722, ESMA: ICB: XPM – CALL PROCESSING
- AF6723, ESMA: ICB: XPM – RBS RESOURCE MANAGER
- AF6724, ESMA: ICB: SIGP SCANNER
- AF9754, ESMA: ICB: XPM – ICB MTC

This feature needs the following features to function properly:

- AF6716, ESMA: ICB: CNA – ICB NODE PROVISIONING
- AF6718, ESMA: ICB: CNA – ICB NODE MAINTENANCE
- AF6721, ESMA: ICB: XPM – ICB NODE PROV

This feature is part of a group of features used by feature:

- AF6717, ESMA: ICB: CNA – ICB LINE PROVISIONING I
- AF6718, ESMA: ICB: CNA – ICB NODE MAINTENANCE

This feature group is optional, with the optionality controlled by feature AF6716 using Software Optionality Control (SOC). This feature group is part of the CNA08/XPM09 release. Please reference AF6716 in the **SW-LATER** section of this manual for a description of the SOC functionality.

Restrictions/Limitations

The following limitations and restrictions apply to ESMA: ICB: CCM – ICB Line Provisioning II:

- No TR-303 messaging or object provisioning (associated with other IDT variant types) is provided for ICB variants.
- FXS is the only protocol used by ICB nodes and lines for this release. Services supported by this feature must be supported by FXS loop start/FXS ground start or voice path signaling. Since FXS does not support a battery reversal, line service class codes and features that require a reversal are not supported. Integrated services digital network (ISDN) and Meridian Business Set (MBS) are not supported. Since the FXS protocol does not provide for adjustable battery, message waiting lamp is not supported.
- The preferred sequential channel number assignment is used for ICB FXS lines.

LAYER   **LN-LATER**
NA008 PRODUCT

                                                                   APPLICATION
ACTID   **FEATURE TITLE**   ISDN
AF6753   Flow Through Provisioning: Manipulating Line Features

Description

Prior to this feature, certain integrated services digital network (ISDN) line features could not be added, changed, or deleted while the line was call processing busy. Flow Through Provisioning: Manipulating Line Features allows a certain set of ISDN features to be manipulated (added, changed, deleted) using SERVORD commands ADO, CHF, and DEO when the line is call processing busy.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

The add option (ADO), change feature (CHF), and delete option (DEO) SERVORD commands are allowed for the features CFU, CBU, CDU, and ACOU when the line is call processing busy. The adding, changing, and deleting of the features CFD and CFB is allowed during processing busy for the normal mode and is prevented for the programmable and fixed modes (ISDN BRAFS terminals only).

The AFC feature cannot be manipulated to allow the addition, deletion, and modification of the AFC keys when the line is call processing busy.

The CFU, CBU, and CDU features are modified to allow them to be deleted from a line when the terminal is call processing busy. However, if the terminal is in the process of registering Call Forwarding and the delete command is issued, the deletion is blocked. The feature CFF cannot be deleted when call processing is busy. The features CFD and CFB cannot be deleted when call processing busy for programmable or fixed mode, but is allowed for normal mode.

Error messages

The Flow Through Provisioning: Manipulating Line Features feature introduces the following SERVORD error messages:

```
Call Forwarding cannot be deleted when it is being programmed.


Call Forwarding Busy Programmable cannot be deleted while set is call processing busy.


Call Forwarding Busy Fixed cannot be deleted while set is call processing busy.


Call Forwarding Don't Answer Programmable cannot be deleted while set is call
processing busy.


Call Forwarding Don't Answer Fixed cannot be deleted while set is call processing busy.


Call Forwarding cannot be deleted while set is call processing busy.


Call Forwarding cannot be deleted when the line is a MADN appearance in the ringing
state.


LTID (ltid#): is in improper state. (Message indicates the line is in the call
processing busy state while attempting to delete CFF).
```

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

NONE

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 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 ;

                    EXTSEIZ EXTOVFL EXTHI    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.

LAYER　　　　　　　　　　　　　　　　　　　　　　　　**LN-LATER**
NA008 PRODUCT

　　　　　　　　　　　　　　　　　　　　　　　　　　　　APPLICATION

ACTID　　　　**FEATURE TITLE**　　　　　　　　　　　　CFW
AJ4192　　　　Call Forward Fraud Prevention (CFFP)

Description

Call Forward Fraud Prevention is an NA008 feature developed to help decrease incidents of fraudulent calls, which involve certain types of call forwarding.

The call forwarding types to which CFFP applies are residential programmable call forwarding types, also referred to as RES programmable CFW types, and include:
- Call forward all calls/customer (CFW/C)
- Universal access to call forward (UCFW)
- Call forward busy line (CFBL)
- Call forward don't answer (CFDA)
- Call forward remote access (CFRA)
- Selective call forwarding (SCF)

Call Forward Fraud Prevention Functionality

To help reduce fraud on call forwarding. CFFP functionality allows the operating company to:
- Define dial plans that cannot be assigned as forward-to DNs on an office-wide basis. All or a subset of these dial plans can be overridden on a per-line basis through a new line option called CFFPOVR (Call Forward Fraud Prevention Override).
- Set an upper limit on the number of times a forward-to DN, which has a restricted dial plan that is overridden through line option CFFPOVR, can be changed within a period of time specified by the operating company.

Dial plan restrictions

With the CFFP feature, the operating company can define which dial plans are restricted to end users who want to program forward-to DNs using any one of the RES programmable CFW types. The dial plans that are to be restricted are datafilled in two new tables introduced by the CFFP feature (tables CFFPDPLN and CFFPTYPE), and apply to whole office. Restricted dial plans can be defined for each or for all of the RES programmable CFW types that apply to CFFP.

An override option, CFFPOVR, is available on a per-line basis to allow individual tailoring of the office-wide list of dial plan restrictions. All or some of the restricted dial plans can be overridden through this line option, which is applicable to all of the RES programmable CFW types.

Limit on changing the forward-to directory number

When the CFFPOVR option is assigned to an end user's line, a limit can be set on the number of times a forward-to DN, which has a restricted dial plan specified in the CFFP tables, can be changed. The limit value ranges between 0 and 30 changes within a set period of time, which has a range of 30 through 240 minutes. A limit of 0 indicates that the number of times a forward-to DN can be changed is unlimited.

Existing call forward restrictions

The RES programmable CFW types to which CFFP applies already have some restrictions on the types of DNs that can be programmed as forward-to DNs. There are also existing patches, GLS11, GLS12, and PTF40, that provide the functionality to block programming of international calls for certain types of call forwarding.

When the SOC for CFFP is ON, CFFP takes over the restrictions except for the restrictions that apply when the end user's own number is involved, which are still handled by the different call forwarding types. The CFFP feature also blocks operator-assisted calls that are not currently blocked by the different call forwarding types, such as those not blocked by SCF.

The functionality provided by patches GLS11, GLS12, and PTF40, is included in the CFFP feature, and is available when the SOC for the CFFP feature is ON. Therefore, as of NA008, these patches are no longer available.

The GLS11 patch applies to Plain Ordinary Telephone Service (POTS) agents, while the GLS12 and PTF40 patches apply to RES and Meridian Digital Centrex (MDC) agents, which have an additional type of call forwarding, Call Forward Universal Key (CFK). Since there is POTS and MDC agent support, limited support of these agents is also included in the CFFP feature; only IDDD DNs (as with the patches) are automatically blocked for POTS and MDC when the SOC for the CFFP feature is ON.

When the SOC for the CFFP feature is idle, restrictions on IDDD do not apply. For POTS agents, when the call forward programming attempt is blocked, the CFPADENY OM register is pegged in order to comply with the existing POTS call forwarding behavior.

Call Forward Fraud Prevention operation

Call Forward Fraud Prevention is activated through the software optionality control (SOC) utility. Once CFFP is activated, any forward-to DNs programmed by the end user are validated by CFFP following the translation stage in call processing. That is, the translated digits are used to validate the forward-to DN. The request to program the forward-to DN is accepted or rejected as described below.

- If the dial plan of the programmed forward-to DN is restricted, as specified in the CFFP tables, the request to program the forward-to DN is rejected.

- If the dial plan of the programmed forward-to DN is restricted, as specified in the CFFP tables, but is overridden through line option CFFPOVR, the request to program the forward-to DN is accepted.

- If the dial plan is not restricted, that is, not specified in the CFFP tables, the request to program the forward-to DN is accepted.

Each time an attempt to program a forward-to DN is denied because either the dial plan of the DN is restricted, as specified in the CFFP tables, or the limit for changing the forward-to DN is exceeded, the call is routed to the NACK (negative acknowledgment) treatment when the RES programmable CFW type used to program the forward-to DN is CFW/C, UCFW, CFBL, or CFDA. When the RES programmable CFW type used to program the forward-to DN is CFRA or SCF, the call is routed to an announcement.

Note: *The CFFP feature preserves the existing treatment provided by each call forwarding type. Therefore, depending on the type of call forwarding feature used by the end user to program the forward-to DN, either a NACK treatment or announcement is provided to the end user.*

A log report (CFFP600) can be generated when an attempt to program a forward-to DN is denied because the dial plan is restricted, and another log report (CFFP601) can be generated when the limit for changing the forward-to DN is exceeded.

Command Changes

The CFFP feature modifies both query and service order commands.

Modified Query Commands

Using query commands can show if the CFFPOVR option is assigned to a line and the parameters associated with it. The CFFP feature modifies the Query Directory Number (QDN), Query Line Equipment Number (QLEN), Query Working Line Equipment Number (QLENWRK), and Query Working Directory Number (QDNWRK) commands to show the CFFPOVR option when it is assigned to a line. The dial plan codes that CFFPOVR overrides are also shown, as well as the limit. (The limit is the maximum number of times the end can change the forward-to DN within the predefined period of time specified by the operating company through office parameter CFFP_CONTROL).

The following shows an example of the QDN command output for a line that is assigned the CFFPOVR option:

```
> qdn 6246112

DN:                   6246112
TYPE:                 SINGLE PARTY LINE
SNPA: 613   SIG: DT   LNATTIDX: 271
LINE EQUIPMENT NUMBER:    HOST 01 0 01 19
LINE CLASS CODE:          1FR
IBN TYPE:             STATION
CUSTGRP:              RESG271 SUBGRP: 0 NCOS:0
LINE TREATMENT GROUP:             1
CARDCODE: 6X17AC    GND:N    PADGRP: STDLN    BNV: NL    MNO: N
PM NODE NUMBER:           72
PM TERMINAL NUMBER:            52
OPTIONS:
DGT CFW C NSCR 2 I $
RES OPTIONS:
CFFPOVR IDDD INTERTOL$ 15
```

Modified Service Order Commands

The CFFP feature does not introduce any new service order commands; however, it enhances the ADO, CHR, NEW, DEO, and OUT commands to support the CFFPOVR line option.

If universal access is turned off, that is, field RES_AS_POTS for office parameter RES_SO_SIMPLIFICATION is set to Y (yes), a Plain Ordinary Telephone Service (POTS) line becomes a RES line when adding the CFFPOVR option to a line, and reverts to POTS when removing the CFFPOVR option from a line, if it is the last RES option being removed.

Data Schema Changes

The CFFP feature introduces tables CFFPDPLN and CFFPTYPE, and modifies tables IBNFEAT, CUSTAREA, and LCCOPT. The CFFP feature also introduces a new office parameter, CFFP_CONTROL, in table OFCENG.

New Table CFFPTYPE

Table CFFPTYPE (Call Forward Fraud Prevention Type) specifies the RES programmable CFW types that are to have restricted dial plans. Each RES programmable CFW type specified, has an associated entry that points to a tuple in table CFFDPLN. New fields are KEY and TYPEIDX.

In addition to the standard DMS table control error messages, the following CFFP-specific error messages may be displayed when attempting to datafill table CFFPTYPE:

```
TUPLE NOT UPDATED - MULTIPLY-DEFINED CFW TYPE
CANNOT ADD TUPLE -  NOT PERMITTED
CANNOT PERFORM OPERATION
TUPLE NOT DELETED - OFFICE TUPLE IS MANDATORY
TUPLE NOT UPDATED- DEFAULT TYPE ALL IS MANDATORY
```

The following shows sample datafill for table CFFPTYPE:

```
> cha
TYPEIDX:
> all 2
TYPEIDX:
> cfw DEFAULT
TYPEIDX:
> cfra DEFAULT
TYPEIDX:
> $

TUPLE TO BE CHANGED:
OFFICE (ALL 2) (CFW DEFAULT) (CFRA DEFAULT) $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
Y

TUPLE CHANGED

> list all

KEY                                                       TYPEIDX
_____
OFFICE                     (ALL 2) (CFW DEFAULT) (CFRA DEFAULT) $
```

New Table CFFPDPLN

Table CFFPDPLN (Call Forward Fraud Prevention Dial Plan) defines dial plan restrictions on an office-wide basis. All or a subset of these dial plan restrictions can be overridden through line option CFFPOVR. New fields in this table are: DPLNIDX, IDDD, FGB, INTERTOL< INTRATOL, COIN, 1500, 1700, 1800, 1900, N11, and NPANXX.

Field DPLNIDX contains the entry associated with the entry in table CFFPTYPE, which is used to access table CFFPDPLN.

In addition to the standard DMS table control error messages, the following CFFP-specific error messages may be generated when attempting to datafill table CFFPDPLN:.

```
MEMORY ALLOCATION PROBLEM
TUPLE NOT UPDATED - MULTIPLY-DEFINED DNS
TUPLE NOT DELETED - INDEX IS REFERENCED BY TABLE CFFPTYPE
VECTOR OF 3 OR 6 DIGITS: 000-999, 000000-999999, XXX000-XXX999
TUPLE NOT FOUND - UNABLE TO ACCESS TABLE CFFPDPLN DUE TO UNDEFINED INDEX
TUPLE NOT UPDATED - FIELD NPANXX MUST BE 3 OR 6 DIGITS
TUPLE NOT UPDATED - ILLEGAL DN IN NPANXX FIELD
```

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The following shows sample datafill for table CFFPDPLN:

```
> add
DPLNIDX:
>2
IDDD:
>y
FGB:
>y
INTERTOL:
>n
INTRATOL:
>n
COIN:
>n
I500:
>500
I500:
>$
I700:
>700
I700:
>$
I800:
>800
I800:
>888
I800:
>$
I900:
>900
I900:
>$
N11:
>911
N11:
>411
N11:
>$
NPANXX:
>613625
NPANXX:
>$
TUPLE TO BE ADDED:
                2       Y Y     N       N       N
                                                        (500)
                                                        (700) $
                                            (800) (888) $
                                                        (900) $
                                            (911) (411) $
                                                        (613625) $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
Y

TUPLE ADDED

> list all

DPLNIDX                         IDDD        FGB     INTERTOL INTRATOL
COIN                  I500      I700        I800         I900   N11
NPANXX
```

```
DEFAULT          Y     Y     N     N     Y
                                                                        $
                                                                        $
                                                                        $
                                                                        $
                                                                        $
                                                                        $

2                Y     Y     N     N     N
                                                                (500) $
                                                                (700) $
                                                                (800) (888)
                                                                (900) $
                                                        (911) (411) $
                                                        (613625) $

        BOTTOM
```

Table IBNFEAT Changes

Modified table IBNFEAT contains information that defines IBN and RES line features.
A tuple in this table consists of fields KEY and DATA. The subfields included in field
KEY are LEN, DNNO, DF, and FEATURE. The subfields included in field DATA are
different for each IBN and RES line feature. Fields DPLNCODE, LIMIT, COUNT, DAY,
HOUR, and MINUTE are new; fields DF and FEATURE are modified. The following
shows sample datafill for table IBNFEAT:

```
LEN              DNNO    DF       FEATURE       DATA
_____
HOST 00 0 03 03   0      CFFPOVR        CFFPOVR       IDDD    20    15
```

Note: *Fields DAY, HOUR, and MINUTE make up the timestamp, and are only used by*
          the internal mechanism, therefore, are hidden fields. Internal table CUSTAREA
          is modified to add tuples that contain the information to hide the timestamp.

Note: *Table IBNFEAT is a read-only table and cannot be changed through the table*
          editor. The service order (SERVORD) utility is used to add or delete tuples to and
          from table IBNFEAT.

Table LCCOPT Changes

Modified table LCCOPT adds option CFFPOVR in the list of compatible options for the
supported RES line class code (LCC). The COMPAT field is modified. The following
shows sample datafill for table LCCOPT:

```
LCC
                    COMPAT
_____
RES
(ATC) (AUL) (BNN) (CDR) (CFFPOVR) (CFW) (CIR) (CLF) (CLI) (COD) (CWT)
(DGT) (DLH) (DNM) (DOR) (DTM) (ELN) (ESL) (FIG) (FNT) (FRO)
(FRS) (FSR) (GND) (HOT) (INT) (LOD) (LOR) (MAN)
```

Note: *Table LCCOPT is a read-only table and cannot be changed by the operating*
          company.

Table CUSTAREA Changes

Table CUSTAREA is used to hide the timestamp for the CFFP feature, which is contained in table IBNFEAT. The following tuples are added to table CUSTAREA:

```
REFAREA                                            FLDNAME
FSPEC                              PRTPOS
DISPLAY                           AREAREF
_____
CFFPOVR_IBN_VAR_AREA 1 DPLNCODE DPLNCODE 13 Y N
CFFPOVR_IBN_VAR_AREA 2 LIMIT LIMIT 72 Y N
CFFPOVR_IBN_VAR_AREA 3 COUNT ATMPTCNT 75 Y N
CFFPOVR_IBN_VAR_AREA 4 DAY DAY 78 N N
CFFPOVR_IBN_VAR_AREA 5 HOUR HOUR 82 N N
CFFPOVR_IBN_VAR-AREA 6 MINUTE MINUTE 85 N N
```

Note: *Table CUSTAREA is a read-only table and cannot be changed by the operating company.*

New Office Parameter CFFP_CONTROL

Office parameter CFFP_CONTROL in table OFCENG, which is used to specify the office-wide default limit on the number of allowable call forward programming attempts, and the period of time within which the number of programming attempts should not exceed the applicable limit. This office parameter is also used to indicate whether the log reports for CFFP (CFFP600 and CFFP601) are to be generated. This parameter consists of the following fields: DEFAULT_LIMIT, TIME_PERIOD, DENIED_LOG, and EXCEEDED_LOG.

Log Message Changes

The CFFP feature introduces the information log reports CFFP600 and CFFP601.

New Log CFFP600

Log report CFFP600 is generated each time an attempt is made to program a restricted directory number (DN). This log report is only generated when field DENIED_LOG of office parameter CFFP_CONTROL is set to Y. Following is an example:

```
DLSE CFFP600 JAN05 12:10:15 1818 INFO Attempt restricted
Call ID            :       6789 7654
Subscriber DN      :       6137226789
Forward-to DN      :       15148443345
Dial plan code     :       INTERTOL
CFW type           :       UCFW
```

New Log CFFP601

Log reports CFFP601 is generated each time the end user exceeds the allowable number of times (set at the LIMIT prompt when assigning line option CFFPOVR) a forward-to DN, which has a restricted dial plan that is overridden through line option CFFPOVR, can be programmed within the predefined period of time (set in field TIME_PERIOD of office parameter CFFP_CONTROL). This log report is only generated when field

EXCEEDED_LOG of office parameter CFFP_CONTROL is set to Y. Following is an example:

```
DLSE CFFP601 JAN07 12:15:28 2104 INFO Limit exceeded
Call ID          :      3219 6457
Subscriber DN    :      6137226789
Forward-to DN    :      15148443345
Dial plan code   :      INTERTOL
CFW type         :      UCFW
Override option  :      INTERTOL
Attempt counter  :      21
Limit on line    :      20
```

OM Changes

NONE

Service Order

New Option: CFFPOVR

The CFFP feature introduces the new line option CFFPOVR (Call Forward Fraud Prevention Override). This new line option enables the operating company to override all or a subset of the restricted dial plans specified in the CFFP tables, for all of the RES programmable CFW types on a per-line basis.

New Prompts

New prompts associated with the CFFPOVR line option are: DIAL_PLAN_CODE and LIMIT:OFFICE_DEFAULTS. Every time the operating company modifies the value of LIMIT or DIAL_PLAN_CODE for a particular line, the counter for the number of attempts and the timestamp are reset to 0 for that line. If for any reason the counter needs to be reset for a line, the operating company can either remove the CFFPOVR option from the line and then add it again, or can execute the CHA (change) command on the line without actually changing any of the current datafill for the line.

Error Message

The following CFFP-specific error message for line option CFFPOVR may be generated when attempting to add the CFFPOVR option to a line.

```
SET OF {IDDD, FGB, INTERTOL, INTRATOL, COIN, I500, I700, I800,I900, N11, NPANXX} OR ALL
CFFPOVR can be assigned to hunt lines using only the ADO command
CFFPOVR can only be assigned to single party, MADN, or hunt lines
CFFPOVR can only be assigned to the primary member of a MADN group
CFFPOVR can only be assigned to the pilot DN of an MLH/DLH group
```

AMA Changes

NONE

Notes

The programmable call forward features (CFW, UCFW, SCF, CFRA, CFDA, CFBL) are engineering requirements since CFFP is invoked when a programmable CFW feature is invoked.

Alarms

NONE

Interactions

The following describes the interactions between CFFP and other functionalities.

Advanced Intelligent Network (AIN)

The Advanced Intelligent Network (AIN) functionality enables end-office call processing to use centralized service logic programs located at the Service Control Point (SCP). These programs 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 Common Channel Signaling No 7 (CCS7).

AIN 0.0

Once a call hits an AIN trigger, a query is sent to an off-board processor. The call is suspended until a response is sent back from the off-board processor. The off-board processor can respond with an order to redirect the call to another destination.

The CFFP feature can only screen the digits programmed by the end user. If call redirection occurs, a new call leg is created and the CFFP feature cannot block the new destination digits supplied by the off-board processor. Therefore, if the end user programs a forward-to DN that is defined in the switch as being an AIN 0.0 trigger, subsequent redirections of the call to a restricted DN resulting from this trigger being hit when an actual call is in progress, cannot be blocked by the CFFP feature.

AIN 0.1

The interaction between CFFP and AIN 0.1 is the same as the interaction between CFFP and AIN 0.0.

Call forwarding

The basic functionality of call forwarding is to redirect the calling party to another line.

The CFFP feature is only invoked when an attempt to program a forward-to DN is made using one of the RES programmable CFW types supported by CFFP. That is, CFW/C, UCFW, CFBL, CFDA, CFRA, and SCF.

Call Forwarding Remote Access (CFRA)

The CFRA call forwarding option allows end users to program and activate or deactivate Call Forward Universal (CFU), Call Forward Intragroup (CFI), Call Forwarding Fixed (CFF), or Call Forward All Calls/Customer (CFW/C) from a line other than their own.

When CFFP is active on the switch where the end user is connected, and the end user's line is assigned both CFW/C and CFRA, any programming attempts made remotely through CFRA are validated by CFFP.

Carrier Toll Denied (CTD)

The CTD features enables the operating company to specify a maximum of 21 carriers from which an end user is denied access for direct dialed (DD) and 1+NPA+555 calls.

When the end user is assigned the CTD feature, the forward-to DN cannot be a toll number using a carrier specified in the list, regardless of the overrides defined by the CFFP feature through line option CFFPOVR. Therefore, the restrictions defined by the CTD option take over any restriction overrides defined by the CFFP feature through line option CFFPOVR. If the DN is blocked by CTD, it cannot be overridden by CFFP. However, if the DN is not blocked by CTD, it is subject to CFFP screening.

Equal Access

The Equal Access (EA) software blocks calls where the NXX code, which is treated as a service access code (SAC), is datafilled in field SAC of table EASAC.

This existing restriction takes over any restriction overrides defined by the CFFP feature through line option CFFPOVR, but only when casual dialing (10XXX) is used.

Enhanced Secondary Directory Number (ESDN)

The ESDN option enables the operating company to add a separate set of options to each secondary directory number (SDN) associated with a primary directory number (PDN). This option also allows the end user to originate calls from an SDN.

Programmed forward-to DNs are subject to CFFP screening since CFW/C, CFBL, and CFDA can be assigned to an SDN. The CFFPOVR line option can also be assigned to an SDN, therefore, allows the operating company to override any restricted dial plans defined in the CFFP tables.

Full Carrier Toll Denied (FCTD)

The FCTD option enables the operating company to specify a maximum of 21 carriers from which an end user is allowed access for direct dialed (DD) and 1+NPA+555 calls.

When the end user is assigned the FCTD option, the forward-to DN cannot be a toll number using a carrier that is not specified in the list, regardless of the overrides defined by the CFFP feature through line option CFFPOVR. Therefore, the restrictions defined by the FCTD option take over any restriction overrides defined by the CFFP feature through line option CFFPOVR. If the DN is blocked by FCTD, it cannot be overridden by CFFP. However, if the DN is not blocked by FCTD, it is subject to CFFP screening at which point it can be blocked by CFFP.

Hunt Groups

A hunt group consists of several lines or members in an end user group. When a call terminates on a hunt group, the call passes from one member to another until one member in the group is free to answer the call. The number to access the hunt group is called the pilot DN. Several types of hunt groups exist, including the following:

- Directory Number Hunt (DNH)
- Preferential Hunt (PRH)
- Multiline Hunt (MLH)
- Distributed Line Hunt (DLH)

The CFFPOVR line option can be assigned to any member of a DNH or PRH type of hunt group, however, can only be assigned to the pilot DN of an MLH or DLH type of hunt group.

Multiple Appearance Directory Number (MADN)

The MADN feature allows a single directory number (DN) to be associated with multiple lines. The lines that are assigned this DN are referred to as the MADN group, and the line that corresponds to the DN, is called the primary member. MADN groups can be configured with either a single call arrangement (SCA), a multiple call arrangement (MCA), or an extension bridging (EXB) arrangement.

The CFFPOVR line option can only be assigned to the primary member of a MADN group configured with an EXB arrangement.

Account Code Required (ACR) and Override Call Forward on Account code restrictions (OCFA)

The ACR feature requires that a user enter an access code and account code when originating calls. When an originator programs a DN that requires an account code using a call forwarding type, the programming attempt is blocked.

The OCFA option is a RES line option that overrides the need for account/ authorization codes when forwarding to a number that would otherwise require an account/authorization code.

When the line is not assigned the OCFA option, the DN cannot be programmed. When the line is assigned the OCFA and ACR options, the DN can be programmed, but is subject to CFFP screening.

Speed Calling (SC1, SC2, and SC3)

Speed calling enables the end user to define a speed call code (usually one digit) for a DN. The end user then dials the speed call code rather than the whole DN.

The translated dialed digits resulting from the translation of speed call codes are subject to CFFP screening.

Subscriber Activated Call Blocking (SACB)

The SACB option provides end users with the capability to activate and deactivate call blocking, thereby, restricting or allowing certain types of calls.

A DN can be blocked by SACB, but only after it has been screened by CFFP. If the DN is restricted by both CFFP and SACB, it is blocked by CFFP. A DN that is restricted by SACB cannot be overridden by CFFP through line option CFFPOVR.

Toll Denied (TDN)

The TDN option prevents an end user from originating toll calls.

When the end user's line is assigned the TDN option, the forward-to DN cannot be a toll number regardless of any restriction overrides defined by the CFFP feature through line option CFFPOVR. Therefore, the restrictions defined by the TDN feature take over any restriction overrides defined by CFFP. If the DN is blocked by TDN, it cannot be overridden by CFFP. However, if the DN is not blocked by TDN, it is subject to CFFP screening.

Virtual Facility Group (VFG)

A VFG is a software structure that emulates a trunk. The translation for calls that route through VFGs in first done from the originating line or trunk to the incoming side of the VFG, and then from the outgoing side of the VFG to the terminating line or trunk.

If an end user programs a forward-to DN that subsequently results in the call being routed over a VFG, CFFP cannot screen the new set of digits that arise when the call passes through VFG routing.

Restrictions/Limitations

The following limitations and restrictions apply to CFFP:
* The CFFP feature is limited to the following line class codes (LCC):
  — RES
  — RES/1FR
  — RES/1MR
  — RES/ZMD
  — RES/ZMZPA

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- The CFFP feature provides limited support for Plain Ordinary Telephone Service (POTS) agents, therefore, when the last RES option is removed from a RES line, and the line is converted to POTS, CFFP functionality is limited.

- CFFP screening is only performed on DNS that are programmed once the feature has been activated through the Software Optionality Control (SOC) utility. Any forward-to DNs programmed prior to CFFP being activated through SOC, are not subject to CFFP screening.

- The CFFP feature requires that lines terminating to a COIN station, be within the same switch in order to perform screening.

- The number of times the forward-to DN can be changed can reach at most two times the limit specified by the operating company less one, for a particular line.

LAYER   **LN-LATER**
NA008 PRODUCT

                                                                         APPLICATION
ACTID   **FEATURE TITLE**   900FP
AJ4374   900 Fraud Prevention (CCM)

Description

The 900 Fraud Prevention (900FP) feature prevents local Directory Number (DN) fraud on 900 numbers. This feature allows the prevention of a type of 1-900 fraud, which is perpetrated by directly dialing a client ten-digit DN instead of the 900 number associated with it.

In the Canadian network, the 900 numbers are translated to 800/888 numbers prior to being translated into a real ten-digit DN. Through this feature, the end user is prevented from directly dialing the 800/888 number associated with the 900 number through datafill in the originating office.

Command Changes

NONE

Data Schema Changes

The 900FP feature modifies table DNFEAT to support the new CLNT900 option in field OPTLIST and table TMTCNTL to include the Blocked 900 (B900) treatment. Table DNFEAT assigns options against DNs.

Table DNFEAT Changes

The OPTLIST field is modified to accept the new CLNT900 value indicating that the DN is a 900 client DN. For physical lines, this table can be datafilled through SERVORD. For virtual DNs, such as DNs associated with trunks or Automatic Call Distribution/ Uniform Call Distribution (ACD/UCD) groups, table control is used to manually datafill the table. This limitation exists because SERVORD requires a Line Equipment Number (LEN) to be associated with a DN. Any DNs found in table DNROUTE do not have a LEN, and, therefore, options cannot be added to them through SERVORD.

Following is an example of DNFEAT datafill:

```
>table dnfeat
TABLE: DNFEAT
>list all
TOP
AREACODE OFCCODE STNCODE                        OPTLIST
----------------------------------------------------------
613 234 5465    (AINDN DNTRIG) $
514 342 8907    (CLNT900) $
BOTTOM
```

To support trunks (for example Primary Rate Interface (PRI), Private Exchange (PX)) associated with 900 numbers, the translation associated with these trunks must be modified. Instead of being directly routed in an office route table (OFRT, OFR2, OFR3, OFR4), a special translation DN must first be datafilled in table DNROUTE, which in turn indexes the office route formerly associated with the trunk. Once the special DN is created in table DNROUTE, the new CLNT900 option can be datafilled in table DNFEAT for 900 fraud detection.

The following example shows the Query Directory Number (QDN) output of a virtual DN (in this case, a trunk DN) once assigned the new CLNT900 option:

```
> qdn 7651234
-------------------------------------------------------------------
DN:                                                        7651234
TYPE: SPECIAL TRANSLATION
DNFEAT OPTIONS: CLNT900
-------------------------------------------------------------------
```

Table TMTCNTL Changes

Feature AJ4375 adds the new value B900 into the range of value for the TREATMT field of subtable TREAT in table TMTCNTL. For details on the data schema modifications in Table TMTCNTL, refer to feature AJ4375 in the *SW-LATER* section of the Maintenance manual.

Log Message Changes

When a fraudulent call occurs, either a LINE138 or TRK138 log is generated every time a call is routed to the B900 treatment with the proper datafill in place in table TMTCNTL:

- LINE138 log is generated when the calls originate from a line and are sent to a treatment.
- TRK138 log generation is turned on when the calls come from a trunk and are sent to a treatment.

Following is an example of how the B900 treatment is datafilled with the LINE138 log generation turned on.

```
> table tmtcntl
TABLE: TMTCNTL
pos lnt; sub treat
> lis all

TOP
TREATMT                              LOG

FSTRTE
-----------------------------------
B900                                    Y                                S

BLDN
```

Similarly, the next example shows how B900 treatment is datafilled with the TRK138 log generation turned on under the appropriate TRKGRP sub-table in table TMTCNTL:

```
> table tmtcntl
TABLE: TMTCNTL
pos PXTRKGRP; sub treat
> lis all

TOP
TREATMT                                        LOG

FSTRTE
------------------------------------
B900                                    Y                        S

BLDN
```

OM Changes

This feature introduces the new TFRB900 OM register (previously named FRSPR15) that is associated with the B900 treatment. This OM is pegged each time a call is blocked by the feature and routed to the B900 treatment. When the calling party is blocked by the 900FP feature, the end user is routed to the B900 treatment. The operating company datafills the B900 treatment in table TMTCNTL. It can be a tone or an announcement. The TRMTFR3 (Treatment Feature 3) OM group measures statistics for the feature treatments, which are used to check provisioning in the office.

Treatment groups are used to explain call situations which are attributable to a certain call feature, whether POTS, IBN, or other. This does not include treatments used to deny access to features for reasons of authorization. Following is output from the OMSHOW command:

```
>omshow trmtfr3 active

TRMTFR3

CLASS:   ACTIVE
START:1997/02/19 11:00:00 WED; STOP: 1997/02/19 11:10:18 WED;
SLOWSAMPLES:          7 ; FASTSAMPLES:          62 ;

          FRSPR1    FRRTEERR    TFRNDISC    TFRPSNF
          TFRINER   ISAEXIT     TFRPNUN     TFRUNPM
          FRMISRTE  FRQORREL    TFRICSA     TFRICSD
          GSMLNPMC  TFRCBFC     TFRB900     FRSPR16
          FRSPR17   FRSPR18     FRSPR19     FRSPR20
          FRSPR21   FRSPR22     FRSPR23     FRSPR24
          FRSPR25   FRSPR26     FRSPR27     FRSPR28
          FRSPR29   FRSPR30     FRSPR31     FRSPR32


    0         0          0           0           0
              0          0           0           0
              0          0           0           0
              0          0           0           0
              0          0           0           0
              0          0           0           0
              0          0           0           0
              0          0           0           0
    >
```

A LINE138 or TRK138 log can be generated every time the TFRB900 OM register is pegged, and the proper datafill is in place in table TMTCNTL.

The following example shows the addition of a tuple for a DN in table DNFEAT:

```
> table dnfeat
TABLE: DNFEAT
> add
AREACODE:
>514
OFCCODE:
>765
STNCODE:
>1234
DNOPT
>clnt900
DNOPT
>$
TUPLE TO BE ADDED:
514              765    1234   (CLNT900)$
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED
```

Service Order

The 900FP feature introduces CLNT900 option, a new line option under the existing field OPTLIST in table DNFEAT. When this feature is active, the new SERVORD DN CLNT900 option becomes available. The following customer commands are impacted to support this new line option:

- ADO - Add Option
- CHF - Change Feature
- DEO - Delete Option
- NEW - New Directory Number

The SERVORD utility is modified to support the CLNT900 line option. The AINDN option cannot be assigned in conjunction with the CLNT900 option.

The new CLNT900 option can be assigned against a 900 client DN for the following types of agents:

- 1FR/POTS line converted to RES (RES/1FR)
- 1MR/POTS line converted to RES (RES/1MR), ZMD/POTS line converted to RES (ZMD/RES)
- ZMZPA/POTS line converted to RES (ZMZPA/RES)
- RES
- Analog Business Sets (IBN)
- Key Business Sets (PSET)
- PBX and PBM lines
- INWATS lines
- Hunt groups
- ISDN lines

The CLNT900 option cannot be assigned to virtual DNs such as ACD/UCD virtual DNs and special translation DN used for trunk routing. ACD/UCD must be datafilled in table DNROUTE prior to being assigned the CLNT900 option in table DNFEAT.

AMA Changes

NONE

Notes

Although this feature has no specific hardware requirements, it does have software dependencies. The 900FP feature requires full CCS7 network connectivity between SSP and terminating switch; therefore, it is dependent on the following package:

- PEC code: NTX167AB
- NTX Name: SS7 Trunk Signaling Base
- Order Code: SS700001
- Functional Group: TEL00008
- PCL release NA002 and above

Alarms

NONE

Interactions

This feature interacts with the following:
- Advanced Intelligent Network (AIN)
- Anonymous Caller Rejection (ACRJ)
- ACD/UCD
- Coin line originating calls
- Call forwarding
- Denied Termination (DTM)
- Hunt groups
- Screen List Editing (SLE) features
- Series Completion (SCMP)

AIN 0.0, AIN 0.1, AIN 0.2

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

All AIN terminating triggers applicable on the call before the Authorize_Termination Point in Call (PIC #2) have precedence over the 900FP feature.

ACRJ

ACRJ allows subscribers to reject calls from callers who suppress the display of their names or DNs. Instead of reaching the subscriber, anonymous calls are routed to an announcement.

The 900FP feature is activated regardless of the ACRJ option assigned to the terminating party. If a call is not blocked out by 900FP and the ACRJ option is assigned to the 900 client DN station, calls on which callers have blocked the display of their DNs are routed to the ACRJ announcement.

ACD/UCD

The ACD/UCD feature allows calls to be evenly distributed to a number of preassigned stations known as ACD/UCD stations. These features queue incoming calls to a message desk. When calling an ACD or UCD group, the caller hears the treatment provided by the ACD/UCD group, such as audible ringing, music, or an announcement.

The 900FP feature supports ACD/UCD groups. Only the calls which are not blocked by 900FP can terminate on the ACD/UCD DN.

Coin Line Originating Calls

The 900FP feature blocks fraudulent 900 calls that originate from coin lines as long as a full CCS7 connectivity exists between the DMS-200 office and the DMS-100 terminating end office. If the operating company has the appropriate billing system in place for pay-phones and allows origination of 900 calls from coin lines, the 900FP feature performs fraud detection as expected and allows the call to go though, or routes the call to the B900 treatment.

Call Forwarding (CFW, CFF, CFU, CFD, CFDA, CFB, CFBL, CFGD, CFGDA)

The 900FP feature screens all calls terminating on a 900 client DN as a result of a call forward. Furthermore, the 900FP feature screens all calls terminating on a 900 client DN that has call forwarding (CFW) active before the forwarding takes place if granted by the fraud detection. A caller can forward a call a maximum of five times.

For example, call forwarding options may be assigned to a 900 client DN to overflow to another 900 client DN for reasons such as no-answer condition, busy condition, or forward unconditional. A call terminating on a 900 client DN1 that has CFW activated to forward to 900 client DN2 is screened for fraud detection by the 900FP feature before it terminates on the 900 client DN1 and again before it terminates on the 900 client DN2.

If a non-900 client DN has either CFDA or CFBL and is forwarded directly to a 900 client DN, the functionality differs depending on whether the forwarding is intra-switch or inter-switch. For inter-switch forwarding, the call is forwarded, but blocked before terminating at the 900 client DN. For intra-switch forwarding, the call is not forwarded, but continues to ring at the DN that was originally dialed. In either case, a fraudulent call does not terminate.

DTM

The DTM option prevents a line from receiving any calls. Calls attempting to terminate to a line with the DTM option receive denied terminating (DNTR) treatment.

The 900FP feature has precedence over the DTM option. A call screened out by the 900FP feature is routed to the B900 treatment even if the DTM option is assigned to the terminating party.

Hunt Groups (DNH, MLH, DLH, CIR, KSH)

A hunt group allows a terminating call to be offered subsequently to all members of the group for several rings until it is answered.

All hunt group configurations are supported by the 900FP feature. Only the calls which are not blocked by 900FP can terminate on the DN associated with the hunt group.

For a DNH hunt group, each member of the group is assigned a DN and, therefore, can be reached independently from the pilot DN. Consequently, to protect the entire DNH hunt group, the operating company must provision every single member DN with the CLNT900 DN option for proper 900 fraud detection.

SLE features (SCA, SCRJ, SCF, DRCW)

The SLE features provide call screening lists. A set of SLE audio announcements is used for all instructions and prompts. The subscriber selects actions to be performed by entering a one- or two-digit command sequence. Screening lists are made up of validated DNs.

The 900FP feature has precedence over SLE-based features. Only the calls that are not blocked by 900FP can activate the SLE-based features assigned to the 900 client DN.

SCMP

The SCMP feature allows calls to be redirected from a busy DN to another specified DN that is served by the same office. If the DN to which busy calls are redirected is a 900 client DN, the call is not blocked by the 900FP feature. It is the responsibility of the operating companies to ensure that they do not provision SCMP to forward to 900 client DNs.

Restrictions/Limitations

- Only calls using the 800+ software package are supported by 900FP. E800 calls are not supported.
- The feature cannot distinguish the difference between a 900 call and a call placed directly to the 800/888 number to which the 900 number is translated. The operating company must ensure that these 800/888 numbers cannot be dialed directly.
- It is assumed that the network has full CCS7 connectivity between the SSP and the terminating office.

- The operating company is responsible for datafilling table DNFEAT with the 900 client DNs.
- The CLNT900 option can only be assigned against a 900 client DN for the LCC 1FR/1MR through SERVORD.
- Special translation DNs associated with trunks must be datafilled in table DNROUTE to be supported by the 900FP.
- It is assumed that a separate 900 database provides the OCN in the IAM if the 800 Service Indicator is not set in the type of address field in the GAP parameter.
- Unlike other hunt group types, the DNH hunt group type requires that the CLNT900 DN option is assigned to each DN member to ensure that the entire group is protected from fraudulent calls.
- SERVORD does not support the provisioning of the CLNT900 option to virtual DNs such as UCD/ACD virtual DNs and special translation DNs used for trunk office routing. For these agents, the CLNT900 option must be datafilled in table DNFEAT.
- The ACD/UCD group type requires that CLNT900 option is assigned to the prime DN and each DN member to ensure that the entire group is protected from fraudulent call.

LAYER	**LN-LATER**

NA008 PRODUCT

APPLICATION

ACTID	**FEATURE TITLE**	CNA

AJ4836   900 Fraud Prevention (CNA)

Description

This feature prevents local directory number (DN) fraud on 900 numbers. For a complete description of this feature, please refer to the CCM feature AJ4374 in the ***LN-LATER*** section of this manual.

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
NA008 PRODUCT

LN-LATER

APPLICATION
VMS

ACTID   **FEATURE TITLE**
AQ1596   Remote Message Indicator (RMI)

Description

The RMI feature enhances current residential voice messaging services by offering some of the advantages of Telephone Answering Devices (TAD). RMI allows subscribers to check for the existence of new messages in their Voice Messaging System (VMS) from a remote station. Subscribers call their home stations and receive an indication of whether or not there are any messages in their voice mailboxes based on the number of audible ringback cycles before the call is forwarded to their VMS. Subscribers can thus verify the existence of messages without connecting to the VMS and without incurring long distance charges when applicable.

Command Changes

The Query Directory Number (QDN), Query Line Equipment Number (QLEN), Query Logical Terminal (QLT) and Query Customary Line Information (QCUST) commands are updated to display the new RMI line option through SERVORD.

Data Schema Changes

The following tables have been modified: IBNFEAT, KSETFEAT, IBNXLA, and TMTCNTL. RMI has added:

- RMI line option to IBNFEAT and KSTFEAT
- RMI star activation code to IBNXLA
- Office Parameter RMI_RING_TIMERS to OFCENG
- Two office treatments, RMID and RMIA, to TMTCNTL.TREAT

IBNFEAT Table Changes

The new RMISTATE field indicates the state of RMI on the line. It is set to 'I' when RMI is inactive and to 'A' when RMI is active. A datafill example follows:

```
TABLE: IBNFEAT
>loc 00 0 03 03 0 rmi
>lis
LEN DNNO DF FEATURE DATA
------------------------
HOST 00 0 03 03 0 RMI RMI I
```

KSETFEAT Table Changes

The RMISTATE field indicates the state of RMI on the line. It is set to 'I' when RMI is inactive and to 'A' when RMI is active.

```
TABLE: KSETFEAT
>loc isdn 101 1 rmi
>lis
TUPLE ADDED:
FEATKEY FEATURE KVAR
--------------------
ISDN 101 1 RMI RMI I
```

Table IBNXLA Changes

The new value 'RMICTRL' is added to the range of values for the existing FEATURE field. In the following example, RESXLA is the name of a feature translator for a group of RES customer group, 98 is the digit sequence assigned to the RMICTRL access code, and RMICTRL is the name of the RMI activation/deactivation feature:

```
TABLE: IBNXLA
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
KEY:
>resxla 98
TRSEL:
>feat
ACR:
>n
SMDR:
>n
VCDR:
>n
FEATURE:
>rmictrl
TUPLE TO BE ADDED
RESXLA 98 FEAT N N N RMICTRL
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
TUPLE ADDED

>list
KEY                                                 RESULT
-------------------------------------------------
RESXLA                                              98          FEAT
N N N RMICTRL
```

Subtable TMTCNTL.TREAT Changes

The values RMIA and RMID are added to the range of values for the TREATMT field of the TREAT subtable in table TMTCNTL. In the following datafill example, the routes specified for the treatments correspond to two distinct confirmation tones for RMIA and one single confirmation tone for RMID:

```
TABLE: OFRT
>loc 910
>lis 2
RTE RTELIST
-----------
910 (N D CONFMN 0 N N) (N D CONFMN 0 N N)(S D IDLE) $
911 (N D CONFMN 0 N N) (S D IDLE) $
```

New Office Parameter in Table OFCENG

The new office parameter RMI_RING_TIMERS specifies the two ringing timers used by the RMI feature. It contains two fields:

*   MSG
*   NOMSG

MSG is the timer that applies when messages are waiting in RMI subscriber's voice mailbox. NOMSG is used when no messages are waiting. The range of values for these two fields is 12 to 60 in seconds.

Log Message Changes

RMI does not create any new logs. To generate a LINE138 log every time a call is routed to RMIA and RMID treatments, log generation can be turned on in table TMTCNTL. Below is an example of datafill of this extended treatment:

```
>table tmtcntl
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: TMTCNTL
>pos lnt
     LNT (  109)
>sub treat
TREATMT LOG                      FSTRTE
RMIA                 Y      T     OFRT  910
```

OM Changes

The RMI feature creates two new OM registers under the existing TRMTFR3 OM group, which are pegged each time the RMIA/RMID treatments are provided:

*   TFRRMIA
*   TFRRMID

The associated LINE138 log is generated if the operating company decides to datafill the RMIA extended treatment to be logged.

Service Order

The SERVORD system is enhanced to recognize the new RMI line option. Line option RMI can be assigned to lines with a Line Class Code (LCC) of RES, RES/1FR, RES/1MR, RES/ZMD, RES/ZMZPA, and ISDNKSET.

AMA Changes

NONE

Notes

Engineering Hardware

The activation/deactivation of RMI can be done by subscribers with lines terminating on any of the following Peripheral Modules (PM):

- Line Concentrating Module (LCM) or Remote Line Concentrating Module (RLCM) connected to a Line Group Controller (LGC)
- LCM or RLCM connected to a Line Trunk Controller (LTC)
- LCM or RLCM connected to a Remote Cluster Controller (RCC)
- Line Module (LM)
- Remote Line Module (RLM) which operates in conjunction with the Digital Carrier Module - Remote (DCM-R)

Lines terminating on the following remotes (also called Remote Terminals-RT or Remote Carriers-RC) and their associated Subscriber Carrier Module (also called Control Terminal-CT) are also supported:

- DMS-1 Rural RT (RCT) connected to a SCM-100R (also called Subscriber Module Remote - SMR)
- DMS-1 Urban RT (RCU) connected to a SCM-100U (also called Subscriber Module Urban - SMU)
- Remote Fiber Terminal (RFT) connected to a Fiber Central Office Terminal (FCOT), also called a S/DMS Access Node

The RMI feature cannot be activated/deactivated when a Remote Switching Center (RSC), which serves RCCs, or an RLM is in Emergency Stand-Alone (ESA) operation. ESA provides the capability for subscribers terminating off the same peripheral to complete calls when the peripheral loses communication with the host DMS.

Software Package Dependencies

The RMI feature is an enhancement to the Message Waiting Indicator feature and requires CFD/CFDA/CFGDA option assigned to the line in order to function. Therefore, the RMI feature requires the following packages to be present on the End Office:

- NTX806AA, CFDA on RES, BAS00003

- NTX106AA, CFD on Business Set, MDC00007
- NTX119AA, Message Waiting Indicator (MWI),MDC00003

The NTX106AA functionality is optional but required to offer the RMI feature to ISDN line subscribers.

Alarms

NONE

Interactions

The following paragraphs describes the interaction between RMI and other functionalities.

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

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

All AIN terminating triggers applicable on the call before T_Alertng Point in Call (PIC # 15) have precedence over the RMI feature. This requirements affects the current trigger implementation of AIN as follows:

- AIN 0.0
  - DN Trigger (DNTRIG) trigger has precedence over the RMI feature.
- AIN 0.1
  - Termination Attempt trigger has precedence over the RMI feature.
- AIN 0.2
  - Termination Attempt trigger has precedence over the RMI feature.

Call Forward (CFW)

The Call Forward (CFW) feature enables subscribers to forward calls to defined locations inside and outside the customer group.

Call Forward has precedence over RMI. When CFW is active on a RMI subscriber's line it conflicts with the message indication provided by the feature. RMI subscribers will not receive message indication when they leave the house with CFW activated on their line.

Call Forward Don't Answer (CFDA/CFD)/Call Forward Group Don't Answer (CFGDA)

The Call Forward Don't Answer (CFDA/CFD) feature allows an end user to specify a directory number (DN) to which calls are to be forwarded when the base station (dialed DN) does not answer within a specified time-out period.

The behavior of CFDA/CFD is modified when RMI is active. RMI affects CFDA/CFD as follows:

- When RMI and CFDA/CFD are active, RMI timers have precedence over the CFDA/ /CFD timer. When messages are queued against the subscriber's line, the RMI message timer is used. When there are no messages queued against the subscriber's line, the RMI no-message timer is used.

- When CFDA/CFD is active but RMI is inactive, the CFDA/CFD timer is in effect.

- The activation and deactivation of RMI affects the operation of the CFDA/CFD feature. Activation of RMI sets the state of CFDA/CFD to active if the CFDACNTL field is set to "F" (fixed activation). Deactivation of RMI does not affect CFDA/CFD. The state remains active if it was previously activated or CFDA/CFD becomes inactive if that was the case.

- Activation of CFDA/CFD has no effect on RMI.

- Deactivation of CFDA/CFD does not affect the state of RMI, but the RMI feature is no longer in effect.

Call Forward Busy Line (CFBL/CFB)

The Call Forwarding Busy Line (CFBL/CFB) feature allows subscribers to forward incoming calls from a base station to another station when the base station is busy.

CFBL/CFB has precedence over RMI and conflicts with RMI functionality. When RMI is active and the subscriber's station is busy, CFBL/CFB immediately forwards any incoming calls to the VMS. No indication is provided to the caller about the status of the mailbox.

CFBL/CFB applies to a RMI subscriber who also has CWT only under the following conditions:

- The subscriber has a call on hold due to CWT
- The subscriber is dialing an outgoing call
- The subscriber is the originator of a 3-way call
- The subscriber is involved in a 3-way call where the call's originator is in the same end office as the subscriber

Call Forward of CWT (CFCW)

RMI and CWT are compatible for subscribers who belong to a customer group with the CFCW option. CTW altering tones are allowed and a message waiting indication is provided to the caller when the call is not answered.

Call Waiting (CWT)

The Call Waiting (CWT) feature makes a busy line appear "idle" to the caller's perspective.

CWT has precedence over the RMI feature if the subscriber is not subscribed to a customer group with the Call Forward of Call Waiting (CFCW) option.

Denied Termination (DTM)

A line with Denied Termination (DTM) can originate calls, but it cannot receive any calls. Calls which attempt to terminate to a line with the DTM option receive denied terminating (DNTR) treatment.

The DTM feature has precedence over the RMI feature.

In-Session Activation (ISA)

The In-Session Activation (ISA) feature allows operating companies to offer callers a menu of call completion services when a call encounters a busy or no-answer condition. ISA enables in-session callers to activate a call completion service from DTMF or dial-pulse sets without the need to hang up and remember an activation code.

If a call is intra-office and the RMI subscriber is assigned either CFBL/CFB, CFDA/CFD, or both features, then there is no feature interaction with ISA feature. In this situation the ISA feature does not start.

If a call to a RMI subscriber is inter-office, the ISA feature's activation is dependent on the network conditions obtained – i.e. busy or ring-no-answer (RNA). When the RMI subscriber's line is busy, RMI is not offered and there is no feature interaction between RMI and ISA.

When a RNA network condition is detected, ISA starts after the RNA timer expires. The RNA timer should therefore be set to a time greater than the RMI no message timer in order to prevent ISA from being offered when RMI is activated on the terminating subscriber line.

Note: *The ISA RNA timer can be set from 12 to 72 seconds*

Long Distance Signal (LDS)/Distinctive Ringing Call Waiting (DRCW)

Long Distance Signal (LDS) and Distinctive Ringing Call Waiting (DRCW) behave in the same fashion as Call Waiting (CWT). These features allow a subscriber with a busy line to accept an incoming call. The main difference between LDS/DRCW and CWT is the tones they provide to the subscriber when there is a call waiting. LDS and DRCW provide distinctive tone instead of a regular CWT tone.

LDS and DRCW have the same interaction with RMI as the CWT feature, thus refer to the sections on RMI interaction with CWT.

Local Number Portability (LNP)

Local Number Portability allows subscribers to change location, service provider, or service while maintaining their directory numbers and access to advanced calling features.

There is no feature interaction between RMI and LNP as long as the set of features on the original line also exists on the line ported to the DN. A ported DN is a DN that is no

longer served by the original switch and so requires an AIN SCP database query for routing information.

When the RMI subscriber is part of a hunt group and the hunt group members are subject to line portability processing a limitation does exist. Some hunt specific information is lost due to portability and this loss will cause RMI to start in scenarios in which it was not intended to start. The following call scenarios illustrate instances where RMI starts due to LNP processing performed on hunt groups:

- The pilot member of a DNH hunt group does not have the RMI option, but member A has both the RMI and the CFDA options assigned. Member A is also a ported DN. There is an incoming call to the pilot DN of this DNH hunt group. Because the pilot member is busy, hunting begins, and the call routes to idle member A. RMI should start only when member A is reached directly, but after LNP processing the call terminates on the ported-to DN and it triggers RMI through CFDA.
  — In this scenario, RMI should not have started because member A's DN was not dialed directly.

- The pilot member of a hunt group has the RMI option and is a ported DN. The last member of this hunt group does not have RMI assigned. An incoming call to the last member's DN finds this member busy and circular hunting brings the call to the pilot member. RMI should only start when the pilot DN has been reached directly, but after LNP processing the call terminates on the ported-to DN and triggers RMI through CFGDA.
  — In this scenario, RMI should not have started because the call was not placed by directly dialing the pilot DN.

- The pilot member of a DNH hunt group does not have the RMI option. The last member of this group is assigned RMI and also has a ported DN. An incoming call to the pilot member finds the pilot busy and hunting brings the call to the last member of this DNH group. RMI should only be triggered when the last member's DN is dialed directly, but after LNP processing, the call terminates on the ported-to DN and triggers RMI through CFGDA.
  — In this scenario, RMI should not have started because the call was not placed by directly dialing the last member's DN.

Hunt Groups (DNH, DLH, and MLH)

Hunt Groups involve the association of several stations in a Meridian Digital Centrex (MDC) subscriber group. An incoming call to a busy station in a hunt group searches for an idle line within the group.

There are several different types of Hunt Groups, each with a characteristic hunting pattern:

- Distributed Number Hunt (DNH)
  — DNH determines how a call to a busy line is routed to other lines within the hunt group until an idle line is found. Lines within the hunt group are searched in numeric order of their station numbers, beginning with the dialed directory number (DN), known as the pilot. The hunt pattern is either sequential (stopping

at the highest number) or circular (returning to the lowest number after the highest one is reached).

- Distributed Line Hunt (DLH)
  — DLH is a hunting arrangement that consists of lines divided into groups. The hunt is sequential over all groups until a line in an available group is selected.

- Multiline Hunt (MLH)
  — MLH routes each call to a line in a hunt group by trying each line in numerical sequence until the call is answered. All calls start at a single directory number (DN), known as the pilot. No other lines in the hunt group have DNs.

RMI supports DNH, DLH and MLH hunt group types. If a caller reaches the hunt group pilot DN to which RMI, MWT and CFGDA are assigned and active, the RMI feature forwards the call to the CFGDA forward-to-DN after Tmsg seconds when messages are waiting or after Tnomsg when no messages are waiting.

Only the pilot member can activate or deactivate the RMI functionality provided to the hunt group. RMI is available to DNH hunt groups on a per member basis, as long as the member is subscribed to MWT, RMI and CFDA/CFD line options. In this case, the member must be reached directly by dialing the member DN and not reached by hunting mechanism via the pilot DN. In such a configuration, only the individual member can activate/deactivate the RMI feature for the individual's line only.

Only CFD is supported when ISDN line is part of a hunt group.

Multiple Appearance Directory Number (MADN)

The MADN feature allows a single directory number to be associated with a group of subscriber lines. A call that terminates to a MADN group is presented to all members simultaneously.

The RMI option can be assigned to the primary DN of a MADN group that has the type "EXB" (extension bridging). The RMI feature starts as usual.

Screening List Editing (SLE) features (SCA, SCRJ, ACRJ, SCF, DRCW)

The Screening List Editing (SLE) features provide screening lists to subscribers. A set of SLE audio announcements is used for all instructions and prompts. The subscriber enters a one- or two-digit command sequence in order to select actions to be performed. The screening lists are made up of valid directory numbers (DN).

All SLE features (SCA, SCRJ, ACRJ, SCR and DRCW) have precedence over the RMI feature. When a remote caller places a call to a RMI station where a selective feature option is active on the caller's DN, then message waiting indication is no longer provided because the number of audible ringback cycles is no longer controlled by the RMI feature.

Spontaneous Call Waiting Identification (SCWID/Deluxe Spontaneous Call Waiting Identification (DSCWID)

Spontaneous Call Waiting Identification (SCWID) behaves in the same fashion as CWT. Both features allow a subscriber with a busy line to accept an incoming call. SCWID differs from CWT because it delivers calling party information (name or number) and a call waiting tone to the subscriber's set when there is an incoming call.

SCWID interacts with RMI in the same manner as CWT, thus refer to sections on the interaction between RMI and CWT.

DSCID differs from SCWID because it allows the subscriber to dispose an incoming call while busy with another call. For example, the disposition function can force the incoming call to be immediately forwarded to VMS. This disposition would confuse the caller as to the meaning of the indication normally provided by the RMI feature.

Secondary Directory Numbers (SDN, ESDN)

Secondary Directory Number (SDN) and Enhanced Secondary Directory Number provide the subscriber with an additional directory number that can function independently of options assigned to the primary directory number (PDN).

RMI does not interact with SDN since an SDN number cannot subscribe to a messaging service other than the one already provided by to the PDN. In such a case, the SDN must be of type P: follow PDN forwarding options.

Subscriber Programmable CFDA/CFD (SPRNG)

Subscriber Programmable CFDA/CFD (SPRING) allows subscribers to modify the time before an unanswered incoming call is forwarded to the Voice Message System (VMS).

RMI interacts with SPRING as follows:
*   SPRING modifies the CFDA/CFD timers.
*   RMI timers are not modified by SPRING.
*   When RMI is deactivated, the time value previously set by SPRING becomes in effect.
*   When RMI is active, SPRING can be used to change the CFDA/CFD timer.
*   RMI is deactivated when SPRING is used.

Restrictions/Limitations

The following limitations and restrictions apply to RMI:
*   The RMI feature provides only an indication of the Message Waiting Indicator (MWI) message queue against the terminating line called. If the MWI message queue status in the Voice Messaging System (VMS) is out of synchronization with the DMS MWI message queue, then the RMI feature is not informed.

- The total number of audible ringbacks provided to the caller while calling an RMI subscribed stations is equal to the number of audible ringbakcs controlled by the RMI feature plus the number of audible ringbacks provided by the VMS before it answers the call. It is assumed that a guaranteed single audible ringback cycle is provided by the VMS before it answers. Should the VMS take more than one audible ringback cycle to answer, the call will bias the indication provided by the RMI feature.

- The target DMS platform for RMI is DMS-100 or DMS-100/200 BRISC.

- RMI supports only RES lines and ISDNKSET lines

- 1FR, 1MR, ZMD and ZMZPA POTS lines are converted to RES when RMI is assigned.

LAYER   **LN-LATER**
NA008 PRODUCT

                                                                                                    APPLICATION
ACTID   **FEATURE TITLE**   Line Card Monitor
AR2217   Enhanced Line Card Monitor – Logs and Alarm Severity
                      Setting

Description

The Enhanced Line Card Monitor (ELCM) Logs and Alarm Severity Setting feature
provides the DMS System Administrator with the ability to modify the severity of the:

- HAZ Alarm Banner
- HAZ Log Message

This also enhances the existing alarm reporting of the MAP alarm report banner to allow the
setting of the Hazardous Condition thresholds. It provides the following functions:

- Alarm Threshold Entry
- HAZ Alarm Update
- AlarmStat Display
- Alarm Banner Update

The HAZ alarm update interacts with World Line Card (WLC), and Plain Old Telephone
Service (POTS) when HAZ conditions are set or cleared. The AlarmStat display is enhanced
to show the thresholds of the HAZ conditions: Minor, Major, and Critical. Alarm update
routines count the number of HAZ conditions in a switch and compare it with the HAZ
thresholds to generate an alarm.

Command Changes

This feature provides the ability to set the severity of the Alarm Banner using standard
MAPCI prompts and responses. The Human Machine Interface (HMI) is consistent with
other "Line Alarm Statistics" CI command at the LTP level (e.g. Loop Performance,
Permanent Lock Out (PLO), Short Diagnostic Failure, Missing Card). The default set to a
single Hazardous condition generates a Major Alarm. The default threshold settings are 0 for
minor alarm, 1 for major, and 10 for critical alarm.

The MAP display is enhanced to display the HAZ alarm thresholds. The Line Test Position
(LTP) AlarmStat command allows the entry of Hazardous Line Condition (HAZ)
Thresholds.

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

This feature interacts with and expands the functionality of the existing Line Card Monitor (NC0109) and Enhanced Permanent Signal (AG3884) features. The hazard Alarm Banner is incremented and decremented when hazard conditions are diagnosed and cleared on a WLC or POTS line.

It also interacts with other Enhanced Line Card Monitor features also being introduced into NA008 PRODUCT: Enhanced Line Card Monitor For HASU Lines (AR2216). The hazard Alarm Banner is incremented and decremented when hazard conditions are diagnosed and cleared on HASU lines by feature AR2216.

Restrictions/Limitations

The ELCM Alarm Banner is restricted by the existing display format and thresholds input. The range of threshold setting is 0 to 32767.

LAYER   **LN-LATER**

NA008 PRODUCT

APPLICATION

ACTID   **FEATURE TITLE**   CompuCALL

AR2255   CompuCALL Enhancements–Screen-Assisted
Telephone

Description

This feature enhances existing CompuCALL services for CompuCall telephone applications that provide call management functions to Meridian Digital Centrex (MDC) and Residential Enhanced Services (RES) subscribers.

This features delivers

- actual caller name and number in CompuCALL messages in all party-call scenarios
- actual caller name and number if the line subscribes to option ECM and, if necessary, options CND and CNAMD
- calling name for interswitch calls when name delivery is in QUERY mode (QUERY mode occurs when Calling Name is not included in the Call Setup message).

Command Changes

NONE

Data Schema Changes

CompuCALL Enhancements–Screen-Assisted Telephony modifies datafill tables SCAISRV, IBNFEAT, and KSETFEAT.

Table SCAISSRV adds the following two message sets to allow subscription to the call event messages for MDC and RES lines:

- SCAI Residential Call Events (category RESEVENT) includes the ability to subscribe to the (function CALLNAME).
- SCAI MDC Call Events (category CTXEVENT) includes the ability to subscribe to the message dv-Call-Callingname-U (function CALLNAME).

Log Message Changes

NONE

OM Changes

CompuCALL Enhancements–Screen-Assisted Telephony introduces new OM group SCAISRV3 with register CLGNAMEU. This register is pegged each time the switch sends message dv-Call-Callingname.

Service Order

CompuCALL Enhancements–Screen-Assisted Telephony adds option CHKLOPT to the ECM line feature. Option CHKLOPT enables a CompuCALL host application session to receive the calling name and number.

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

The following paragraphs describe the interactions between CompuCALL Enhancements–Screen-Assisted Telephony and other functionalities.

Teen Service feature

The Teen Service feature allows members of the same household to have separate phone numbers. A primary directory number (DN) and up to six secondary DNs (SDN) can be assigned to a single line. Different ringing patterns identify the number called.

If a call terminates on a Teen Service SDN, then the Call Offered message contains the SDN. Additionally, if the SDN answers the call, the Call Answered message contains the SDN. Also, if the SDN releases the call, the Call Release message contains the SDN.

In three-party call scenarios, the SDN is not delivered.

Three-Way Call Interaction with Teen Service

If a call terminates on a Teen Service SDN that has the Three-Way Calling (3WC) service and then the 3WC controller adds a second leg to the call, the name and number of the primary DN is delivered to that call.

Similarly, the primary DN is delivered to the controller in the Call Answered message.

Call Forward Don't Answer with Teen Service

The name and number of the primary DN is delivered if the following occurs:
* A call terminates on a type P, Teen Service SDN whose primary DN has option CFDA or option CFBL.
* Then, the call is forwarded to another DN that is also ECM associated.

Private Number or Caller

This feature adheres to the Calling Name Delivery Blocking (CNAB) and Calling Number Delivery Blocking (CNDB) standards. For instance, if the originating line has CNAB, then the Call Offered message does not deliver the name. However, the host computer can retain the name.

Call Screen

The Selective Call Rejection (SCRJ) feature allows a subscriber to reject calls arriving from a list of previously identified DNs. If a caller terminates on an associated RES line that is in the caller's SCRJ list, no call event messages are sent to the host concerning the associated RES line.

The Selective Call Acceptance (SCA) feature allows a subscriber to accept calls arriving from a list of previously defined DNs. If a caller terminates on an associated RES line that is not in the caller's SCA list, then no call event messages are sent to the host concerning the associated RES line.

MDC feature interactions

Because this feature does not enhance the ACD call event messages to include the dialable and name fields, the ACD name is not available to send.

For example, if an ACD call terminates to an MDC or RES line, then the name or number of the call is not available. However, if the call is forwarded to or conferences another associated MDC or RES line (party C), then party C receives the name and number of party B.

Three-Way Call chaining scenario

If party A calls party B, and party B conferences party C, who then conferences party D, the following calling name and number delivery occurs:

- Party B receives party A's name and number.
- Party C receives party B's name and number.
- Party D receives party C's name and number.

Suspended Service

Option SUS (Suspended Service) on single line and multiline telephone sets allows all service to be denied on those sets. The subscriber is blocked from originating or receiving any calls. If an MDC or RES line has option SUS, then the host does not receive any call event messages concerning the suspended line.

Interswitch Call Forwarding interactions with CompuCALL messages

The call history information in the Call Offered and Call Answered messages is lost for calls that are forwarded to a different switch, for example, over an SS7/PRI network.

These messages will contain only the information pertaining to the call after the forwarding occurred.

Call Forwarding without the call presenting to the forwarding party

Option CFD or CFDA (Call Forward Don't Answer) is the only call forward capability for which CompuCALL call event messages are sent. For all other call forwarding capabilities, the call is forwarded without being offered to the forwarding party so no CompuCALL call event messages are sent to or received by the forwarding party. The CompuCALL call event messages for the forwarded party treat the call as if it came directly from the forwarding party. (No call forwarded information is provided).

Restrictions/Limitations

The following limitations and restrictions apply to CompuCALL Enhancements–Screen-Assisted Telephony:

- All incoming and outgoing call-event messages with their parameters must be subscribed to in table SCAISSRV.
- The dv-Call-Callingname-U message is sent for an incoming call if the Caller Name data is available in the dv-Call-Offered-U message.
- The incoming event messages for functions Call Offered, Call Answered, and CAll Released are not delivered if functions Call Forwarded Intragroup (CFI), Call Forward Universal (CFU), or Call Forward Busy (CFB) are activated on an associated busy line. Conversely, if Call Forward Don't Answer (CFD) is activated on an associated line and a call comes to the line, a Call Offered message is sent and, therefore, the Calling Name message is sent. If the line is not answered and the call is forwarded, a Call Released message is sent.
- Because this feature does not enhance the ACD call event messages to include the dialable number and name fields, the ACD name is not available to send in the MDC or RES call history.

LAYER
NA008 PRODUCT

LN-LATER

APPLICATION
Line Card Monitor

ACTID	**FEATURE TITLE**
AR2268	Enhanced Line Card Monitor - Test Suspending Command

Description

This Enhanced Line Card Monitor (ELCM) feature is an enhancement of the existing Line Card Monitor feature (NC0109) and Enhanced Permanent Signal feature (AG3884). It allows customers to use a new CI command HAZSUSP from LTP level to suspend testing manually of lines that are in the:

- Shower Queue
- Hazardous audit lists
- Ring Ground audit lists

Command Changes

A new CI command, HAZSUSP with optional parameter N, has been created at the Line Test Position (LTP) level as a hidden command for this feature. It provides the following functionalities:

- Human Machine Interface
- Suspending of the testing of lines that are in the Shower Queue or Hazardous Line Condition (HAZ)/Ring Ground Condition (RG) audit lists for N minutes
- Resuming of the suspended testing after the N minutes
- Forced resuming of the suspended testing before the N minutes expires

The minimum suspension interval is 2 minutes with the maximum no greater than 10 minutes. That is, the valid N is {2,3, 4, 5, 6, 7, 8, 9, 10} in addition to 0, which is used to stop the suspension before the N minutes expires.

Also note that this feature only allows a short suspension (2 to 10 minutes) of the Showerq DIAG and Line Hazard Test (LHT) tests of the Enhanced Line Card Monitor feature. It does not suspend the whole ELCM functionality. A line with faulty conditions is still detected and put into showerq. Since hazardous World Line Card (WLC) currently does not invoke either Showerq DIAG or LHT test, the Line Log Reduction Feature is not affected by this feature

The format of HAZSUSP is as follows:

```
> HAZSUSP [ N]
```

where N=0, 2, 3, 4, 5, 6, 7, 8, 9, 10

- If N=2, 3, 4, 5, 6, 7, 8, 9, 10, and HAZSUSP is currently *inactive*, then display following message on the MAP:

```
HAZSUSP is started
```

- If N=2, 3, 4, 5, 6, 7, 8, 9, 10, and HAZSUSP is currently *active* (i.e. the test processes are suspended), then display the following message:

```
HAZSUSP is already active. Reactivate? (Y/N)
```

— If 'Y', then display:

```
HAZSUSP is reactivated
```

— If 'N', then do nothing.

- If N=0 and HAZSUSP is currently *active*, then display

```
HAZSUSP is stopped
```

- If N=0 and HAZSUSP is currently *inactive*, then display msg

```
HAZSUSP is inactive
```

- If no parameter input, then display the current status of HAZSUSP:

```
HAZSUSP is active
- if the previous HAZSUSP N is still active.
HAZSUSP is inactive
- if HAZSUSP is inactive.
```

- For any other invalid input or query the format of the command, the following message is displayed:

```
EITHER incorrect optional parameter(s) OR too many parameters.
```

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

This feature enhances the existing features NC0109 and AG3884. It allows the user to suspend the Showerq DIAG and HAZ/RG audit processes.

It also interacts with the two other Enhanced Line Card Monitor features: AR2216 - Enhanced Line Card Monitor for HASU Lines, and AR2217 - Enhanced Line Card Monitor Logs and Alarms Setting. Once HAZSUSP is activated, the Showerq DIAG and HAZ/RG audit processes are also suspended for both WORKING lines and HASU lines, and the number of reported HAZ lines remain unchanged during the suspending period.

This feature is independent with the OFCVAR LINE_CARD_MONITOR. This is consistent with the existing HAZ/RG audit process which continues to process lines in HAZ state even if LINE_CARD_MONITOR is turned off.

The feature applies to the Nortel Line Cards in NA008 Product with the following Product Engineering Codes and Line Card Types:
- NT2X17, Type "A" North American Domestic
- NT2X18, Type "B" North American Domestic
- NT6X17AC, Type "A" North American Domestic
- NT6X18AA and AB, Type "B" North American Domestic
- NT6X19, Message Waiting Line Card

Restrictions/Limitations

This feature does not apply to WLC, which currently does not invoke the Showerq DIAG and HZ/RG audit processes.

LAYER   **LN-LATER**
NA008 PRODUCT

                                                                           APPLICATION
ACTID   **FEATURE TITLE**   AIN
AU2366   AIN Enhancements to QLEN/QDN

Description

Advanced Intelligent Network (AIN) Enhancements to query line equipment number (QLEN) and query directory number (QDN) advances the functionality of related line query tools. These line query tools show office-wide and customer group-wide AIN trigger group subscriptions on a given line.

The query tools modified are:
- QLEN
- query working line equipment numbers (QLENWRK)
- QDN
- query working directory numbers (QDNWRK)
- query logical terminal (QLT)
- query ISDN terminal (QIT)
- query group (QGRP) multiple directory number (MDN) lines option

Each of the query tools display separate (line-based) AIN trigger group subscriptions for the queried line.

Command Changes

AIN Enhancements to QLEN/QDN advances the functionality of the following line query tools in the PROGDIR directory:
- QLEN
- QLENWRK
- QDN
- QDNWRK
- QLT
- QIT

> *Note:* *This additional functionality affects only the output of the above tools. There is no change to their input parameters.*
>
> *Line query tools display office-wide and customer group-wide AIN subscriptions that apply to the line or lines being queried.*

This feature provides the customer with the following additional information:

- AIN trigger group subscribed for the customer group (when a group is subscribed)
- When the line is a member of a customer group, the AIN trigger group subscribed for the customer group (when a group is subscribed)

This feature extracts office-wide customer group-wide trigger group subscription data for the queried line or lines. The formatted data is provided on the MAP display as part of the line query command output.

This feature enhances the existing office option display capability to check for the presence of the Office AIN Trigger Group stored in the tuple AIN_OFFICE_TRIGGRP of the DMS table OFCVAR. If a trigger group is present, then the text "AIN" is displayed in the list of Office Options followed by the trigger group name. A sample of the enhanced office options display capability follows:

```
PM TERMINAL NUMBER :    179
 OPTIONS:
 DGT
 RES OPTIONS:
 AIN LINETRIG1
 OFFICE OPTIONS:
 U3WC AIN OFFICETRIG
--------------------------------------------------------------------
 >
```

This feature also adds the capability to display options provisioned on a customer group basis (customer group options) to the line query tools listed above. This capability checks for the presence of certain customer group options. If any are found, it displays the title "CUSTOMER GROUP OPTIONS:" and a list of the customer group options found. The following is a sample produced in table OFCVAR of enhanced QLEN output for RES line:

```
>QLEN HOST 00 1 05 18
--------------------------------------------------------------------
 LEN:     HOST  00 1 05 18
 TYPE: SINGLE PARTY LINE
 SNPA: 613
 DIRECTORY NUMBER:      6216061
 LINE CLASS CODE:      1FR
 IBN TYPE: STATION
 CUSTGRP:          RESG200     SUBGRP: 0  NCOS: 0
 SIGNALLING TYPE:  DIGITONE
 LINE ATTRIBUTE INDEX:      200
 CARDCODE: 6X17AC    GND: N  PADGRP: STDLN  BNV: NL MNO: N
 PM NODE NUMBER     :    74
 PM TERMINAL NUMBER :    179
 OPTIONS:
 DGT
 RES OPTIONS:
 AIN LINETRIG1
 CUSTOMER GROUP OPTIONS:
 AIN CUSTTRIG
 OFFICE OPTIONS:
 U3WC
--------------------------------------------------------------------
 >
```

The customer group option display capability checks whether the queried line is a member of a customer group. If the line is a member of a customer group, then the table CUSTSTN is checked for the presence of the AIN option tuple for that customer group. If such a tuple is found, the text "AIN" is displayed in the Customer Group options list followed by the subscribed trigger group name. A sample of the customer group option display capability follows:

```
PM TERMINAL NUMBER :    179
 OPTIONS:
 DGT
 RES OPTIONS:
 AIN LINETRIG1
 CUSTOMER GROUP OPTIONS:
 AIN CUSTTRIG
 OFFICE OPTIONS:
 U3WC AIN OFFICETRIG
-----------------------------------------------------------------
 >
```

Since no call context information is available to the line query tools, they only indicate potential for AIN involvement in calls. Therefore, the display of an AIN subscription in the line query tool output does not guarantee AIN involvement in calls on the line. To verify AIN involvement in a call, the user can make a more specific check using the TRAVER tool.

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 following limitations and restrictions apply to AIN Enhancements to QLEN/QDN:
- there is no call context information available to the line query tools
  — line query tools only indicate the potential for AIN involvement in calls on the queried line or lines

- indicates when the AIN option is subscribed to the line, its customer group, or its office
  — this indication does not guarantee AIN involvement in calls on the line

Note: *To verify AIN involvement in a call, the user can make a more exact check using the translation verification (TRAVER) tool.*

- B8ZS protocol must be used for ILDR.
  — This message occurs when trying to define ILDR to an RLCM that is connected to its host via carrier not in B8ZS protocol.

- ESF signaling format must be used for ILDR.
  — This message occurs when trying to define ILDR to an RLCM that is connected to its host via carrier not in ESF signaling format. The craftsperson action in both cases above is to correct the host or RLCM carriers.

- ILDR requires 6X50AB card.
  — This message occurs when trying to define ILDR to an RLCM whose DS1CARD is not 6X50AB. The craftsperson action is to correct the RLCM card.

- No more than 2 ILDRs are allowed on this shelf.
  — This message occurs when trying to define another ILDR on a shelf that has already two ILDRs on it. The craftsperson action is the define the ILDR on another host.

- ILDR cannot be provisioned in physical drawer 0 or 5.
  — This message occurs when trying to define ILDR as physical drawer 0 or 5. The craftsperson action is to define ILDR in another drawer.

- 2 ILDRs cannot exist on the same LCA.
  — This message occurs when trying to define second ILDR of the shelf in the same Line Concentrating Array (LCA) as the first. The craftsperson action is to define ILDR in another drawer.

- Adding a new ILD might drop up to 2 calls!
  — This message occurs when defining an ILDR 2, connections are set between the ISDN Drawer Controller (IDC) and the XPM message card, which might drop existing calls using the same C-side channels of the LCM/RLCM/OPM/OPAC. The craftsperson action is to accept, reject, or edit the tuple.

- WARNING: Resource limitation is reached for RCC2 <n>
  — This message occurs when defining ILDR in a configuration where the last available C-side messaging channels are used for the ILDR. No action is required.

- ERROR: Resource limitation is reached for RCC2 <n>
  — This message occurs when trying to define ILDR in a configuration where there are no C-side messaging channels available. The craftsperson action is either to define the ILDR in another host or delete a node from the configuration.

- Lines still equipped in drawer <n> Must first delete associated line data.
  — This message occurs when trying to define ILDR as a drawer that is equipped. The craftsperson action if to either correct the drawer number or delete the lines defined in table LNINV.

- ILDR is not compatible with LCM with 64kb memory.
  - This message occurs when trying to define an ILDR on a LCM/RLCM/OPM/OPAC whose load size is 64k. The craftsperson action is to change the LCM/RLCM/OPM/OPAC's load size to a bigger value.

- FILENAME is not datafilled in PMLOADS.
  - This message occurs when trying to define/change an ILDR with LOAD that is not defined in table PMLOADS. The craftsperson either corrects the LOAD name or defines it in table PMLOADS.

- Drawer PEC not suitable for ILDR.
  - This message occurs when trying to define/change an ILDR with invalid or not suitable to ILDR drawer PEC. The craftsperson response is to correct the drawer PEC.

- ILDR is not Offline.
  - This message occurs when trying to delete an ILDR that is not offline. The craftsperson response is to delete the special connections in SPECCONN.

Table LCMINV Responses

- ILDR not compatible with an LCM with 64kb memory.
  - This message occurs when trying to change the ILDR equipped load size of the LCM/RLCM/OPM/OPAC to 64k. The craftsperson response is not to change the load size of LCM/RLCM/OPM/OPAC.

- Delete network special connections before changing the LCM location.
  - This message occurs when trying to relocate a LCM/RLCM/OPM/OPAC with special connections defined for its ILDRs to another XPM. The craftsperson response is to delete the special connections of the ILDR in table SPECCONN.

- Delete network special connections before changing CSLINKS.
  - This message occurs when trying to change C-side links of a LCM/RLCM/OPM/OPAC with special connections defined for its ILDRs. The craftsperson response is to delete the special connections of ILDR in table SPECCONN.

- B8ZS protocol must be used for ILDR.
  - This message occurs when trying to relocate an RLCM with ILDRs defined on it to another RLCM that is connected to its host via carrier not in B8ZS protocol. The craftsperson response is to correct the host or the new carriers of the RLCM.

- ESF signaling format must be used for ILDR.
  - This message occurs when trying to relocate an RLCM with ILDRs defined on it to another RLCM that is connected to its host via carrier not in ESF signaling format. The craftsperson response is to correct the host or the new carriers of the RLCM.

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- ILDR requires 6X50AB card.
  - This message occurs when trying to change an RLCM ILDR equipped DS1CARD to another card. The craftsperson response is not to change the RLCM card.

- This configuration does not support ILDR.

  - This message occurs when trying to relocate an LCM with ILDRs defined on it to a host that is neither RCC+ nor RCC2, or to relocate an RLCM, OPM or OPAC with ILDRs defined on it to a host that is neither RCC+ nor RCC2, nor LTC+, nor LGC+. The craftsperson response is to correct the host or delete ILDR.

Table LCMINV Responses

- Line card specified not valid for an ILDR.
  - This message occurs when trying to add/change a line to an ILDR with cardcode other than BX27. The craftsperson response is to correct the cardcode to BX27.

- Line card number must be 0 - 13 for an ILDR.
  - This message occurs when trying to add a line to an ILDR with the card number out of the range 0 to 13. The craftsperson response is to correct the card number.

- *WARNING* line status changed to WORKING

  - This message occurs when defining an ILDR line with status other than WORKING. No craftsperson response is required.

Table LTCPSINV Responses

- B8ZS protocol must be used for ILDR. Link no = <n>
  - This message occurs when trying to change the protocol of a link connected to an ILDR equipped RLCM. The craftsperson response is not to change the protocol of the link.

- ESF signaling format must be used for ILDR. Link no = <n>

  - This message occurs when trying to change the signaling format of a link connected to an ILDR equipped RLCM. The craftsperson response is not to change the signaling format of the link.

Table RCCPSINV Responses

- B8ZS protocol must be used for ILDR. Link no = <n>
  - This message occurs when trying to change the protocol of a link connected to an ILDR equipped RLCM. The craftsperson response is not to change the protocol of the link.

- ESF signaling format must be used for ILDR. Link no = <n>

  - This message occurs when trying to change the signaling format of a link connected to an ILDR equipped RLCM. The craftsperson response is not to change the signaling format of the link.

Data Schema Changes

For each ILDR defined in the switch, via table LCMDRINV, the following information is stored:

- Physical Drawer number - ILDR Drawer number
- PEC of the Drawer - ILDR PEC
- PEC of the Line Drawer Control card - IDC PEC
- Drawer loadname - loadfile name for the ILDR drawer

DRWRDATA is a field that has been expanded in table LCMDRINV to include the new ILD PEC, NT6X54DA. Following is a datafill example:

```
TABLE: LCMDRINV:

      LCMNM
                                                                      DRWRTAB
   ------------------------------------------------------------------------
   REM1  08 0
   (0 NILDRWR) (1 NILDRWR) (2 NILDRWR) (3 NILDRWR)
   (4 NT6X54DA NT6X05DA IDAA08L) (5 NILDRWR) (6 NILDRWR) (7 NILDRWR)
   (8 NILDRWR) (9 NILDRWR) $
```

When changing the drawer information in table LCMDRINV that concerns an ILDR the following is checked:

- The PEC name of the IDC must be NT6X54DA.
- The ILDR PEC must be NT6X05DA.
- The ILDR new PEC, NT6X06DA, must co-exist only with the IDC PEC NT6X54DA, and vice versa.
- Definition of ILDRs is allowed only in North American's configuration.
- Definition of ILDRs under an LCM is allowed only if the LCM host is an RCC+ or an RCC2.
- Definition of ILDRs on RLCM is allowed only if all RLCM carriers towards its host have FF (signaling format) = ESF and ZLG (protocol) = B8ZS defined in table CARRMTC, and DS1 card = 6X50AB defined in table LCMINV. This is to allow 64K bps clear channel for circuit switched.
- Definition of ILDRs is allowed only if the load size of the LCM/RLCM/ OPM/OPAC is greater than 64k.
- A maximum of 2 ILDRs can be defined per LCM, RLCM, OPM or OPAC PMs.
- ILDR cannot be equipped as physical drawer 0 or 5. This is because physical drawers 0 and 5 are used for running the BIC Relay Test diagnostic and require line 0 of these drawers to be set aside for system uses.
- Only 1 ILDR can be defined in each LCA (Line Concentrating Array). This means that if the ILDR drawer number of the first ILDR is within the range of 1 - 4, the next ILDR to be defined in this LCM/RLCM/OPM/OPAC has its drawer number within the range of 6 - 9. This limitation exists in order to permit an optimal heat dispersion in the LCM/ RLCM/OPM/OPAC.

- If the LCM/RLCM/OPM/OPAC is INService, a warning is given to the user that adding a new ISDN Line DRawer to the LCM/RLCM/OPM/OPAC might drop up to two calls. This is due to the fact that the additional ILDR requires two connections between the IDC and the XPM message card. These connections might drop existing calls that use the same C-side channels of the LCM/RLCM/OPM/OPAC.

- The number of ILDRs that can be supported in a given P-side node configuration is limited by the XPM C-side channels that are available for P-side node messaging (e.g. 45 for RCC2).

- Definition of an ILDR is allowed only if the state of the drawer is Unequipped, that is, no lines are defined in this drawer.

- The loadfile name for the ILDR must be defined in table PMLOADS.

- Deletion of an ILDR is allowed only if its state is Offline.

- Deletion of an ILDR is allowed only if it does not have lines or special connections defined on it.

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

Two ISDN line drawer configurations are supported by the DMS-100:

- Line Trunk Controller (LTC+) or Line Group Controller (LGC+) containing the following shelves:
  — RLCM
  — OPM
  — OPAC

- LTC+ or LGC+ connected to Remote Switching Center (RSC)+/RSC-S (SONET RSC), which contains the following shelves:
  — LCM
  — RLCM

— OPM

— OPAC

Each LCM, OPM, OPAC, or RLCM shelf houses two ILDRs.

Alarms

NONE

Interactions

This feature comprises the following features:
- AF6374 ISDN ILD provisioning - DMSTL
- AF6375 ISDN ILD provisioning - DMSCCM
- AF6380 ISDN ILD provisioning - DMSCNA

This feature is part of the ILD feature group and interacts with the following features:
- ILD Line Maintenance (Actids AF6376 and AF6377)
- ILD Static Data (Actids AF3678, AF6379, AF3680 and AF3681)
- ILD HMI (Actids AF6384 and AF6383)
- ILD Node Maintenance (Actids AF6388, AF6389 and AF6390)
- ILD SPECCONN, LTMAP and DTA support (Actids AF6391, AF6392 and AF6393)

Restrictions/Limitations

Restrictions apply to updating tables LCMINV, LNINV, LTCPSINV, and RCCPSINV.

LCMINV

The new restrictions implemented in updating table LCMINV are:
- When relocating an LCM/RLCM/OPM/OPAC equipped with an ILDR, or moving its links, all relevant special connections defined on the ILDR in table SPECCONN must be deleted first (the establishment of a nailed-up connection between ILDR Bd channel and an Integrated Packet Handler (IPH) is defined in table SPECCONN). ILDR lines do not need to be deleted, in contrast to an LCM Enhanced (LCME), but all Bd and Bb connections must first be removed.
- In case of relocation or change of links of RLCM equipped with an ILDR its new carriers must also allow 64K bps clear channel.
- When relocating an LCM/RLCM/OPM/OPAC equipped with an ILDR the new configuration must also support ILDR.
- For ILDR equipped LCM/RLCM/OPM/OPAC it is not allowed to change the load size to 64k.
- For ILDR equipped RLCMs it is not allowed to change its card.

LNINV

The restrictions in adding or changing an ILDR line in table LNINV are:

- Verifying that, if the respective drawer is defined as ILDR in table LCMDRINV, the line card is suitable for an ILDR, that is BX27.

- Verifying that the line card number is in the range of 0 to 13. This is because ILDR supports up to 28 lines in a physical drawer (2 lines per line card x 14 slots = 28).

- Setting the line state to WORKING, even if the craftsman writes a different state. This is because, unlike an LCME line, the ILD does not require a special connection to the EDCH to be set up.

- The state of the drawer remains unchanged while the ILDR is defined. The state of the drawer is changed to Unequipped only when the ILDR is deleted from table LCDRINV (changed to NILDRWR).

LTCPSINV

A new restriction is implemented in updating table LTCPSINV: when changing the carrier of a link connected to an ILDR equipped RLCM, the new carrier must allow 64k bps clear channel.

RCCPSINV

A new restriction is implemented in updating table RCCPSINV: when changing the carrier of a link connected to an ILDR equipped RLCM, the new carrier must allow 64k bps clear channel.

LAYER   **LN-LATER**
XPM 81

                                                                                             APPLICATION
ACTID   **FEATURE TITLE**   SLC
AF6966   CM Support for Unequipped Lines at SLC

Description

This feature handles unequipped lines at the Subscriber Loop Carrier for 96 lines (SLC96) in Mode 1 configuration. Once the unequipped line is detected by Subscriber Module SLC-96 (SMS), it is placed in to the Line Maintenance Busy (LMB) state and a log is generated.This feature along with AF6935 provides the functionality required to detect unequipped lines in a Remote Terminal (RT) operating in the MODE 1 configuration. This capability is necessary to ensure that call processing events, which rely on line equipped status, are handled properly by the DMS.

The SLC 96 type RT uses A and B bit signaling to communicate line state information to the Subscriber Module SLC-96 Remote (SMSR). The SMSR communicates with the DMS using Nortel protocol DMS Signaling 30 (DS30).

This feature creates a new message which allows the state of all 96 lines of the RT to be sent to the DMS. For example, if this message indicates that the line circuit is not installed in the RT, the line state is set to LMB.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

The PM subsystem generates a PM128 log when the PM encounters trouble during normal operation. The PM state changes as a result of a system or manual request. In-service trouble (ISTb) conditions are usually not service affecting and are resolved by system action.

The following modified PM128 log, with new text for a minor reason, is generated as a result of the alarm condition sent by the SMS/SMSR indicating that at least one datafilled line on the RT has become unequipped:

```
RTPE    *   PM128 FEB13 13:54:12 6200 TBL  ISTB RCS ERCS 00 1
         FROM: InSv minor: Unequipped line(s) detected in Shelf A
RTPE    *   PM128 FEB13 13:54:12 6200 TBL  ISTB RCS ERCS 00 1
         FROM: InSv minor: Unequipped line(s) detected in Shelf B
RTPE    *   PM128 FEB13 13:54:12 6200 TBL  ISTB RCS ERCS 00 1
         FROM: InSv minor: Unequipped line(s) detected in Shelf C
RTPE    *   PM128 FEB13 13:54:12 6200 TBL  ISTB RCS ERCS 00 1
         FROM: InSv minor: Unequipped line(s) detected in Shelf D
```

To clear the minor alarm, the craftsperson inserts a line card or removes the datafill in the CM for the missing line card.

When no unequipped datafilled lines are detected on the RT, another PM128 log is generated to indicate that the alarm has been cleared. The following is an example of this log for each shelf of the RT:

```
RTPE    *    PM128 FEB14 14:11:37 7200 TBL   ISTB RCS ERCS 00 1
          FROM: ISTb minor: Unequipped lines detected in Shelf A cleared
RTPE    *    PM128 FEB14 14:11:37 7200 TBL   ISTB RCS ERCS 00 1
          FROM: ISTb minor: Unequipped lines detected in Shelf B cleared
RTPE    *    PM128 FEB14 14:11:37 7200 TBL   ISTB RCS ERCS 00 1
          FROM: ISTb minor: Unequipped lines detected in Shelf C cleared
RTPE    *    PM128 FEB14 14:11:37 7200 TBL   ISTB RCS ERCS 00 1
          FROM: ISTb minor: Unequipped lines detected in Shelf D cleared
```

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

A minor alarm is generated or cleared corresponding to the line state in the Remote Terminal (RT). Four new alarm reasons corresponding with the four shelf locations (A,B,C,D) of the RT system have been added to an existing alarm. The alarm is generated when the DMS detects an unequipped card in the RT which is datafilled in the DMS. The alarm is cleared when no unequipped datafilled cards are detected in the RT. The DMS decodes the new line state message and posts or clears the appropriate alarm against the associated RT. The alarm state is reported by:
*   outputting a PM log message
*   posting an alarm reason viewable at the PM level of the MAP

Interactions

This feature is part of the feature set needed to provide the functionality of detecting unequipped lines in an RT (SLC-96) operating in only the MODE 1 configuration:
*   AF6935 - SLC96 Unequipped Card Detection
*   AF6966 - CM Support for Unequipped Lines at SLC

This feature changes the DMS line state of unequipped lines in an RT to synchronize the DMS view with the RT line state. Call termination attempts which previously failed are not attempted with this new design. By preventing terminations to unequipped lines, call processing overhead and OM failure counts are reduced.

This feature adds a new LMB line state interpretation for the RT. Typically in the DMS, the LMB state is used to indicate that the Line Controlling Device is in an out of service state. However, in remotes such as the Remote Carrier DS-1 Urban (RCU), an LMB state can also mean that a line is out of service. This feature follows that convention.

An update is placed in the appropriate Nortel Publication (NTP) which states:

```
LMB Line Module Busy. A line is LMB when the RT that it attaches to is out of service,
or when the RT has indicated that the line is unequipped in the RT.
```

Restrictions/Limitations

This feature addresses only detection of unequipped lines in an RT operating in the MODE 1 configuration.

LAYER   **LN-LATER**
XPM 81

                                                             APPLICATION
ACTID   **FEATURE TITLE**   MBS
AN3010   MVI MBS Line Maintenance – CNA

Description

This feature provides Multi Vendor Interface (MVI) Meridian Business Sets (MBS) maintenance enhancement such as Automatic Lamp Refresh (ALR) and Automatic Line Test (ALT) for DMS TR303 MVI product.

This feature provides the remaining functionality needed to provide line test for TR303 MBS. In addition, it provides the following table control functionality:

- the capability to datafill a MBS line on a TR303 Remote Digital Terminal

- a change to the N201 Timeslot Management Channel (TMC) Link Access Protocol for the D-Channel (LAPD) default value to support call processing for MBS lines on TR303 Remote Digital Terminals (RDTs)

- a One Night Process (ONP) POSTSWACT step to dynamically update the N201 parameter of the TMC LAPD static data in the Subscriber Carrier Module 100 Access (SMA)/Expanded Subscriber Carrier Module Access (ESMA). This postswact step is needed due to the N201 TMC LAPD default value change.

Command Changes

NONE

Data Schema Changes

Messages have been modified and added to tables RDTINV and LNINV.
- Warning message
- Error message

Warning Message Added to CLAPDFLT Field in Table RDTINV

The default value of N201 TMC LAPD parameter in the CLAPDFLT field of table RDTINV has changed from 32 to 52 to support the Electronic Business Set (EBS) INFORMATION message size that is required for call processing to support EBS lines on the RDT.

A new field-specific warning message is displayed when the craftsperson chooses not to use the default values for the LAPD parameters by entering "N" in the CLAPDFLT field of table RDTINV and enters non-default values in the CLAPDPAR subfield of the CLAPDFLT field that are not large enough to support the TMC messaging required for MBS lines.

The following warning message is displayed along with the default values for the CLAPDPAR sub-field when non-default values are entered for the N201 and T200 parameters. If the RDT is to support EBS services the N201 and T200, values need to be changed to the values displayed with the warning message. This message is already displayed for AccessNode, but this feature now displays it for TR303 RDTs also.

```
Warning: EBS lines will not work on this RDT.
            For EBS lines to work on this RDT
          N201 parameter must be >= 52 and
         T200 parameter must be >= 25
```

Error Message Added to CARDCODE Field in Table LNINV

A modified error message is displayed to the craftsperson when an invalid cardcode is entered for a Line Equipment Number (LEN) from a TR303 RDT. RDTEBS is now a valid cardcode for TR303 RDTs.

The following message reflects the fact that RDTEBS is now a valid cardcode for TR303 RDTs. It shows valid values for the CARDCODE field if an invalid value is entered:

```
Card Code must be {RDTCON, RDTLSG, RDTISD,RDTMPY,RDTEBS}
```

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

This feature needs the following features to function properly: AN3002, AN3003, AN3004, AN3005, AN3006, and AN3011.

Restrictions/Limitations

NONE

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TRK-NOW

This section identifies changes and/or additions to trunk functions that are Maintenance 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 Maintenance activity.

NA008 PRODUCT

XPM 81

DMS-100F Maintenance Synopsis
Release 08.01, November 1997

LAYER   **TRK-NOW**
NA008 PRODUCT

                                                             APPLICATION

ACTID   **FEATURE TITLE**   MBS
AF6823   Patch Source Inclusion I

Description

Patch Source Inclusion I improves the speed call key functionality for Meridian business set (MBS) subscribers with the Ambiguous Speed Call (AMBISC) feature. It also increases the range of two office parameters and moves code from a non-MDC owned module to a new MDC owned module.

This feature provides the following functionalities:

•   increases the range of the LONG_TIMED_RELEASE_DISC_TIME office parameter

•   increases the range of the EBS_TO_TRUNK_TRD_TIME office parameter

•   decouples the code associated with the EDB_TO_TRUNK_TRD_TIME office parameter from a non-MDC owned module and moves it to an appropriate MDC module

•   overrides the use of the feature and replaces translation selectors for any access code that is in the ambiguous speed call range.

Command Changes

NONE

Data Schema Changes

This feature modifies EBS_TO_TRUNK_TRD_TIME and LONG_TIMED_RELEASE_DISC_TIME office parameters in table OFCENG and modifies an option in table CUSTSTN.

Office Parameter Changes in Table OFCENG

Patch Source Inclusion I increases the range of office parameter EBS_TO_TRUNK_TRD_TIME in table OFCENG to a range of {16 TO 32767}. This office parameter allows operating companies to set the duration of Timed Release Disconnect (TRD) timing performed on Electronic Business Sets (EBS) to trunk calls.

The range of the office parameter LONG_TIMED_RELEASE_DISC_TIME defined in the table OFCENG is increased to a range of {16 TO 32767}. This parameter allows operating companies to specify the time, in 10-ms intervals, for which a called party on-hook is timed before releasing the connection to the calling party.

Table CUSTSTN Changes

Option AMBISC in table CUSTSTN is modified to add subfield OVERRIDE. When subfield OVERRIDE is set to TRUE, option AMBISC overrides the FEAT and REPL translation selectors in table IBNXLA and subscribers can access their speed call cells.

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

This feature overrides the use of feature translators for any access code that is in the speed call range (2-7 and 20-69). This functionality can be switched ON/OFF through datafill. 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

NONE

LAYER   **TRK-NOW**
NA008 PRODUCT

                                                                   APPLICATION
ACTID   **FEATURE TITLE**   ACD
AF6824   Patch Source Inclusion II

Description

Patch Source Inclusion II changes the interaction between Network Automatic Call Distribution (NACD) and Night Service (NS) features. It also increases the capacity of the Management Information System (MIS) link for call processing events.

This feature provides the following functionalities:

- Enables a caller to an NACD group in NS treatment to get BUSY treatment instead of NS treatment when other NACD groups in the network are taking calls but have no available agents or queue slots.

- Assigns unique integer values of the Resource Index (RI) to the following four states of an NACD group: call queue exceeded, maximum wait time exceeded, all agents Make Set Busy (MSB), and Night Service Active.

- Prevents the broadcast of RI event messages from an NACD group to the MIS link.

Command Changes

NONE

Data Schema Changes

New options have been added to tables ACDGRP and NACDGRP by this feature.

Table ACDGRP Changes

Field OPTIONS in table NACDGRP is modified to include option BSYTMT. With BSYTMT datafilled, callers to an NACD group in NS treatment get BUSY treatment when other NACD groups in the network are taking calls but have no available agents or queue slots.

Table NACDGRP Changes

Field MISOPT in table ACDGRP is modified to include option NORIMIS. When field ACDMIS is also sent to "Y" in table ACDGRP, RI event messages are not broadcast from an NACD group to the MIS link.

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

This feature needs the following engineering features to function properly:
- The USES list of the module NACDDATA is changed to include modules ACTPATTC and TYPVERUI. This requires a NEEDS list change for the package NACDSUB to include the package PATCHSUB.
- The USES list of the module NACDTYPS is changed to include module BASICDEF. This requires a NEEDS list change for the package NACDCOMM to include the package CCDEFSUB.

This feature is part of a group of features used by feature ACD.

Alarms

NONE

Interactions

Patch Source Inclusion II changes the interaction between NACD and NS features by sending a caller to BUSY treatment instead of NS treatment when they call an NACD group which is in the NS treatment and other NACD groups in the network are taking calls but have no available agents or queue slots.

Restrictions/Limitations

The following limitations and restrictions apply to Patch Source Inclusion II:
- If a site in the network of ACD groups has a load with a CCM DRU less than CCM08, then the patch MDR54 must be activated at that site for the NACD functionality to work properly.
- This restriction is removed if the site in the network of ACD groups has a load with a CCM DRU equal to or greater than CCM08.
- The limitation above is an existing limitation of the patch MDR54 already reported in PRS UT53579.

LAYER   **TRK-NOW**
NA008 PRODUCT

                                                          APPLICATION
ACTID   **FEATURE TITLE**   CNA
AJ4595   AIN STR/IP Phase 2 (CNA)

Description

AIN STR/IP PHASE 2 (CNA) provides Phase 2 of the AIN Service Enablers
Send_To_Resource (STR) functionality. Feature AJ4595 extends the capabilities provided
by feature AJ4102 in NA007 by supporting the following functionality:

- Information exchange between a remote intelligent peripheral (IP) and the service
  control point (SCP) using the ISDN user part (ISUP) facility (FAC) message.

- Error handling associated with the information exchange between the IP and the SCP.

- StrParameterBlock and IPReturnBlock sizes of up to 120 bytes

- ClearCauseData parameter

- STR-connection timer (TSTRC) and IP disconnect timer (TDISC)

- Primary rate interface (PRI) trunk group subscription to the SendToIPResource
  operation

The STR message is one of the response messages that a service switching point (SSP) can
receive from an SCP as a response to a query. The STR message is used for interaction with
the user in advanced intelligent network (AIN).

The SSP detects a trigger and sends an AIN Service Enablers query to the SCP using
transaction capabilities application part (TCAP) message protocol during call processing.
The SCP then sends reply back to the SSP. When the reply is an AIN Service Enablers STR
message in a conversation package and the directory number (DN) is identified in the
Destination Address parameter as an IP, then the SSP establishes a connection to the
requested IP.

The SSP that encounters the trigger and receives the request from the SCP to establish an
STR-connection is referred to as the local SSP. When the IP that is requested by the SCP has
a direct PRI link to the local SSP, this IP is referred to as the remote IP (relative to the local
SSP). The local SSP has to establish an ISUP connection to an SSP that has a direct link to
the remote IP. In this scenario, the SSP that has a direct PRI connection to the remote IP is
referred to as the remote SSP.

Command Changes

NONE

Data Schema Changes

Two new office parameters, AIN_TDISC_TIMER and AIN_TSTRC_TIMER, are added to table OFCENG.

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

This feature needs the following features to function properly:
- AJ4596 (CCM)
- AJ4594 (CCM)
- AJ4593 (SHR)
- AJ4592 (TL)
- AJ4591 (XPM)

Restrictions/Limitations

This feature removes some of the previous limitations, by supporting the following functionality:
- ISUP FAC message required for the information exchange between a remote IP and the SCP via CITR and CIFR messages
- Subscription of PRI to the SendToResource operation
- Provisionable TSTRC timer value
- Provisionable TDISC timer value

- StrParameterBlock sizes up to 120 bytes
- IPReturnBlock sizes up to 120 bytes

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)

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- 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

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Alarms

NONE

Interactions

This feature depends on the following features, which introduced OM interfaces in CSP06/CSP07:

- 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

LAYER   **TRK-NOW**
XPM 81

                                                                  APPLICATION

ACTID   **FEATURE TITLE**   **BRI**
AF6673   ISDN BRI XPM Call Processing Resource Management

Description

This feature, Integrated Services Digital Network (ISDN) Basic Rate Interface (BRI) XPM Call Processing Resource Management, implements changes to the XPM call processing software to better manage XPM call processing resources. The changes made are based on the results of a study of XPM BRI call processing capacity. Based on a review of XPM BRI call processing capacity, this feature addressed the following three areas:

- Added XPM monitor level to identify 'rapid messaging' BRI interfaces
- Modified the XPM call processing software resource interface
- Added CM to XPM messaging to the set of resources monitored by the XPM call processing flow controls in the Line/Trunk Controller (LTC)

Command Changes

A new interface to XPM CallP S/W resources has been implemented. This enhances the XPM CallP debug capabilities.

Data Schema Changes

NONE

Log Message Changes

A new PM189 (INFO) 'rapid messaging' BRI interface log has been added.

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

NONE

LAYER   **TRK-NOW**
XPM 81

                                                                                 APPLICATION
ACTID   **FEATURE TITLE**   ESMA
AF6722   ESMA: ICB: XPM – Call Processing

Description

This feature, Expanded Subscriber Carrier Module-100 Access (ESMA): Integrated Channel Bank (ICB): XPM - Call Processing, implements the interface to Terminal Processing Task (TPT) of the ICB call processing in the ESMA and is responsible for the following actions in the ESMA as they pertain to ICB call processing:

- Differentiate between TR303 and ICB call events
- Route call events to correct call processing subsystem
- Handle call progression for ICB lines on a per terminal basis
- Perform ringing for ICB lines using loop and ground start Foreign Exchange Subscriber End (FXS) signalling
- Allocate channels using the "Preferred" method
- Active calls surviving ESMA warm swact
- Enhanced ISDN Signaling Preprocessor (EISP) terminal audit not running for ICB lines

Each component has a specific function that needs to be performed in order to successfully call process ICB lines on the ESMA.

In this ESMA to channel bank configuration, a digital signal level 1 (DS1) can be connected directly from the customer premises channel bank to an ESMA peripheral. This connection allows channel bank connectivity without incurring additional equipment costs of purchasing Line Concentrating Module (LCM)/Enhanced LCMs (LCMEs) and central office side channel banks.

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 part of the feature set needed to support D4 channel banks subtending an ESMA. This feature set implements line services using the FXS signalling protocol for these channel banks. The group of features is listed below:

- AF6716 - ESMA: ICB: CNA - ICB Node Provisioning
- AF6717 - ESMA: ICB: CNA - ICB Line Provisioning I
- AF6718 - ESMA: ICB: CNA - ICB Node Maintenance
- AF6719 - ESMA: ICB: CCM - ICB Line Provisioning II
- AF6721 - ESMA: ICB: XPM - ICB Node Provisioning
- AF6722 - ESMA: ICB: XPM - Call Processing
- AF6723 - ESMA: ICB: XPM - RBS Resource Manager
- AF6724 - ESMA: ICB: Signal Processor (SIGP) Scanner

Restrictions/Limitations

- Channel bank supported by an ICB must support on-hook transmission capability in order for the DMS to support Custom Local Area Signaling Services (CLASS) and Advanced Display Services Interface (ADSI).
- Line diagnostics are not supported on ICB lines.
- Frequency selective ringing is not supported on ICBs.
- ICB call processing does not support functionality for Remote Digital Terminal (RDT) Line Subgroup (LSG) Line Class Code PBX.
- ICB call processing does not support reverse battery functionality.

LAYER   **TRK-NOW**
XPM 81

                                                                         APPLICATION
ACTID   **FEATURE TITLE**   FXS
AF6723   ESMA: ICB: XPM - RBS Resource Manager

Description

This feature, Expanded Subscriber Carrier Module-100 Access (ESMA): Integrated Channel Bank (ICB): XPM - Robbed Bit Signalling (RBS) - Resource Manager, implements the RBS resource manager in the ESMA to support the Foreign Exchange Subscriber (FXS) signalling protocol used by D4 channel banks. FXS signalling protocol uses AB robbed bits. The RBS resource manager functionality adds the capability of processing AB bits to the existing RBS processor, thus providing the interface between the AB bit scanning mechanism and the call processing entity within the ESMA. This feature implements the AB state machine to handle FXS on ICB lines.

This is one of three features needed to provide call processing for ICB lines using FXS signalling on the ESMA. The functionality of this feature concerns only the interface between the Signaling Processor (SIGP) AB bit scanning mechanism and the line call processing functionality. As such, this feature adds the ability to:

*   translate AB bit requests into call processing events
*   translate call processing events into AB bit commands
*   validate AB bit requests based on current scanning mode
*   use processing maintenance commands to enable/disable bit scanning

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

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AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

This feature needs the following features to function properly:
- AF6716 - ESMA: ICB: CNA - ICB Node Provisioning
- AF6717 - ESMA: ICB: CNA - ICB Line Provisioning I
- AF6718 - ESMA: ICB: CNA - ICB Node Maintenance
- AF6719 - ESMA: ICB: CCM - ICB Line Provisioning II
- AF6721 - ESMA: ICB: XPM - ICB Node Provisioning
- AD9754 - ESMA: ICB: XPM - ICB Maintenance
- AF6722 - ESMA: ICB: XPM - ICB Call Processing
- AF6724 - ESMA: ICB: SIGP Scanner

Restrictions/Limitations

NONE

LAYER
XPM 81

TRK-NOW

APPLICATION

ACTID   **FEATURE TITLE**
AF6949   XPM Maintenance Arbitrator for ECL Loads

MtcArb

Description

This feature provides additional XPM Maintenance Arbitrator (MtcArb) functionality for any XPM which uses the Effective Code Length (ECL) prefixed software load. The following functionality is provided by this feature:

- New symptoms to trigger diagnostics when Call Processing detects integrity or parity hits
- Periodic fault reporting
- Faults reported via logutil on a periodic basis
- Posting XPMs based on alarm status: critical, major, or minor
- Verifying critical fault cleared prior to manual Return to Service (RTS)

Command Changes

Commands changed in the LGCDIR are QueryPM, Swact, TST, Post, and RTS.

QueryPM

QueryPM is an existing command used to query miscellaneous information about the posted XPM. The syntax is as follows:

```
QueryPM: QUERY MISC INFO ABOUT THE PM
Parms: [<OPTION> {FLT,
                  CNTRS,
                  FILES,
                  DIAGHIST [<OPTHIST> {DIAG,
                                       CARD,
                                       RESET}]}]
```

The following changes have been made to the QueryPM command:

- QueryPM
  - If the unit of the posted XPM contains MtcArb, and if MtcArb is functional in the unit, then the QueryPM command shows that the unit has MtcArb functional. If the unit of the posted XPM contains MtcArb, and if MtcArb is disabled in the unit, then the QueryPM command shows that the unit has MtcArb disabled.
- QueryPM Flt
  - If the unit of the posted XPM has MtcArb enabled and the Node is ISTb or SysB, the QueryPM Flt command displays a service degradation level (severe, partial, or potential) and a card list provided by the XPM unit. This is done regardless of

the state of the unit, as long as the CM can communicate with the XPM (the XPM cannot be at ROM.)

The above changes are not visible unless MtcArb is in the load and enabled.

QueryPM Response

This information is supplied for each unit, but only if MtcArb is disabled. New text responses are:

- MtcArb functional
  - If the unit contains the MtcArb feature, and the XPM unit has the feature functional, then the QueryPM command shows that unit as having MtcArb functional.
- MtcArb disabled
  - If the unit contains the MtcArb feature, and the XPM unit does not have the feature functional, then the QueryPM shows the unit as having MtcArb disabled, for example:

```
>QueryPM
PM Type: LTC  PM No.: 5  PM Int. No.: 8  Node_No.: 63
PMs Equipped: 32  Loadname: ECL08AX  EEPRom Load: MX77NI05
WARM SWACT is supported and available.
LTC 5 is included in the REX schedule.
Last REX date was SUN. 1997/01/19 at 22:44:51; PASSED.
Node Status: {OK, FALSE}
Unit 0 Inact, Status: {OK, FALSE}  ,MtcArb functional
Unit 1   Act, Status: {OK, FALSE}  ,MtcArb functional
Site Flr RPos  Bay_id   Shf Description    Slot     EqPEC
HOST  01 ZZ02  LTE   03  18  LTC : 005               6X02AA
```

QueryPM Flt Response

New text responses are:

- Minor or Potential service degradation in unit
- Partial service degradation in unit
- Severe service degradation in unit
- No degradation of service in unit
- XPM failed to respond to QueryPM Flt msg

The new text response also generates a card list if one is valid, for example:

```
QueryPM flt
                Node is ISTb
                    Inactive Unit out of service
        One or both Units inservice trouble
        Unit 0
            The following inservice troubles exist:
            MtcArb detected fault in unit
            Severe service degradation in unit
            The following cards should be replaced:
            Site Flr RPos  Bay_id  Shf  Description    Slot      EqPEC
            HOST  01 ZZ02  LTE  03  1    LTC : 005      15        6x92
        Unit 1
            The following inservice troubles exist:
        not SysB or ISTb
            No degradation of service in unit
```

If the XPM unit contains the MtcArb feature, and the XPM unit has the feature functional, then the QueryPM Flt command shows a degradation level and card list provided by the XPM unit (providing the unit has a service degrade). This information is supplied for each unit, but only if MtcArb is functional and the unit is ISTb or SysB.

The XPM did not respond when the CM sent the QueryPM flt message to the XPM if the following text is output at the screen:

```
XPM failed to respond to QueryPM Flt msg
```

The XPM unit may be initializing or the links could not be opened. The craftsperson needs to try the QueryPM Flt message again.

When the XPM is active and InSv, some XPM resources may not be thoroughly tested. This may be the result of call processing using the resources needed for testing. In some cases, the card list is more accurate when the unit is out of service. Therefore, if a card list is generated when the XPM is active and InSv, the craftsperson needs to take the following actions, if possible:

1. Retest the unit when inactive and out of service.

2. If the fault was detected by the Out of Service (OOS) test, use the card list from the OOS test .

3. Otherwise, use the QueryPM Flt card list.

4. Change any card listed in this response at the earliest convenient time. The card list is ordered with the card most likely faulty at the head of the list.

5. When the card list contains more than one card, replace the cards one at a time.

6. Test the unit to determine if the fault has cleared, prior to proceeding to the next card.

SwAct

Changes to the SwAct command are:

- After a service level SwAct, the newly inactive unit is set SysB for service level, which results in immediate RTS without diagnostics. The unit returns to service. After a SwAct for a critical problem, the newly inactive unit is set SysB for MtcArb critical problem, which results in RTS by the audit with diagnostics. If a critical degradation is detected during testing, the unit does not return to service for diagnostic failure. If diagnostics do not detect the fault, then the unit fails RTS since the fault is recognized as one that causes a critical problem that can be seen only when the unit is active.

- The CM still maintains diagnostic history for XPMs with MtcArb functional, but it does not refuse SwActs based on that history if both units have MtcArb functional. It lets MtcArb make the decision. The CM's diagnostic history is used if MtcArb is functional in only one unit. New responses to the SwAct command if PreSwAct fails are, for example:

```
A Warm SwAct will be performed after
data sync of active terminals.
The XPM has reasons not to recommend a SwAct
A SWACT would cause partial service degradation
related to sync capability.
The SWACT FORCE Command may be used to
Override the Swact Controller
```

TST

TST is an existing command used to run in-service/out-of-service tests on an XPM or a particular unit of an XPM.

The change to this command is that MtcArb now takes action if the test fails on an in-service unit. For example, if the test uncovers a fault in the active unit and the inactive unit can provide significantly better service, a SwAct occurs. This may result in the test being aborted.

With MtcArb functional, if any diagnostic tests are initiated (by Facility Audit (FACAUD), or manual tests from the MAP, or a Symptom noticed by the MtcArb system, a SwAct for service level is done if the inactive unit's service level is significantly better based on the following:

- At least one less severe degradation at any importance level
- No severe degradations in either unit and at least one less partial degradation at any importance level.
- No severe or partial degradations in either unit and at least 5 fewer minor or potential degradations over all importance levels.

For severe and partial degradations, importance levels are checked from most important to least important.

If both units are running with MtcArb functional, MtcArb uses the test results and performs service level evaluation. Possible responses due to the running of service level

evaluation are a unit being taken SysB, a unit going from InSv to ISTb, a unit SWACTing to the standby unit, or a unit going from ISTb to InSv.

When the XPM is active and InSv, some XPM resources may not be thoroughly tested. This may be the result of call processing using the resources needed for testing. In some cases, the card list is more accurate when the unit is out of service. Therefore, if a card list is generated when the XPM is active and InSv, the craftsperson needs take the same action as in responding to QueryPM.

Post

Post is an existing command used to post a peripheral from the PM level of the MAP. Post is a Menu type command and is targeted for SuperNode and BRISC processors. The Post command is available in resident software.

This feature adds the capability to post XPMs based on the current alarm status displayed in the ALARM banner of the MAP. Following is the syntax for the new addition, which is appended to the current Post command syntax:

```
[<PM Type> {XPM} ...{Crit,
                      Major,
                      Minor}]
```

All XPMs which match the criteria provided with the Post command are added to the current post set.

RTS

RTS is an existing command used to return to service one or both units of an XPM. The command syntax has not changed. This command has been changed so that when an XPM unit that has been SysB for a critical problem is manbusied and then RTSed, a message is output prompting you to verify the fault has been cleared. The possible responses are FIXED and CANCEL with the default being CANCEL.

Data Schema Changes

NONE

Log Message Changes

The following changes have occurred to PM logs:
• MtcArb state appended to all PM logs of XPMs with MtcArb present in the load
• Modified PM181 log generated when an XPM unit reports an unsolicited fault report message to the CM
• New SYSB reasons in PM181 logs with MtcArb enabled
• New ISTb reason in PM181 logs with MtcArb enabled
• New ISTb reason, MtcArbFault
• Periodic fault reporting

The MtcArb state (functional/disabled) is now appended to PM logs of XPMs with MtcArb present in the load. An example is as follows:

```
TPB ***    PM107 MAR07 10:48:27 9824 CBSY LTC  0
                        Node       : CBsy
                        Unit0   Act: CBsy
                        Unit1 Inact: ManB  From CBsy
                        Unit0: MtcArb is disabled, Unit1: MtcArb is functional
```

PM logs have a free form text format. The new line referencing MtcArb is one of two formats. If MtcArb is loaded in both XPM units, the log syntax is:

```
Unit0: MtcArb is <state>, Unit1: MtcArb is <state>
```

where <state> is either "functional" or "disabled".

If MtcArb is loaded in only one of the units, the log syntax is:

```
Unit<unit_no>: MtcArb is <state>
```

where <unit> is either "0" or "1" and <state> is either "functional" or "disabled".

A new PM 181 log is generated when an XPM unit reports an unsolicited fault report message to the CM. Whenever new faults are detected or all faults are cleared, a fault report message is sent. Fault reports are also sent periodically when an in-service unit has any outstanding faults. This log contains the current degradation level in the XPM unit, and a card list of faulty cards if any exist. An example follows:

```
RTPZ ***    PM181 DEC11 08:16:58 6018 INFO LTC  5 Unit 0
                        Node: ISTb, Unit0 Act: ISTb, Unit1 Inact: ManB
                        Unit0: MtcArb is functional, Unit1: MtcArb is functional
                        Severe service degradation in unit
                        The following cards should be replaced:
                         Site Flr RPos  Bay_id   Shf  Description     Slot      EqPEC
                         HOST  01 ZZ02  LTE  03   18  LTC : 005       15        6X92
```

The format is:

```
mmmdd hh:mm:ss ssdd INFO pmid
Node:state, Unit0 activity:state, Unit1 activity:state
```

The valid texts that may be seen in this PM181 log are:
- No degradation of service in unit
- Severe service degradation in unit
- Minor or potential service degradation in unit
- Partial service degradation in unit

The card list contains valid cards in the XPM unit that is currently faulty. A new ISTb reason, MtcArbFault, has been added with this feature. The MtcArbFault ISTb reason is used in the following circumstances:
- After a service level SwAct

- After a non-critical problem fault is detected in the inactive unit

With MtcArb enabled, the following new SysB reasons and responses are seen in PM181 logs in response to the QueryPM Flt command:
- CritProbUnitAct - Critical problem detected only when unit active
- CritProbInvstg - Critical problem; XPM isolating cause
- ActDrop:toMate - ActivityDrop; Better service provided by mate
- CritProbMtcArb - Crit Problem detected in unit
- TimeoutMtcArb - MtcArb timed out during fault isolation

This feature provides the ability to periodically output logs reporting faults. Only the interval at which the logs are output has been changed.

The intervals at which the faults are reported is based on the degradation of the node. The log is output with alarm status as follows:
- Critical alarm
  — Output when the active unit has a severe degradation. Logs are output in 15-minute intervals.
- Major alarm
  — Output when the active unit has a partial degradation or the inactive unit has a severe or partial degradation. Logs are output in 30-minute intervals.
- Minor alarm
  — Output when either unit has a minor or potential degradation. Logs are output in 60-minute intervals.
- No Alarm
  — Output when all degradations clear. Logs are output twice when all faults are cleared.

Logs are output periodically only when the XPM unit is ISTb. The log output is the same as the original log, except the alarm status may have been changed.

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

NONE

LAYER   **TRK-NOW**
XPM 81

                                                                  APPLICATION
ACTID   **FEATURE TITLE**   TBCT
AR2403   PRI TBCT

Description

This feature provides XPM support for the Primary Rate Interface (PRI) Two B-Channel Transfer (TBCT) feature. Please refer to feature AR2401 in the ***TRK-LATER*** section for a description of the functionality of 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

NONE

Restrictions/Limitations

NONE

TRK-LATER

This section identifies changes and/or additions to trunk functions that are Maintenance 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

TELECOM 08

XPM 81

TAM-8991-005 4Q97 and up

DMS-100F Maintenance Synopsis
Release 08.01, November 1997
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LAYER	**TRK-LATER**
NA008 PRODUCT	

APPLICATION

ISDN

ACTID	**FEATURE TITLE**
AF6709	Integrated Services Digital Network NI-2/3 Billing

Description

This feature adds a table controlled option to allow detailed automatic message accounting (AMA) records to be generated that identify conference trunk usage by a Flexible Calling user.

Command Changes

NONE

Data Schema Changes

ISDN NI-23 AMA introduces the FLEXCALL option in table AMAOPTS to allow on or off optionality for making detailed AMA records for Flexible Calling Conference Trunk usage.

The example below displays AMAOPTS tuple entry:

```
table amaopts;pos flexcall
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: AMAOPTS
TABLE: AMAOPTS FLEXCALL ON
```

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

ISDN NI-2/3 AMA modifies billing for billable calls originated by ISDN Flexible Calling subscribers. If the FLEXCALL and ISDNCIRCUIT options are turned on in table AMAOPTS and the Flexible Calling subscriber adds one or more call legs to an existing 2-party call, a structure code 0076, call code 026 AMA record is produced to record conference circuit usage. This record has an appended ISDN core module (code 070) populated with a value of 2 in the Signaling or Supplementary Service Capability Usage field to indicate

Flexible Calling was used. If the added on call legs are billable for some other reason (for example, an originating study) and additional AMA records are generated, those records also have an appended ISDN core module (code 070) populated with a valve of 2 in the Signaling or Supplementary Service Capability Usage field to indicate Flexible Calling was used.

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

NONE

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 TFC or isolation, which may be a result of a 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 TFC and 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**   AIN

AF6762   AIN 0.2 Trigger Upgrade (CNA)

Description

Advanced intelligent network (AIN) Service Enablers (0.2) Trigger Upgrade (CNA) introduces changes to the Off-Hook Delay (OHD) trigger and AIN query message parameters. This feature allows public wireless trunks to subscribe to the OHD trigger. AIN 0.2 Trigger Upgrade (CNA) introduces one new query message parameter, GenericAddressList, and enhances three existing query parameters, CallingPartyBGID, ChargeNumber, and ChargePartyStationType.

Note: The GenericAddressList parameter is only available to AIN Service Enablers, Release 2 customers.

The AIN call model is characterized by various points in call (PIC) where the digital multiplex system (DMS) call model can be interrupted. Each PIC has a corresponding trigger detection point (TDP) where the DMS service switching point (SSP) can encounter an AIN trigger. When the criteria for the trigger is met, an AIN query message is sent to the service control point (SCP). The SCP replies with an AIN response message that contains information which can influence the call. The AIN response message directs the DMS SSP to reroute or forward the call, route the call to treatment, collect more digits, or continue normal processing.

At each AIN TDP the criteria for a trigger can be met, causing an AIN query message to be sent to the SCP. The type of query message is defined by the TDP where the trigger is checked. For example, the OHD trigger which occurs at the Info_Collected TDP, sends an Info_Collected query to the SCP.

Note: AIN 0.2 Trigger Upgrade (CNA) only affects processing of the query message, not the response messages.

Note: AIN 0.2 Trigger Upgrade (CNA) allows the OHD trigger to be subscribed for multi-frequency (type 2A) and signaling system 7 (SS7) (type 2A and 2B) public wireless (cellular) trunk types.

Command Changes

NONE

Data Schema Changes

Trunk types (GRPTYPE=CELL in table TRKGRP) can now be provisioned in table TRKAIN. Otherwise, AIN 0.2 Trigger Upgrade (CNA) introduces no new tables and does not modify the data schema for any existing tables.

Following is a TRKAIN datafill example:

```
TABLE: TRIGGRP
>list
KEY                                  TRIGDATA
----------------------------------------------------
OFFHKDELGRP INFOCOL   (OFFHKDEL ( ESC ) $ GT1INFO)$


TABLE: TRKAIN
>list
GRPKEY                               AINGRP
----------------------------------------------------
SOMETRKGRP                           OFFHKDELGRP
```

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

Generic addresses for ported number, proprietary 800 services, connected number, and broadcast destination features are not sent in the GenericAddresList.

This feature, AF6762, is part of a suite of features enhancing GR-1298 compliance for the AIN SE product. The other features are as follows:

- AF6850 (CCM)
- AF6851 (TL)
- AF6852 (SHR)

This feature needs the following engineering features to function properly:

- AIN Messaging Environment
- AIN Software Optionality Control (SOC)

This feature is part of a group of features used by feature: AIN Toll Free Service

Restrictions/Limitations

The following limitations and restrictions apply to AIN 0.2 Trigger Upgrade (CNA):

- Only dialed number, destination number, supplemental user provided calling addresses (failed screening or not screened), and completion number types of generic addresses, are used to populate the GenericAddressList parameter.
- GenericAddressList parameter population for integrated services digital network (ISDN) originating facilities is not supported.
- The SubgroupID field of the CallingPartyBGID parameter is always set to No_Indication for sS7 originating trunk facilities.
- The business group identified (ID) field in the CallingPartyBGID parameter is set to the business group identifier of the triggering agent.
- The screening indicator field of the CallingPartyID parameter for all line triggering agents is always set to Network Provided.
- GenericName parameter population for ISDN originating facilities is not supported.
- The UserID for ISDN triggering agents is set to the directory number of the agent.
- Interaction of speech-activated intelligent dialing (SAID) stringing of digits (SOD) and AIN Service Enablers is currently blocked on a call-by-call basis.
- The only triggers that can be encountered after throttling a virtual facility group (VFG) are at the Information_Analyzed and Network_Busy trigger detection points (TDP).

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:
  — post the backup D-channel
  — set the backup D-channel to ManB
  — set the backup D-channel to INB.
  — post the B-channel that is used as the new D-channel.
  — set the B-channel to ManB
  — set the B-channel to INB

- Execute these steps from table control:
  — delete the B-channel in table TRKMEM.
  — provision the backup D-channel to the channel location of the old B-channel in table TRKSGRP.
  — 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:
  — post the new backup D-channel
  — set the new backup D-channel to in-service (InSv).
  — post the new B-channel.
  — 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

ISDN

ACTID	**FEATURE TITLE**
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**	AMA
AF7086 End Office Operator Assisted Billing	

Description

This feature enables the production of Automatic Message Accounting (AMA) records on Operator Assisted (OA) call types. It provides billing capabilities for oa calls in the end office in accordance with the Telecom Reform Act of 1996. Billing record generation is triggered by a combination of two factors:

- In table AMATKOPT, the overall functionality is enabled by datafilling the OABILL option to an operator (OP) trunk group.
- In table STDPRTCT subtable STDPRT, the pretranslator associated with the originating line must be datafilled to specify the OA call type for the dialed number.

Command Changes

NONE

Data Schema Changes

Table AMATKOPT allows the application of Bellcore-format AMA options to separate trunk groups. The options can be applied to the entire trunk group or to specific members of the trunk group.

This feature adds the OABILL option to the existing table AMATKOPT. The OABILL option controls whether an OA call utilizing a member of the trunk group generates a local AMA record in the originating office. When OABILL is assigned in AMATKOPT and the call is an OA call, a billing record is generated. This option applies to North American offices for Bellcore-format AMA billing. An example follows:

```
TABLE AMATKOPT
CLLI                                   OPTIONS
------------------------------------------------
ISUPOP1                                         OABILL   $
```

Provisioning has changed for the CRS_PRU_POOL2_SIZE office parameter in table OFCENG. Feature AF6738 in the **TRK-LATER** section of this manual increases the usage of the extension blocks controlled by CRS_PRU_POOL2_SIZE. This increase occurs when billing is done for OA calls (controlled by the AMATKOPT option OABILL). If the OABILL option is on, then the increased usage of extension blocks may be substantial depending on the number of OA calls utilizing the selected trunk.

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

This feature enables the production of AMA records on calls terminated to 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 OA calls produce a billing record.

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

NONE

LAYER   **TRK-LATER**
NA008 PRODUCT

                                                   APPLICATION
ACTID   **FEATURE TITLE**   CLID
AJ4372   PXCLID

Description

This feature, Calling Line Identification (CLID) from Private Exchange (PX) Trunks With Blocking Option (PXCLID), allows an operating company to store:

- Single name for a PX trunk group
- Directory (DN) for a PX trunk group
- Both on the host DMS end-office

Command Changes

NONE

Data Schema Changes

The PXCLID feature modifies table CXGRP by adding two options, CNAM and CNUM, to the PXOPTIONS vector. Subfield CNAM defines the CLID calling name. Subfield CNUM defines the CLID calling number. Subfield CNUM also prompts for the boolean BLKPRES, which defines whether the CLID for the PX trunk group is to be blocked. (When BLKPRES is set to Y, both the CNAM and CNUM, if datafilled, are blocked).

New fields are CLLGNAME, CLGNUM, and BLKPRES. Field PXOPTIONS has been modified.

The PXCVLID feature increases the size of table CXGRP from 256 tuples to 511 tuples.

Note: *Tuples 0-31 in table CXGRP are reserved.*

Following is an example of this table with the modification highlighted:

```
TABLE: CXGRP
>lis
CUSTKEY
            SPB
                                                                    CTD
                                                                FCTDNTER
                                                                FCTDNTRA
                                                                   EWATS
                                                      EWATSI
                                                                 PXOPTION
-------------------------------------------------------------------------
    32
    Y  6133311327
                                                                     N
                                                                     N
                                                                     N
                                                                     N
                                                        N
        (   CLI ) (   RMR ) (   RMT ) (  CNAM  CUSTOMER_ABCDEF )
                                              (  CNUM 6136218888 N )$
```

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

Advanced Intelligent Network (AIN)

The AIN functionality enables end office call processing to use centralized service logic programs located at Service Control Points (SCPs), which determine how AIN calls proceed for further call processing. Queries and responses are exchanged between a DMS SuperNode end office equipped with AIN functionality and the SCP using CCS7.

A PX trunk assigned the PXCLID feature adds the calling number to the TERMATT AIN trigger on an intraswitch call.

Anonymous Call Rejection (ACRJ)

The ACRJ feature prevents termination of anonymous calls to a subscriber's line and routes such calls to an announcement. A PX trunk assigned the PXCLID feature routes to the ACRJ announcement when the blocking option of PXCLID is set to Y.

Automatic Recall (AR)

Automatic Recall is a Customer Local Area Signaling Services (CLASS) feature, which allows the subscriber to recall the last incoming call by entering a feature code.

Automatic Recall recalls the CLID DN when it is activated.

Calling Name Delivery (CNAMD)

The CNAMD option allows the incoming caller's name plus the time and date of the call to be displayed on the customer premises equipment (CPE).

The PXCLID feature CLID name is displayed when the CNAMD feature is present.

Calling Number Delivery (CND)

The CND option allows the incoming calling number plus the time and date of the call to be displayed on the CPE.

The PXCLID feature CLID DN is displayed when the CND feature is present.

Compucall Links on Automatic Call Distribution (ACD)

The Compucall produce is comprised of DMS-100 software, and an intelligent link to an end-user's business computer. The Meridian product ACD, along with the Compucall produce enables a nearly simultaneous presentation of voice call, coordinated with a call-related data screen, to a DMS-Meridian ACD agent.

The PXCLID feature does not send the CLID DN of a PX trunk over the Compucall links.

Dialable Directory Number (DDN)

DDN is a CLASS feature that enhances the CND feature by delivering the calling DN in the form required for the called party to return the call.

The PXCLID CLID DN is received in the correct dialable form when the DDN feature is present.

Deluxe Spontaneous Call Waiting Identification (DSCWID)

The DSCWID option allows a subscriber to display calling party information on a Call Waiting (CWT) call.

The PXCLID feature CLID name and DN are displayed when the DSCWID feature is present.

Distinctive Ringing/Call Waiting (DRCW)

The DRCW feature alerts the subscriber with a distinctive call waiting tone, or distinctive power ringing, when a call arrives from a previously identified DN. The identified DNs are programmed into a list using the Screening List Editing (SLE) feature. The standard call waiting tone or standard power ringing is applied on calls not identified in the DRCW list.

The PXCLID CLID DN is recognized by the programmed CLID name or number in the DRCW feature's list.

Feature Group Options (FTRGRP)

FTRGRP is a line option that allows the operating company to use a single service order command to assign a group of features to one agent. Through datafill the operating company defines a feature group and the features it uses, and then assigns the FTRGRP option (and therefore all the pre-defined features) to the new agent.

The PXCLID DN and CLID name are delivered to an agent assigned compatible DN and name display options through FTRGRP.

Network Name

A network name is associated with a Centrex customer group, when datafilled in table CUSTNTWK.

The PXCLID CLID name and DN are delivered to a terminating agent in the customer group, provided the CLID option is present in table CUSTNTWK.

Reason Display (REASISP)

The REASDISP option, datafilled in table CUSTSTN, displays a datafillable reason when various features are invoked on an EBS or Meridian set.

If the PXCLID feature blocked the CLID from a PX trunk, the REASDISP of the terminating agent displays the appropriate reason.

Name Display (NAMEDISP)

The name display option, datafilled in the CUSTSTN, displays a calling name on an EBS or Meridian set.

If the PXCLID feature has CLID name datafilled, the name is displayed on the terminating agent set.

Selective Call Acceptance (SCA)

The SCA feature allows the subscriber to selectively accept calls arriving from a limited set of DNs. The set DNs are programmed into a list using the SLE feature. Rejected calls (calls not on the list) receive SCA treatment.

A PX trunk call is accepted only if the PXCLID CLID DN is programmed into the SCA DN set.

Selective Call Forwarding (SCF)

The SCF feature is an incoming call management feature which allows the subscriber to define a special list of DNs and a destination number. The defined numbers are programmed using the SLE feature. Calls that terminate to the subscriber are forwarded if the DN of the originating station matches a DN on the SCF list.

A PX trunk call is forwarded only if the PXCLID CLID DN is programmed into the SCF list.

Selective Call Rejection (SCRJ)

The SCA feature allows the subscriber to selectively reject calls arriving from a limited set of DNs. The set DNs are programmed into a list using the SLE feature. Rejected calls (calls on the list) receive the SCRJ treatment.

A PX trunk call is rejected only if the PXCLID CLID DN is programmed into the SCRJ DN set.

Service Groups (SVCGRP)

SVCGRP is a line option that consists of the two options: CLID and Name Display (NAMEDSP).

The PXCLID CLID name and DN are delivered to an agent with the SVCGRP feature.

SUPPRESS

Table NETNAMES allows datafilling of a SUPPRESS option for the PUBLIC NETNAME, which results in the suppression of the name, the number, or both for intraoffice and interswitch calls, or both.

The PXCLID CLIF name, DN, or both is suppressed if the SUPPRESS option is already datafilled in table NETNAMES of the end-office.

800 Service

The 800 service, also known as Inward Wide Area Telephone Service (INWATS), is an intertoll office service that allows the called party to pay for toll calls.

An 800 call that originates from a PX trunk group with the PXCLID feature and is routed over ISUP messaging provides the CLID DN information, which is sent in the 800 database query to the SCP.

When no CCS7 connectivity exists between the PX trunk and the SSP end-office, the CLID information for the PX trunk is not available to the SSP. In this case, the NPX and NXX of the calling party is obtained using existing 800 Service procedures, and sent in the 800 database query to the SCP.

Restrictions/Limitations

The following limitations and restrictions apply to PXCLID:

- The PXCLID feature does not allow CLID blocking on a per-call or per-line basis. An entire PX trunk group must be set to blocking or non-blocking of BOTH the calling name and calling number information.
- The PXCLID feature uses the Nortel proprietary method of Calling Name Delivery (CNAMD), and does not support the Transaction Capabilities Application Part (TCAP) method of CNADM for intraswitch calls.
- The PXCLID feature does not support the connected name feature, which allows the called party's name to be displayed on the calling party's terminal equipment.
- The PXCLID feature restricts the range of the PXOPTION field in table CXGRP to 13.

LAYER   **TRK-LATER**
NA008 PRODUCT

                                                                 APPLICATION
ACTID   **FEATURE TITLE**   CCM
AJ4594   PRI AIN IPI

Description

Primary Rate Interface (PRI) Option for Advanced Intelligent Networks (AIN) Intelligent Peripheral Interface (IPI) feature (CCM) adds option AIN_IPI_SERV to table LTDATA. Option AIN_IPI_SERV is used to subscribe the PRI trunks to the SendToIPResource operation of AIN Service Enablers. The value of the option is set using the standard table control interface.

AIN Service Enablers applications are the primary customer of the PRI Option for AIN IPI (CCM). AIN Service Enablers applications access the value of this option during call processing time, to determine whether the PRI link can be used for the SendToIPResource operation

AIN Service Enablers specifications, GR-1129-CORE and GR-1298-CORE, require an additional subscription parameter (called STR_Subscription_Code) for the PRI. This parameter is used to determine when the PRI link between the switch and the IP is used for terminating an STR-connection. In other words, this parameter allows or disallows an intelligent peripheral (IP) to receive the send to resource (STR) operations from the service control point (SCP). This parameter can also serve to prevent the switch from sending IP-specific operations to non-IP customer premises equipment (CPE).

PRI Option for AIN IPI (CCM) adds a subscription parameter to the ISDN PRI datafill. The call processing applications use standard mechanisms to access the value of this parameter. The call processing application (AIN Service Enablers) is responsible for checking the value of the parameter and taking the appropriate action.

Command Changes

NONE

Data Schema Changes

A new option is added to the existing table LTDATA. The option AIN-IPI_SERV can be set to subscribe the PRI trunks to the SendToIPResource operation of AIN Service Enablers.

A datafill example follows:

```
>TABLE LTDATA
>POS ISDN 557 SERV
LTDKEY
-------------
ISDN 557 SERV

LTDRSLT
----------------------------------------------------------
SERV N N ALWAYS ALWAYS (TBO 800 N ) (CHG) (AIN_IPI_SERV ) $
```

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

The new option is compatible with all the existing LTDATA options.

This feature is part of the following group of features:
*   AJ4594- PRI Option for AIN IPI (CCM)
*   AJ4593 - PRI Option for AIN IPI (SHR)
*   AJ4592 - PRI Option for AIN IPI (TL)

Restrictions/Limitations

NONE

LAYER   **TRK-LATER**
NA008 PRODUCT

                                                         APPLICATION
ACTID   **FEATURE TITLE**   SHR
AJ4771   Black Box Fraud Prevention

Description

This feature contains the SHR layer software changes associated with feature AJ4532, Black Box Fraud Prevention. A description of feature AJ4532, Black Box Fraud Prevention, follows.

When a telephone call is made
- the originating end outpulses the digits dialed
- the switches establish a two-way speech path between the originating end and the terminating end
- the called party answers the call
- the far end switch sends and answer supervision signal to the originating switch starting the billing process.

As call billing starts when answer supervision is received, any action that delays sending this affect customer billing. This type of call fraud is termed black box fraud.

This feature prevents black box fraud by modifying the call process so that:
- the originating end outpulses the required digits
- the switch establishes a two-way speech path between the originating end and the terminating end
- the originating switch blocks the outgoing speech path
- answer supervision is received from the terminating end
- the outgoing speech path is unblocked, two way calling is established, and the billing process started

By blocking the outgoing speech path until the reception of answer supervision, and the start of billing, feature AJ4532 prevents black box fraud.

Command Changes

NONE

Data Schema Changes

To activate Black Box Fraud Prevention, enter DLYFWDXMT in the OPTION field of table TRKOPTS for each trunk group affected.

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Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

The following limitations and restrictions apply to Black Box Fraud Prevention:

- supports line-to-trunk and trunk-to-trunk connections
- supports the following trunk types:

    — digital PBX trunks (PX)
    — primary rate access trunks (PRA)
    — two-way IBN trunks (IBN2)
    — outgoing IBN trunks (IBNO)
    — two-way local trunks (T2)
    — out-going local trunks (TO)

LAYER   **TRK-LATER**
NA008 PRODUCT

                                                                             APPLICATION
ACTID   **FEATURE TITLE**   CNA
AJ4772   Black Box Fraud Prevention (CNA)

Description

This feature contains the CNA changes associated with feature AJ4532, Black Box Fraud
Prevention. It adds the Software Optionality Control (SOC) activation mechanism in the
CNA release. This is to prevent the feature from being activated by another product. Please
see feature AJ4532 in the ***TRK-LATER*** section of the this manual for a complete description
of 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

NONE

Restrictions/Limitations

The following limitations and restrictions apply.

Black Box Fraud Prevention provides supports to line-to-trunk and trunk-to-trunk connections only.

Black Box Fraud Prevention provides support to the following trunk types:
- digital PBX trunks (PX)
- outgoing IBN trunks (IBNO)
- two-way IBN trunks (IBN2)
- out-going local trunks (TO)
- two-way local trunks (T2)

LAYER   **TRK-LATER**
NA008 PRODUCT

                                                                                                     APPLICATION
ACTID   **FEATURE TITLE**   CCM
AJ4841   Black Box Fraud Prevention (CCM)

Description

This feature contains the CCM layer software changes associated with feature AJ4532 in the
TRK-LATER section of this manual. This feature blocks the forward speech path between
outpulsing of digits until the receipt of an answer signal from the terminating end. The
forward path is established only when answer supervision is received. This prevents use of
two-way connection in the event that the answer supervision is fraudulently delayed or
suppressed at the terminating end. This feature affects table control and call processing.

Command Changes

Before the DLYFWDXMT option for a selected trunk group in table TRKOPTS is accepted,
a warning message as shown below is displayed to warn the craftsperson about the impact
of this option to the selected trunk group (CLLI Name) during call processing. The warning
message is displayed when the DLYFWDXMT option is datafilled:

```
WARNING: This option will block the forward speech path until an answer message is
returned from the  far-end trunk. If no answer message is received, the forward speech
path is never established.
```

Data Schema Changes

Table control can be activated on a per trunk group basis by adding a new option
DLYFWDXMT in table TRKOPTS. If DLYFWDXMT is not datafilled, this means that the
feature is not activated for this trunk group.

The call processing software is enhanced to decide if two-way speech path or one-way
speech path is to be established. The one-way speech path is made, provided the following
conditions are met:

•   The new option DLYFWDXMT is datafilled in table TRKOPTS for that trunk group.
•   The terminating trunk is one of the following trunk types (PX, IBNT2, IBNTO, T2, TO)

Once the one-way speech path is set up, the DMS waits for the answer supervision from the
far-end trunk. Once answer supervision is received, two-way speech path is established.

Log Message Changes

NONE

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OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

The following features are associated with this feature:
- AJ4532 (BASE/TL08)
- AJ4771 (SHR08)
- AJ4772 (CNA08)
- AJ4599 (XPM09)
- AJ4841 (CCM08)

Restrictions/Limitations
- This feature only supports DTC and LTC XPM peripherals (XPM Plus version only); i.e., analog trunks are not supported. This feature supports only those trunk types listed:
  — PX (Digital PBX Trunk)
  — IBNT2 (Two-way IBN Trunk)
  — IBNTO (Outgoing IBN Trunk)
  — T2 (Two-way Local Trunk)
  — TO (Outgoing Local Trunk)
- It supports line-to-trunk and trunk-to-trunk connections only.
- An adjustable timer to release the call is not provided with this feature if an answer signal is not detected within a specified interval. This timer will be implemented in NA09.
- Both operator and CAMA trunks will not be supported by this feature.
- Although P2 trunk is part of the FSD requirements, P2 trunk is an analog trunk and, therefore, it is not supported by this feature. A workaround is to use digital trunk from DMS to channel bank to do the analog-to-digital conversion.

LAYER   **TRK-LATER**
NA008 PRODUCT

                                                                    APPLICATION
ACTID   **FEATURE TITLE**   ANI
AN0349   ES Trunk ANI Spill On Call Abandon

Description

Subscribers who dial 911 and then go on-hook can possibly interrupt the outpulsing of automatic number identification (ANI) out of the emergency services (ES) trunk. Thus, call abandonment may not allow proper ANI delivery to the far end. This feature provides a period of time for the full outpulsing of this ANI by temporarily suspending line supervision on the caller line (such as an on-hook). Field Abandon Hold Time (ABNHLDTM) in table TRKGRP with GRPTYP set as ES denotes the length of time in seconds that the calling line is held while ANI outpulsing continues.

In addition, this feature is able to detect the corresponding active patch in the previous loading during a One Night Process (ONP) and to automatically set ABNHLDTM accordingly during the ONP.

Note: *This feature does not guarantee that the call will be held if the caller is still on-hook at the end of the ABNHLDTM interval. However, this feature does allow time for the ANI to be outpulsed to the far end. The public safety answering point (PSAP) operator can use the ANI to call back the originator of the call.*

Command Changes

NONE

Data Schema Changes

The delay time is set by means of the new ABNHLDTM parameter in the ES Trunk refinement in table TRKGRP. To turn on this feature, the ABNHLDTM parameter must have a value greater than zero. Setting ABNHLDTM to zero turns the feature off. The recommended range of this parameter is 5 to 10 seconds. The absolute range is 0 to 15 seconds. The default is 0 seconds (or 5 seconds when patch RDG64 was active on the old load). An example follows:

```
ES 0 ELO NCRT OG N NIL MIDL 63 1000 HI 60 DC LO Y Y ANISPILL 5
```

Log Message Changes

Note: *Although no logs have been changed, this feature generates additional E911212 log traffic.*

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

The following limitations and restrictions apply to ES Trunk ANI Spill On Call Abandon:

- The caller cannot activate other features during the ABNHLDTM period.
- This feature may not work as designated if the digit collection is set so that it times out before the ABNHLDTM period is over.

LAYER   **TRK-LATER**
NA008 PRODUCT

                                                                   APPLICATION
ACTID   **FEATURE TITLE**   NS/EP
AQ1574   GETS HPC

Note: *The use of High Probability of Completion (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) HPC is a service provided by the OMNCS to meet 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 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:

- 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 subcriber'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.

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 is cleared when protocol timers have expired.

LAYER   **TRK-LATER**
NA008 PRODUCT

                                                                    APPLICATION
ACTID   FEATURE TITLE   LNP
AR2237   Local Number Portability Billing Enhancement

Description

LNP Billing Enhancements improves the billing records generated by Local Number Portability (LNP) calls.

This activity

- enables operating company personnel to assign a location routing number (LRN) to up to ten remote switching units attached to their office
- appends originating LNP billing data to calls with call codes 001 through 006, 072, and 142, when the originator is ported
- records the correct terminating numbering plan area (NPA) for calls that use seven digits across area codes

To implement local number portability, each service provider's office is assigned a unique LRN. Calls that originate from or terminate to a ported directory number (DN) each generate LNP billing information that is based upon LRN. However, some offices may have remote switching units that serve DNs some distance away. This activity provides for distinct billing rates for remote switch units. It provides each one with the option to have a distinct LRN.

This activity also ensures that the billing software records the correct terminating area code NPA. When the operating company permits local, that is 7-digit cross-NPA dialing, the billing software records the terminating NPA that applies to the terminating DN.

Command Changes

NONE

Data Schema Changes

LNP Billing Enhancements changes the datafill for table HOMELRN. It enhances the OPTION field, to allow datafill for up to ten sites. A datafill example follows:

```
AREACODE OFCCODE STNCODE OPTIONS

613      722     1234    (SITE)(HOST)(REM)$)$)
```

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

LNP Billing Enhancements captures the LRN served by a remote switching unit in the LNP-specific addition to the billing record.

LNP Billing Enhancements ensures that the switch records the terminating NPA for a local call that crosses NPA areas.

Notes

NONE

Alarms

NONE

Interactions

LNP Billing Enhancements interacts with
- Call redirection, such as the Call Forwarding feature.
- Signaling for ISUP. For calls from a remote unit, billing uses that remote's LRN as the Jurisdiction Information Parameter (JIP) outpulsed through ISUP trunks

Restrictions/Limitations

NONE

LAYER	**TRK-LATER**
NA008 PRODUCT	

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APPLICATION

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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 <u>not</u> 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.

LAYER   **TRK-LATER**
NA008 PRODUCT

                                                                   APPLICATION
ACTID   **FEATURE TITLE**   AIN
AU2332   AIN Service Enablers SDS Escape List (CNA)

Description

The advanced intelligent network (AIN) Service Enablers specific digit string (SDS) Escape
List (CNA) implements a mechanism for AIN call processing to escape the following digit-
string based triggers:
- SDS
- N11 (dialing codes for special services such as 411 for information services, 611 for
  telephone repair services, and 911 for emergency services)
- customer dialing plan (CDP)
- public office dial plan feature codes (PODPFEAT)
- specific feature code (SFC)
- local number portability (LNP)

The SDS trigger is a 3 to 10 digit public office dial plan (PODP) trigger that occurs at the
analyzing information (INFOANAL) trigger detection point (TDP). The SDS trigger is only
applicable to agents subscribing to PODP. The provisioning of the SDS triggers can be found
in tables TRIGGRP and TRIGDIG. For provisioning purposes, the SDS trigger is datafilled
as a PODP trigger.

AIN Service Enablers SDS Escape List (CNA) provides the customer with the following
functionalities for the supported triggers:
- provisioning of the SDS escape code
- escape code checking

For an escape code supported trigger, any dialed number that matches the SDS escape code
avoids hitting the trigger and no query message is sent to the service control point (SCP) or
adjunct.

Command Changes

AIN Service Enablers SDS Escape List (CNA) modifies the TRAVER output to support the
SDS escape code implementation. The ACTION field of table TRIGDIG is enhanced to
allow an additional value, ESCAPE, which indicates that the tuple is an escape code.

Data Schema Changes

The range of the values that can be datafilled in the ACTION field of table TRIGDIG is
expanded to include the ESCAPE value. The ESCAPE value represents an escape code for

the SDS trigger. The ESCAPE action allows a dialed number to escape the trigger when the dialed number matches the specified escape criteria.

The change to table TRIGDIG is limited to adding a value to the ACTION field, therefore, the external format of the tuples is still valid. No reformat procedures are required.

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

The escape codes are not provisioned on an office-wide basis. Furthermore, they are implemented on a per DIGNAME basis rather than on per trigger basis (as specified in GR-1298).

LAYER
NA008 PRODUCT

TRK-LATER

APPLICATION

ACTID   **FEATURE TITLE**
AU2444   LNPSSP: Query Location Routing Number (QLRN)

LNPSSP

Description

Local Number Portability (LNP) implements service provider portability, which allows customers to change their service providers without having to change their telephone numbers.

LNP deployment implies that numbers from one switch (Donor Switch) can be ported to another switch (Recipient Switch). LNP is built as an application of AIN 0.1 and as such it requires the Service Control Point (SCP) to obtain the Location Routing Number (LRN) for a given ported number. In a call to a ported number, the SSP sends a query to the SCP in order to retrieve the Local Routing Number of the switch where the called DN has been ported to.

QLRN allows a craftsperson to initiate a query from the SSP to the SCP, based on a Directory Number (DN) and view the returned Called Party ID.

QLRN is a tool intended for use by service order clerks, support groups, etc. The primary purpose of QLRN is to display the returned called party ID from the SCP to be used for routing purposes. In addition, messages provided by this tool can be used to identify possible missing switch datafill.

QLRN launches the same query to the SCP as if a call to a portable number (directory number that is provided by the user) has been made and the LNP trigger was hit during call processing.

It should be noted that at the QLRN prompt, if the user provides a 10-digit DN that satisfies both a non-LNP (PODP, N11, CDP) and a LNP digit criteria in table TRIGDIG, QLRN displays a warning and proceeds to build the query message according to the values obtained from the matched LNP entry in table TRIGDIG. The warning message notifies the user that an actual call to the specified 10-digit DN, results in a non-LNP trigger being hit prior to the LNP trigger. Understand that a warning from QLRN of this nature only displays the first trigger that matched digit criteria in table TRIGDIG and NOT subsequent triggers (prior to/ including LNP).

Also, before sending the query message, QLRN checks whether Automatic Code Gapping (ACG) controls are in effect. In a case that ACG controls are in effect, QLRN displays a warning and prompts whether the user wishes to continue with the query or not. If the user response is to continue with sending the query message, QLRN populates the ACG Encountered parameter in the outgoing query and increments an OM register indicating such. When the user decides not to continue with QLRN an ACG-OM register is updated to reflect a blocked query as would happen in call processing. Note that when ACG controls are in effect, sending QLRN queries might increase network congestion.

Once QLRN launches a query, it notifies the user and then awaits a response from the SCP for the period dictated by the value of the tuple AIN_T1_TIMER in table OFCENG. At this point QLRN increment an OM register to reflect a QLRN query has been sent. The only valid response for QLRN is an LNP Analyze Route response. Reception of other variations of Analyze Route or any other response such as Disconnect, Send To Resource (STR), etc... by QLRN is considered an error, even though normal calls may go through, in which case an error message notifying the user is displayed.

Upon reception of a valid response from the SCP, QLRN displays the following:
* Routing number
* Calling party DN
* Office Common Language Location Identifier (CLLI)
* Date and start time
* Elapsed time

The value for the office CLLI is taken from the tuple OFFICE_CLLI_NAME in table OFCENG.

When any further problems are encountered, QLRN displays an appropriate message and quit.

QLRN User Interface and Initiation

QLRN is activated by entering the command line name of the tool, 'QLRN', and a 10-digit DN.

If the DN is not supplied, QLRN prompts for it until given or the command is aborted.

The user may supply an optional second 10-digit DN on the command line which will be taken as the Calling Party ID. This parameter overrides a default UserID provided by QLRN. It is provided to work around cases where the SCP may screen a query based on the UserID even though an LNP response message should not rely on this value. As mentioned in the default calling party ID value is the Master HOMELRN on the switch. When only six digits are in this value, QLRN will set the station code to '0000' for the required 10-digit calling party ID. If the HOMELRN can not be found then QLRN will prompt for the calling party ID as a mandatory parameter.

For help, 'help QLRN' displays the syntax and a brief description of the command.

QLRN Parameter Population

This section summarizes the default values in QLRN's outgoing query.

The parameters in the outgoing query message built by QLRN are obtained from different sources. While some of the parameters are provided as input by the user, others are either derived from switch datafill or are hard coded in the software.

SCP Query Exceptions

After a query to the SCP QLRN may not display a called party ID for several reasons:
- the SCP is out-of-service
- the network is unstable
- or the SCP may be unable to generate a response because it has no entries to respond with

On query exceptions, the user is informed via a message to the terminal before quitting.

QLRN SCP Response Output

Upon reception of a valid response from the SCP, QLRN displays the following:
- Routing number
- Calling party DN
- Office CLLI
- Date and start time
- Elapsed time

Command Changes

New command: QLRN

Input a ten digit Called Party DN and optionally a ten digit Calling Party DN on the command line and QLRN will query the SCP to find out what the returned called party ID is. If there are any problems with datafill or accessing the SCP, QLRN will notify the user and quit.

At the CI prompt, enter the command name, 'QLRN', with a ten digit called party DN or it will prompt. In addition, the user can supply an optional 10-digit calling party DN on the command line.

Entering QLRN without any parameters

```
CI:
>QLRN
TEN DIGIT CALLED PARTY:
>6135551212
TEN DIGIT CALLING NUMBER 6132910000:
>8192341234

Query sent: 1997/03/18 15:14:25.180 TUE.
...
```

Entering QLRN with Called Party ID on command line

```
CI:
>QLRN 6135551212

Query sent: 1997/03/18 15:14:25.180 TUE.
....
```

Entering QLRM with all parameters

```
CI:
>QLRN 6135551212 5551234567

Query sent: 1997/03/18 15:14:25.180 TUE.
...
```

Entering invalid QLRN parameters

```
CI:
>QLRN
TEN DIGIT CALLED PARTY:
>$
*** ERROR ***
$
|
TYPE OF TEN DIGIT CALLED PARTY IS DIGIT_TABLE_10
TEN DIGIT CALLED PARTY:
>
TEN DIGIT CALLED PARTY:
>6135558901
The Home LRN will be used for the CALLING NUMBER, enter otherwise or press RETURN.
TEN DIGIT CALLING NUMBER: 6132910000
>$
*** ERROR ***
$
|
TYPE OF TEN DIGIT CALLING NUMBER IS DIGIT_TABLE_10
TEN DIGIT CALLING NUMBER: 6132910000
>BCD1239090
*** ERROR ***
BCD1239090
|
TYPE OF TEN DIGIT CALLING NUMBER IS DIGIT_TABLE_10
TYPE IS DIGIT_TABLE_10 TABLE OF 10 {1,2,3,4,5,6,7,8,9,0}'S
TEN DIGIT CALLING NUMBER: 6132910000
>

Query sent: 1997/03/18 15:14:25.180 TUE.
...
```

Home LRN not found

```
CI:
>QLRN
TEN DIGIT CALLED PARTY:
>6135558901
The Calling Number must be provided since the Home LRN can not be determined.
TEN DIGIT CALLING NUMBER:
>$
*** ERROR ***
$
|
TYPE OF TEN DIGIT CALLING NUMBER IS DIGIT_TABLE_10
TEN DIGIT CALLING NUMBER:
>6134446789

Query sent: 1997/03/18 15:14:25.180 TUE.
...

CI:
>QLRN 6135551234
The Calling Number must be provided since the Home LRN can not be determined.
TEN DIGIT CALLING NUMBER:
>6134446789

Query sent: 1997/03/18 15:14:25.180 TUE.
...
```

Command responses

Upon invocation of QLRN, many possible responses may be returned to the user depending on error conditions, missing datafill, valid response, etc. The following lists all possible QLRN messages provided to the user.

Insufficent datafill in table TRIGGRP to build a query

Base LNP datafill could not be found in table TRIGGRP. QLRN will not be able to query because no LNP trigger criteria matches in table TRIGGRP.

```
CI:
>QLRN 6135551212

Base LNP datafill could not be found in table TRIGGRP.
>
```

Insufficent datafill in table TRIGDIG to build a query

LNP digit criteria match for <Called Party ID> could not be found in table TRIGDIG. QLRN will not be able to query because no matching digit criteria was found in table TRIGDIG.

> *Note:* *This message means that QLRN as in CALLP has searched through available LNP digit criteria in table TRIGGRP and not found a digit match in table TRIGDIG. There may be matching digit patterns in table TRIGDIG but no tuples with digit criteria linked back to an LNP digit criteria record in table TRIGGRP.*

```
CI:
>QLRN 6135551212

LNP digit criteria match for 6135551212 could not be found in table TRIGDIG.
>
```

SCP (ACG) traffic overload control in effect.

When ACG traffic overload controls are in effect, sending a query to the database may impact network congestion. However, for maintenance purposes, queries of a test nature are still allowed to query the SCP. In such cases QLRN will prompt the user and continues with launching the query only upon receiving a positive response.

Override ACG controls

```
CI:
>QLRN 6135551212

************************************************
SCP (ACG) traffic overload control is in effect.
************************************************
Do you still want to continue? (Y/N)
>N
>
```

When the user chooses (Y)es a response will follow depending on the SCP. The SCP has returned a valid response.

The only valid response for QLRN is an LNP Analyze Route response. Upon reception of a valid response from the SCP, QLRN notifies the user and also displays the following:

- Routing number
- Calling party DN
- Office CLLI
- Date and start time
- Elapsed time

Complete QLRN run with valid response/no optional Calling Party ID

```
CI:
>QLRN 6135551212

Query sent: 1997/03/18 15:14:25.180 TUE.
Valid QLRN response received.
Routing Number: 8191234567.
CALLING DN: 6135250000. Office: OFFICE_CLLI.
Elapsed Time (MM:SS:mS): 00:00:380.
>
```

Complete QLRN run with valid response/the optional Calling Party ID

```
CI:
>QLRN 6135551212 6138281234

Query sent: 1997/03/18 15:14:25.180 TUE.
Valid QLRN response received.
Routing Number: 8191234567.
CALLING DN: 6138281234. Office: OFFICE_CLLI.
Elapsed Time (MM:SS:mS): 00:00:380.
>
```

T1 timer expiry

No response is returned within switch default time-out period (AIN 0.1 T1 timer has expired). No response from the SCP has arrived within the period specified by the switch.

```
CI:
>QLRN 6135551212

Query sent: 1997/03/18 15:14:25.180 TUE.
No response within switch default time-out period (AIN 0.1 T1 timer has expired).
>
```

Other matching digit criteria

In addition to LNP, QLRN has detected a digit criteria that matches another trigger at the AIN Information Analyzed Trigger Detection Point. Table TRIGDIG contains a tuple that satisfies the digit criteria for another trigger in addition to LNP. The user needs to make sure the non-LNP trigger would still allow call processing to continue such that the LNP trigger would be hit.

```
CI:
>QLRN 6135551212

Call will hit AIN Trigger "PODP" prior to LNP.
Ignoring Non-LNP triggers and continuing with LNP trigger information.

Query sent: 1997/03/18 15:14:25.180 TUE.
...
>
```

Invalid QLRN response received

A response other than a LNP Analyze Route message has been received from the SCP. Note that the response may be valid for call processing but is indeterminate to QLRN.

```
CI:
>QLRN 6135551212

Query sent: 1997/03/18 15:14:25.180 TUE.
Invalid QLRN response received.
CALLING DN: 6138281234. Office: OFFICE_CLLI.
Elapsed Time (MM:SS:mS): 00:00:380.
>
```

SOC option warning

The SOC option for LNP has been turned off. Results may or may not be useful.

```
CI:
>QLRN 6135551212

WARNING: LNP SOC OPTION IS OFF.LNP calls will NOT work but QLRN will attempt to
query anyway.

Query sent: 1997/03/18 15:14:25.180 TUE.
...
```

SCP error

Corrupt message from SCP or SCP is not attached. The message sent from the SCP has been corrupted or the link between the SSP and the SCP is down.

```
CI:
>QLRN 6135551212

Query sent: 1997/08/13 09:55:12.076 WED.
Error, either received corrupt message from SCP
or SCP is not attached.

...
```

SCP returned an abort or error message. This occurs when the SCP sends back an abort or error message due to an unrecognizable package type, incorrect or badly structured transaction portion.

```
CI:
>QLRN 6135551212

Query sent: 1997/08/13 09:39:01.110 WED.
Error, SCP returned abort or error message.

>QLRN 4164631001
...
```

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

Changed OM Group: LNP

Register list

- LNPQRY
- LNPQRY1
- LNPQFT1
- LNPRFERR
- LNPQFRTE
- LNPQESC
- LNPQESC1
- LNPQFACG
- LNPQFSCP
- LNPQFSSP
- LNPRFCNT
- LNPRFDSC
- LNPRFSTR
- LNPPORT
- LNPPORT1
- LNPREL
- LNPUADNR
- LNPUAHOM
- LNPQLRNQ (new)
- LNPQLRNR (new)
- LNPQLRNV (new)
- LNPQLRNA (new)

This group is associated with the QLRN tool for Local Number Portability.

OM SHOW example

```
LNPQRY       LNPQRY1      LNPQFT1      LNPRFERR
LNPQFRTE     LNPQESC      LNPQESC1     LNPQFACG
LNPQFSCP     LNPQFSSP     LNPRFCNT     LNPRFDSC
LNPRFSTR     LNPPORT      LNPPORT1     LNPREL
LNPUADNR     LNPUAHOM     LNPQLRNQ     LNPQLRNR
LNPQLRNV     LNPQLRNA
    0            0            0            0
    0            0            0            0
    0            0            0            0
    0            0            0            0
    0            0            0            0
    0            0
```

Register information

New register: LNPQLRNQ

This register counts the number of queries sent by QLRN.Its associated registers are TCMSGOUT and TCINVKL in group TCAPUSAG.

These groups of registers mark various information about TCAP messaging.

New register: LNPQLRNR

This register counts the number of responses received by QLRN. Its associated registers are TCMSGIN, TCQWPERM, and TCRESPNS in group TCAPUSAG.

These groups of registers mark various information about TCAP messaging.

New register: LNPQLRNV

This register counts the number of valid responses received by QLRN.

New register: LNPQLRNA

This register counts the number of times the user was prompted for and selected to override ACG blocking controls. Its associated registers are BLKCASCP, BLKCASMS, SCPOVLDO, and SMSOVLDO in group AINACG.

These groups of registers mark various information about ACG blocked queries.

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

Note that QLRN will not imitate call processing exactly. For calls to satisfy trigger criteria, there may be digit criteria and call type criteria to consider. QLRN only checks digit criteria.

LAYER   **TRK-LATER**

TELECOM 08

                                                          APPLICATION

ACTID   **FEATURE TITLE**   Black Box FP

AJ4532   Black Box Fraud Prevention

Description

This feature monitors calls. If there is no answer message, it does not connect the forward path and complete the call. It blocks the forward speech path between outpulsing of digits until the receipt of an answer signal from the terminating end. The forward path is established only when answer supervision is received. This prevents use of two-way connection in the event that the answer supervision is fraudulently delayed or suppressed at the terminating end.

Command Changes

Table TRKOPTS has been modified. A new option DLYFWDXMT has been created for every trunk group (CLLI Name). This option is datafilled on a per trunk group basis and is limited to 2-way and outgoing trunk groups only. By default, all trunk groups do not have this option. If DLYFWDXMT option is added to a trunk group, this feature is activated for this trunk group. If DLYFWDXMT option is deleted from this trunk group, this feature is deactivated for this trunk group. A warning message is displayed when the DLYFWDXMT option is datafilled. To activate this feature to a particular trunk group, this option has to be added to the trunk group in table TRKOPTS.

Two fields have been modified and one new field added:
* The CLLI field is the common language identifier used to identify the trunk group on which the option is assigned.
* The OPTION field contains the name of the datafilled option. For this feature, DLYFWDXMT is the option.
* OPT_KEY is a new field.

Data Schema Changes

Table TRKOPTS must be datafilled after the tables CLLI, TRKGRP and TRKSGRP.

To activate this feature for a particular trunk group, use the following procedure:

In CI level, use this syntax:

```
>TABLE TRKOPTS <RETURN>
>add <CLLI NAME> DLYFWDXMT DLYFWDXMT <RETURN>
```

> *Note:* *This option blocks the forward speech path until an answer message is returned from the far-end trunk. If no answer message is received, the forward speech path is never established.*

```
TUPLE TO BE CHANGED:
                 <CLLI NAME> DLYFWDXMT DLYFWDXMT
 ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>Y <RETURN>
TUPLE CHANGED
JOURNAL FILE INACTIVE
>
```

To disable this feature for a particular trunk group, use the following procedure:

In CI level, use this syntax:

```
>TABLE TRKOPTS <RETURN>
>POS <CLLI NAME> DLYFWDXMT <RETURN>
><CLLI NAME> DLYFWDXMT DLYFWDXMT
>DEL <RETURN>
>Y <RETURN>
```

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

This feature covers the following:
- XPM09 (AJ4599)
- SHR08 (AJ4771)
- CNA08 (AJ4772)

This feature needs the following feature to function properly: SHR08 (AQ1572).

Restrictions/Limitations

This feature only supports DTC and LTC XPM peripherals (XPM Plus version only). Analog trunks are not supported. Only those trunk types listed above are supported by this feature.

- It supports line-to-trunk and trunk-to-trunk connections only.
- An adjustable timer to release the call is not provided with this feature if an answer signal is not detected within a specified interval. This timer is implemented in NA09.
- Both operator and Centralized Automatic Message Accounting (CAMA) trunks is not supported by this feature.
- Although P2 trunk is part of the FSD requirements, P2 trunk is an analog trunk, and therefore, it is not supported by this feature. A workaround is to use digital trunk from DMS to channel bank to do the analog-to-digital conversion.

LAYER   **TRK-LATER**
XPM 81

                                                                              APPLICATION
ACTID   **FEATURE TITLE**   ISUP
AF6729   LIU7 Elimination for NA ISUP Looparounds

Description

This feature eliminates Link Interface Unit #7 (LIU7) traffic for ISDN User Part (ISUP) loopback trunks by using an ISUP Signalling Loopback (ISL). ISUP messages associated with loopback trunks are routed internally within the DMS software instead of being routed to the SS7 network. This allows ISUP loopback trunks to be provisioned without an additional impact on SS7 network resources. This eliminates the need for LIU7 hardware and includes the ability to reuse existing point codes for the office.

This feature is comprised of software components in the Computing Module (CM) and Digital Trunk Controller (DTC7). The primary areas involved are:
- Provisioning
- Call Processing
- Trunk Maintenance

With the exception of provisioning one additional table, ISL trunks do not provide any additional maintenance overhead and function as normal ISUP trunks.

Command Changes

In PMDebug, the PDA command of the CALL level is modified to display ISL trunk information. This includes an indicator to display whether or not, the trunk is ISL and if so, the Far End Terminal ID.

Data Schema Changes

A new table, C7ISL, is introduced to identify ISL trunks and maintain information about the trunk endpoints. The purpose of table C7ISL is two-fold:
- Identify those ISUP facilities with ISL capabilities
- Provide the DTC7 XPM with the additional information needed to properly route the associated signalling messages

After the standard ISUP trunk tables have been datafilled, C7ISL is datafilled to designate the trunk as an ISL and identify the far end of the trunk. Only ISUP trunks may be datafilled in the table.

When the trunk is brought into service, the CM sends information in the Trunk Data Message to the XPM identifying each ISL trunk in table C7ISL. The Terminal Identifier (TID) for the associated far end trunk is obtained from the table and included in the message. This allows the XPM to distinguish messages for ISL trunks and handle them appropriately.

Table C7ISL uses the existing fields: ENDPT1 and ENDPT2.

Datafill sequence for table C7ISL follows that of table C7TRKMEM. A dependency is created between the two tables, such that any ISUP trunk group member to be datafilled in table C7ISL must first be present in table C7TRKMEM. Likewise, any ISUP trunk group member with a presence in table C7ISL is not permitted to be deleted from table C7TRKMEM.

When defining an ISL facility in table C7ISL, if trunk members are not present in table C7TRKMEM, an error message results. An example is:

```
Trunk group member(s) specified in ENDPT field(s) not present in table C7TRKMEM.
```

Table C7ISL requires trunk group members to be in an INB state before allowing the tuple to be added, deleted, or changed. If trunk group members are not INB, an error message results.

```
ENDPT trunk(s) not INB.
```

Because signalling messages are bi-directional, an ISL facility defined in table C7ISL consists of two tuples. One tuple for each direction in which signalling messages is transmitted.

```
TABLE: C7ISL
ENDPT1                    ENDPT2
------------------------
OGISL   1                 ICISL   1
ICISL   1                 OGISL   1
```

Regardless of the order in which an ISL facility is datafilled, once the first tuple is datafilled, the second tuple is datafilled automatically.

If the following tuple is datafilled in table C7ISL,

```
TABLE: C7ISL
ENDPT1                    ENDPT2
------------------------
OGISL   1                 ICISL   1
```

then the following tuple is automatically datafilled.

```
TABLE: C7ISL
ENDPT1                    ENDPT2
------------------------
ICISL   1                 OGISL   1
```

Log Message Changes

NONE

OM Changes

In PMDebug, the ISUPOM level has been changed to display the Receive Message OM pegs in the XPM. New OMs are pegged in the XPM for ISL trunks.

All ISUP OM groups are pegged normally, including ISUPUSAG group registers. ISUPUSAG registers are pegged in the LIU7 for ISUP calls, but pegged in the CM and DTC for ISL calls. No MTP level OMs are pegged since ISL messages are not routed to the SS7 network.

Service Order

NONE

AMA Changes

NONE

Notes

Offices expected to be affected by LIU7 Elimination include North America DMS100/200, DMS250, DMS 500, and WOW (Wireless On Wireline) products.

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

Restrictions and limitations include:
- ISL routeset dependency
- ISL exclusive trunk provisioning
- DS1 span provisioning for ISL trunks
- Carrier Identification Code (CIC) availability
- CCS7 Test Utilities (C7TU) functionality

ISL Routeset Dependency

ISL trunks depend on the existence of SS7 routesets. Even though ISLs do not use SS7 network facilities, the existence of the facilities is necessary for provisioning the ISL trunks. Consequently, ISL trunks are subject to the condition of the routeset they are datafilled against in the same manner as any other ISUP trunk datafilled against that routeset (i.e., congestion, service outages, etc.). These factors need to be taken into consideration when provisioning ISL trunks.

ISL Exclusive Trunk Group Provisioning

ISL Trunk Groups need to be designated exclusively for ISL trunks. Standard ISUP trunk members are not mixed within the same Trunk Group as ISL trunks. Failure to adhere to this restriction may result in lost messages and call failures. Standard ISUP trunks use the routeset information obtained from table ISUPDEST and C7RTESET for routing messages. ISL trunks, although provisioned against a routeset do not use this routing information. As a result, if ISL and non-ISL trunks exist within the same Trunk Group, messages may be sent to the SS7 network (non-ISL) or they may be routed within the DMS (ISL). This creates an ambiguous routing situation. Therefore, all members of a trunk group intended for ISL use need to be datafilled in table C7ISL.

DS1 Span provisioning for ISL trunks

Due to the fact that ISL trunks do not support group messages (i.e., Group Blocking, Group ReSet Circuit and Circuit Query for a range of messages), it is desirable to provision them on separate spans from other ISUP trunks. If ISL trunks are provisioned on the same spans as non-ISL trunks, the non-ISL trunks are subject to the group messaging restrictions of the ISL trunks and result in single messages being sent instead of group messages.

CIC Availability

Each ISL also has an entry in table C7TRKMEM, reducing the number of CICs available for the existing trunk groups datafilled against the routeset.

C7TU Functionality

Since ISL messages are not routed to the LIU7, they cannot be captured with the C7TU utility.

LAYER
XPM 81

TRK-LATER

APPLICATION
PRI

ACTID	**FEATURE TITLE**
AF6873	TR-444 PRI RN Support - XPM

Description

This activity provides support for the Redirecting Number 1 (RN1) and RN2 parameters on an incoming or outgoing interface.This feature adds support for all valid Screening and Presentation indicators and adds support for Redirecting Number Information Elements (RNIEs) in the Q.931 message protocol.

See features AF6862 and AF6863 in the ***TRK-LATER*** section of this manual.

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 corresponding features are AF6862 and AF6863 in the ***TRK-LATER*** section of this document.

This feature is part of a group of features used by features AF6863 and AF4864.

Restrictions/Limitations

NONE

LAYER
XPM 81

TRK-LATER

APPLICATION
MBS

ACTID   **FEATURE TITLE**
AN3003   MVI MBS Call Processing (XPM)

Description

This features provides the XMS-based Peripheral Module (XPM) call processing component of Meridian Business Set (MBS) services on a TR303 Remote Digital Terminal (RDT). All MBS functionality is provided on a TR303 RDT. Examples of MBS features include, but are not limited to: Automatic Answer Back, Call Forward, Speed Calling, Called Number Display, and Onhook Dialing.

This feature provides the following for Multi Vendor Interface (MVI) MBS:
- Call processing state machine functionality
- XPM portion of line test and line audit
- Modification to SCEPTER translation base to support MVI MBS line object
- Capability to datafill and provision an MBS line on a TR303 RDT

Changes to XPM call processing involves allowing proprietary MBS call related messaging to be handled on the Timeslot Management Channel (TMC). Also, since MBS sets require a clear channel, all ABCD bit inband signalling for MBS channels have been disabled. All XPM call processing changes are transparent to the Compute Module (CM), the RDT, and, most importantly, the subscriber.

Command Changes

NONE

Data Schema Changes

See feature AN3010 in the *LN-LATER* section in this book for changes to tables RDTINV and LNINV.

An additional change to table RDTINV is a new subfield BRIDGING with the range of values Y and N, which has been added to the field RDTVAR. The field indicates whether the RDT supports the change ToBridged action.

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

This feature needs the following feature to function properly: AN3002 - MVI MBS Provisioning and Table Control.

This feature is part of a group of features used by this feature:

- AN3004 MVI MBS Automatic Lamp Refresh - XPM
- AN3005 MVI MBS Automatic Lamp Refresh - CM
- AN3006 MVI MBS Line Test

Restrictions/Limitations

The capability to datafill MVI MBS lines has been enabled by feature AN3010, found in the Line Later section in XPM 81 layer of this book.

SF-NOW

This section identifies changes and/or additions to service features that affect Maintenance functions and occur immediately upon the new software load insertion. This includes changes or additions to commands, data schema, logs, and OMs, which affect Maintenance activities.

LAYER   **SF-NOW**
BASE 09

APPLICATION
YR2000

ACTID   **FEATURE TITLE**
YR2000   YR2000 Support

Description

The year 2000 feature replaces the existing mechanism to accept and return an accurate time value instead of returning false for time values greater than the year 1999.

This feature modifies Time of Day system to handle and set dates greater than the year 1999. Time of Day software in the SOS environment does not support the year 2000 and greater. Constraints that restrict the year 2000 and greater are removed from the existing code.

This features does not support the year 2000 and beyond completely. It is only laying the groundwork within the operation system.

Command Changes

NONE

Data Schema Changes

NONE

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

DMS-100F Maintenance Synopsis   691
Release 08.01, November 1997
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Alarms

NONE

Interactions

NONE

Restrictions/Limitations

Time of Day System only allows for dates up to the year 2039.

DMS-100F Maintenance Synopsis
Release 08.01, November 1997

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.

TAM-8991-005 4Q97 and up

- 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.

DMS-100F Maintenance Synopsis
Release 08.01, November 1997
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— 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**   CACH
AF6715   MADN/EKTS CACH-CNA Enhancements

Description

The Multiple Appearance Directory Number/Electronic Key Telephone Set Call Appearance Call Handling (MADN/EKTS CACH)-CNA Enhancements feature is the CNA portion of the design for the EKTS CACH and Call Appearance Reservation (CARES) features. The actual implementation of this feature is described in the following feature descriptions:

- AF6638 MADN/EKTS CACH-Call Processing (see *SF-NOW* section of this manual)
- AF6646 MADN/EKTS CACH-Table Control (see *SW-NOW* section of this manual)
- AF6647 MADN/EKTS CACH-SERVORD (see *SW-NOW* section of this manual)

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   **SF-NOW**
NA008 PRODUCT

                                                           APPLICATION
ACTID   **FEATURE TITLE**   SOC
AF6761   SOC Activity for NI000051

Description

The software optionality control (SOC) is the mechanism Nortel provides to govern the operating company's usage of functionality. Generic configurations are sent to the operating companies. The setting of the SOC state introduces the customization of the features.

The ISDN Basic Rate Interface (BRI) features in the NA008 release are defined in the functional group called NI000051. SOC Activity for NI000051 controls a large subset of the features in the BRI Phase II release. The remaining BRI features are addressed on an individual feature basis. The SOC Activity for NI000051 features include ISDN packet, default service, and the features for NI-2 terminals.

SOC Activity for NI000051 uses the state controlled variant. The operating company turns the state ON to activate or turns the state to IDLE to deactivate the features. The NI000051 SOC state is initially IDLE except if SOC is already on a load and there is an office upgrade. A password is issued by Nortel to the operating company to activate the feature funtionality from a MAP (maintenance and administration position) terminal. The right to use (RTU) password is not automatically set if the SOC state is changed to ON during an office upgrade.

Command Changes

NONE

Data Schema Changes

Changed table: LTMAP

A new error message is added for the LTMAP (Logical Terminal Mapping) table that appears when attempting to attach a terminal interface to a physical NI-2 terminal without the option NI000051 turned ON.

```
Terminal cannot be assigned to an ISDN interface. Option NI000051 must be turned to ON.
```

Example

```
NI000051 State = ON, adding an NI-2 terminal to the logical interface
TABLE: LTMAP
>ADD ISDN 7 LEN SRCM 04 1 15 25 $ Y
TUPLE ADDED
NI000051 State = IDLE, adding an NI-2 terminal to the logical interface.
TABLE: LTMAP
>ADD ISDN 7 LEN SRCM 04 1 15 25 $ Y
ERROR: NI-2 terminals cannot be assigned to an ISDN interface. Option NI000051 must
be turned ON
```

Log Message Changes

NONE

OM Changes

NONE

Service Order

The SOC Activity for NI000051 affects an error message which appears when using the SLT ATT Service Order System (SERVORD) command.

The SLT ATT SERVORD command functions as normal when the NI000051 SOC state is ON. The command for attaching the terminal to the logical terminal identified (LTID) is blocked if the NI00051 SOC state is in the IDLE state. The following error message is sent indicating to turn the state of NI000051 to ON:

```
Terminal cannot be assigned to an ISDN interface.
Option NI000051 must be turned ON.
```

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

SOC Activity for NI000051 is dependent on the following SOC options:
- NI000050: NI2 BRI Functional Group

- NI000007: NI0 ISDN BASE
- NI000008: NI0 NI-1 BRI
- NI000010: NI0 NI-1 Packet

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**   AIN
AF6852   AIN 0.2 SFC Trigger for Service Enablers

Description

A specific feature code (SFC) is an individually subscribed trigger that allows users to dial specific feature codes that are unique for their lines. On dialing the feature code, the new SFC trigger queries the switching control point (SCP) or Adjunct to obtain further routing instructions related to the specific feature. In many respects, the SFC trigger is similar to the public office dialing plan feature (PODPFEAT) code trigger presently offered.

The SFC trigger is an individually subscribed trigger and can be assigned to residential services (RES) and basic rate interface (BRI) agents. To encounter the SFC trigger, the user dials a feature access code (FAC) or vertical service code (VSC) which is datafilled in translations (table IBNXLA). On finding the match, the VSC digits and caller's subscription are further screened to ensure all AIN pre-query checks are met. Once all checks are validated, the info_analyzed message is sent to the SCP to determine the service actions for the feature.

The service switching point (SSP) can receive any of four responses from the SCP after sending an SFC-generated info_analyzed message. The responses supported are Analyze_Route, Disconnect, Continue, and Send_To_Resource. SFC creates no specific changes for these responses and their functionality remains the same.

Command Changes

The TRAVER tool has been modified for the SFC trigger. Also, the AINMKR CI command can be used.

TRAVER Tool Changes

The TRAVER tool is updated to support the subscription, validation, criteria checking, translation, and routing verifications for the SFC trigger. Examples of the TRAVER messages for SFC follow:

```
Trigger R02 SFC is applicable to individual RES or BRI lines.

Trigger R02 SFC is NOT applicable to customer group.

Trigger R02 SFC is NOT applicable to office

AIN 0.2 trigger bypassed as AIN00220 SOC Option is IDLE.
```

TRAVER output displays the appropriate software optionality control (SOC) state of the trigger and provides the verification status for BRI or RES lines (for example, whether the trigger was successfully executed).

AINMKRES CI Command

The AINMKRES CI command at the MAP level is available for converting POTS lines to RES lines. The user simply inputs the range of lines which are required for change, and, if desired, has the ability to convert all lines to RES using the command.

The following example converts a range of lines from POTS to RES.

```
CI:
>ainmkres
AINMKRES:
WARNING: Restarts, table control, and SERVORD changes
during the CONVERT process are NOT recommended.
>
AINMKRES:
>range start host 0 0 0 2 stop  host 0 0 1 9
```

The next example converts all the lines to RES.

```
>all
```

Data Schema Changes

The TRIGGRP and TRIGDIG tables have been modified.

Table TRIGGRP Changes

AIN 0.2 SFC Trigger for Service Enablers adds the SFC trigger to the TRIGGER sub-field of the TRIGDATA field for table TRIGGRP. In adding the trigger as a valid entry, the mandatory digits dialed (DG) criteria are required. No change to the datafill sequence occurs. An example follows:

```
>add
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
KEY:
>SFCGRP INFOANAL
TRIGGER:
>sfc
CRITERIA:
>dg
DIGNAME:
>SFCDIG
CRITERIA:
>$
INFONAME:
>nil
TRIGGER:
>$
TUPLE TO BE ADDED:
SFCGRP INFOANAL
(SFC ( DG SFCDIG) $ NIL)$

ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
```

Table TRIGDIG Changes

Table TRIGDIG is modified to incorporate the SFC trigger by adding SFC as valid trigger KEY value and as a new TRIGGER value. Following is sample datafill:

```
MACHINES NOT IN SYNC - DMOS NOT ALLOWED
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
KEY:
>SFCDIG SFC B23
TRIGGER:
>SFC
ACTION:
>EVENT
PROTOCOL:
>tcap
MSGSET:
>r02
TRANSPRT:
>ss7
GTT:
>gtyp
GTSOURCE: DFLT
>
OPTION:
>$
TUPLE TO BE ADDED:
SFCDIG SFC B21 SFC
EVENT TCAP R01   SS7 GTYP DFLT
                                                                     $

ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
```

Log Message Changes

NONE

OM Changes

Please refer to feature AR2306 in the *SW-NOW* section of this manual, which describes OMs in general for AIN NA008.

Service Order

The SERVORD utility is used to assign the AIN options to RES and BRI lines. To add the AIN option, the craftsperson assigns AIN to the line by using the ADO command. When it is a POTS line, it is automatically converted to a RES line when assigning the option. To assign the AIN option to BRI lines, the craftsperson uses the same ADO command. The SERVORD system automatically prompts the user to add the option to the primary and all secondary DNs.

AMA Changes

NONE

Notes

This feature relies on AIN 0.1 and AIN 0.2 base functionality, SOC control, and provisioning. It is part of the NA008 Service Enablers program and controlled by SOC activity AIN00220.

Alarms

NONE

Interactions

This feature is part of the following group of features:

- AF6852 - AIN 0.2 SFC Trigger for Service Enablers (SHARED)
- AF6762 - AIN 0.2 SFC Trigger for Service Enablers (CNA)
- AF6850 - AIN 0.2 SFC Trigger for Service Enablers (CCM)

Interactions between AIN 0.2 SFC Trigger for Service Enablers and other functionalities are as follows:

- The add option (ADO) and NEW commands in SERVORD convert plain ordinary telephone service (POTS) lines to RES lines.
- The SFC trigger is supported on calls originated by additional functional call (AFC) directory numbers (DN).
- SFC is subscribed on a line basis and customized dialing plan (CDP) is subscribed to on a group basis (the SFC is encountered first in the call). When a CDP trigger that is assigned to a customer group uses the same feature code as the SFC trigger, the SFC trigger takes precedence.
- Normally, the off-hook delay (OHD) trigger cannot be encountered on dialed feature access codes; however, when both the OHD and SFC triggers are subscribed, the OHD trigger has precedence.
- The offer of precedence assumes that the SFC trigger occurs before other triggers such as PODPFEAT. SFC trigger precedence, when applicable to other triggers on the same line subscription level, is determined by the datafill order in table TRIGGRP. When SFC is the first trigger assigned in the table, then it is the first trigger encountered.
- Authorization code features involve the collection of codes prior to completing a call. The codes can be collected before or after having dialed the desired DN.
- Some call forwarding features allows certain feature access code to be programmed as the forwarded-to party, e.g., those datafilled in table IBNXLA with the FTR selector, such as AIN. The features affected are:
  — call forwarding validation (CFWVAL)
    – The validation of the forwarded-to DN can encounter triggers at the Info_Collected, Information_Analyzed, Network_Busy, and Termination_Attempt TDPs. The SFC trigger is encountered on call forwarding validation.

— call forward programmable (CFWP)

  – When the forwarded-to party is an SFC feature code, the SFC trigger is encountered upon forwarding the call.

- Automatic callback (ACB) allows the subscribers to redial the last station they called and be queued against the station when it is busy. When both stations become idle, the calling station is given special ringing, and upon answering, a call is made to the called station. ACB can be invoked on calls that initially encounter the SFC trigger. The blocking of ACB originated calls depends on other factors: the SCP response message received (for example, Analyze_Route), the contents of the response message (for example, CalledPartyID), and the state of the SOC option advanced intelligent networks (AIN) ACB/AR Premium (order code AIN00018).

- Automatic recall (AR) allows subscribers to recall the last station that called and to be queued against the station when it is busy. When both stations become idle, the calling station is given special ringing and upon answering, a call is made to the called station. AR can be invoked on calls that initially encounter the SFC trigger. The blocking of ACB originated calls depends on other factors: the SCP response message received (for example, Analyze_Route), the contents of the response message (for example CallerPartyID), and the state of the SOC option AIN ACB/AR Premium (order code AIN00018).

- Hotline features are features which originate calls without the caller dialing any digits. The digits are datafilled upon feature subscription. The following features can have an SFC feature access code datafilled as the number to dial (the SFC trigger can be encountered upon feature activation):

— automatic dialing (AUD) (BRI agents only)

— automatic line (AUL)

— warm line (WML)

- Network facility access (NFA) provides a direct connection from a subscriber to an intelligent peripheral (IP) using NFA trunks. The connection can either be through implicit (auto) access or explicit (dialed) access. NFA is used by Speech activated intelligent dialing (SAID) features.

- Speed calling can be separated into two aspects:

— speed call programming

— speed call invocation

  Validation is not performed on the destination digits for POTS agents; therefore, a speed call cell can be programmed with an SFC vertical service code (VSC) or feature access code. When a POTS line with a speed call cell programmed to an SFC VSC or feature access code is later converted to RES, invoking that speed call cell results in the feature access code being translated. However, due to a limitation with speed call, the AIN feature is not activated nor is the SFC trigger encountered.

- Three-way calling (3WC) features allow the user (controller) to hookflash during a stable call to establish a new leg of a call, independent of the other legs. 3WC features include:

— 3WC

— consultation hold (CH)

— usage sensitive three-way calling (U3WC)

Establishing a new call leg proceeds just like a new call. The trigger detection points are encountered in both the AIN originating call model (OCM) and terminating call model (TCM), including the InfoAnalyzed TDP. When the SFC trigger is subscribed to, it is encountered once the second leg of a 3WC is established.

Restrictions/Limitations

AIN 0.2 SFC Trigger for Service Enablers supports only RES and BRI line agents.

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

DMS-100F Maintenance Synopsis
Release 08.01, November 1997

SF-LATER

This section identifies changes and/or additions to service features that affect Maintenance 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.

LAYER   **SF-LATER**
BASE 09

                                                                        APPLICATION
ACTID   **FEATURE TITLE**   PRSM
AN1897   PRSM Year 2000 Support

Description

This feature modifies the handling of the date values for the Post Release Software Manager (PRSM) product to support the year 2000 and beyond. Date values utilized by PRSM are changed from a six-character format to an eight-character format.

Command Changes

Modified directories

The PRSMCIDIR and BCSMONDIR directories have been changed for PRSM 2000 support. The CI commands PRISM and DMSMON access PRSMCIDIR and BCSMONDIR, respectively. To return to CI, enter QUIT or LEAVE.

The new format of date fields in the PRSM database affects all PRSMCI commands that perform database searches. You can enter date values as parameters when defining a PRSU set definition.

These changes relate specifically to the following PRSU fields:
*   APPDATE
*   INSDATE
*   REMDATE
*   STATDATE
*   VALDATE

The sections below identify the directory command changes.

SELECT

The SELECT command is used to generate reports from the PRSM database. You can specify which database fields are included in the report and define search criteria based on multiple database fields.

The format of date fields is changed. Search criteria based on date fields accept date values in either of two formats; YYMMDD or YYYYMMDD. When you supply a six-character format, you can assume the current century.

All date fields included in reports generated by the SELECT command are displayed in an eight-character format.

SELECT command parameters

- select_definition_name (predef_select, seldef_name)
  - predef_select is either one of the following select set definition names or a seldef_name created with the SELDEF command.

- field_name (PRSU or DEST field name)
  - field names refer to PRSM database fields. There are fields associated with PRSUs and fields associated with DESTs.

- prsm_set_definition (prsu_set_def, dest_set_def)
  - A PRSU set is a group of one or more PRSUs. PRSU sets may be operated on by PRSM commands. You can define PRSU sets using the PRSMSET command, make use of predefined set definitions, or specify the set definition as a parameter in a PRSM command.
  - A DEST set is a group of one or more destinations. DEST sets may be operated on by PRSM commands. You can define DEST sets using the PRSMSET command, make use of predefined set definitions, or specify the set definition as a parameter in a PRSM command.
  - Date values used as parameters in PRSU set definitions are accepted in either of two formats; YYMMDD or YYYYMMDD.

- options (FLDWIDTH)
  - Specifies the field width for fields specified in the SELECT selection criteria.

- width (numeric)
  - Number of character spaces to allocate for field.

SELECT command usage examples

```
>select informcm
PRSUID            MODULE    EDIT APPDATE   APPTIME CAT CL RESTART FREE ST DEST
----------------- -------- ---- -------- ------- --- -- ------- ---- -- ----
000BKCB8          C0000MOD AA01 19990130 15:27   GEN C  NONE    NA   A  CM
                  C0001MOD AA01
                  C0002MOD AA01

>select informisn
PRSUID   MODULE   EDIT APPDATE  APPTIME CAT CL RESTART FREE ST DEST DEV UNIT
-------- -------- ---- -------- ------- --- -- ------- ---- -- ---- --- ----
420BLIB8 C0420MOD AA01 19980210 06:57   GEN C  NONE    NA   R  MS       0

>select informxpm
PRSUID   MODULE   EDIT APPDATE  APPTIME CAT CL RESTART ST DEST DEV UNIT
-------- -------- ---- -------- ------- --- -- ------- -- ---- --- ----
T00BBX08               19970103 14:30   SRC C  NONE    A  LTC  0   0
T00BBX08               19970103 14:30   SRC C  NONE    A  LTC  0   1

>select informsite
PRSUID            APPDATE
----------------- --------
BAS08BK           19990130
```

```
>select shortinfcm
PRSUID             ST CAT ACTIVE DEST APPDATE  APPTIME FREE
------------------ -- --- ------ ---- -------- ------- ----
000BKCB8           A  GEN N      CM   19990130 15:27   NA

>select shortinfisn
PRSUID   ST CAT ACTIVE DEST DEV UNIT APPDATE  APPTIME FREE
-------- -- --- ------ ---- --- ---- -------- ------- ----
420BLIB8 R  GEN N      MS   0        19980210 06:57   NA

>select shortinfxpm
PRSUID   ST CAT ACTIVE DEST DEV UNIT APPDATE  APPTIME
-------- -- --- ------ ---- --- ---- -------- -------
T00BBX08 A  SRC        LTC  0   0    19990101 22:33
T00BBX08 A  SRC        LTC  0   1    19990101 22:33

>select prsuid status appdate from prsuset prsus where appdate '= 990101
PRSUID   ST APPDATE
-------- -- --------
A7NBMIB8 R  19990101
INC00001 R  19990101
T00BBX08 A  19990101
A7NBMBB8 R  19990101
B2NBMBB8 R  19990101
```

PRSMSET

The PRSMSET command allows creation of a static set of DESTs or PRSUs. The set exists for the current session and is undefined once the user session is terminated.

The format of date fields is changed. Search criteria based on date fields accept date values in either of two formats: YYMMDD or YYYYMMDD. When you supply a six-character format, you can assume the current century.

PRMSET command parameters

- prsm_set_definition (prsu_set_def, dest_set_def)
  — A PRSU set is a group of one or more PRSUs. PRSU sets may be operated on by PRSM commands. You can define PRSU sets using the PRSMSET command, make use of predefined set definitions, or specify the set definition as a parameter in a PRSM command.
  — A DEST set is a group of one or more destinations. DEST sets may be operated on by PRSM commands. You can define DEST sets using the PRSMSET command, make use of predefined set definitions, or specify the set definition as a parameter in a PRSM command.
  — Date values used as parameters in PRSU set definitions are accepted in either of two formats: YYMMDD or YYYYMMDD.

- set_name (string)
  — Name of the set. You can determine a set name at the time of creation, or the system provides a name.

PRSMSET command usage examples

```
>prsmset create prsuset prsus where appdate '>= 980212
PRSMSET00 created.
>prsmset query PRSMSET00
BCABLBB8

>prsmset create prsuset prsus where appdate '>= 19980212
PRSMSET01 created.

>prsmset query PRSMSET00
BCABLBB8

>prsmset add prsuset prsus where appdate '>= 19980211 name prsmset00
Added elements to set PRSMSET00.
```

SETDEF

The SETDEF command is used to create PRSU and DEST set definitions to use them in other PRSM commands. Set definitions created with SETDEF are retained provided that you supply the setdef_name when you create them. A maximum of 100 set definitions can be maintained with SETDEF.

The set definitions saved with SETDEF are evaluated each time you use the setdef_name to find the current PRSUs or DESTs that match the criteria.

The format of date fields is changed. Search criteria based on date fields accept date values in either of two formats: YYMMDD or YYYYMMDD. When you supply a six-character format, you assume the current century.

SETDEF command parameters

- prsm_set_definition (prsu_set_def, dest_set_def)
  — A PRSU set is a group of one or more PRSUs. PRSU sets may be operated on by PRSM commands. You can define PRSU sets using the PRSMSET command, make use of predefined set definitions, or specify the set definition as a parameter in a PRSM command.
  — A DEST set is a group of one or more destinations. DEST sets may be operated on by PRSM commands. You can define DEST sets using the PRSMSET command, make use of predefined set definitions, or specify the set definition as a parameter in a PRSM command.
  — Date values used as parameters in PRSU set definitions are accepted in either of two formats: YYMMDD or YYYYMMDD.
- set_name (string)
  — Name of the set. You can determine a set name at the time of creation, or the system provides a name.

SETDEF command usage examples

```
>setdef create destset alldests with prsus where appdate '= 19980212
SETDEF00 created.
```

```
>setdef query setdef00
SETDEF Name   Definition
------------  ----------
SETDEF00      ALLDESTS WITH PRSUS WHERE APPDATE = 19980212
```

SELDEF

Use the SELDEF command to create PRSM select definitions to use them in
SELECT commands. Selection definitions created with SELDEF are retained
provided that they are created with a user supplied seldef_name. A maximum of 100
selection definitions can be maintained with SELDEF.

The select definitions saved with SELDEF are evaluated each time you use the
seldef_name to find the current PRSUs or DESTs which match the criteria.

The format of date fields is changed. Search criteria based on date fields accept date
values in either of two formats: YYMMDD or YYYYMMDD. When you supply a
six-character format, you can assume the current century.

SELDEF command parameters

- fields (PRSU or DEST field name)
  — Field names refer to PRSM database fields. There are fields associated
    with PRSUs and fields associated with DESTs.

- prsm_set_def (prsu_set_def, dest_set_def)
  — A PRSU set is a group of one or more PRSUs. PRSU sets can be operated
    on by PRSM commands. You can define PRSU sets using the PRSMSET
    command, make use of predefined set definitions, or specify the set
    definition as a parameter in a PRSM command.
  — A DEST set is a group of one or more destinations. DEST sets can be
    operated on by PRSM commands. You can define DEST sets using the
    PRSMSET command, make use of predefined set definitions, or specify
    the set definition as a parameter in a PRSM command.
  — Date values used as parameters in PRSU set definitions are accepted in
    either of two formats: YYMMDD or YYYYMMDD.

- set_name (string)
  — Name of the set. You can determine a set name at the time of creation, or
    the system provides a name.

SELDEF command usage examples

```
>seldef create prsuid status statdate from prsuset prsus where appdate `= 980212
SELDEF00 created.

>seldef query seldef00
SELDEF Name   Definition
------------  ----------
SELDEF00      PRSUID STATUS STATDATE FROM PRSUSET PRSUS WHERE APPDATE = 19980212
```

```
>select seldef00
PRSUID    ST STATDATE
-------- -- --------
BCABLBB8 VA 19980212
```

REPORT

The REPORT command is used to generate a report for specific values of certain fields without entering the entire select definition.

The format of date fields is changed. Search criteria based on date fields accepts date values in either of two formats; YYMMDD or YYYYMMDD. When you supply a six-character format, you can assume the current century.

REPORT command parameters

- module name (string)
    — The name of a specific module.

- date (YYMMDD or YYYYMMDD)
    — The date criteria for report generation. All PRSUs with a STATDATE equal to or greater than the specified date are included in the report.

- destid (string)
    — The complete name of a DEST in PRSM (MS 0, SPM 0 VSP 2, CM, LTC 0 0, LIU7 112, etc.).

- prsu name (string)
    — The name of a specific PRSU.

REPORT command usage examples

```
>report date 970206
PRSUID          MODULE   EDIT STATDATE STATT CAT ACT ST DESTID
--------------- -------- ---- -------- ----- --- --- -- -------------------
BAS08BK                       19970206 16:03 ???     A  SITE

>report date 19970206
PRSUID          MODULE   EDIT STATDATE STATT CAT ACT ST DESTID
--------------- -------- ---- -------- ----- --- --- -- -------------------
BAS08BK                       19970206 16:03 ???     A  SITE

>report dest site
PRSUID          STATDATE STATT CAT ACT ST LOADNAME H DESTID
--------------- -------- ----- --- --- -- -------- - -------------------
BAS08BK         19970206 15:40 ???     A  SITELOAD N SITE

>report prsu 000BKCB8
PRSUID          MODULE   EDIT CAT A ST STATDATE STATT FR DESTID
--------------- -------- ---- --- - -- -------- ----- -- ----------------
000BKCB8        C0000MOD AA01 GEN N A  19990130 15:27 NA CM
                C0001MOD AA01
                C0002MOD AA01
```

```
>report module C0000MOD
PRSUID           MODULE   EDIT STATDATE STATT CAT ACT ST DESTID
---------------- -------- ---- -------- ----- --- --- -- ------------------
000BKCB8         C0000MOD AA01 19990130 15:27 GEN N   A  CM
                 C0001MOD AA01
                 C0002MOD AA01
```

NEWPATCH

The NEWPATCH command associated with directory BCSMONDIR displays a list of PRSUs applied on or before the last reset date.

NEWPATCH command usage example

```
DMSMON:
>newpatch

************************
*      New Patches     *
************************

 Last reset : 1997/02/10 00:00:00
 Data dumped: 1997/02/10 13:46:47

PRSUID
-----------------------
          MODULE   EDIT APPDATE  APPTIME CAT CL RESTART FREE ST DEST DEV UNIT
          -------- ---- -------- ------- --- -- ------- ---- -- ---- --- ----
A7NBLBB8
                        19970210 06:38   ACT F  NONE    NA   A  CM
420BLIB8
          C0420MOD AA01 19970210 06:57   GEN C  NONE    NA   R  MS      0
420BLIB8
          C0420MOD AA01 19970210 06:57   GEN C  NONE    NA   R  MS      1
A6NBLBB8
                        19970210 11:38   ACT C  NONE    NA   A  CM
```

Data Schema Changes

PRSM Year 2000 Support expands fields in table PRSUDATA to allow eight character date entries.

Log Message Changes

NONE

OM Changes

NONE

Service Order

NONE

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

The following paragraphs describe the interactions between PRSM Year 2000 Support and other functionalities.

The patch administration and downloading interface and the regional patch software are modified to support complete year value input and output.

Customer or third party interfaces used to process report date, generated by the SELECT or REPORT commands, may require modifications to accommodate the eight-character date format.

Restrictions/Limitations

The following limitations and restrictions apply to PRSM Year 2000 Support:
- The core type used to track time-of-day in binary format does not support year values beyond the year 2039.
- A six character date suffix is added to the peripheral loadname of pre-patched XPM loads (PPXL). Procedures used to validate PPXL loadname dates continue to support this format.

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**   ISDN
AF6655   ISDN Music on Hold

Description

The ISDN Music on Hold feature provides that when a subscriber to this feature places a call on hold, the party on hold is connected to an audio (music) source. When the ISDN user retrieves the call, the party on hold is disconnected from the audio source and reconnected to the ISDN user. The customer group must have option KSMOH in table CUSTSTN. The ISDN LTID must have option KSMOH in table KSETINV.

Command Changes

NONE

Data Schema Changes

The I-MOH feature adds a KSMOH option with a KSMOH audio group to the set of possible options in Table CUSTSTN. It also adds a KSMOH feature index to the set of features in Table AUDIO. In addition, KSMOH is also added to the DN in Table KSETINV.

This feature is assigned on a business-group basis and by DN, as to a business-group in Table KSETLINE. It uses the same datafill setup as the existing KSET Music on Hold feature\.

I-MOH is controlled via the datafill of Table AUDIO, which defines the music source, and Table CUSTSTN, which selects the music source per business group.

Table AUDIO

I-MOH is controlled by an audio entry in Table AUDIO. The KSMOH audio route lists are assigned to the audio group in Table AUDIO with a feature of KSMOH.

Sample datafill for updating this table follows:

```
>table audio
>add
AUDIOKEY:
>audio1 KSMOH
Choice:
>ann
AR:
>y
CYCLE
>3
ANNCLLI:
>vca
CHOICE:
>music
MUSICLLI:
>vca
TIME:
>0
CHOICE:
>$
```

Table CUSTSTN

OPTNAME (KSMOH) must also be assigned to the CUSTNAME (ISDN Basic Business Group) in the Table CUSTSTN.

KSMOH is an existing valid option that can be datafilled in the OPTIONS field of this table. The AUDIOGRP field ties the KSMOH option to the audio source specified in Table AUDIO.

Sample datafill for updating this table follows:

```
>table custstn
>add
custname
>ibntst
optname:
>ksmoh
option:
>ksmoh
audiogrp
>audio1
```

Table KSETINV

I-MOH is also controlled by an entry in Table KSETINV. The KSMOH option is assigned to each LTID that has this feature.This option must be added using SERVORD commands to update the tuple in the table KSETINV. Assigning the option to a DN or logical terminal assigns music to all DNs associated with that logical terminal.

Example datafill for updating Table KSETINV follows:

```
>servord
SO:
>ado
SONUMBER:     NOW 97 2 5 AM
>
DN_OR_LEN:
>7225001
OPTKEY:
>1
OPTION:
>KSMOH
OPTKEY:
>$
```

Log Message Changes

NONE

OM Changes

NONE

Service Order

The KSMOH option is assigned to each LTID that has this feature. This option must be added using SERVORD commands to update the tuple in the table KSETINV.

AMA Changes

NONE

Notes

Although no special engineering hardware is required, each system needs to be engineered to provide a sufficient number of audio sources to support the number of holdees expected to receive KSMOH without impacting system performance.

Alarms

NONE

Interactions

This feature needs the following feature to function properly:
• AF6692, ISDN BRI XPM Software Enhancements.

The following describes the interaction between ISDN Music on Hold and other functionalities.

- Music is not connected to conference calls. If an ISDN user has the KSMOH option assigned and is a member of a conference call, going on hold does not broadcast music to the conference bridge. This interaction applies to Flexible Calling, Meet Me, and Preset conferences.

- When an ISDN user who is part of a 2-way connection on a line that has the Additional Call Offering (ACO) feature puts the other party on hold to answer an incoming call, the party on hold is connected to music. If the ISDN user then puts the third party on hold and goes back to the original connection, the third party is connected to music. If the ISDN user then puts both parties on hold to access another DN, both parties on hold are connected to music.

- ISDN Music on Hold does not supply music to group intercom (GIC) or intercom (ICM) calls that are placed on hold.

- ISDN Music on Hold is not applied to calls that are actively connected to 911.

Restrictions/Limitations

The following limitations and restrictions apply to ISDN Music on Hold:
- The ISDN user must have voiceband call type.
- A valid music or announcement source must be available.
- Feature Call Forward Don't Answer (CFD) does not offer music if hold is activated before the call is transferred.
- Music is not offered to terminals using a protocol version control (PVC) value prior to PVC 2.

LAYER   **SF-LATER**
NA008 PRODUCT

                                                                                                   APPLICATION
ACTID   **FEATURE TITLE**   ISDN
AF6783   ISDN Packet SERVORD Commands for Single DN

Description

This feature contains the SERVORD changes associated with AF6782, ISDN Packet Single
DN. A complete description of AF6782 follows.

Feature AF6782 allows the use of the same directory number (DN) for both packet mode
(PMD) and voice interface / circuit mode data (VI/CMD) calls for Fully Initializing
Terminals (FITs) called integrated terminals (ITs).

Feature AF6782 is dependent on ISDN Packet Shared DN feature (AF6777) which provides
the ability to use the same DN for both PMD and VI/CMD calls on separate terminals.

Presently the DMS-100 supports ISDN basic rate interface (BRI) D-channel access to packet
services only from terminals with provisioned static TEIs. Single DN functionality
overcomes this limitation by allowing the provisioning of D-channel packet service to
National ISDN 2 (NI-2) compliant FITs that use dynamic TEIs (DTEIs). The ability to
identify NI-1 and NI-2 circuit mode interface configurations is introduced by feature
AF6641. All currently supported packet switched (PS) and circuit switched (CS) services
continue to be supported on the new configuration.

Provisioning of the ISDN Packet Single DN functionality is incremental to NI-1 SERVORD
provisioning. NI-1 provisioning remains unchanged. Feature AF6782 does not affect packet
services for non-initializing terminals (NITs) with dynamic terminal assignment

Command Changes

NONE

Data Schema Changes

The following tables are affected by ISDN Packet Single DN:
- LTDEF
- KSETLINE
- LTMAP

Log Message Changes

NONE

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                                  Release 08.01, November 1997

OM Changes

NONE

Service orders

The following SERVORD functionalities are affected by ISDN Packet Single DN:

ISDN BRI Packet Single DN allows the user to define a new IT terminal with the 2BD access privilege. SERVORD command set up logical terminal (SLT) ADD, with CS = NI2 and PS = D, adds 2BD service to an IT. Nailed up B-channel packet (NUPB) calls are blocked on NI-2 terminals; SERVORD command SLT ADD with CS = NI2 and PS = B is rejected. A NUPB terminal can be defined on the same ISDN loop if it was not defined as a NI2 terminal.

With feature AF6782, SERVORD allows provisioning of NI-2 compliant ITs to the following configurations:

- Two keys with different call types appear on the same terminal for the same DN, one key with PMD and the other with VI/CMD.
- Two hunt groups using two EST commands for the same DN appear on the same terminal but on two different KEYS, one for PMD call type and the other for VI/CMD call type.
- Hunt group member DN can also be shared between two keys on the same terminal, one with a packet call type and the other with a circuit call type.
- To remove a DN from service requires the user to specify a KEY so that the DN appearance on that KEY is removed. If the OUT command is issued the first time, only the DN is detached from KEY, but the DN is not put out of service and it is not routed for treatment. Only when the OUT command is issued for the second time is the DN removed from service and routed for treatment.

SERVORD and table control activation of ISDN BRI Single DN Packet configuration features on ITs display error messages if not compliant with the above list.

SERVORD command Query logical terminal (QLT) displays logical terminal identifier (LTID) configuration information for the LTID's primary DN. This includes LTGROUP number, LTCLASS, and bearer service restrictions. Following the LTID's primary DN output is a list of all the DNs that appear on the LTID, along with their corresponding key numbers. Additionally, the display indicates whether the DN is a normal DN or a multiple appearance directory number (MADN).

The IT supports multiple appearances of the same DN on a different key with different call types. With feature AF6782, the SERVBORD QLT command displays the call type associated with each DN and its corresponding key. This includes DN/key pairs for the packet call type. The customer group information is repeated for packet call types. For changes to SERVORD commands QDN and QGRP, refer to feature AF6777, ISDN Packet Shared DN, in the *SW-NOW* section of this manual.

AMA Changes

NONE

Notes

ISDN Packet Single DN functions on the DMS-100 packet handler (DMS-PH).

Alarms

NONE

Interactions

The following systems interactions apply to ISDN Packet Single DN:

- Table control supports provisioning of ITs with
  — Access privilege of two B-channel and one D-channel (2BD) service on one DN.
  — DTEIs and usage of a Default DN (DFDN) key for the primary DN instance of PMD service. The Primary DN (PDN) key of the VI/CMD instance is assigned to the first key.

- Call Processing (CALLP) subsystem enhancements to support DN sharing required changes in processing permanent virtual circuit (PVC) and switched virtual circuit (SVC) ISDN calls when accessing DFDNs.

- SERVORD enhancements support access privilege 2BD, DN options DFDN and PMD. SERVORD Query commands include the addition of the integrated terminal (IT) and associated keys.

Restrictions/Limitations

NONE

LAYER   **SF-LATER**
NA008 PRODUCT

                                                                         APPLICATION
ACTID   **FEATURE TITLE**   ISDN
AF6784   ISDN Packet QUERY Commands for Single DN

Description

This feature contains the QUERY command changes associated with AF6782, ISDN Packet Single DN. A description of AF6782 follows.

Feature AF6782 allows the use of the same directory number (DN) for both packet mode (PMD) and voice interface/circuit mode data (VI/CMD) calls for Fully Initializing Terminals (FIT) called integrated terminals (IT). ITs use only one terminal end point identifier (TEI) for all call types. With ISDN Packet Single DN, end users are able to establish PMD and VI/CMD calls independently and simultaneously from or to the same DN. On the IT, the call types are represented as different appearances of the DN on separate keys.

Feature AF6782 is dependent on ISDN Packet Shared DN feature (AF6777) which provides the ability to use the same DN for both PMD and VI/CMD calls on separate terminals.

Presently the DMS-100 supports ISDN basic rate interface (BRI) D-channel access to packet services only from terminals with provisioned static TEIs. Single DN functionality overcomes this limitation by allowing the provisioning of D-channel packet service to National ISDN 2 (NI-2) compliant FITs that use dynamic TEIs (DTEIs). The ability to identify NI-1 and NI-2 circuit mode interface configurations is introduced by feature AF6641. All currently supported packet switched (PS) and circuit switched (CS) services continue to be supported on the new configuration.

Provisioning of the ISDN Packet Single DN functionality is incremental to NI-1 SERVORD provisioning. NI-1 provisioning remains unchanged. Feature AF6782 does not affect packet services for non-initializing terminals (NIT) with dynamic terminal assignment.

Command Changes

Please see AF6782 in the *SW-NOW* section of this document.

Data Schema Changes

The following tables are affected by ISDN Packet Single DN:
- LTDEF
- KSETLINE
- LTMAP

Log Message Changes

NONE

OM Changes

NONE

Service Order

The following SERVORD functionalities are affected by ISDN Packet Single DN.

ISDN BRI Packet Single DN allows the user to define a new IT terminal with the 2BD access privilege. SERVORD command set up logical terminal (SLT) ADD, with CS = N12 and PS = D, adds 2BD service to an IT. Nailed up B-channel packet (NUPB) calls are blocked on NI-2 terminals. SERVORD command SLT ADD with CS = N12 and PS = B are rejected. A nailed up B channel packet terminal can be defined on the same ISDN loop if it was not defined as a N12 terminal.

With feature AF6782, SERVORD allows provisioning of NI-2 compliant ITs to the following configurations:

- Two keys with different call types appear on the same terminal for the same DN, one key with PMD and the other with VI/CMD.
- Two hunt groups using two EST commands for the same DN appear on the same terminal but on two different KEYS, one for PMD call type and the other for VI/CMD call type.
- Hunt group member DN is shared between two keys on the same terminal, one with a packet call type and the other with a circuit call type.
- To remove a DN from service requires the user to specify a KEY so that the DN appearance on that KEY is removed. If the OUT command is issued the first time, only the DN is detached from KEY, but the DN is not put out of service and it is not routed for treatment. Only when the OUT command is issued for the second time is the DN removed from service and routed for treatment.

SERVORD and table control activation of ISDN BRI Single DN Packet configuration features on ITs display error messages if not compliant with the above list.

SERVORD command Query logical terminal (QLT) displays LTID configuration information for the LTID's primary DN. This includes LTGROUP number, LTCLASS, and bearer service restrictions. Following the LTID's primary DN output is a list of all the DNs that appear on the LTID, along with their corresponding key numbers. Additionally, the display indicates whether the DN is a normal DN or a MADN.

The IT supports multiple appearances of the same DN on a different key with different call types. With feature AF6782 the SERVBORD QLT command displays not only what it currently does, but also the call type associated with each DN and its corresponding key. This includes DN/key pairs for the packet call type. The customer group information is repeated for packet call types. For changes to SERVORD commands QDN and QGRP, refer to feature AF6777, ISDN Packet Shared DN, in the *SW-NOW* section of this manual.

AMA Changes

NONE

Notes

NONE

Alarms

NONE

Interactions

NONE

Restrictions/Limitations

NONE

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 LEN.
* 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.

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)

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DMS-100F Maintenance Synopsis
Release 08.01, November 1997

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

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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

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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

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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

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DMS-100 Family

Maintenance Synopsis

N⊘RTEL
NORTHERN TELECOM