Critical Release Notice

Publication number: 297-8021-350
Publication release: Standard 19.05

The content of this customer NTP supports the SN09 (DMS) software release.

Bookmarks used in this NTP highlight the changes between the NA015 baseline and the current release. The bookmarks provided are color-coded to identify release-specific content changes. NTP volumes that do not contain bookmarks indicate that the NA015 baseline remains unchanged and is valid for the current release.

Bookmark Color Legend

Black: Applies to content for the NA015 baseline that is valid through the current release.

Red: Applies to new or modified content for NA017 that is valid through the current release.

Blue: Applies to new or modified content for NA018 (SN05 DMS) that is valid through the current release.

Green: Applies to new or modified content for SN06 (DMS) that is valid through the current release.

Purple: Applies to new or modified content for SN07 (DMS) that is valid through the current release.

Pink: Applies to new or modified content for SN08 (DMS) that is valid through the current release.

Orange: Applies to new or modified content for SN09 (DMS) that is valid through the current release.

Attention!
Adobe® Acrobat® Reader™ 5.0 or higher is required to view bookmarks in color.

Publication History

Note: *Refer to the NA015 baseline document for Publication History prior to the NA017 software release.*

January 2006

Standard release 19.05 for software release SN09 (DMS). Updates made for this release are shown below:

Volume 1-3

No changes

Volume 4

Section Channelized access on LPP/LIS, Datafilling table TRKMEM (Sheet 6 of 6), removed (TBD) from remote unit as required by CR Q01256730.

Volume 5-16

No changes

Volume 17

Section Universal Access to CLASS Features, RESOFC field, note added as required by CR Q01218960.
Section Call Forwarding Remote Activation, Limitations and Restrictions, bullet added as required by CR Q01168869.

Volume 18-25

No changes

September 2005

Standard release 19.04 for software release SN08 (DMS). Updates made for this release are shown below:

Volume 1

Section PRI trunk groups, Datafilling table TRKSGRP, L1Flags description corrected for Q01112597.

Volume 10

Section DMS-100 and Meridian 1 Options 11-81 datafill correlation, Table 15-2, L1Flags description corrected for Q01112597.

Volume 17

Call Forwarding Remote Activation, Speed Calling description corrected for Q01095576.

August 2005

Standard release 19.03 for software release SN08 (DMS). Updates made for this release are shown below:

<u>Volume 9</u>

Documentation correction in Call Forward/Interface Busy. CR Q01038988 was incorrectly referred to as CR Q01038999 in the March 2005 documentation release. This has been corrected in the History section for Call Forward/Interface Busy, and in this Critical Release Notice.

<u>Volume 14</u>

Changes made to Residential Call Hold. “Table flow for Residential Call Hold (RCHD)” amended. (Q01038649)

June 2005

Standard release 19.02 for software release SN08 (DMS). Updates made for this release are shown below:

<u>Volume 14</u>

Changes made to Group Intercom All Call (Q00100917)

<u>Volume 16</u>

Changes made to Automatic Call Distribution (Q01091391)

March 2005

Preliminary release 19.01 for software release SN08 (DMS). Updates made for this release are shown below:

<u>Volume 1-8</u>

No changes

<u>Volume 9</u>

Modified – Call Forward/Interface Busy by CR Q01038988

<u>Volume 10-25</u>

No change

December 2004

Standard release 18.02 for software release SN07 (DMS). Updates made for this release are shown below:

<u>Volume 1-12</u>

No changes

Volume 13
Added Virtual Office Worker (VOW) by A00002011

Volume 14-16
No changes

Volume 17
Universal Access to Call Forwarding (UCFW) changes to AMA billing by CR Q00982215

Volume 18-23
No changes

Volume 24
Added OSSAIN XA-Core Data Messaging Capacity Enhancements by A00005160

Volume 25
No changes

September 2004

Preliminary release 18.01 for software release SN07 (DMS). Updates made for this release are shown below:

Volume 1
Modified – Introduction to trunk tables (ES trunk groups) by CR Q00838215-1

Volume 2-3
No changes

Volume 4
Modified – Datafilling Trunk Signaling (ISUP Hop Counter) by CR Q00760514-10

Volume 5-10
No changes

Volume 11
Modified – Datafilling MDC Minimum (Call Pickup) by CR Q00879738

Volume 12
Modified – Datafilling MDC MSAC (Do Not Disturb) by A00002196

Volume 13-15
No changes

Volume 16
Modified – Datafilling ACD Base (Base automatic call distribution) by CR Q00812364

Volume 17
Modified – Datafilling RES Advanced Custom Calling (900 FP) by CR Q00834222
Modified – Datafilling RES Advanced Custom Calling (CSMI) by CR Q00683891
Modified – Datafilling RES Advanced Custom Calling (CWAS) by CR Q00891675-01
Modified – Datafilling RES Advanced Custom Calling (Enhanced CSMI) by CR Q00683891

Volume 18
No changes

Volume 19
Modified – Datafilling RES Service Enablers (SLE) by CR Q00760256

Volume 20
Modified – Datafilling Emergency Number Services (E911 Wireless ALI Interface) by CR Q00856825

Volume 21-24
No changes

Volume 25
Modified – Datafilling Unbundling (UNBN OPTRANS and EA) by A00002765

March 2004

Standard release 17.03 for software release SN06 (DMS). Updates made for this release are shown below:

Volume 1- 9
No changes

Volume 10
Changes due to CR Q00757372 that clarify the applicability of the AUDTRMT option. The changes are in sections:

- 7 Datafilling NI0 NI-2 PRI, PRI Call Screening
- 8 Datafilling NI0 ISDN PRI Base, Flexible Digit Analysis
- 8 Datafilling NI0 ISDN PRI Base, PRI ISDN Treatments
- 9 Datafilling NI0 ISDN PRI CNAM, PRI SUSP for CNAME

Volume 11-16
No changes

Volume 17
Modified - Call Screening, Monitoring, and Intercept (CSMI) for Q00659151
Modified - RES Simultaneous Ringing for Q00715967
Modified - Usage Sensitive Three-way Calling (U3WC) for Q00703423-03

Volume 18
Changes to Chapter 1 - Datafilling RES Display Functionality and Privacy, Anonymous Caller Rejection (ACRJ) as follows:

- change to description of interaction with Call Forwarding Don't Answer (CFDA) for CR Q00773476
- change to description of interaction with SOC RES00011 for CR Q00735537.

Volume 19
Changes due to CR Q00735537, which shows the interaction of various services with SOC RES00011. The changes are in Chapter 1 – Datafilling RES non-display services, and the affected services are:

- Distinctive Ringing/Call Waiting (DRCW)
- Selective Call Acceptance (SCA)
- Selective Call Forwarding (SCF)
- Selective Call Rejection (SCJ)

Volume 20
Changes due to CR Q00757372, which clarifies the applicability of the AUDTRMT option. The changes are in section:

- 2 Datafilling Emergency Number Services, E911 PRI PSAP Delivery

Volume 21-25
No changes

September 2003

Standard release 17.02 for software release SN06 (DMS). Updates made for this release are shown below:

Volume 1
New - Panther support for third-party RMs
Modified - E911 trunk groups

Volume 2-11
No changes

Volume 12
Modified - Query Functional Station Grouping

Volume 13-14
No changes

Volume 15
Modified - VMX Interface

Volume 16
No changes

Volume 17
Modified - Call Screening, Monitoring, and Intercept (CSMI)
Modified - Enhanced CSMI
Modified - Long Distance Alerting
Modified - Long Distance Alerting Enhancement (LDAE)
Modified - Service Order Simplification for MADN Extension Bridging

Volume 18
Modified - Call Logging (CALLOG) Modified - Universal Voice Messaging
Modified - Voice Mail Easy Access (VMEA)

Volume 19
Modified - CMS AR Screening of Private Calls (CASOP)
Modified - In-Session Activation (ISA)

Volume 20
Modified - DMS Integrated E911 PSAP Functionality
Modified - E911 Incoming Wireless Calls
Modified - E911 Incoming Wireless Calls (MF)
Modified - E911 ISUP Parameter Enhancements
Modified - E911 ISUP Trunking
Modified - E911 Tandem
Modified - E911 Translations Robustness
Modified - VFG Support for E911 (LOC and/or ISUP/ANI Call)

Volume 21-25
No changes

June 2003

Preliminary release 17.01 for software release SN06 (DMS). Updates made for this release are shown below.

Volume 1-25
New Critical Release Notice added. Otherwise, no changes

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297-8021-350

DMS-100 Family

North American DMS-100

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Data, ISDN, and Internet Services Part 1 of 3

LET0015 and up   Standard   14.02   May 2001

NORTEL NETWORKS™

DMS-100 Family

North American DMS-100

Translations Guide Volume 8 of 25

Data, ISDN, and Internet Services Part 1 of 3

Publication number: 297-8021-350
Product release: LET0015 and up
Document release: Standard 14.02
Date: May 2001

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NTP Summary Contents

This summarized table of contents defines the category of product information that can be found in each volume of the *Translations Guide*. Each volume of the *Translations Guide* contains a detailed listing of the contents of that volume and a multi-volume contents listing if related subject matter spans multiple volumes.

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Meridian Digital Centrex (MDC) Part 2 of 6

MDC Minimum (continued), MDC MSAC, MDC Standard

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Meridian Digital Centrex (MDC) Part 3 of 6

MDC Standard (continued), MDC CLASS on MDC, MDC MBG Minimum, MDC MBG Standard

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Meridian Digital Centrex (MDC) Part 4 of 6

MDC MBG Standard (continued), MDC MBS Minimum, MDC MBS Standard, MDC PRO

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Enhanced Services, Enhanced Workstation Services Software, Operator Services AIN

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1 Introduction to 1-Meg Modem Service

Understanding 1-Meg Modem Service translations

The 1-Meg Modem Service provides high-speed, data-over-voice communications over standard telephone lines to the home or small-office subscriber. The 1-Meg Modem Service provides the following functionality:

- high bandwidth with line transport rates up to 1280 kilobits per second (kbit/s) downstream and 360 kbit/s upstream
- simultaneous data and voice connectivity
- continuous data connection
- data traffic routed to data networks, relieving congestion on the voice switch

The 1-Meg Modem Service uses a digital subscriber line (DSL)-like technology to provide the increased bandwidth with existing subscriber wiring and central office equipment. The 1-Meg Modem Service co-exists with existing telephone service.

Following are potential applications of the 1-Meg Modem Service.

- work at home

  The subscriber uses the 1-Meg Modem Service to connect to their corporate network.

- Internet access

  The subscriber uses the 1-Meg Modem Service to connect to their Internet service provider (ISP).

- small office communications

  The subscriber uses the 1-Meg Modem Service to connect to their corporate network. Two small offices can communicate through the 1-Meg Modem Service and rely on the transport network for interconnection.

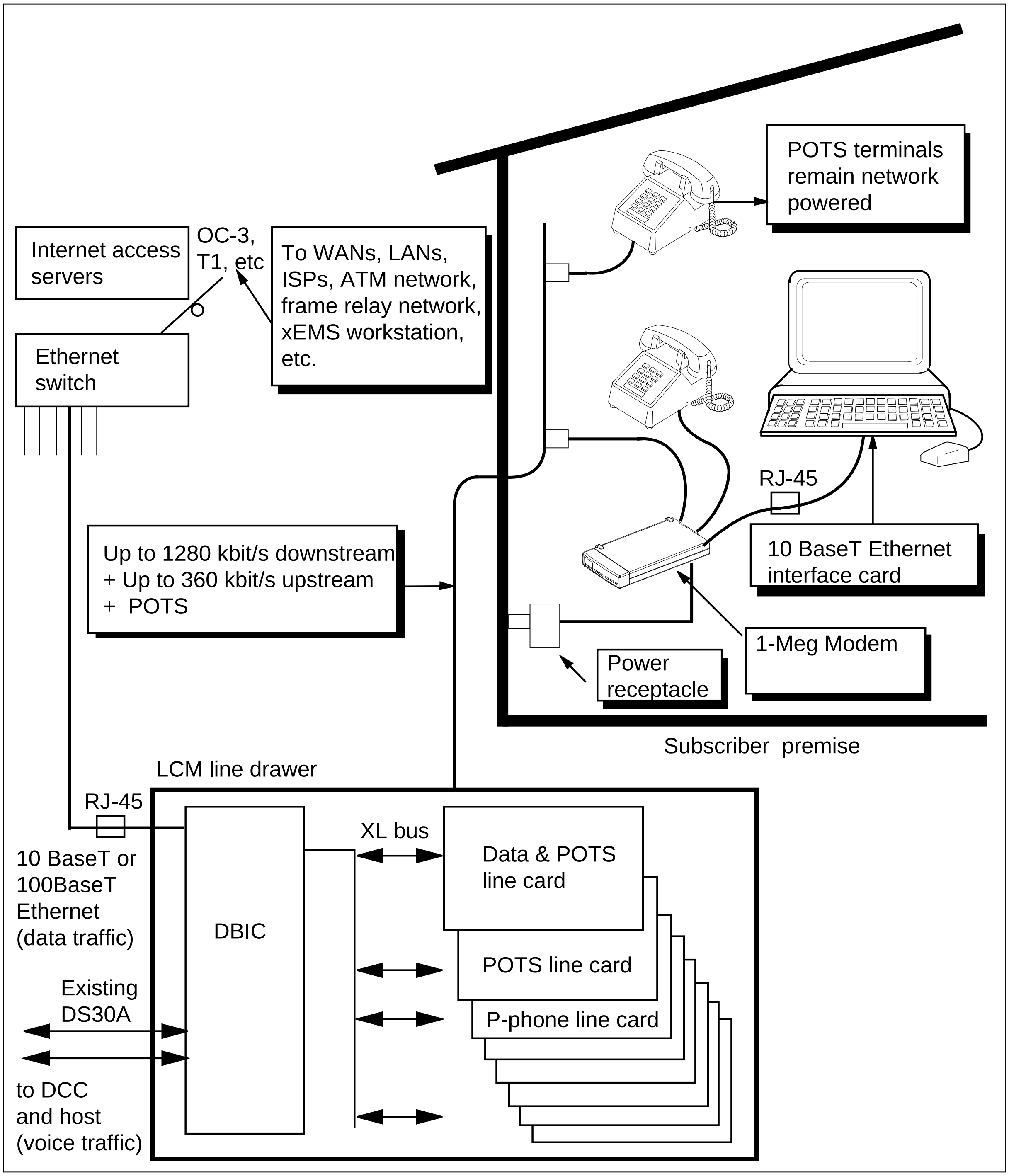
Components

The 1-Meg Modem Service consists of the following components:

- The 1-Meg Modem is customer premises equipment (CPE) that connects the telephone line, extension telephones, and a single computer. To the subscriber, the modem installs like a regular voice band modem, except the modem uses a 10BaseT Ethernet connection to the computer. Voice and data circuits are kept separate on the loop. This allows simultaneous voice and data traffic with no impact to other telephony features.
- A new xDSL line card (xLC) replaces the subscriber's line card in an existing line concentrating module (LCM) drawer. The card provides full voice service in parallel with high-speed data communication with the 1-Meg Modem.
- A new data-enhanced bus interface card (DBIC) replaces the existing bus interface card (BIC) in the existing LCM drawer. The card provides a concentrating function for the voice and data connections within a single LCM drawer. The card also separates the voice and data traffic for routing to the appropriate networks.
- The xDSL Element Management System (xEMS) provides operations, administration, maintenance, and provisioning (OAM&P) functions from a Hewlett-Packard (HP) or Sun workstation. Based on HP OpenView, the xEMS is a graphical user interface (GUI) that uses icons and pull-down menus.

The following figure illustrates the 1-Meg Modem Service.

Figure 1-1 1-Meg Modem Service system overview



Human machine interface (HMI)

Feature AF6472 introduces a new command interpreter (CI) command: QXNET (Query Ethernet). The QXNET command is used to query the 1-Meg

Modem Service engineering rules validation routines and formats the output for use by operating company personnel.

The QXNET command queries data from the DMS-100. The command can take several minutes to complete, depending on the size of the office and the number of lines datafilled in table LNINV. The following table lists the parameters of the QXNET command.

Table 1-1 QXNET parameters

Parameter	Options	Definition
COUNT	Site, frame, unit, drawer, COUNTALL	Query 1-Meg Modem Service counts (quantitative information) in an office, an LCM or LCM drawer basis.
VERIFY	Site, frame, unit, drawer, VERIFYALL	Verify compliance to 1-Meg Modem Service engineering rules on an office, an LCM, or LCM drawer basis.
EXPAND	Site, frame, unit, drawer, EXPANDALL	Query the expandability of 1-Meg Modem Service in an office, an LCM, or LCM drawer basis.
MAC	Address, ALL	Media Access Control (MAC) layer address. The Ethernet address, also known as the hardware physical address, obtained from stamping on the DBIC. This number must be unique and correspond to the number on the DBIC.

Syntax of QXNET commands

```
COUNT <OPERATION:>  {COUNT [<SITE> STRING]
                            <frame> {0 TO 511}
                             <unit> {0 TO 9}
                           [<DRAWER> {0 TO 99}],
                             COUNTALL,

VERIFY [<SITE> STRING]
                            <frame> {0 TO 511}
                            <unit> {0 TO 9}
                           [<DRAWER> {0 TO 99}]
                           [<CIRCUIT> {0 TO 99}],
                             VERIFYALL,

EXPAND [<SITE> STRING]
                            <frame> {0 TO 511}
                            <unit> {0 TO 9}
                           [<DRAWER> {0 TO 99}]
                           [<CIRCUIT> {0 TO 99}],
                             EXPANDALL,
```

```
MAC<MAC ADDRESS> STRING}, ALL
```

Signaling for 1-Meg Modem Service

Both the DBIC and the 1-Meg Modem support an industry standard 10BaseT, ITU 802.3 Ethernet interface. The 1-Meg Modem Service plus POTS functionality delivers the equivalent connectivity of an Ethernet LAN port to the end user's personal computer (PC) with the simplicity and ease-of-use of today's voice band modems. The ITU 802.3 10BaseT interface represents a data connection between the central office and the end-user. The interface delivers an asymmetric bandwidth of up to 1280 kbit/s downstream and up to 360 kbit/s upstream.

Preparing to datafill 1-Meg Modem Service

The following tables must be datafilled for Nortel 1-Meg Modem Service:

- LCMINV
- LCMDRINV
- LNINV

Functional groups for 1-Meg Modem Service

The following paragraph provides functional group names, ordering codes, and prerequisites for 1-Meg Modem Service.

HSTP0 DMS ADSL Capability, HSTP0002

HSTP0 DMS ADSL Capability has no prerequisites.

HSTP0 DMS ADSL Capability

Ordering codes

Functional group ordering code: HSTP0002

Functionality ordering code: Not Applicable

Release applicability

CCM07 and up

HSTP0 DMS ADSL Capability was introduced in CCM07.

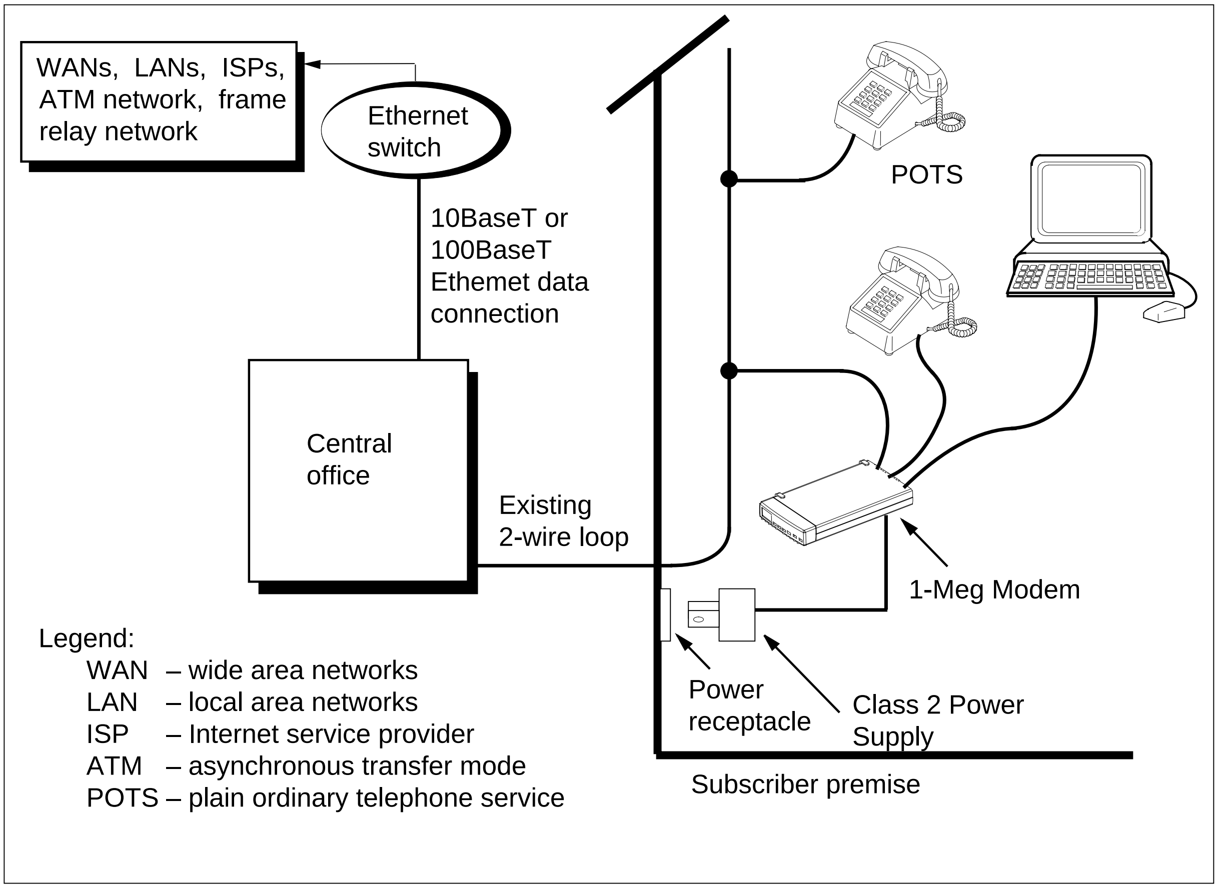
Prerequisites

HSTP0 DMS ADSL Capability has no prerequisites.

Description

HSTP0 DMS ADSL Capability provides the computing module (CM) software changes that allow an office to provision and maintain 1-Meg Modem Service hardware. The following figure illustrates the 1-Meg Modem Service.

1-Meg Modem Service overview



Operation

Prior to this enhancement, line concentrating module (LCM) or remote line concentrating module (RLCM) subscribers were limited to analog modem speed rates of 56 kbit/s. With analog modems, the subscriber cannot simultaneously use POTS and data services. Additionally, data calls typically have longer holding times that adversely affect the operating company's traffic call hundredth seconds (CCS) values. HSTP0 DMS ADSL Capability addresses these limitations by:

- allowing simultaneous use of data and all voice services
- increasing data rates
  - — up to 1280 kbit/s downstream to the customer
  - — up to 320 kbit/s upstream to the central office
- routing data traffic away from the DMS-100, to reduce the impact on the office's CCS values.

HSTP0 DMS ADSL Capability (continued)

Components

The 1-Meg Modem Service consists of the following components:

- The 1-Meg Modem is customer-premise equipment (CPE) that connects the telephone line, extension telephone, and PC. To the subscriber, the modem installs like a regular voice band modem, except the modem uses a 10BaseT Ethernet connection to the computer. Voice and data circuits are kept separate on the loop. This allows simultaneous voice and data traffic with no impact to other telephony features.
- A new xDSL line card (xLC) replaces the subscriber's line card in an existing LCM line drawer. The card provides full voice service in parallel with high-speed data communication with the 1-Meg Modem.
- A new data-enhanced bus interface card (DBIC) replaces the existing bus interface card (BIC) in the existing LCM line drawer. The card provides a concentrating function for the voice and data connections within a single LCM line drawer. The card also separates the voice and data traffic for routing to the appropriate networks.
- The xDSL Element Management System (xEMS) provides operations, administration, maintenance, and provisioning (OAM&P) functions from a Hewlett-Packard (HP) or Sun workstation. Based on HP OpenView, the xEMS is a graphical user interface (GUI) that uses icons and pull-down menus.

The DBIC and xLCs are backwards compatible with the current bus interface (BIC) and line card (LC) architecture. You can add either component without affecting existing subscriber features or services. The LCM or RLCM handles all 1-Meg Modem Service voice traffic like existing plain old telephone service (POTS) calls.

Human machine interface (HMI)

This feature introduces a new command interpreter (CI) command: QXNET. QXNET is used to query the HSTP0 DMS ADSL Capability engineering rules validation routines and formats the output for use by operating company personnel.

Translations table flow

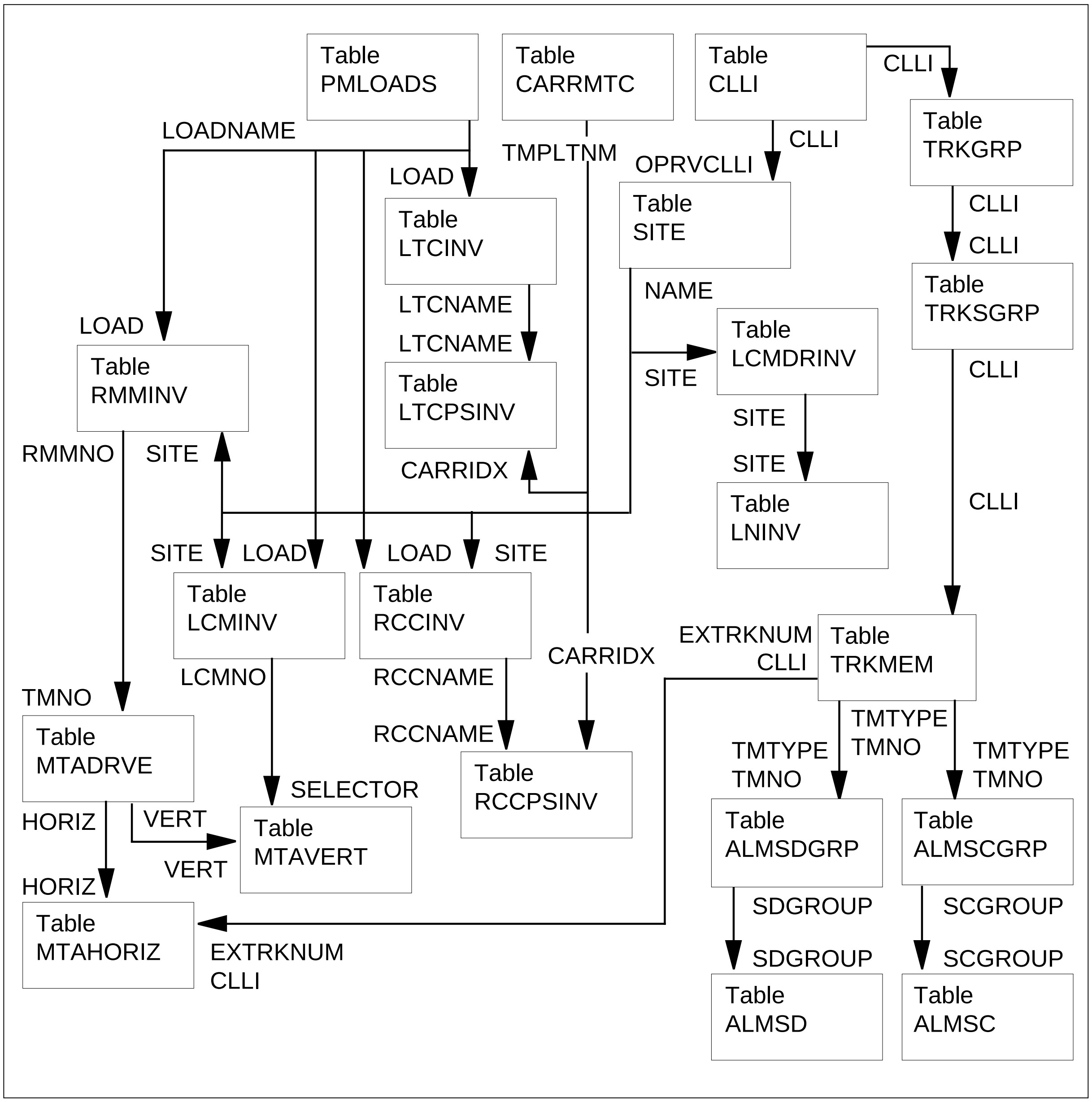
The HSTP0 DMS ADSL Capability translations tables are described in the following list:

- Table LCMDRINV
- Table LNINV

HSTP0 DMS ADSL Capability (continued)

The HSTP0 DMS ADSL Capability translation process is shown in the flowchart that follows.

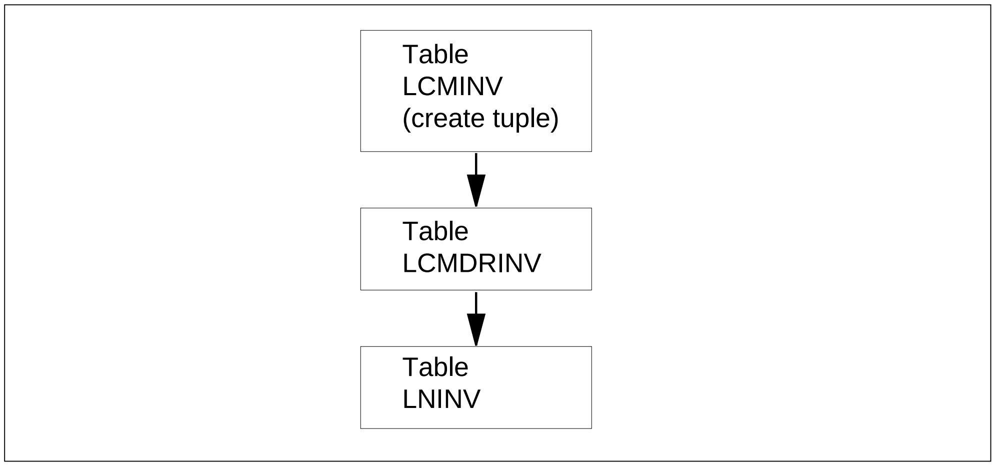
Translations process for HSTP0 DMS ADSL Capability



The following figure illustrates the table flow to datafill HSTP0 DMS ADSL Capability.

HSTP0 DMS ADSL Capability (continued)

Table flow for HSTP0 DMS ADSL Capability



Following is the datafill content for the tables in the previous flowchart.

- Table LCMINV lists data assignments for each bay associated with a LCM or RLCM. Field SITE in table LCMINV corresponds to the NAME tuple from table SITE. This field identifies the equipment for the switching unit and for all remote locations connected to it. Field LOAD in table LCMINV corresponds to the LOADNAME tuple from table PMLOADS. This field stores the device location of each PM load file.
- Table LCMDRINV lists the LCM name, physical drawer numbers, product equipment code (PEC) of the drawers, drawer loadname, and media access control (MAC) address for each LCM and LCM variant in the host office. The data contained in the tuples of this table is used by line drawer applications to assess the functionality supported in each physical drawer.

  The LCMDRINV table is restricted to allow only change operations and does not support manual additions or deletions. Tuples of this table are automatically added or deleted when a corresponding entry is added or deleted in the LCMINV table.
- Table LNINV lists site name with the line equipment number (LEN), and associated data for each line card circuit in an office.

Limitations and restrictions

The following limitations and restrictions apply to HSTP0 DMS ADSL Capability:

- Each drawer entered in table LCMDRINV to support HSTP0 DMS ADSL Capability must have a DBIC.
- If the LCM is a remote LCM, the line drawer can support only NTEX54CA DBICs and NTEX17DAs.
- Each drawer with a DBIC must have an xLC to support HSTP0 DMS ADSL Capability. If the drawer does not have a DBIC, the xLC will only provide voice services.
- The 1-Meg Modem Service subscriber must have a 1-Meg Modem.
- When a tuple is added or deleted in table LCMINV, a corresponding tuple is automatically added or deleted in table LCMDRINV.

Interactions

HSTP0 DMS ADSL Capability has no functionality interactions.

Activation/deactivation by the end user

HSTP0 DMS ADSL Capability requires no activation or deactivation by the end user.

Billing

HSTP0 DMS ADSL Capability does not affect billing.

Station Message Detail Recording

HSTP0 DMS ADSL Capability does not affect Station Message Detail Recording (SMDR).

Datafilling office parameters

HSTP0 DMS ADSL Capability does not affect office parameters.

HSTP0 DMS ADSL Capability (continued)

Datafill sequence

The following table lists the tables that require datafill to implement HSTP0 DMS ADSL Capability. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for HSTP0 DMS ADSL Capability

Table	Purpose of table
LCMDRINV	Line Concentrating Module Drawer Inventory. Lists data assignment for each drawer associated with a LCM unit.
LNINV	Line Circuit Inventory. Lists the data for each line card slot.

Datafilling table LCMDRINV

Verify the following datafill specific to HSTP0 DMS ADSL Capability for table LCMINV. Only those fields that apply directly to HSTP0 DMS ADSL Capability are shown. Refer to the *Translations Guide* for a description of the other fields.

Datafilling table LCMDRINV (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
LCMNM			LCM name. Entry made up of subfields SITE PM_type and PM_no.
	SITE	alphabetic (up to four characters) or blank	Site name. Enter the site name for this LCM or RLCM.
	FRAME	0 to 511	Frame number. Enter the LCM frame number.
	PM_NO	0 to 255	Peripheral module number. Enter PM number for this LCM or RLCM.
DRWRTAB			Drawer table. This field is made up of subfields PHYDRNO, DRWRPEC, LDCPEC, and LOADNAME.

Note 1: Changes to fields with multiple entries should be made in the PROMPT mode only. In nonprompt mode it is possible to leave out existing entries.

Note 2: Enter the continuation mark (+) in fields with multiple possible entries when more data is specified on the next line or more records will be entered. Enter the end mark ($) in fields with multiple possible entries after the last entry.

HSTP0 DMS ADSL Capability (continued)

Datafilling table LCMDRINV (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	PHYDRNO	0 to 9	The physical drawer number.
	DRWRPEC	NILDRWR, NT6X05AA, NT6X05BA, NT6X05CA, NT6X05DA, NT6X05EA, NTBX32BA	The physical line drawer PEC
	DRWRSEL	NTEX54AA, NTEX54AB, NTEX54BA NTEX54CA	Drawer select. Enter the PEC code of the DBIC.
	MACADDRESS	Table of 12 hexidecimal digits	Media Access Control (MAC) layer address. The Ethernet address, also known as the hardware physical address, obtained from stamping on the DBIC. This number must be unique and correspond to the number on the DBIC.
	IPADDR	4 digits, with each digit ranging from 0 to 255	IP Address The Internet Protocol (IP) address of the LCM line drawer. The default is 0 0 0 0. This subfield only applies when you use the 1MMS option in SERVORD to provision 1-Meg Modem Service. The value in this subfield can be the default (0 0 0 0) or any IP value if the office does not support 1-Meg Modem Service or you do not use SERVORD to provision 1-Meg Modem Service.

Note 1: Changes to fields with multiple entries should be made in the PROMPT mode only. In nonprompt mode it is possible to leave out existing entries.

Note 2: Enter the continuation mark (+) in fields with multiple possible entries when more data is specified on the next line or more records will be entered. Enter the end mark ($) in fields with multiple possible entries after the last entry.

Datafill example for table LCMDRINV

The following example shows sample datafill for table LCMDRINV.

HSTP0 DMS ADSL Capability (continued)

MAP display example for table LCMDRINV

```
TABLE LCMDRINV

LCMNM DRWRTAB
________________________________________________________

 HOST 00 0
(0 NT6X54AA NT6X05AA) (1 NILDRWR) (2 NTEX54BA NT6X05EA
EEFF00010203 0 0 0 0) (3 NILDRWR) (4 NTEX54BA NT6X05EA
FF0001020304 0 0 0 0) (5 NILDRWR) (6 NILDRWR) (7 NILDRWR) (6
NTEX54BA NT6X05EA 000102030405 0 0 0 0) (7 NTEX54BA NT6X05EA
010203040506 0 0 0 0) (8 NTEX54BA NT6X05EA 010203040507 0 0
0 0) (9 NILDRWR )$
```

Error messages for table LCMDRINV

The following error messages apply to table LCMDRINV.

Error messages for table LCMDRINV

Error message	Explanation and action
`Tuple Addition occurs when the corresponding entry is added into the LCMINV table.`	An attempt was made to manually add a tuple entry into table LCMDRINV.
`Tuple Deletion occurs when the corresponding entry is deleted from the LCMINV table.`	An attempt was made to manually delete a tuple entry from table LCMDRINV.

Datafilling table LNINV

Table LNINV associates the site name from table SITE to each physical line circuit in the LCM or RLCM. This table defines the LEN of a line and indicates the software location and its hardware characteristics. Each line card in the LCM should be represented by a tuple in table LNINV.

The subfields used to identify the line card are altered so a LEN can identify an LCM line card. In a LEN for an LCM, the fields for the LEN are defined as follows:

- SITE
- FRAME
- UNIT
- SUBGROUP
- CIRCUIT

HSTP0 DMS ADSL Capability (continued)

Note the following table interactions:

- The line assignment for coin lines is made in table LENLINES. The LNATTIX field corresponds to the line class, code, coin first (CCF), coin dial tone first (CDF), or coin semi-postpay (CSP), in table LINEATTR.
- POTS lines LCMLSG do not have corresponding tuples in keyset-type tables.
- For Meridian business sets (MBS), the VARTYPE in table LCMINV must be NTPROP.

The following table shows the datafill specific to HSTP0 DMS ADSL Capability for table LNINV. Only those fields that apply directly to HSTP0 DMS ADSL Capability are shown.

For a description of the other fields, refer to the data schema section of this document.

Datafilling table LNINV (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
LEN		alphanumeric	Line equipment number. This field contains the following subfields: SITE, FRAME, UNIT, SUBGROUP, and CIRCUIT.
	SITE	alphanumeric	Site. Enter the location of the LCM or RLCM (four-character alphanumeric). This entry is not optional, and there is no default value assigned to it.
	FRAME	0 to 511	Frame. Enter the frame number, which is not a physical frame but a software entity that represents the group the LCM or RLCM belongs to at the site.
	UNIT	0 to 1	Unit. Enter the number representing the LCM or RLCM unit within the group.
	SUBGROUP	0 to 19	Subgroup. Enter the number of subgroups in the line drawers.
	CIRCUIT	0 to 31	Circuit. Enter the number of circuits in the subgroups. The range is 0-31.

HSTP0 DMS ADSL Capability (continued)

Datafilling table LNINV (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
CARDCODE		EX17AA, EX17BA, EX17CA, EX17DA	Card code. Enter the PEC of the line card or line card carrier.
PADGRP		STDLN, UNBAL, PPHON, LRLM, NPDGP and ONS	Pad group. Enter the name of the pad group assigned to the line circuit in the pad data table. The values include STDLN, UNBAL, PPHON, LRLM, NPDGP, and ONS.
STATUS		HASU, WORKING, UNEQUIP, CUTOFF, and RESERVED.	Status. Enter the line inventory availability status. The values include HASU, WORKING, UNEQUIP, CUTOFF, and RESERVED.
GND		Y *or* N	Ground. Where line is ground start, enter Y. Otherwise, enter N (for loop start).
BNV		L *or* NL	Balanced network value. Enter L when line circuit is configured for a loaded network. Otherwise, enter NL (for nonloaded network).
MNO		Y *or* N	Manual override. Enter Y when on-hook balance network test is to be prevented from updating field BNV in this table. Otherwise, enter N to allow off-hook balance network test to update field BNV in this table.
CARDINFO		NIL	Card information. The NIL value is the default. The values are NIL, SSLCC, or ISLCC.

Datafill example for table LNINV

The following example shows sample datafill for table LNINV.

HSTP0 DMS ADSL Capability (end)

MAP display example for table LNINV

```
  LEN      CARDCODE  PADGRP  STATUS GND BNV MNO CARDINFO
________________________________________________________
HOST  00 0 0  01  EX17CA  STDLN   HASU   N  NL  N  NIL
HOST  00 0 0  02  EX17CA  STDLN   HASU   N  NL  N  NIL
HOST  00 0 0  03  EX17CA  STDLN  WORKING N  NL  N  NIL
HOST  00 0 0  04  EX17CA  STDLN  WORKING N  NL  N  NIL
HOST  00 0 0  05  EX17CA  STDLN   HASU   N  NL  N  NIL
HOST  00 0 0  06  EX17CA  STDLN   HASU   N  NL  N  NIL
HOST  00 0 0  07  EX17CA  STDLN  WORKING N  NL  N  NIL
HOST  00 0 0  08  EX17CA  STDLN  WORKING N  NL  N  NIL
HOST  00 0 0  09  6X17BA  STDLN   HASU   N  NL  N  NIL
HOST  00 0 0  10  6X17BA  STDLN   HASU   Y  NL  N  NIL
HOST  00 0 5  00  6X17BA  STDLN   HASU   N  NL  N  NIL
HOST  00 0 5  01  6X17BA  STDLN   HASU   N  NL  N  NIL
```

Translation verification tools

HSTP0 DMS ADSL Capability tables LCMINV and LCMDRINV support 1-Meg Modem Service specific checks through the table control commands:

>CHECK

>CHECK ALL

SERVORD

HSTP0 DMS ADSL Capability SERVORD rejects attempts to add the cut-off-on-disconnect (COD) to an xDSL line. Operation of the cut-off-relay interrupts data services on an xDSL line including the COD feature.

2 Datafilling Datapath

This chapter provides information on how to enter data in Datapath (DTP).

Functional groups for Datapath

The DTP operating group requires the digital multiplex system (DMS) SuperNode Platform—BASE0001, TEL00001, and BAS00003. The operating group name, ordering code and additional requirements for DTP appear in the following paragraph.

DTP Datapath, DTP00001

The DTP Datapath requires the following functional groups to operate:

- the Meridian Digital Centrex (MDC) Minimum, MDC00001
- the MDC meridian business set (MBS) Minimum, MDC00007

DTP CLASS for Datapath

Ordering codes

Functional group ordering code: DTP00001

Functionality ordering code: does not apply

Release applicability

The DMS100C03 and later versions

Requirements

The DTP CLASS for Datapath requires the following functional groups to operate:

- Selective Call Forwarding, RES00032
- Selective Call Rejection, RES00033
- Selective Call Acceptance, RES00035

Description

The DTP CLASS for Datapath provides several CLASS features for the desktop centrex data unit. The DTP provides the following CLASS features:

- Selective Call Acceptance (SCA). This service allows an end user accept calls selectively that arrive from a limited set of Directory Numbers (DN) already identified The DNs to accept are in a list built through the use of the Screening List Editing (SLE) feature. The system accepts incoming calls if the DN of the originating station is on the list of accepted DNs.
- Selective Call Forwarding (SCF). This service allows an end user to use the SLE feature to define a special list of DNs. The list is an SCF list. This service allows an end user to define a remote forward-to DN through the use of the SLE feature. The system can forward calls that terminate on a line with this feature. This event occurs if the DN of the originating station matches one of the numbers on the SCF list.
- Selective Call Rejection (SCRJ). This service allows an end user to reject incoming calls from a limited set of DNs already identified. The DNs to reject are in a list built through the use of the SLE feature. The system rejects incoming calls received from those DNs.
- Single Key CLASS Service Activation. This service allows the operating company to program one or more special Automatic Dial (AUD) keys for the data unit of the end user. Each AUD key must correspond to one of the following CLASS features: SCA, SCF, or SCRJ.

You can use these features in any group. For example, a specified data unit can use SCA, SCF, and SCRJ at the same time.

Operation

Assigning the SCA, SCF, and SCRJ features

The operating company assigns the SCA, SCF, and SCRJ features to the end user through the service order system (SERVORD). You can assign the features to any line that have CLASS features assigned.

Building the screening lists

The end user or the operating company can create or update screening lists for the SCA, SCF, and SCRJ features.

SCA security dialup operation

Only authorized DNs defined in the SCA screening list can terminate the call. The system blocks every other incoming DN.

SCRJ security dialup operation

The system blocks the DNs defined on the SCRJ screening list. Other incoming DNs can terminate the call.

SCF security dialup operation

The system forwards only authorized DNs defined in the SCF screening list. Every other incoming DN terminates the call.

SCF prioritized dialup operation

The SCF prioritized dial-up combines the SCF feature with the DN HUNT (DNH) hunt group to prioritize incoming calls. This feature allows the end user to forward incoming calls from high priority DNs to high priority computer ports.

SCF convenient dialup operation

The SCF convenient dial-up combines the SCF feature with the DNH hunt group and DN dialup. This group routes incoming calls from low speed data units, high speed data units, and modems.

For example, if DN1 is a low speed data unit, an incoming call from another low speed data unit terminates at DN1. An incoming call from a high speed data unit forwards to high speed data unit DNH hunt group. An incoming call from a modem forwards to a modem pool attached to DN1 hunt group.

SCF complex dialup operation

The SCF complex dial-up combines SCF convenient dial-up with the SCA feature in the receiving high speed and low speed data units. This group allows the end user to route selected incoming calls to the correct equipment. This equipment can be high speed or low speed.

DTP CLASS for Datapath (continued)

End user operation

The end user can select the methods of activation for the SCA, SCF, and SCRJ features.

SERVORD commands

The end user can add, change, delete, or query the SCA, SCF, and SCRJ features on a data unit. To perform these actions the end user can use the following SERVORD commands:

- add option (ADO)
- delete option (DEO)
- change feature status (CHF)
- change screening list (CHL)
- query DN (QDN)
- query line equipment number (LEN) (QLEN)
- query screening list (QSL)

Single key activation

With Single Key CLASS Feature Activation, the end user can add, change, or delete the SCA, SCF, and SCRJ features. The user can perform these actions through the use of a single data unit key. The following are examples of this process:

- Go off-hook, or press key 1, the DN key.
- Press the CLASS feature key you want. This key is the special AUD key that the operating company assigns for the SCA, SCF, or SCRJ feature.
- At the voice prompt, press the correct keys to activate or deactivate the feature, or to add, change, or delete DNs from the screening list.

Data unit keypad dialing

The data unit can be a Northern Telecom (NT) Desktop Data Unit, or a like data unit with a built-in keypad and speaker. If this event occurs the end user can dial activation and deactivation codes from the keypad. These codes can add, change, or delete the SCA, SCF, and SCRJ features.

> ***Note:*** Table IBNXLA, IBN Translation, defines activation and deactivation codes.

NT symbolic dialing from a terminal keyboard

The end user can use NT symbolic dialing from a terminal keyboard. This action adds, changes, or deletes the SCA, SCF, and SCRJ features. The end

DTP CLASS for Datapath (continued)

user can use single key activation from the keyboard, like from the data unit. The NT symbolic dialing is in real time.

NT symbolic dialing commands

Command	Meaning	Equivalent key on data unit keypad
+	begin dialing	Go off-hook (or press key 1, the DN key)
!	abort	Release message (RLS)
'	pause	Not applicable
0-9, *, #	digits	Digits
&	key 2	Key 2/Network Resource Selector (NRS)
@	key 3	Key 3/Automatic Dial (AUD)
=	key 4	Key 4/Speed Call (SC)
%	key 7	Key 7/Ring Again (RAG)

An end user uses NT symbolic dialing to activate the SCRJ feature. The end user uses SCRJ activation code *60 and AUD key 3 to activate the feature. This condition appears in the following example.

NT symbolic dialing example using activation code

```
> +
dial tone; # is displayed
> *60
ringback tone followed by ANNOUNCEMENT...
> 3
ANNOUNCEMENT...
> !
silence
```

An end user uses NT symbolic dialing to activate the SCRJ feature. The end user uses single key activation, with key 4 set. This action identifies SCRJ and AUD key 3 set to activate the feature. This condition appears in the following example.

DTP CLASS for Datapath (continued)

NT symbolic dialing example with single key activation

```
> +
dial tone; # is displayed
> =
ringback tone followed by ANNOUNCEMENT...
> 3
ANNOUNCEMENT...
> !
silence
```

Hayes symbolic dialing from a terminal keyboard

The end user can use Hayes symbolic dialing from a terminal keyboard. The end user can use this feature to add, change, or delete the SCA, SCF, and SCRJ features. Hayes symbolic dialing is not in real time. The system does not execute the command until the end user presses the ENTER key. The end user must enter a semicolon (;) at the end of each command line.

Hayes symbolic dialing commands

Command	Meaning	Equivalent key on data unit keypad
AT D	begin dialing	Go off-hook (or press key 1, the DN key)
H0	abort	Release message (RLS)
'	pause	Not applicable
;	end command	Not applicable
0-9, *, #	digits	Digits

An end user uses Hayes symbolic dialing to activate the SCRJ feature. The end user uses SCRJ activation code *60 and AUD key 3 to activate the feature. This situation appears in the following example.

Hayes symbolic dialing example with activation code

```
> AT D * 60;
dial tone followed by ringback tone followed by
ANNOUNCEMENT...
> AT D 3;
ANNOUNCEMENT...
> AT H0;
silence
```

Translations table flow

A description of the DTP CLASS for Datapath translations tables appears in the following list:

- Table KSETFEAT (Business Set and Data Unit Feature) lists the line features assigned to the business sets and data units. The business sets and data units are in table KSETLINE (Business Set and Data Unit Line Assignment). The DTP CLASS for Datapath uses this table to define data unit key 2, 3, 4, 7, or 8. The DTP CLASS for Datapath defines these data unit keys as a programmable AUD key.
- Table RESFEAT (Residential Line Feature) contains the assignment of the CLASS features for residential lines. The DTP CLASS for Datapath uses this table to define the CLASS features. These features are SCA, SCF, and SCRJ. The DTP CLASS for Datapath defines these feature for each LEN to apply screening against.

  Note: Enter data in table RESFEAT after tables IBNLINES (IBN Line Assignment) and IBNFEAT (IBN Line Feature).

- Table SLELIST (Screening List Editing List) defines the entries for each SLE list in the switch. The DTP CLASS for Datapath uses this table to define each entry of every SLE list in the switch.

  Note: Enter data in table SLELIST after table RESFEAT.

The DTP CLASS for Datapath translation process appears in the following flowchart.

DTP CLASS for Datapath (continued)

Table flow for DTP CLASS for Datapath

End user initiates an SCA, SCF, or SCRJ SLE session for dialing an activation code

Table KSETFEAT
FEATKEY=subfields LEN, KEY, FEAT
subfield LEN=line equipment number
subfield KEY=2, 3, 4, 7, or 8
subfield FEAT=AUD
FEATURE=AUD
PGMAUD=Y
AUDFEAT=SCA, SCF, or SCRJ
SERVORD automatically assigns AUD to an MBS and enters data in this table

Table RESFEAT
LINE=line number
FEAT=SCA, SCF, or SCRJ

Table SLELIST
LEN=line equipment number
FEAT=SCA, SCF, or SCRJ
DN=directory number

The datafill content used in the flowchart appears in the following table.

Datafill example for DTP CLASS for Datapath

Datafill table	Example data
KSETFEAT	HOST 02 0 01 00 4 AUD AUD Y SCRJ
RESFEAT	HOST 02 0 01 00 SCRJ SCRJ NOAMA INACT
SLELIST	HOST 02 0 01 00 SCRJ 0 N 4163771600 PUBLIC 10 N

Limits

The following limits apply to DTP CLASS for Datapath.

DTP CLASS for Datapath (continued)

Data unit considerations

The following data unit considerations apply to DTP CLASS for Datapath:

- The DTP CLASS for Datapath is present for the desktop data unit.
- You must assign the SCA, SCF, and SCRJ features to the DN key of the data unit. This key is always key 1.
- You must assign the Single Key CLASS Feature Activation feature to one of the following data unit keys: 2, 3, 4, 7, or 8.

  Note: You must assign the following data unit features to specified keys:

  — Key 2 Network Resource Selector (NRS)

  — Key 3 Automatic Dial (AUD)

  — Key 4 Speed Call (SC)

  — Key 7 Ring Again (RAG)

  — Key 8 Other

  The operating company must assign each of these features to a specified data unit. This action must occur before the assignment of the Single Key CLASS Service Activation feature. For example, a data unit can have NRS, AUD, and RAG assigned (keys 2, 3, and 7). If this event occurs the assignment of Single Key CLASS Feature Activation must to key 4 or key 8.
- The DTP CLASS for Datapath is not present for the rackmount data unit. The rackmount data unit does not have a keypad or a speaker and does not support the Hayes command set.
- The DTP CLASS for Datapath is not for other Datapath products, like the following:

  — Asynchronous Interface Line Card (AILC)

  — Coax Eliminator Controller Interface (CUIF)

  — Datapath Extension (DPX)

  — Coax Eliminator Terminal Interface (TIF)

SLE screening list size considerations

The datafill in table RESOFC (Residential Line CLASS Office Data) determines the maximum number of DNs on a screening list. For example, in

DTP CLASS for Datapath (continued)

the following sample datafill for table RESOFC, the end user can define the following:

- a maximum of 30 DNs on the SCA screening list
- a maximum of 25 DNs on the SCF screening list
- a maximum of 20 DNl on the SCRJ screening list

The theoretical maximum is 1024 DNs for each screening list.

MAP example for table RESOFC

```
SCA   Y  SUBSCR  SCA   30 N
SCF   Y  SUBSCR  SCF   25 N
SCRJ  Y  SUBSCR  SCRJ  20 N
```

Hunting limits

The DTP CLASS for Datapath only supports DNH hunting.

Custom User Group limits

The Closed User Group (CUG) is a security feature on the data unit. The SCF and CUG are exclusive. An end user cannot activate SCF and CUG at the same time.

Hayes keyboard dialing limits

The system does not execute commands with Hayes keyboard dialing until you press ENTER. When you use keyboard dialing to activate or activate CLASS features, you must type in the command and press ENTER. You must press ENTER before the data unit times out, or you must type the command again.

SLE Language option limits

The DTP CLASS for Datapath does not support the SLE Language (SL) option for the data unit.

Applications addressed

The DTP CLASS for Datapath addresses the following applications:

- Data unit with only the CLASS feature (not any other features)
- Inbound Modem Pool
- Outbound Modem Pool
- CUG
- Datapath Hunt Group. CLASS on data unit with DNH hunt group.

- The NT Symbolic Dialing. Used for CLASS activation and deactivation, and screening list editing.
- Hayes Keyboard Dialing. Used for CLASS activation and deactivation, and screening list editing.
- The POTSDATA. The POTSDATA allows the assignment of Datapath service to non-centrex users. The POTSDATA supports a subset of the options available for normal centrex data unit users. You must correctly enter tables that relate to the customer group POTSDATA.

Interactions

The following paragraphs describe the actions between DTP CLASS for Datapath and other functionalities.

SCA and SCF feature interaction

When the data unit has the SCA and SCF features activated, the SCA screening occurs before the SCF screening. If a DN is present on the SCA list and the SCF list, the SCA feature first accepts the DN. The SCF feature forwards the DN.

SCA and SCRJ feature interaction

When the data unit has the SCA and SCRJ features activated, the SCA screening occurs before the SCRJ screening. If a DN is present on the SCA list and the SCRJ list, the SCA feature first accepts the DN. The SCRJ feature rejects the DN.

SCRJ and SCF feature interaction

When the data unit has the SCRJ and SCF features activated, the SCRJ screening occurs before the SCF screening. If a DN is present on the SCRJ list and the SCF list, the SCRJ feature rejects the DN. The SCF feature forwards the DN.

SCA feature interaction with CUG feature

When the data unit has the SCA and CUG features active, the SCA screening occurs before the CUG screening. For the acceptance of an incoming call, the SCA feature must first accept the call. The call must pass the CUG screening.

SCF feature interaction with CUG feature

The SCF feature and the CUG feature are exclusive. An end user cannot activate SCF and CUG at the same time.

DTP CLASS for Datapath (continued)

SCRJ feature interaction with CUG feature

When the data unit has the SCRJ and CUG features activated, the SCRJ screening occurs before the CUG screening. For acceptance of an incoming call, the call must first pass the SCRJ screening, then the CUG screening.

SCA, SCF, and SCRJ feature interaction with DNH hunt group

For maximum security, each member of a DNH hunt group must use the same SCA, SCF, and SCRJ screening lists.

Incoming DN is not available for screening

On interswitch calls, some trunks do not carry the caller ID. If a trunk does not carry the caller ID, the caller DN is not available for screening. If this event occurs, SCA does not accept the call. The SCF does not forward the call. The SCRJ does not reject the call.

Activation/deactivation by the end user

The end user must activate and deactivate DTP CLASS for Datapath.

Activating/deactivating the SCA, SCF, and SCRJ features

To initiate an SCA, SCF, or SCRJ SLE session, the end user dials the correct activation code. Table IBNXLA specifies this code.

The Bellcore recommended values for the activation and deactivation codes appear in the following table.

Bellcore recommended activation and deactivation values

Feature	Action	Recommended value
SCA	Activation	*68
SCA	Deactivation	*88
SCF	Activation	*63
SCF	Deactivation	*83
SCRJ	Activation	*60
SCRJ	Deactivation	*80

During the SLE session the end user can perform the following actions:

- query the status of the feature
- activate or deactivate the feature

- review the feature screening list
- add entries to or delete entries from the feature screening list

The operating company can specify an initial SCA, SCF, or SCRJ screening list. The operating company can perform this task at the same time as option assignment to the line. The company can update the information later.

Procedures for the SCF feature

The following set of procedures only applies to the SCF feature.

> ***Note:*** Procedures include information for Digitone (DTMF) only.

Activation/deactivation of the SCF feature

At your telephone

1 Enter a correct feature access code.

Response: You hear, “Your SCF service is now <on, off>." Following this statement you hear one of the following four statements:

- “There (is) are (one...) (entry) entries on your list, including (one...) private (entry) entries."
- “There (is) are (one...) (entry) entries on your list."
- “There (is) are (one...) private (entry) entries on your list."
- “There are no entries on your list."

The end user hears hear, “You may dial during the announcements for faster service. When you have finished, hang up."

“To turn this service <on, off>, dial 3."

“To add an entry, press the number sign key."

“To remove one or more entries, press the star key."

“To hear the entries on your list, dial 1."

“To hear these instruction repeated, dial 0."

“Please dial now."

2 Press 05.

> ***Note:*** This number is the recommended activation number for this procedure. Use the activation number entered in table IBNXLA.

Response: If service is active, the end user hears, “Your SCF service is now off. Please continue, dial 0 for instructions, or hang up."

If the service is inactive and you defined a remote (forward-to) DN, the end user hears, “Your calls will be forwarded to <remote DN>. If this number is correct, dial 1. If this number is not correct, dial 0. Please dial now."

If you dial 0 to reject the remote DN, or if the service is inactive and you have not defined a remote DN, the end user hears, “Please dial the number to

DTP CLASS for Datapath (continued)

which you want your calls forwarded, then press the number sign key. Please dial now."

3 Dial the remote DN.

Response: If you enter a wrong number, the end user hears, ``The number you have dialed, <DN>, is not permitted."

If you defined a remote DN, the you hear, ``Your calls will be forwarded to <remote DN>. If this number is correct, dial 1. If this number is not correct, dial 0. Please dial now."

If you reject the remote DN or have not defined a remote DN, you hear, ``Please dial the number to which you want your calls forwarded, then press the number sign key. Please dial now."

4 Response: If the screening list is not empty, the status activates and the end user hears, ``Your SCF service is now on. Please continue, dial 0 for instructions, or hang up."

If the screening list is empty, the end user hears, ``To turn on this service, you must add an entry to your list. To add an entry, please press the number sign key."

Instructions to add entries to a screening list are in Adding entries to a screening list.

If the addition is successful, the status changes to active, and subscribers hear, ``Your SCF service is now on. Please continue, dial 0 for instructions, or hang up."

Defining a remote DN for the SCF feature

At your telephone

1 Enter a correct feature access code.

Response: You hear, ``Your SCF service is now <on, off>." Following this statement you hear one of the following four statements:

- ``There (is) are (one...) (entry) entries on your list, including (one...) private (entry) entries."
- ``There (is) are (one...) (entry) entries on your list."
- ``There (is) are (one...) private (entry) entries on your list."
- ``There are no entries on your list."

You hear, ``You may dial during the announcements for faster service. When you have finished, hang up."

``To turn this service <on, off>, dial 3."

``To add an entry, press the number sign key."

``To remove one or more entries, press the star key."

``To hear the entries on your list, dial 1."

``To hear these instruction repeated, dial 0."

``Please dial now."

2 Dial the remote DN.

Response: If you enter an incorrect a number, you hear, ``The number you have dialed, <DN>, is not permitted."

If you define a remote DN, you hear, ``Your calls will be forwarded to <remote DN>. If this number is correct, dial 1. If this number is not correct, dial 0. Please dial now."

If you reject the remote DN or did not define a remote DN, you hear, ``Please dial the number to which you want your calls forwarded, then press the number sign key. Please dial now."

3 Response: If the screening list is not empty, the status activates, and you hear, ``Your SCF service is now on. Please continue, dial 0 for instructions, or hang up."

If the screening list is empty, you hear, ``To turn on this service, you must add an entry to your list. To add an entry, please press the number sign key."

Instructions to add entries to a screening list are in “Adding entries to a screening list".

If the addition is successful, the status changes to active, and subscribers hear, ``Your SCF service is now on. Please continue, dial 0 for instructions, or hang up."

Procedure for the SCRJ feature

The following procedure only applies to the SCRJ feature.

> ***Note:*** Procedures include information for DTMF only.

Activation/deactivation of the SCRJ feature

At your telepone

1 Enter a correct feature access code.

Response: When you enter the SCRJ feature, if a DN from the last calling party is present, you hear, ``To reject the last calling party, press the number sign key, dial 0, 1, and then press the number sign key again."

Billing

The DTP CLASS for Datapath does not affect billing.

Station Message Detail Recording

The DTP CLASS for Datapath does not affect Station Message Detail Recording.

Datafilling office parameters

The DTP CLASS for Datapath does not affect office parameters.

DTP CLASS for Datapath (continued)

Datafill sequence

The following table lists the tables that require datafill to implement DTP CLASS for Datapath. The tables appear in the correct entry order.

Datafill tables required for DTP CLASS for Datapath

Table	Purpose of table
KSETFEAT	Business Set and Data Unit Feature. This table allows the operating company to define data unit key 2, 3, 4, 7, or 8 as an AUD key. ***Note:*** Data entry in this table occurs through SERVORD. A datafill procedure or example is not provided. See SERVORD for an example of how to use SERVORD to enter data in this table.
RESFEAT	Residential Line Feature. This table defines the CLASS features SCA, SCF, and SCRJ for each LEN.
SLELIST	Screening List Editing List. This table defines each entry of every SLE list in the switch.

Datafilling table RESFEAT

The datafill for DTP CLASS for Datapath for table RESFEAT appears in the following table. The fields that apply to DTP CLASS for Datapath appear in this table. See the data schema section of this document for a description of other fields.

Datafilling table RESFEAT

Field	Subfield or refinement	Entry	Explanation and action
LINE		alphanumeric (1 to 16 characters)	Line number. Identifies the line to apply screening against.
FEAT		SCA, SCF, SCRJ	Feature name. Identifies the type of screening to apply to incoming calls on LINE.

Datafill example for table RESFEAT

Sample datafill for table RESFEAT, with three data unit tuples appears in the following example. Note that LEN HOST 02 0 01 00 has two different CLASS features assigned, SCRJ and SCF.

DTP CLASS for Datapath (continued)

MAP example for table RESFEAT

```
            LINE    KEY    FEAT
                                                  VAR
_________________________________________________________
HOST  02 0 01 00     0    SCRJ
                                 SCRJ NOAMA INACT
HOST  02 0 01 00     0    SCF
                                 SCF  NOAMA INACT
HOST  02 0 02 00     0    SCF
                                 SCF  NOAMA INACT
```

Datafilling table SLELIST

The datafill for DTP CLASS for Datapath for table SLELIST appears in the following table. The fields that apply to DTP CLASS for Datapath appear in this table. See the data schema section of this document for a description of other fields.

Datafilling table SLELIST

Field	Subfield or refinement	Entry	Explanation and action
LEN		alphanumeric (1 to 16 characters)	Line equipment number (LEN). Identifies the line to apply screening against.
FEAT		SCA, SCF, SCRJ	Feature name. Identifies the type of screening to apply to incoming calls on LINE.
DN		numeric (10 digits)	Directory number (DN). Identifies the DN to add for SCA, SCF, or SCRJ screening.

Datafill example for table SLELIST

Sample datafill for table SLELIST, with four data unit tuples appears in the following example. The LEN HOST 02 0 01 00 can have more than one CLASS feature assigned. This feature can have more than one SLE list.

DTP CLASS for Datapath (continued)

MAP example for table SLELIST

```
             LINE                   KEY   FEAT
   ENTRYNO NEW         DN      KIND VBCOUNT EXTN
_________________________________________________________
HOST 02 0 01 00                       0   SCRJ
         0   N 4163771600   PUBLIC      10    N
HOST 02 0 01 00                       0   SCRJ
         1   N 4166210107   PUBLIC      10    N
HOST 02 0 02 00                       0   SCRJ
         2   N 4163456789   PUBLIC      10    N
HOST 02 0 01 00                       0   SCF
         0   N 4164567890   PUBLIC      10    N
```

Tools for verifying translations

The DTP CLASS for Datapath does not use translation verification tools.

SERVORD

The DTP CLASS for Datapath allows the end user to assign CLASS features SCA, SCF, and SCRJ. The end user assigns these features to the data units of line classes DATA and PDATA. The DTP CLASS for Datapath introduces Single Key Access to the SLE of SCA, SCF, and SCRJ for data units.

The response to the PGMAUD prompt can be Y. If this event occurs the system accepts the values 2, 3, 4, 7, and 8 at the OPTKEY prompt.

DTP CLASS for Datapath (continued)

SERVORD limits

The following SERVORD limits apply to DTP CLASS for Datapath:

- You must assign the SCA, SCF, and SCRJ features to the DN key of the data unit. This feature is always key 1.
- You must assign the Single Key CLASS Feature Activation feature to one of the following data unit keys:
  - 2
  - 3
  - 4
  - 7
  - 8

Note 1: The operating company must assign the following features, if present, to specified keys. This action must occur before the assignment of the Single Key CLASS Service Activation feature to a key.

- Key 2 Network Resource Selector (NRS)
- Key 3 Automatic Dial (AUD)
- Key 4 Speed Call (SC)
- Key 7 Ring Again (RAG)
- Key 8 Other

Note 2: The system accepts keys 2, 4, 7, and 8 if the response to the PGMAUD prompt is Y.

DTP CLASS for Datapath (continued)

SERVORD prompts

SERVORD prompts assign the SCA, SCF, SCRJ, and Single Key CLASS Feature Activation features to a data unit. These prompts appear in the following table.

SERVORD prompts for DTP CLASS for Datapath (Sheet 1 of 2)

Prompt	Valid input	Explanation
ADD_ DELETE_ CHANGE	A, C, D	Defines if addition of DNs to (A), deleted from (D), or changed for (C) the SCA, SCF, or SCRJ screening list occurs. This prompt appears if the response to the SO prompt is CHL.
AUDFEAT	SCA, SCF, SCRJ	Defines the feature assigned to the AUD key. This prompt appears if the response to the OPTION prompt is AUD.
BILLING_ OPTION	AMA, NOAMA	Defines if the system generates an automatic message accounting (AMA) record. This prompt appears if the response to the SO prompt is ADO, CHF, or CHL.
DN_OR_ LEN	7-digit DN or LEN	Defines the DN or LEN of the line to change or query.
DN_TO_ ADD_OR_ DELETE	10-digit DN	Defines the DN to add to, change, or delete from the SCA, SCF, or SCRJ screening list. This prompt appears if the response to the SO prompt is CHL.
DNS	10-digit DN (up to 4 DN and VBCOUNT pairs)	Defines one or more DNs to add to, change, or delete from the SCA, SCF, or SCRJ screening list. This prompt appears if the response to the SO prompt is ADO.
FDN	Correct remote DN	Defines the remote (forward-to) DN to which calls forward. This prompt appears if the response to the OPTION prompt is SCF.
NUMCALLS	1 to 1024	Defines the maximum number of simultaneous SCF calls allowed through the base station. This prompt appears if the response to the OPTION prompt is SCF.
OPTION	AUD, SCA, SCF, SCRJ	If AUD, assigns the AUD option to the data unit key defined by OPTKEY. If SCA, SCF, or SCRJ, defines the feature assigned.

DTP CLASS for Datapath (continued)

SERVORD prompts for DTP CLASS for Datapath (Sheet 2 of 2)

Prompt	Valid input	Explanation
OPTKEY	1, 2, 3, 4, 7, 8	Defines data unit key 1 as the DN key. Defines data unit key 2, 3, 4, 7, or 8 as an AUD key.
PGMAUD	Y	Defines if AUD keys can occur. This prompt appears if the response to the OPTION prompt is AUD.
RINGREM	NORING, RING, NA	Defines if the ring splash is on or off. The response to RINGREM can be RING. If this condition occurs the system delivers a ring splash to the SCF base station when the system forwards a through. If the response is NORING, the system does not deliver a ring splash. The NA (not applicable) indicates use of customer group ring splash value (option CFXFEAT in table CUSTSTN (Customer Group Station Option)). A response of RING or NORING overrides the value defined at the customer group level. This prompt appears if the response to the OPTION prompt is SCF.
SO	ADO, DEO, CHF, CHL	Defines the SERVORD command to execute.
STATUS	ACT, INACT	Defines the initial status of the feature, active (ACT) or inactive (INACT). This prompt appears if the response to the SO prompt is ADO, CHF, or CHL.
VBCOUNT	0 to 10	Defines the number of digits voiced back when the SCA, SCF, or SCRJ screening list changes. This prompt appears if the response to the SO prompt is ADO or CHL.

SERVORD example of how to add the SCA feature to a data unit

The following is an example of the SCA feature follows.

> ***Note:*** The procedure to add the SCRJ feature is the same, except the response to the OPTION prompt is SCRJ.

DTP CLASS for Datapath (continued)

Example of the SCA option in prompt mode

```
> ADO
SONUMBER: NOW 91 10 8 AM
>
DN_OR_LEN:
> 7224272
OPTKEY:
> 1
OPTION:
> SCA
BILLING OPTION:
>
STATUS:
> INACT
DNS:
> 9192709899
VBCOUNT:
> 10
DNS:
> $
OPTKEY:
> $
```

Example of the SCA option in no-prompt mode

```
> ADO $ 7224272 1 SCA $ INACT 9192709899 10 $ $
```

SERVORD example of how to add the SCF feature to a data unit

An example of the SCF option follows. This example adds SCF to a line that has DN 722-4272.

Example of the SCF option in prompt mode

```
> ADO
SONUMBER: NOW 91 10 8 AM
>
DN_OR_LEN:
> 7224272
OPTKEY:
> 1
OPTION:
> SCF
BILLING_OPTION:
>
STATUS:
> INACT
DNS:
> $
FDN:
> 7724111
NUMCALLS:
> 10
RINGREM:
> NA
OPTKEY:
> $
```

Example of the SCF option in no-prompt mode

```
> ADO $ 7224272 1 SCF $ INACT $ 7724111 10 NA $
```

SERVORD example of how to delete the SCA feature from a data unit

The following is an example of the DEO command. In this example, the individual line that is present is flat rate service. This line associates with DN 621-5124. This line has options DGT, NDC, ELN, TES, and SCA. The options to delete are DGT, NDC, and SCA.

> ***Note:*** The procedures to delete the SCF and SCRJ features are the same. The response to the OPTION prompt is SCF or SCRJ.

DTP CLASS for Datapath (continued)

Example of the DEO command in prompt mode

```
>DEO
SONUMBER: NOW 91 12 07 PM
 >
DN_OR_LEN:
>6215124
OPTKEY:
>2
OPTION:
>DGT
OPTKEY:
>3
OPTION:
>NDC
OPTKEY:
>1
OPTION:
>SCA
OPTKEY:
>$
```

Example of the DEO command in no-prompt mode

```
>DEO $ 6215124 2 DGT 3 NDC 1 SCA $
```

SERVORD example of how to change the status of the SCA feature on a data unit

An example of the CHF command follows. This example changes the status of the SCA feature on a line that has DN 722-4272.

> ***Note:*** The procedures to delete the SCF and SCRJ features are the same. The response to the OPTION prompt is SCF or SCRJ.

Example of the CHF command in prompt mode

```
> CHF
SONUMBER: NOW 91 10 8 AM
>
DN_OR_LEN:
> 7224272
OPTKEY:
> 1
OPTION:
> SCA
BILLING_OPTION:
>
STATUS:
> ACT
OPTKEY:
> $
```

Example of the CHF command in no-prompt mode

```
> CHF $ 7224272 1 SCA $ ACT $
```

SERVORD example of changing the SCA screening list for a data unit

An example of the CHL command appears in the following example. The CHL command adds, changes, and deletes the DN of a screening list.

DTP CLASS for Datapath (continued)

Example of the CHL command in prompt mode

```
>CHL
SONUMBER: NOW 91  9 19 PM
>
DN_OR_LEN:
>6211233
OPTKEY:
> 1
OPTION:
>SCRJ
BILLING_OPTION:
>NOAMA
STATUS:
>ACT
ADD_DELETE_CHANGE:
```

Adding a DN	Deleting a DN	Changing a DN
>A	>D	>C
DNS:	DNS:	OLD_DN:
>6136215002	>6136215002	>6136215001
VBCOUNT:	DNS:	NEW_DN:
>7	>$	>6136212011
DNS:		VBCOUNT:
>$		>7
		OLD_DN:
		>$

Example of the CHL command in no-prompt mode

```
>CHL $ 6211233 1 SCRJ $ $ A 6136215002 7 $
```

SERVORD example of changing Single Key CLASS Feature Activation feature to a data unit

Use the ADO command to allow the end user to use a single key to activate or deactivate the SCA feature. This process appears in the following SERVORD example.

> ***Note:*** The procedures to delete or change a DN are the same. The response to the ADD_DELETE_CHANGE prompt is D (delete) or C (change). The procedures to change the SCF and SCRJ screening lists are the same, except the response to the OPTION prompt is SCF or SCRJ.

DTP CLASS for Datapath (end)

SERVORD example of adding the Single Key CLASS Feature Activation feature in prompt mode

```
> SERVORD
SO:
> ADO
SONUMBER: NOW 91 10 8 AM
>
DN_OR_LEN:
> 7224272
OPTKEY:
> 3
OPTION:
> AUD
PGMAUD:
> Y
AUDFEAT:
> SCA
OPTKEY:
> $
```

SERVORD example of adding the Single Key CLASS Feature Activation feature in no-prompt mode

```
> ADO $ 7224272 3 AUD Y SCA $
```

3 Datafilling Data Span

The following chapter describes the Data Span, NI000002, functionality.

DataSPAN FRS

Ordering codes

Functional group ordering code: NI000002

Functionality ordering code: not applicable

Release applicability

BCS34 and up

DataSPAN FRS was introduced in BCS34.

Prerequisites

All the datafill information for this particular functionality is included in this document. However, prerequisite software or hardware may be required for complete implementation.

Description

DataSPAN frame relay service (FRS) provides connection-oriented packet switching for DMS-100, DMS-200, and DMS-250 SuperNode switching systems. The switch is provisioned with one or more link peripheral processors (LPP) or one or two single-shelf link peripheral processors (SSLPP) installed in an enhanced multipurpose cabinet (EMC). The DataSPAN subscriber is connected to the frame relay network through an access channel on which multiple logical link connections to other subscribers may exist. DataSPAN FRS provides

- bandwidth-on-demand
- multiple data sessions on a single line
- simplified network management
- high-speed data networking over the public switched telephone network

Using DataSPAN, devices can be integrated into wide-area networks (WAN) using logical connections with a minimal number of physical dedicated lines. Therefore, DataSPAN FRS can provide more cost-effective frame relay network services with higher performance than other data-networking alternatives, such as permanent links and local area networks (LAN).

DataSPAN and CCS7 nodes

DataSPAN FRS is supported on the following CCS7 nodes:

- DMS SuperNode Signaling Point/Service Switching Point (DMS SP/SSP)
- DMS SuperNode Signaling Transfer Point (DMS-STP)

- DMS SuperNode Service Control Point (DMS-SCP)
- DMS SuperNode Signaling Transfer Point/Service Switching Point Integrated Node (DMS STP/SSP INode)

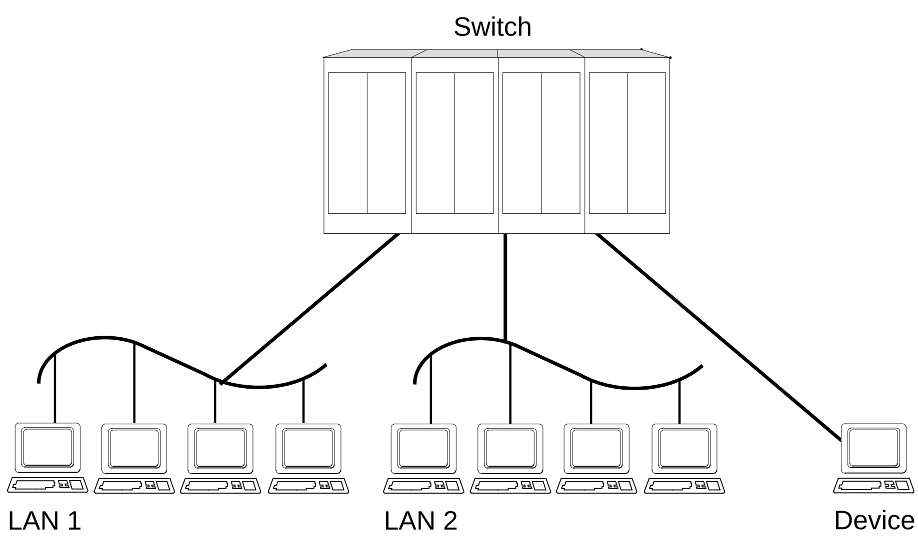
Operation

When DataSPAN FRS is implemented, each device or LAN is connected to the switch by an access channel. Each access channel can carry multiple virtual connections, called logical link connections (LLC). Each LLC operates independently of other LLCs on the access channel.

Devices send data across a dedicated LLC in frames that conform to the high-level data link control (HDLC) format. By carrying multiple LLCs simultaneously on a single access channel, the frame relay service provides a network link between multiple devices in the network on a single physical T1 carrier.

The following figure shows the access channels required for two LANs and one device using the frame relay service.

Using frame relay service for data transmission



Note: Each LAN or device needs one access channel to the switch.

DataSPAN FRS (continued)

Access channel types

There are four types of access between the CPE and the frame relay interface units (FRIU) that connect to the frame relay network.

- channelized access through Datapath and digital data service (DDS) at 56 kbit/s or 64 kbit/s
- ISDN basic rate interface (BRI) and primary rate interface (PRI) access at 56 kbit/s or 64 kbit/s
- fractional T1 access at 384 kbit/s
- non-channelized access through T1 carrier circuits at 1.344 Mbit/s or 1.536 Mbit/s

T1 carriers are used for all connections, except for ISDN channelized access, which uses ISDN facilities prior to connection to the FRIUs. Refer to the ISDN documentation (layer 297-2401) for detailed information on ISDN component configurations.

Frame relay interface units

Access to the frame relay network is through the FRIU. The FRIU is a module application-specific unit (ASU) installed in either the LPP or the SSLPP. Operating companies are connected to the FRIUs through T1 channels that permit access through both ISDN and non-ISDN connections. Inter-shelf connections within link interface modules (LIM) are provided through the frame transport bus (FBUS). Trunking FRIUs are required where the connection between the originator and the destination spans two or more LPPs or SSLPPs. Trunking FRIUs are not available for subscriber access.

The FRIU is a switching device that can switch frames at 56 kbit/s, 1.344 Mbit/s or 1.536 Mbit/s. A frame is received from the T1 and is routed using the incoming channel and DLCI as keys to the destination of the frame. The frame is then sent to the local message switch, where it is routed to its destination FRIU. When frames are received in the destination FRIU, they are sent out onto the T1 of the FRIU.

The FRIU temporarily stores frame counts along with octet, cell, and segment counts. These accumulated counters are later retrieved from the FRIU by the operational measurements (OM) subsystem and the CM billing controller.

Channelized access

There are three types of channelized access: Datapath, DDS, and ISDN.

Datapath

Datapath provides access using either a local loop, a DMS remote peripheral, or a DE-4 channel bank. Datapath can use the DMS hotline feature to automatically connect the data terminating equipment (DTE) to the DataSPAN FRS when the DTE comes online.

DataSPAN FRS supports transfer rates of 56 kbit/s or 64 kbit/s, but does not support T-link subrate encoding. The subscriber must use the high speed data unit (HSDU) that supports the V.35 physical interface.

Digital data service

DataSPAN FRS supports the non-error-correcting form of DDS. Individual DS0 channels must be multiplexed across a T1 carrier facility before connecting to the DMS SuperNode switch. Up to 24 channels at 56 or 64 kbit/s each can be supported on a single T1 facility.

ISDN

DataSPAN FRS supports ISDN BRI and PRI B-channel circuit switched access. Individual ISDN channels are multiplexed across a T1 carrier, which then connects to the FRIU. Up to 24 channels with data transmission speeds of 56 kbit/s or 64 kbit/s for BRI, and 64 kbit/s for PRI, can be supported on a single T1 facility and FRIU.

Channelized fractional T1 access

A T1 carrier facility can provide four 384-kbit/s DataSPAN access channels. These channels must be multiplexed across a T1 carrier facility before connecting to the DMS SuperNode switch.

Unchannelized T1 access

The unchannelized mode uses all 192 bits of information in a T1 carrier frame to carry data associated with a single DataSPAN frame on a single 1.344-Mbit/s or 1.536-Mbit/s channel.

Carriers

DataSPAN FRS is implemented across local exchange carriers and interexchange carriers on both DMS-100 and DMS-250 digital switches. Most

DataSPAN FRS (continued)

capabilities are the same for both carriers. Specific differences are described in the following table.

Capability differences between DataSPAN FRS on local exchange carriers and interexchange carriers

Local exchange carriers	Interexchange carriers
Support digital trunk controllers (DTC), line concentrating modules (LCM), and line trunk controllers (LTC)	Support DTCs
Access by DE-4 channel banks or DMS remote peripheral equipment	Access by DE-4 channel banks, and from local exchange carriers over digital trunk groups
Automatic Message Accounting (AMA) billing	Call Detail Recording (CDR) billing

DataSPAN FRS and the DMS-100 office

DataSPAN FRS uses DMS-100 Family switching technology to provide processor-controlled routing of data packets between devices at different subscriber locations. The subsystems in the DMS SuperNode office required to support DataSPAN FRS are the following:

Subsystems used by DataSPAN FRS (Sheet 1 of 2)

Subsystem	Function
Computing module	The computing module (CM) provides management control for the LPP and the FRIUs. Functions include downloading software, customer interface and connections, hardware tests, and other software functions.
Digital trunk controller	The DTC links data channels on T1 circuits from remote peripherals and other offices to the DMS network. It carries DataSPAN data from the DMS network to the LPP using channelized T1 carriers.
DMS bus	The DMS-bus transfers internal SuperNode control messages between the CM and all peripherals including the LPP and FRIUs. It does not carry customer data frames.
Frame relay interface unit	The FRIU supports one T1 trunk operating in channelized, fractional T1, or unchannelized mode. It supports the DataSPAN protocols.

DataSPAN FRS (continued)

Subsystems used by DataSPAN FRS (Sheet 2 of 2)

Subsystem	Function
Line concentrating module	The LCM contains Datapath or ISDN data line cards connected through local loops to customer high-speed data units (HSDU).
Link peripheral processor	The LPP performs all DataSPAN switching functions, transporting frames between FRIUs. An LPP supports 36 ASUs.
Line trunk controller	The LTC carries voice, Datapath, and ISDN traffic between the DMS network and the LCMs.
Network	The network switches data channels from a variety of sources to the LPP. It supports connections operating at 64 kbit/s or less.
Single-shelf LPP	The SSLPP performs the same functions as the LPP, except the SSLPP only supports 12 ASUs.
T1 Customer service unit/Data service unit	The T1 CSU/DSU performs the mapping between the V.35 interface and protocols used to transmit over a circuit. Transfer rates are 384 kbit/s for fractional T1 and 1.536/1.344 Mbit/s for unchannelized T1.

DataSPAN FRS data transmission requirements

In order for DataSPAN FRS to transmit data, the following conditions are required:

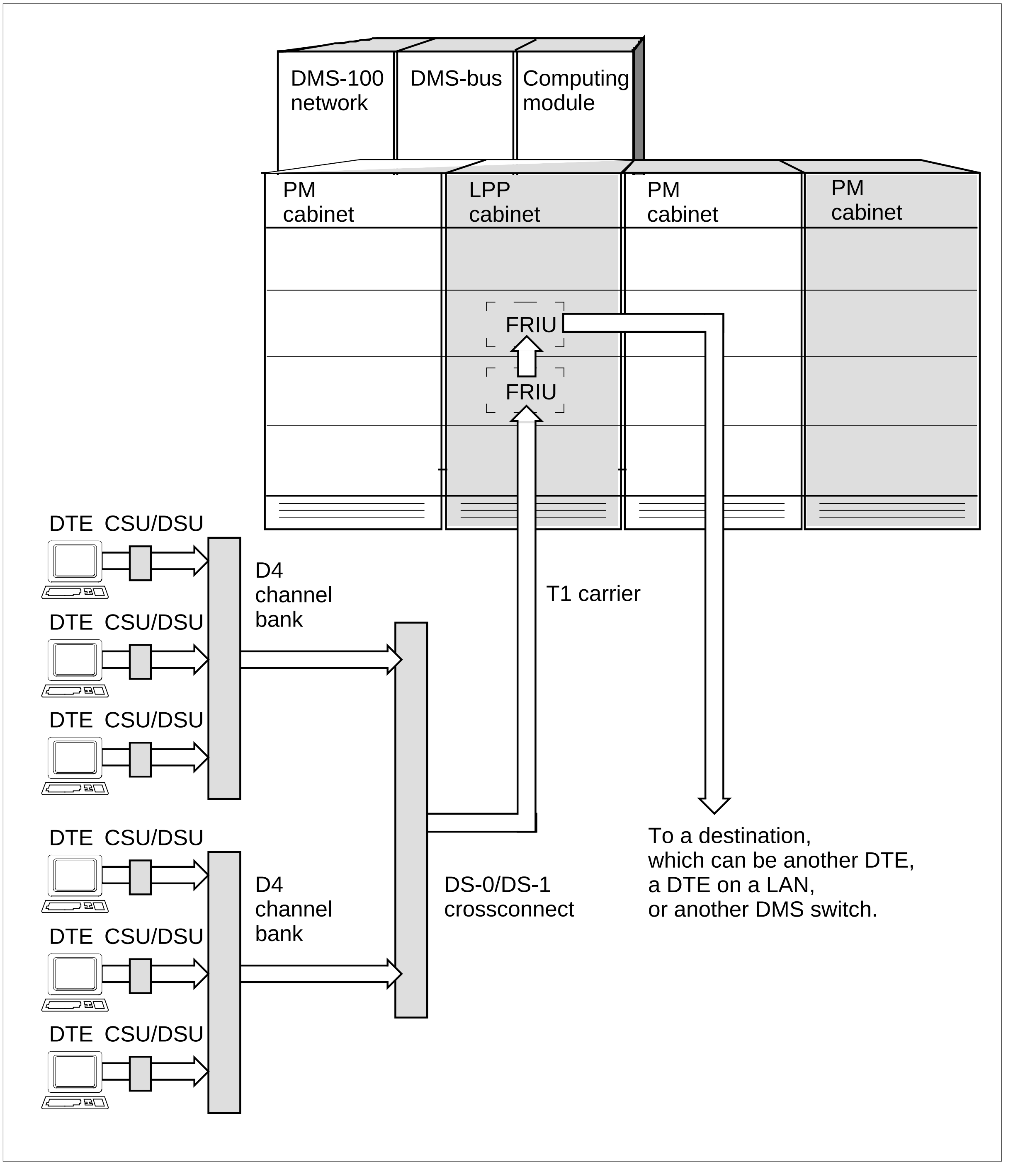
- All data is packaged in frames.
- Data frames adhere to the HDLC format.
- System tables are used for routing data.
- All switches carrying FRS traffic must be equipped with an FRS capability that complies with frame relay standards *(Frame Relaying Bearer Services — Architectural Framework and Service Description*, ANSI T1.606).
- Each logical link connection transfers data in a full-duplex exchange of frames, with frame order preserved in both directions.

DataSPAN implementation is compliant with CCITT/ITU, ANSI, and Frame Relay Forum standards for frame relay user network interface and network-to-network interface. Frame Relay Forum compliance assures interworking with customer premises equipment (CPE) as well as other switch vendors.

DataSPAN FRS (continued)

The following figure shows the components involved in the transmission path for non-ISDN channelized access.

Transmission path for non-ISDN channelized access



Frame relay service and the Open Systems Interconnection model

The Open System Interconnection (OSI) model was developed by the CCITT and International Standards Organization (ISO) to standardize manufacturing protocols. The OSI model consists of seven layers, as shown in the following table.

The OSI model

Layer		Activity
1	Physical	Bit stream transmission over a physical connection between users
2	Data link	Procedures for error detection and error recovery
3	Network	Routing procedures for data transfer
4	Transport	Procedures for end user to end user data transfer
5	Session	User's interface tot he network for establishing and managing a connection
6	Presentation	Procedures for transforming the data into a suitable form for the application
7	Application	Application process used by the computer

DataSPAN FRS functions entirely within the Data link layer. DataSPAN FRS includes only the core aspects of the Data link layer and ignores the elements of procedure in this layer.

Core aspects include

- frame delimiting, alignment, and transparency provided by the use of HDLC flags and zero bit insertion
- frame multiplexing/demultiplexing using the data link connection identifier (DLCI) field
- frame inspection to ensure that the frame consists of an integer number of octets prior to zero bit insertion or following zero bit extraction
- error detection (but not error recovery) by discarding individual frames found to have errors
- buffer and congestion management using Q.921 and Q.931 for CCITT (LAPD protocol)

For additional information, refer to ANSI standard T1S1/90-214.

DataSPAN FRS (continued)

Switching

DataSPAN FRS provides an interface between customer premise equipment (CPE) and the data packet network. The network provides processor-controlled routing of data packets between originating and destination CPE. The network consists of switches, and subscribers are connected through logical link connections.

Switches

Switches are linked by T1 carriers and provide a large number of permanent virtual circuits (PVC). PVCs can be datafilled to permit any device in the network to communicate with any other device using logical link connections. Switches deliver bandwidth-on-demand using dynamic routing between devices in the network.

Logical link connections

A DataSPAN customer is connected by an access channel to a switch equipped with DataSPAN FRS. Each device is logically connected to one or more devices on the network. Each logical link connection operates independently of other logical links on the physical access channel.

DataSPAN FRS supports both permanent logical link connections (PLLC) and automatic logical link connections (ALLC). The throughput on a single logical link connection can be up to 1.536 Mbit/s, with a one-way transit delay of less than 3 ms within the switch.

Permanent logical link connections

PLLCs are connections that follow a single defined path through the network between two end points, using specific data link channel identifiers (DLCI). Each PLLC must be created manually by datafilling each switch carrying the connection.

Automatic logical link connections

ALLCs can be used in situations in which trunk tandeming is not required. ALLCs streamline connection administration, and need manual datafill only at the switches serving the endpoint's access channels.

ALLCs are able to re-establish connections broken by trunk failures. When a primary trunk fails, an ALLC can re-establish itself using the secondary trunk, if one is available. Primary and secondary trunks are established through datafill.

Framing

Each transmitted data frame contains both data and routing information. Data from different devices is multiplexed onto a single access channel using uniquely identifiable frames. HDLC protocol is used to identify frames in reference to origination and destination points.

High-level data link control

HDLC is a bit-oriented synchronous data-link protocol that is used to standardize the transmission of data in frames. The following figure shows the data structure of an HDLC frame used in DataSPAN FRS.

HDLC frame for frame relay service

Bit	8	7	6	5	4	3	2	1
	HDLC flag							
Octet 1	0	1	1	1	1	1	1	0
Octet 2	Address (high order octet)							
Octet 3	Address (low order octet)							
Octet 4 to Octet n-3	Frame relay information field							
Octet n-2	FCS (first order)							
Octet n-1	FCS (second order)							
	HDLC flag							
Octet n	0	1	1	1	1	1	1	0

The frame consists of the following components:

- an 8-bit HDLC flag, consisting of a zero followed by six ones and ending with a zero
- a 2-octet address field (high and low order octet fields), which contains the following:
  - — the DLCI, high order
  - — the command/response (C/R) flag for use by applications
  - — extended address (EA) flag
  - — DLCI, low order
  - — forward explicit congestion notification (FECN)
  - — backward explicit congestion notification (BECN)

DataSPAN FRS (continued)

- discard eligibility (DE) flag
- EA flag (end of header)

- the frame relay information field, containing up to 2100 octets of customer data
- 2-octet frame check sequence (first order and second order fields) that is used to monitor for transmission errors
- an 8-bit HDLC flag closes the frame (the closing flag of one frame may be the opening flag of the next)

Data link connection identifier field

Each frame carries a DLCI in the 2-octet address field. The DLCI is used for routing, and distinguishes the frame from those belonging to other logical links.

Since DLCIs are local to each end device, switches at each end of the same logical link may refer to their subscribers using different DLCI values.

The destination of the frame is determined by comparing the DLCI to the routing table associated with the FRIU. The FRIU is the hardware unit that provides FRS functions at the switch.

For unchannelized T1 access, there are 992 DLCIs available within a value range of 16 to 1007. For unchannelized T1 trunks, 1006 DLCIs are available within a value range of 1 to 1007. For channelized and fractional T1 access, there are 200 DLCIs available for each channel within a value range of 16 to 216. The following table shows the functions assigned to each DLCI value range.

DLCI values and their corresponding functions

Value range	Function
0	in-channel signaling or ANSI standard local message interface (ANSI LMI)
1 to 15	reserved
16 to 1007	frame relay connections
1008 to 1022	reserved
1023	reserved for user network interface standard LMI (UNI LMI)

Maximum frame size

Since DataSPAN FRS does not segment frames, the subscribers must agree on a maximum size for the frames that are carried on a logical link connection. The maximum frame size allowed by DataSPAN FRS is 2106 octets: 2100 octet are available for data payload, and six octets are used for the frame relay protocol.

UNI standard LMI protocol

The user network interface (UNI) LMI protocol provides high-level communication between the CPE and the DataSPAN frame relay network. The UNI LMI process communicates with the CPE using the reserved DLCI of 1023 (ANSI standard LMI reserves DCLI 0).

Through the UNI LMI protocol, the frame relay network and the CPE can verify connectivity and inform the CPE of the DLCIs that have been assigned. UNI LMI is used to monitor when DCLIs are added, modified, or removed from the network. The operating company is responsible only for ensuring that there are sufficient CPE resources available for the potential number of logical link connections that may be corrected.

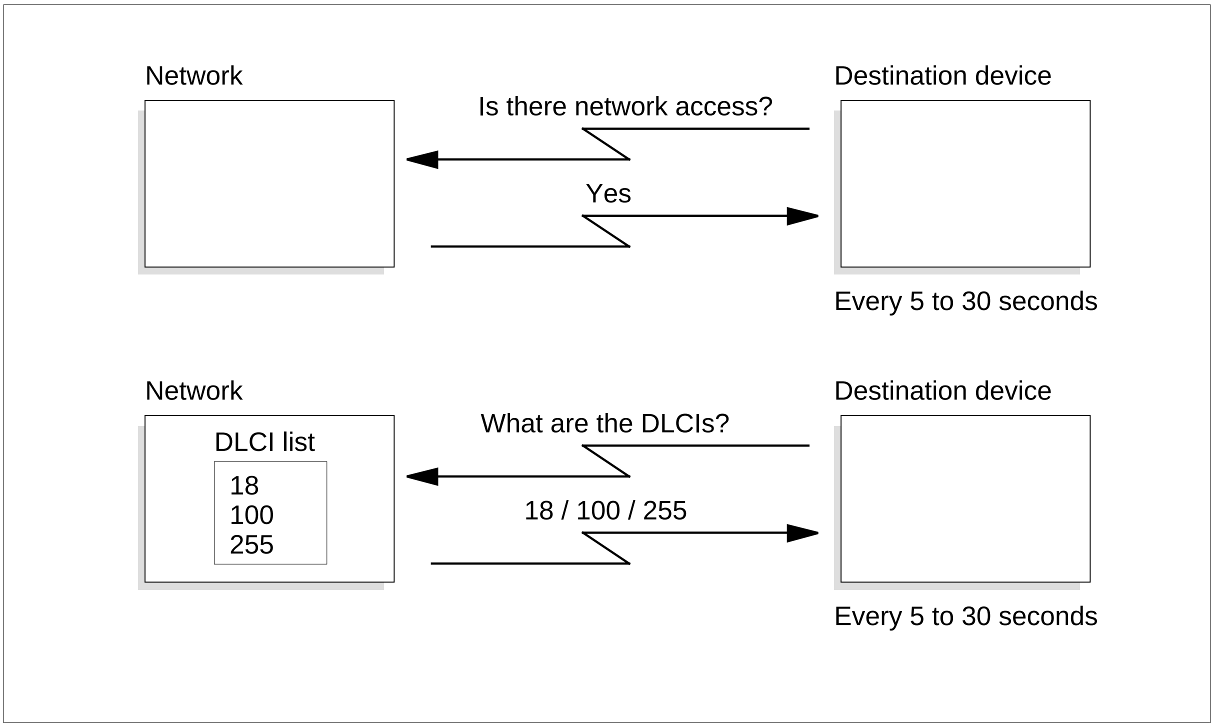
Other functions of the UNI LMI include:

- continuous confirmation of the integrity of the local access
- notification to the subscriber of new logical link connections
- implicit notification to the subscriber of deleted connections

The following figure provides an overview of how devices send frame relay network messages to verify connectivity and to query for assigned DLCIs.

DataSPAN FRS (continued)

Local management interface



ANSI standard LMI

ANSI LMI provides the following features in addition to the UNI LMI feature set:

- support for ANSI format messages
- optional bidirectional network procedures
- optional single PVC asynchronous status messages
- network wide propagation of PVC availability status
- support of CCITT messages

The ANSI LMI process communicates with the CPE using the reserved DLCI of 0.

Congestion management and frame buffering

DataSPAN FRS can optimize overall throughput and accommodate momentary bursts of traffic through various congestion management strategies that return service to a normal operating state. These congestion management strategies provide the basis for committed information rate (CIR). The objectives of congestion management are to maintain, with high probability, the quality of service of a PVC.

DataSPAN FRS congestion control provides both realtime mechanisms, which help prevent congestion, and a means of recovering from extreme congestion. An explicit method of congestion control is provided through the explicit congestion notification (ECN) bits of the frame relay protocol.

Data can accumulate in buffers because the FRIU does not prevent subscribers from sending data to the network. This is because the FRIU is designed to accept all data packets that it receives. When buffers within the FRIU are consumed, ECN congestion control is invoked and frames above programmed thresholds are discarded.

Committed information rate

CIR is used to define fixed subrates on the access network. Subrates can then be applied to PVCs. By allocating fixed bandwidth for each PVC on the access line, the operating company can achieve the following:

- simplified engineering and administration of the FRS network
- simplified billing
- fair distribution of resources to all PVCs sharing those resources

The CIR of a PVC is the subscriber data throughput that the operating company commits to provide under normal operating conditions.

Three levels of service can be offered to the subscriber:

- No rate enforcement. This service does not apply rate enforcement. The network relays frames unchanged.
- CIR = 0. This service does not guarantee any sustained level of throughput. The subscriber assumes the risk of frame loss and assumes responsibility for evaluating the safest context (time and throughput) in which to maximize network usage. This option is equivalent to providing a statistical service on access.
- CIR > n, where n = number of bits. This service provides a sustained throughput under normal operating conditions. Rate enforcement is used on each PVC to ensure that CIR is always available.

There are no restrictions on service mix for any specific trunk or access. The operating company can decide on service mix based on available network resources.

DataSPAN FRS (continued)

Translations table flow

The DataSPAN FRS translations tables are described in the following list:

- Table CARRMTC (Carrier Maintenance Control)
- Table MSCDINV (Message Switch Cards Inventory)
- Table MSILINV (Message Switch Inter-MS Link Inventory) (for SSLPP only)
- Table PMLOADS (Peripheral Module Loads)
- Table LIMINV (Link Interface Module Inventory) (for LPP only)
- Table LIMCDINV (Link Interface Module Card Inventory) (for LPP only)
- Table LIMPTINV (Link Interface Module Port Inventory) (for LPP only)
- Table SUSHELF (Service Unit Shelf)
- Table LIUINV (Link Interface Unit Inventory)
- Table FRSCCTRL (Frame Relay Service Congestion Control)
- Table PVDNAGEN (Private Virtual Data Network Agent)
- Table PVDNCUST (Private Virtual Data Network Customer)

Determine whether trunk or access connections are required:

- For trunk connections, continue with the following tables:
  - — CLLI (Common Language Location Identifier).
  - — FRSTRKGP (Frame Relay Service for T1 Trunk Group)
  - — FRSTRKS (Frame Relay Service for T1 Trunks)
  - — PVDNCHAN (Private Virtual Data Network Channel)
  - — FRSCIR (Frame Relay Service Committed Information Rate)
  - — FRSTRKCN (Frame Relay Service Connections for T1 Trunks)
  - — FRSCNEND (Frame Relay Service Connection End)
- For access connections, continue with the following tables:
  - — PVDNCHAN (Private Virtual Data Network Channel)
  - — FRSCIR (Frame Relay Service Committed Information Rate)
  - — FRSACCCN (Frame Relay Service Access Point Connections)
  - — FRSCNEND (Frame Relay Service Connection End)

DataSPAN FRS (continued)

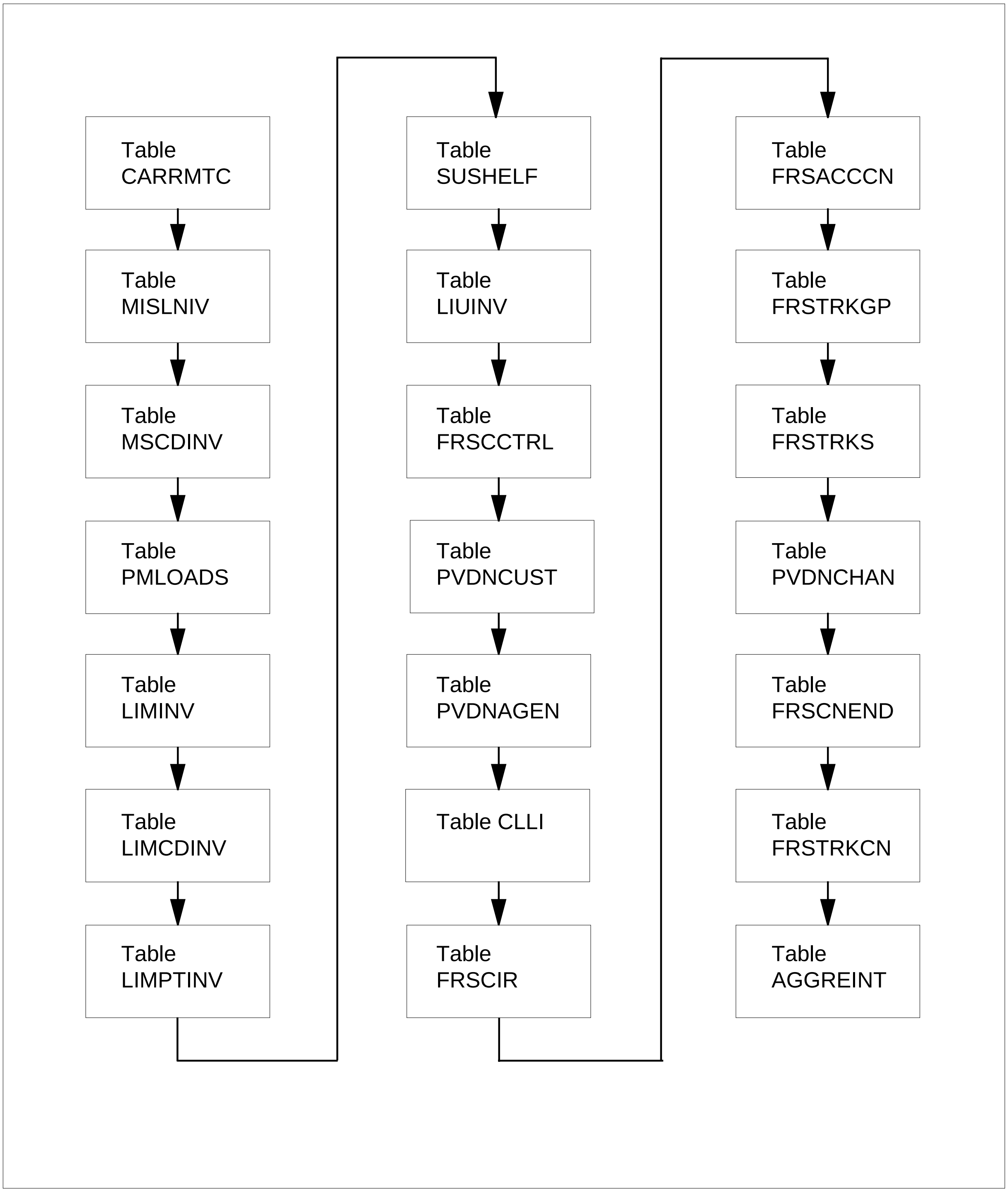
To create new logical link connections, datafill the following tables:

- PVDNCUST
- PVDNAGEN
- CLLI
- FRSTRKGP (Frame Relay Service for T1 Trunk Group)
- FRSTRKS (Frame Relay Service for T1 Trunks)
- PVDNCHAN
- FRSACCCN or FRSCNEND
- FRSTRKCN or FRSCNEND

The DataSPAN FRS translation process is shown in the flowchart that follows.

DataSPAN FRS (continued)

Table flow for DataSPAN FRS



DataSPAN FRS (continued)

The following table lists the datafill content used in the flowchart.

Datafill example for DataSPAN FRS

Datafill table	Example data
CARRMTC	FRIU FRSTEST 255 255 FRT1 NTEX30AA SF BPV N 250 1500 50 50 50 1500 3 8
MSCDINV	0 0 17 DSS512 NT9X17AD NT9X62BA 4
MSILINV	0 0 23 DS30 2
PMLOADS	F8X36CJ F8X36CJ S00DPMLOADS F8X36CJ S00DPMLOADS N
LIMINV	0 1 A 4 LIM 501 LPX36CJ NT9X70BA NT9X71AB 1.0
LIMCDINV	0 0 9 DS30 NT9X17AA NT9X23BA
LIMPTINV	0 9 0 0 DMSY MS 1 20 1
SUSHELF	LIM 1 12 0 3 3 Z 0 LIM 502 NTOX72AA (7 NT9X74AA NT9X79BA) (32 NT9X74AA NT9X79BA)
LIUINV	FRIU 1 LIM 0 1 8 F8X36CJ NTEX22BB NTEX31BA NTEX30AA FBUS UNCHAN DS1_LLEQ_660
FRSCTRL	0 50 50 80
PVDNCUST	XYZ_IND
PVDNAGEN	1 ACCESS VALID 1 X121INTL OTTAWA LS_1536KBS N NIL (INVERSION N) (ERAM N) (CTRL_IDX 0) $ (DARXTIME 0) $ (DATXTIME 0) $
CLLI	TO_BELLEVILLE 794 10 FRAME_RELAY_TRUNK_TO_BELLEVILLE
FRSCIR	1 56000 5000 1200 $
FRSACCCN	1 100 N 2 100 N
FRSTRKGP	FRS60
FRSTRKS	FRS64 1 10
PVDNCHAN	3 FRIU 3 1
FRSCNEND	122456778101 101 N 12245671401 101 N FRS65 Y CONFIRMED
FRSTRKCN	FRS64 0 19 1 ACCESS 1401 19 VALID 12245678001 N
AGGREINT	XYZ_IND 5 48

DataSPAN FRS (continued)

Limitations and restrictions

The following rules apply when provisioning a DMS-100 switch with an FRIU:

- One FRIU is required for each 24 Datapath, ISDN, or digital data service (DDS) channel; there must be one T1 channel on an LTC for each FRIU that handles Datapath, ISDN, or DDS access channels.
- One FRIU is required for each set of four fractional T1 384 kbit/s channels.
- One FRIU is required for each unchannelized T1 carrier.
- One NT9X0191 cable assembly is required for each FRIU to connect the paddle board to the cable bulkhead.
- Up to 12 FRIUs can be installed for each link interface shelf (LIS), for a total of 36 FRIUs per LPP. The maximum number of FRIUs per office is 501.
- A maximum for four FRIUs can be installed on each SSLPP for a maximum of eight FRIUs in the EMC.
- The number of DLCIs permitted for each FRIU depends on the number of channels feeding into the unit to a maximum of 992 DLCIs per channel for unchannelized access and a maximum of 200 DLCIs per channel for channelized access.

The following software restrictions apply to DataSPAN FRS:

- a maximum of 256 000 PVCs per office
- a maximum of 1000 subscribers per office
- a maximum of 2201 agents per office
- a maximum of 1007 PVCs per unchannelized access agent
- a maximum of 200 PVCs per fractional-access (384 kbit/s) agent
- a maximum of 200 PVCs per channelized-access agent
- a maximum of 992 PVCs per trunk
- a link access procedure (LAPD) range of 16 to 1007 for the data link connection identifier (DLCI)
- a maximum of 10 000 PVCs can be owned by each subscriber

Interactions

DataSPAN FRS has no functionality interactions.

Activation/deactivation by the end user

DataSPAN FRS requires no activation or deactivation by the end user.

Billing

The billing record reflects both egress and ingress frame and byte counts. Egress counts are defined as the frame and byte counts transmitted from the frame relay network to the CPE access. Ingress counts are defined as the frame and byte counts received from the CPE access and transmitted onto the frame relay network.

Operating companies can choose how often billing records are generated. They can also choose one of the following formats for data collection:

- frame count and octet count
- frame count and segment count (64 bytes)
- frame count and cell count (44 bytes)

Billing is based on the volume of data that is transferred across the DataSPAN FRS network. Data that is dropped at ingress is not included in billing calculations.

Store to hold the results of billing calculations is allocated dynamically on a channel basis. For one FRIU channel, the initial allocation is approximately 3 kbytes, which is enough to store up to 80 agent-DLCI pairs. Additional allocation for one channel is in 600-byte blocks which is enough to store up to 20 agent-DLCI pairs.

The following figure is an example of an AMA record generated for call code 089.

Call code 089

```
HEX ID:AA  STRUCTURE CODE:40693C  CALL CODE:089C  SENSOR
TYPE:036C  SENSOR ID:0000000C  REC OFFICE TYPE:036C  REC
OFFICE ID:0000000C  PRESENT DATE:00929C  PRESENT
TIME:0400000C STUDY IND:0000000C  CHG NPA:919C  CHG
NUMBER:8472452C  PVC ID:FFFFFF  LOGICAL CHAN
NUMBER:00002C  PKT BILLING NUMBER:FFFFFFFFFFFFFFFF  SEG
COUNT1:FFFFFFFF  SEG COUNT2:FFFFFFFF  SEG COUNT3:FFFFFFFF
SEG COUNT4:FFFFFFFF SEG SIZE:3C  MODULE CODE:069C  TERM
NPA LARGE:800C  TERM NUMBER:9917782C  TRANS SEG
CNT:1223334566678888889901C REC SEG CNT:987776555432111C
TRANS FRAME CNT:222222222221C  REC FRAME CNT:00000000000C
TERM CAUSE IND:309C  MODULE CODE:000C
```

DataSPAN FRS (continued)

Frame relay module 069 is appended to structure code 0693 to record segment and frame counts. The terminating NPA and terminating number values are derived from the value datafilled in field FARENDDN of table FRSTRKCN for the agent who owns the bill being generated.

If the transmit frame count and the receive frame counts are both zero, that is, no frames were sent or received on the PLLC, a record will not be generated for the PLLC at the aggregation interval.

The following table provides information for module code 069.

Module code 069

Information	Field number	Number of characters
Terminating NPA	174	4
Terminating number	175	8
Transmit segment count	806	12
Receive segment count	806	12
Transmit frame count	806	12
Receive frame count	806	12
Terminating cause indicator	177	4

Structure code 0693 is used in conjunction with the FRS call code 089 to record information specific to frame relay with the frame relay module code 069 appended. The following table provides information for structure code 693.

Structure code 0693 (Sheet 1 of 2)

Information	Field number
Record descriptor word	000
Hexadecimal identifier	00
Structure code	0

Note 1: Fields marked * are not supported for FRS. These fields will be filled with FFFF for FRS calls.

Note 2: The field marked # is for recording the DLCI.

Structure code 0693 (Sheet 2 of 2)

Information	Field number
Call code	1
Sensor type	2
Sensor identification	3
Recording office type	4
Recording office identification	5
Present date	6
Present time	18
Study indicator	8
Chargeable NPA	172
Chargeable CO-EPN	173
*Chargeable PVC identifier	195
#Chargeable logical channel no.	223
*Billing number	176
*Rate period 1 segment count	139
*Rate period 2 segment count	139
*Rate period 3 segment count	139
*Rate period 4 segment count	139
Segment size	181

Note 1: Fields marked * are not supported for FRS. These fields will be filled with FFFF for FRS calls.

Note 2: The field marked # is for recording the DLCI.

Station Message Detail Recording

DataSPAN FRS does not affect Station Message Detail Recording.

DataSPAN FRS (continued)

Datafilling office parameters

The following table shows the office parameters used by DataSPAN FRS. For more information about office parameters, refer to *Office Parameters Reference Manual*.

Office parameters used by DataSPAN FRS

Table name	Parameter name	Explanation and action
OFCOPT	FRIU_BILLING_COUNT_FORMAT	This parameter is used by the frame relay billing software to specify the format of the unit used by the operating company to bill the subscriber. The necessary value is determined by Northern Telecom (Nortel) at the time of the initial input.
OFCENG	CRS_PRU_POOL2_SIZE	This parameter controls the provisioning for the CRS_PRU_POOL2 extension block pool. DataSPAN FRS requires one primary recording unit (PRU) per PLLC.
OFCENG	CRS_SUBRU_POOL2_SIZE	This parameter controls the provisioning for the CRS_SUBRU_POOL2 extension block pool. DataSPAN FRS requires one sub-recording unit (SUBRU) per PLLC.
OFCENG	CRS_SUBRU_POOL4_SIZE	This parameter controls the provisioning for the CRS_SUBRU_POOL4 extension block pool. DataSPAN FRS requires one sub-recording unit (SUBRU) per PLLC.
Note: Not having enough recording units means potential loss of frame relay billing data. Failure to claim one of these recording units (PRU or SUBRU) will result in a loss of Bellcore-specific frame relay billing data for the subscriber whose billing data is currently being captured.		

Datafill sequence

The following table lists the tables that require datafill to implement DataSPAN FRS. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for DataSPAN FRS (Sheet 1 of 2)

Table	Purpose of table
OFCOPT	Office Option. This table contains data on engineering options for the office. Refer to *Office Parameters Reference Manual* for how DataSPAN FRS affects office parameters.
OFCENG	Office Engineering. This table contains data on engineering parameters for the office. Refer to “Datafilling office parameters" for how DataSPAN FRS affects office parameters.
CARRMTC	Carrier Maintenance Control. This table contains maintenance control information for peripheral modules and DS-1 links. It also contains out-of-service limits for alarms and records system return-to-service occurrences.
MSCDINV	Message Switch Cards Inventory. This table is used to define information on the system cards, bus extension units, and interface units in the message switch.
MSILNIV	Message Switch Inter-MS Link Inventory. This table defines interlinks used by messaging software to direct messages across DMS message switches in the DMS-bus.
PMLOADS	Peripheral Module Loads. This table stores the device location of every peripheral module load file in order to map between the load names and devices on which the loads reside. PM load files must be datafilled in table PMLOADS before they can be used in inventory tables.
LIMINV	Link Interface Module Inventory. This table contains information on the location of the LIM in the office, the type of cabinet it is in, and the type of shelf on which it resides.
LIMCDINV	Link Interface Module Card Inventory. This table describes the cards in the LIM cabinet.
LIMPTINV	Link Interface Module Port Inventory. This table describes the port connection on each LIM.
SUSHELF	Service Unit Shelf. This table defines the link interface shelf (LIS) in the LIM cabinet.
LIUINV	Link Interface Unit Inventory. This table defines the configuration for each FRIU or other ASU in an LPP.

DataSPAN FRS (continued)

Datafill tables required for DataSPAN FRS (Sheet 2 of 2)

Table	Purpose of table
FRSCCTRL	Frame Relay Service Congestion Control. This table defines the congestion control parameters required for explicit congestion notification (ECN) and discard eligible (DE=1) rate enforcement.
PVDNCUST	Private Virtual Data Network Customer. This table stores the private virtual data network (PVDN) customer's name.
PVDNAGEN	Private Virtual Data Network Agent. This table defines the FRS agents in the PVDN database.
CLLI	Common Language Location Identifier. This table identifies the far end of each announcement, tone, trunk group, test trunk, national milliwatt test lines, and service circuit.
FRSCIR	Frame Relay Service Committed Information Rate. This table defines the CIR templates that are used to enforce the UNI rate on PVCs.
FRSACCCN	Frame Relay Service Access Point Connects. This table defines the DataSPAN FRS connections that connect an access point at both ends of the circuit. The connections specified do not involve trunking.
FRSTRKGP	Frame Relay Service for T1 Trunk Group. This table defines the FRS T1 trunk groups in the office.
FRSTRKS	Frame Relay Service for T1 Trunks. This table defines the FRS T1 trunks in an office.
PVDNCHAN	Private Virtual Data Network Channel. This table defines the relationship between FRS agents and the physical FRIU channels.
FRSCNEND	Frame Relay Service Connection End. This table is used to provision all the FRS connections.
FRSTRKCN	Frame Relay Service Connections for T1 Trunks. This table defines the FRS connections in offices that involve a T1 trunk.
AGGREINT	Frame Relay Service Aggregate Billing Interval. This table defines the timing mechanism that generates billing records for FRS data transmission usage.

Datafilling table CARRMTC

This table is used to define maintenance control information limits for alarms and for system return-to-service occurrences.

DataSPAN FRS (continued)

Deleting tuples from table CARRMTC

If an entry is deleted from table CARRMTC, that entry must not be referenced in table LIUINV.

The following table shows the datafill specific to DataSPAN FRS for table CARRMTC. Only those fields that apply directly to DataSPAN FRS are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table CARRMTC (Sheet 1 of 3)

Field	Subfield or refinement	Entry	Explanation and action
CSPMTYPE		FRIU, LTC, or DTC	C-side node PM type. Enter the PM type of the node on the C-side of the carrier link.
TMPLTNM		alphanumeric (1 to 16 characters)	Template name. Enter the template name for the PM. This entry also appears in the inventory tables, field CARRIDX. The default value is DEFAULT.
RTSML		numeric (0 to 255)	Return-to-service maintenance limit. Enter the number of times in an audit interval a carrier can be returned to service by the system before a warning is issued. Value 255 disables this feature.
RTSOL		numeric (0 to 255)	Return-to-service out-of-service limit. Enter the number of times in an audit interval a carrier may be returned to service by the system before it is permanently out of service. Value 255 disables this feature.
ATTR		see subfield	Attribute. This field consists of subfield SELECTOR and its refinements.
	SELECTOR	FRT1	Selector. Enter FRT1 (frame relay T1). Complete subfields CARD, FF, BERB, IAT, LCGAST, LCGACL, RCGAST, RCGACL, AISST, AISCL, BEROS, BERML, ES, SES, SESCALC, FRAMEML, and FRAMEOS.
	CARD	NTEX30AA	Card. Enter the T1 analog paddle board used in the FRT-I carrier.
	FF	SF or ESF	Frame format. Enter SF for super frame format. Enter ESF for extended super frame format.

DataSPAN FRS (continued)

Datafilling table CARRMTC (Sheet 2 of 3)

Field	Subfield or refinement	Entry	Explanation and action
	BERB	BPV or CRC6	Bit error rate base. Enter BPV for bipolar violation. Enter CRC6 for cyclic redundancy check #6. CRC6 enables an ESF carrier to be used by an FRIU.
	IAT	Y or N	Inhibit alarm transmit. Enter Y if the alarm transmit is inhibited. Otherwise, enter N. The default is N.
	LCGAST	numeric (1 to 9999)	Local carrier group alarm set threshold. Enter a value for the threshold in units of 10 ms. The default value is 250.
	LCGACL	numeric (1 to 9999)	Local carrier group alarm clear threshold. Enter a value for the threshold in units of 10 ms. The default value is 1500.
	RCGAST	numeric (1 to 9999)	Remote carrier group alarm set threshold. Enter a value for the threshold in units of 10 ms. The default value is 50.
	RCGACL	numeric (1 to 9999)	Remote carrier group alarm clear threshold. Enter a value for the threshold in units of 10 ms. The default value is 50.
	AISST	numeric (1 to 9999)	Alarm indication signal set threshold. Enter a value for the threshold in units of 10 ms. The default value is 50.
	AISCL	numeric (1 to 9999)	Alarm indication signal clear threshold. Enter a value for the threshold in units of 10 ms. The default value is 1500.
	BEROL	numeric (3 to 9)	Bit error rate out-of-service limit. Enter the bit error rate out-of-service limit expressed as the negative of the exponent of 10, for example an entry of 4 corresponds to a bit error rate of 10-*4*. The entry in this subfield must be equal or smaller than the entry in subfield BERML. The default value is 6.

DataSPAN FRS (continued)

Datafilling table CARRMTC (Sheet 3 of 3)

Field	Subfield or refinement	Entry	Explanation and action
	BERML	numeric (3 to 9)	Bit error rate maintenance limit. Enter the bit error rate maintenance limit expressed as the negative of the exponent of 10 (10-*n*). The default value is 8.
	ES	numeric (0 to 9999)	Errored seconds threshold. Enter a value for the threshold in units of 10 ms to specify the errored seconds threshold. The default value is 864.
	SES	numeric (0 to 9999)	Severe errored seconds threshold. Enter a value for the threshold in units of 10 ms. The default value is 100.
	SESCALC	BEROS or STD	Severe errored seconds threshold. Datafill this field to specify the severe errored seconds (SES) threshold. Enter BEROS (bit error rate out-of-service limit) to specify that the SES calculation is to be based on the current BEROS limit. Enter STD (standard) to specify that the SES calculation is to be based on a BER value of 10-*3*. The default value for this field is BEROS.
	FRAMEML	numeric (0 to 9999)	Frame bit error maintenance limit. Enter a number from 0 to 9999 to specify the frame bit error maintenance limit. The default value is 17.
	FRAMEOS	numeric (0 to 9999)	Frame bit error maintenance limit. Enter a number from 0 to 9999 to specify the frame bit error maintenance limit. The default value is 511.

Datafill example for table CARRMTC

The following example shows sample datafill for table CARRMTC.

DataSPAN FRS (continued)

MAP display example for table CARRMTC

```
CSPMTYPE TMPLTNM RTSML RTSOL ATTR
________________________________________________________________________
FRIU FRSTEST 255 255 FRT1 NTEX30AA SF BPV N 250 1500 50 50 50 1500 3 8
864
100 BEROS 17 511
```

Datafilling table MSCDINV

The following table shows the datafill specific to DataSPAN FRS for table MSCDINV. Only those fields that apply directly to DataSPAN FRS are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table MSCDINV (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
MSCDKEY		see subfields	Message switch card key. This field contains the subfields MSNUM, SHELFNUM, and CARDNUM and their refinements.
	MSNUM	0 or 1	Message switch number. Enter the message switch number.
	SHELFNUM	0, 1, 2, or 3	Shelf number. Enter the shelf number for the card slot.
	CARDNUM	1 to 26 (see note)	Card position number. Enter the card position number (1 for first, 2 for second, and so on) relative to the other 26 cards. The MS has a total of 38 physical slots. The first and last six physical slots are occupied by power converter cards. Physical slots 7 to 32 remain for the MS cards. They are numbered 1 to 26. For example, for physical slot number 7, enter 1 in this subfield; for physical slot number 32, enter 26. ***Note:*** For the SuperNode SE MS, the range of subfield CARDNUM is restricted to 1 to 13. Physical slot 7 and 32 = CARDNUM 13. Physical slot 19 and 20 = CARDNUM 1. TFI card datafill is only allowed in position 12. Interface card datafill is allowed in positions 5 to 9 (CARDNUM 5 to 9).

Datafilling table MSCDINV (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
SLOTINFO		see subfields	Slot information. This field contains the subfields CARDTYPE and HEADPECS.
	CARDTYPE	DS512	Card type. Enter the type of card. For DataSPAN FRS, enter DS512.
	HEADPECS	see subfields	Head PEC. This field contains the subfields FRONTPEC and BACKPEC.
	FRONTPEC	alphanumeric (8 characters)	Front PEC. Enter the PEC for the front card.
	BACKPEC	NT9X62BA, NT9X62CA or NT9X62CB	Back PEC. Enter the PEC for the back card.
	NUMLINKS	1, 2, or 4	Number of links. Enter the number of links on the NT9X62 card being datafilled as follows: • If the entry in subfield BACKPEC is NT9X62BA, enter 1, 2, or 4. • If the entry in subfield BACKPEC is NT9X62CA or NT9X62CB, enter 1 or 2.

Datafill example for table MSCDINV

The following example shows sample datafill for table MSCDINV.

MAP display example for table MSCDINV

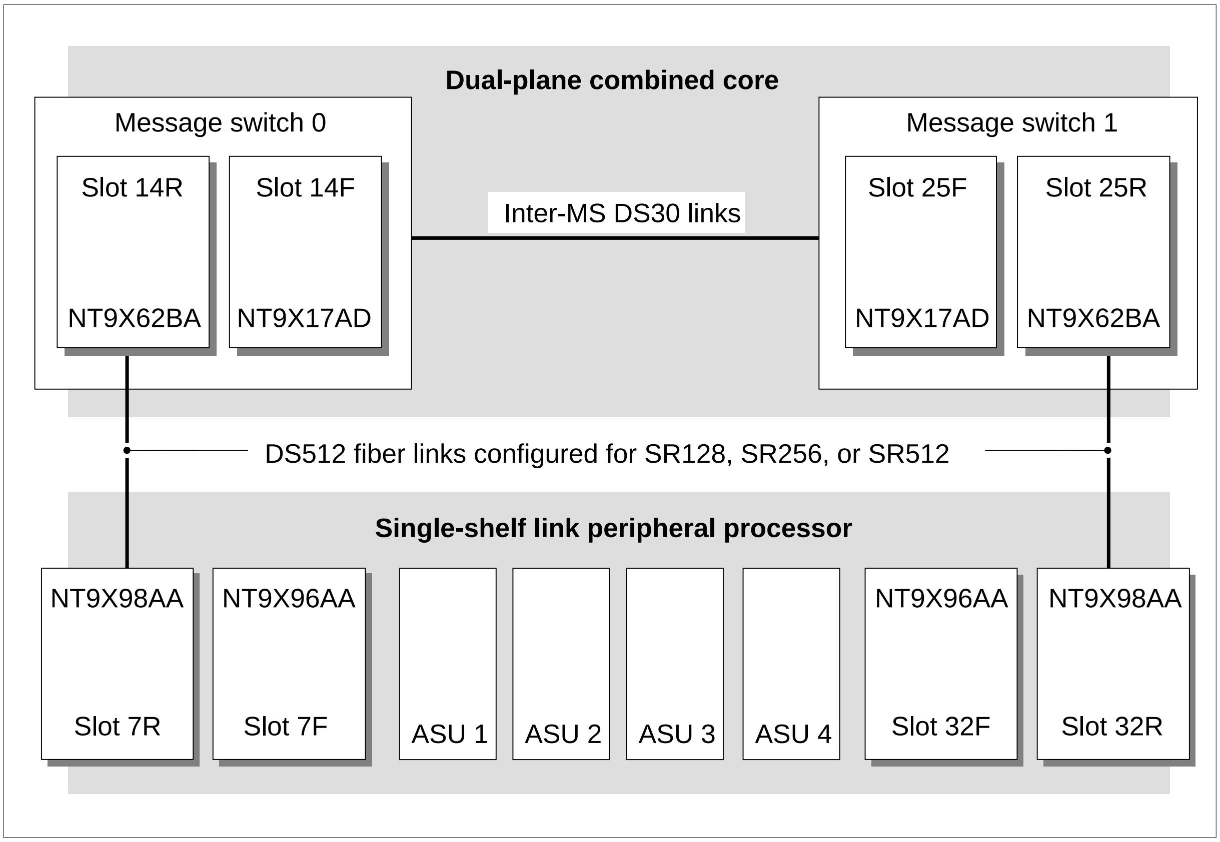
```
MSCDKEY SLOTINFO
________________________________________________________________
0 0 17 DS512 NT9X17AD NT9X62BA 4
```

The following figure shows a typical link configuration for FRIUs in an SSLPP.

Note: An SSLPP supports 12 ASUs; however, DataSPAN only supports four FRIUs because the FRIU can generate heavy FBUS traffic.

DataSPAN FRS (continued)

SSLPP link configuration



Datafilling table MSILINV

This table is used to define inter-message switch links used by the frame transport system (FTS) messaging software to direct messages across DMS message switches at the DMS-BUS protocol.

The following table shows the datafill specific to DataSPAN FRS for table MSILINV. Only those fields that apply directly to DataSPAN FRS are shown.

DataSPAN FRS (continued)

For a description of the other fields, refer to the data schema section of this document.

Datafilling table MSILINV

Field	Subfield or refinement	Entry	Explanation and action
IMSL		see subfield	Inter-message switch link. This field contains subfield LINKNO.
	LINKNO	0 or 1	Message switch interlink number. Enter the number of the interlink to be defined. A maximum of two links can be defined for one MS shelf pair. Link 0 must be added before link 1 can be added.
SHELFNO		0, 1, 2, or 3	Message switch shelf number. Enter the number of the MS shelf on which the interlink will reside.
CARDNO		6 to 23	Message switch card number. Enter the number of the message switch card on which the interlink resides.
INFO		see subfields	Message switch interlink information. This field contains subfields PROTOCOL and PORTNO.
	PROTOCOL	DS30, DS512, SR128, or SR256	Messaging protocol. Enter the messaging protocol used for the MS interlink, and datafill subfield PORTINO.
	PORTNO	0 to 15	Message switch port number. Enter the number of the message switch port that the interlink uses. For DS512 protocol, the only valid entry is 0 (zero). For DS30 protocol, the valid entries are 0 to 15. ***Note:*** For four-port DS30 MS cards, the only valid entries are 0 to 3. For SR128 the valid entries are 0 to 3. For SR256 the valid entries are 0 or 1.

Datafill example for table MSILINV

The following example shows sample datafill for table MSILINV.

DataSPAN FRS (continued)

MAP display example for table MSILINV

```
IMSL SHELFNO CARDNO     INFO
________________________________________
   0       0     23  DS30  2
```

Datafilling table PMLOADS

This table is used to define the device location of every PM load file. The software checks that the load file is present on the datafilled device

Adding or deleting a loadname to table PMLOADS

The XMS-based peripheral modules (XPM) and PM load files must be datafilled in table PMLOADS before they can be used in the inventory tables. The inventory tables enforce this rule. However, during initial datafill and dump/restore, tuples in table PMLOADS are automatically added when tuples are added to inventory tables.

The loadname to be deleted cannot be referenced in inventory tables.

The following table shows the datafill specific to DataSPAN FRS for table PMLOADS. Only those fields that apply directly to DataSPAN FRS are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table PMLOADS (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
LOADNAME		alphanumeric (up to 32 characters)	PM loadfile name. Enter the PM loadfile name. The loadfile name in this field must be the same as the loadfile name specified in the inventory tables.
ACTFILE		alphanumeric (up to 32 characters)	Active PM loadfile name. Enter the active PM loadfile name. The active loadfile can be the original loadfile or a patched loadfile. ***Note:*** The active loadfile can be the original loadfile or a patched loadfile.
ACTVOL		alphanumeric (up to 16 characters)	Active loadfile storage device. Specify the device on which the active loadfile is stored. The range is the set of disk drive unit (DDU) volumes and system load module (SLM) disks that are available to the computing module (CM).

DataSPAN FRS (continued)

Datafilling table PMLOADS (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
BKPFILE		alphanumeric (up to 32 characters)	Backup PM loadfile name. Enter the backup loadfile name. ***Note:*** In BCS36, the PM loadfile name is the shipped loadfile; it must be the same name as that specified in field LOADNAME.
BKPVOL		alphanumeric (up to 16 characters)	Backup loadfile storage device. Specify the device on which the backup loadfile is stored. The range is the set of DDU volumes and SLM disks that are available to the CM.
BKPVOL		Y or N	Automatic loadfile name update. Enter Y to update field ACTFILE automatically with the patched loadfile name. Otherwise, enter N. The default value for this field is Y. ***Note:*** This field also controls whether the loadfile is eligible for loadfile patching.

Datafill example for table PMLOADS

The following example shows sample datafill for table PMLOADS.

MAP display example for table PMLOADS

```
LOADNAME ACTFILE ACTVOL BKPFILE BKPVOL UPDACT
_____________________________________________
F8X36CJ F8X36CJ S00DPMLOADS F8X36CJ S00DPMLOADS N
```

Datafilling table LIMINV

This table is used to define an inventory of the LIMs. The table contains information on the location of the LIM in the building, the type of cabinet in which it is housed, and the type of shelf on which it resides. One tuple is datafilled for each existing LIM.

The following table shows the datafill specific to DataSPAN FRS for table LIMINV. Only those fields that apply directly to DataSPAN FRS are shown.

DataSPAN FRS (continued)

For a description of the other fields, refer to the data schema section of this document.

Datafilling table LIMINV

Field	Subfield or refinement	Entry	Explanation and action
LIM		0 to 16	Link interface module (LIM) number. Enter the link interface number.
FLOOR		0 to 99	Floor. Enter the floor on which the LIM is located.
ROW		A to HJ to NP to ZAA to HHJJ to NNorPP to ZZ	Row. Enter the row in which the LIM is located.
POSITION		0 to 99	Frame position. Enter the position of the cabinet containing the LIM.
CABTYPE		LIM	Cabinet type. Enter the cabinet type in which the LIM resides. LIM is the only valid entry for this field.
CABNUM		0 to 511	Cabinet number. Enter the number assigned to the cabinet.
LOAD		alphanumeric (vector of up to 8 characters)	Software load name. Enter the loadname that refers to the software load in the LIM. This loadname must be found in table PMLOADS. The loadname entry in table PMLOADS must point to the correct physical file.
CABPEC		NT9X70AA NT9X70BA	Cabinet PEC. Enter the cabinet product engineering code (PEC). NT9X70AA (link peripheral processor cabinet) and NT9X70BA (36 link interface unit, link peripheral processor cabinet) are the only valid PECs for this cabinet.
SHLF0PEC		NT9X71AA NT9X71AB	Shelf PEC. Enter the PEC of shelf 0, which resides on the first shelf of the LIM. This shelf contains the LMS shelf.
MTCEVRSN		1.0	Maintenance version. Enter the number of the LIM maintenance version.

Datafill example for table LIMINV

The following example shows sample datafill for table LIMINV.

MAP display example for table LIMINV

```
LIM FLOOR ROW POSITION CABTYPE CABNUM     LOAD   CABPEC
SHLF0PEC  MTCEVRSN
________________________________________________________
  0     1   A        4      LIM    501  LPX36CJ NT9X70BA
NT9X71AB   1.0
```

Datafilling table LIMCDINV

This table is used to define the cards and paddle boards in the LIM cabinet. Cards associated with the FRIU are datafilled in table LIUINV.

Each LIM contains two units, 0 and 1, which are the LIM units. Each slot in the LIM can hold two cards, one in the front and one in the back (designated F and B) respectively. The following system cards can be placed in the LIM slots.

LIM cards

Card type	Front PEC	Back PEC
Central processing unit (CPU)	NT9X13DA or NT9X13DB or NT9X13DD	NT9X26AA or NT9X26AB
Processor bus terminator (P-bus)	NT9X49CA	not applicable
Transaction bus access (TBUSACC)	NT9X49CA	not applicable
T-bus to F-bus interface (TFI)	NT9X73BA	NT9X79BA
Clock	NT9X53AA	not applicable
Memory	NT9X14BB	not applicable
Mapper	NT9X15AA	not applicable
DS30	NT9X17AA	NT9X23BA

Adding or deleting a card in table LIMCDINV

None of the system cards can be added or deleted. Only the PEC and version fields may be changed. To change the configuration of a card, the LIM unit on which you are working must be manual busy, or the whole LIM must be offline. Use the LOADPM command to download information to the LIM.

DataSPAN FRS (continued)

When you datafill table LIMINV, the system automatically datafills all the fields in table LIMCDINV. You should now do the following:

- If you have an NT9X13DB or NT9X13DD card, change the value of subfield FRONTPEC (in field CARDINFO) in table LIMCDINV from NT9X13DA to NT9X13DB or NT9X13DD.
- The NT9X13DD has built-in memory; therefore the NT9X14BB is not required.
- The NT9X13DD has built-in memory; therefore the NT9X14BB is not required.
- Busy the inactive LIM unit to which datafill changes are made, then reload the LIM unit. Failure to do this may result in a mismatch of data between the computing module and the LIM unit.

The following table shows the datafill specific to DataSPAN FRS for table LIMCDINV. Only those fields that apply directly to DataSPAN FRS are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table LIMCDINV (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
LIM		0 to 16	Link Interface Module (LIM) number. Enter the link interface module (LIM) number.
SHELF		0, 1, 2, or 3	Shelf. Enter the shelf on which the card is located.
SLOT		7 to 32	Card slot position. Enter the card slot position number in which the card is located.
CARDTYPE		DS30, MEMORY, CLOCK, PBUS, TBUSACC, FBUS, MAPPER, TFI, or MSP	Card type. Enter the card type that is in the slot position. Entries outside this range are invalid.
CARDINFO		see subfields	Card information. This field contains subfields FRONTPEC and BACKPEC. See the appropriate subfields for definitions.

DataSPAN FRS (continued)

Datafilling table LIMCDINV (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	FRONTPEC	NT9X13DA NT9X13DB NT9X13DD NT9X14BA NT9X14BB NT9X14DA NT9X14DB NT9X15AA NT9X17AA NT9X17AC NT9X17CA NT9X17DA NT9X49CA NT9X49CB NT9X49CC NT9X52AA NT9X53AA NT9X53AD NT9X73AA NT9X73BA NT9X74BA	Front slot PEC. Enter the PEC for the card in the front slot. NT9X73BA is the default rate adaptor PEC that is automatically datafilled with the addition of a link peripheral processor (LPP) in table LIMINV.
	BACKPEC	NT9X23BA NT9X23DA NT9X26AA NT9X26AB NT9X79AA NT9X79BA	Back slot PEC. Enter the PEC of the card positioned in the back of the slot. If no card is used in the back position, leave this subfield blank.

Datafill example for table LIMCDINV

The following example shows sample datafill for table LIMCDINV.

MAP display example for table LIMCDINV

```
LIM SHELF SLOT CARDTYPE                    CARDINFO
________________________________________________________
  0     0    9      DS30 NT9X17AA NT9X23BA
  0     0   10      DS30 NT9X17AA NT9X23BA
```

Datafilling table LIMPTINV

This table is used to define the port connections for each LIM.

DataSPAN FRS (continued)

Modifying tuples in table LIMPTINV

To change the configuration of a port, the LIM must be offline or manual busy.

Adding and deleting tuples in table LIMPTINV

To define a link that connects the two units of a LIM, add one tuple to the table. The other tuple, representing the link from the point of view of the destination port, is datafilled automatically using information entered in the first tuple. Similarly, when deleting an inter-LIM unit link, only one of the tuples needs to be deleted manually. The other tuple will be deleted automatically.

To delete a port entry from LIMPTINV, the LIM must be offline.

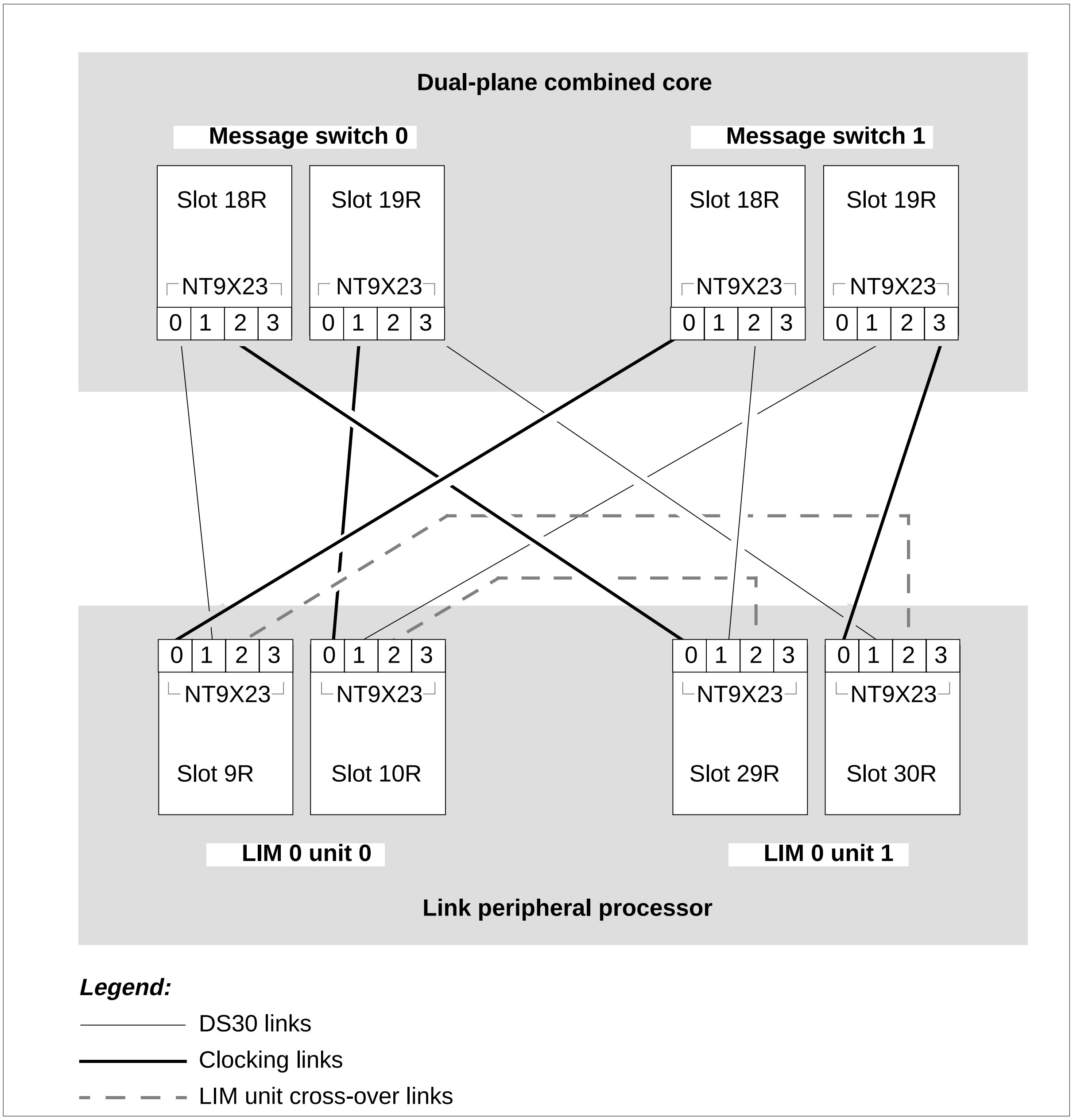
The following are rules for a LIM in an office. The rules assume two 4-port cards per LIM unit.

- Link 0 from each DS30 card on the LIM unit goes to a different MS and provides clocking to the LIM.
- Link 1 on a DS30 card goes to the opposite MS from link 0 on the same card.
- Link 2 on a DS30 card is a LIM cross link.
- Link 3 on a DS30 card is not equipped.
- Link 0 and link 1 on a DS30 card (LIM side) go to the same MS card and port on different MSs.
- Links are spread across two cards per MS for a total of four MS cards. Only half these ports are used for each LIM. Therefore, two LIMs can share the same MS port cards.
- The four clocking links have to span the four MS port cards to which the LIM is connected.

The clocking links of each unit must be connected to a different plane of the DMS-bus. The two interface cards that are used for clocking are in slots 9 and 10 of LIM 0 unit 0, and in slots 29 and 30 of LIM 0 unit 1. Therefore, port 0 in slot 9 must be assigned to a DMS-bus plane other than port 0 in slot 10. Also, port 0 in slot 29 must be assigned to a DMS-bus plane other than port 0 in slot 30. The following figure illustrates the recommended LPP link configuration.

DataSPAN FRS (continued)

LPP link configuration



DataSPAN FRS (continued)

The following table lists the slots and ports for each LIM. On the MS, slots 18R and 19R have been used in the example. However, any slots from 6 to 26 can be used. Those links marked with an asterisk (*) indicate clocking links.

LIM unit to MS

LIM	LIM unit	Slot	Port	MS	Slot	Port
N	0	10R	0	0	19R	1*
N	0	10R	1	1	19R	1
N	0	9R	0	1	18R	0*
N	0	9R	1	0	18R	0
N	1	29R	0	1	18R	2*
N	1	29R	1	1	18R	2
N	1	30R	0	1	19R	3*
N	1	30R	1	0	19R	3
N+1	0	10R	0	0	18R	1
N+1	0	10R	1	1	18R	1
N+1	0	9R	0	1	19R	0
N+1	0	9R	1	0	19R	0
N+1	1	29R	0	0	19R	2
N+1	1	29R	1	1	19R	2
N+1	1	30R	0	1	18R	3
N+1	1	30R	1	0	18R	3

The LIM unit cross connections are listed below.

LIM unit crossover links

from LIM unit	Slot	Port	to LIM unit	Slot	Port
0	9R	2	1	30R	2
0	10R	2	1	29R	2

DataSPAN FRS (continued)

The following table shows the datafill specific to DataSPAN FRS for table LIMPTINV. Only those fields that apply directly to DataSPAN FRS are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table LIMPTINV (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
LIM		0 to 16	Link interface module number. Enter the number assigned to the LIM.
SLOT		7 to 32	Card slot position. Enter the number 9, 10, 29, or 30 to specify the slot in which the card is located. For LIM unit 0, enter 9 or 10. For LIM unit 1, enter 29 or 30.
PORT		0, 1, or 2	Port. Enter the port number on the card.
SHELF		0, 1, 2, or 3	Shelf. Enter the shelf on which the card is located.
PROTOCOL		DMSY	Protocol. Enter the protocol used at the port.
LINKDEST		MS or LIM	Link destination. This field describes the node at the other end of the link. If that node is a message switch, enter MS. If that node is a LIM, enter LIM.
	LINKINFO	see refinements	Link information. This field contains subfields LIM, MS, SLOT, and PORT. If the entry for field LINKDEST is LIM, complete subfields LIM, SLOT, and PORT. See the appropriate subfields for definitions. If the entry for field LINKDEST is MS, complete subfields MS, SLOT, and PORT. See the appropriate subfields for definitions.
	LIM	0 to 16	Link interface module number. Enter the number of the link interface module. Link interface is the node at the other end of the link.
	MS	0 to 1	Message switch (MS) number. Enter the number of the message switch. Message switch is the node at the other end of the link.

DataSPAN FRS (continued)

Datafilling table LIMPTINV (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	SLOT	9, 10, 29, or 30	Card position. If the entry for LINKDEST is LIM, enter 9, 10, 29, or 30 to specify the card position at the other end of the link. If the entry for LINKDEST is MS, enter a number from 6 to 26 to specify the card position at the other end of the link.
	PORT	0 to 15	Port. If the entry for LINKDEST is LIM, enter a number from 0 to 3 to specify the port on the card. If the entry for LINKDEST is MS, enter a number from 0 to 15 to specify the port on the card.

Datafill example for table LIMPTINV

The following example shows sample datafill for table LIMPTINV.

MAP display example for table LIMPTINV

```
LIM SLOT PORT SHELF PROTOCOL LINKDEST    LINKINFO
________________________________________________________
  0    9    0      0     DMSY        MS 1   20    1
  0    9    1      0     DMSY        MS 0   20    1
```

Datafilling table SUSHELF

This table is used to define a common interface for link interface shelf (LIS) identification in a LIM cabinet. The LIM can support three LISs. Table SUSHELF identifies the LIU shelves to the controlling MS or LPP.

The following points must be considered when datafilling table SUSHELF:

- For a SuperNode cabinet with an LPP:
  - — Both F-buses of an LPP must be offline.
  - — A shelf cannot be added, deleted, or modified by table SUSHELF if a frame relay interface unit (FRIU) residing on that shelf is datafilled in

table LIUINV. The corresponding ASU must first be deleted from table LIUINV.

— The LIU shelf PEC must be compatible with the supporting T-bus to F-bus interface (TFI) cards, and with other LIU shelves of the same F-bus.

— The physical location of a LIS in an LPP must be identical to the cabinet location of the specified LPP.

- For an SSLPP connected to a SuperNode cabinet, no FRIUs can be datafilled in LIUINV for the shelf that is being added, deleted, or modified by table SUSHELF.

The following table shows the datafill specific to DataSPAN FRS for table SUSHELF. Only those fields that apply directly to DataSPAN FRS are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table SUSHELF (Sheet 1 of 4)

Field	Subfield or refinement	Entry	Explanation and action
SHELFKEY		see subfields	Shelf key. This field is made up of subfields CONTROL, CTRLNUM, CARDNUM, PORTNUM, and LIUSHELF. See the appropriate subfields for definitions.
	CONTROL	LIM or MS	Control. Enter LIM to indicate that the link interface module is the controlling entity. Enter MS to indicate that the message switch is the controlling entity.
	CTRLNUM	0 to 16 or NIL	Control number. Enter the control number for the LIM.Enter a number from 0 to 16 to specify the LIM. Enter NIL for MS. ***Note:*** The specified LIM must already be datafilled in table LIMINV.
	CARDNUM	6 to 23	Interface card number. Enter interface card number on the MS or LIM. ***Note:*** This entry identifies the interface card pair and must be a TFI card or a four-port NT9X62BA paddle board that supports the subrate DS512 (SR512) message links. Card allocation must be symmetric.

DataSPAN FRS (continued)

Datafilling table SUSHELF (Sheet 2 of 4)

Field	Subfield or refinement	Entry	Explanation and action
	PORTNUM	0 to 3	Port number. Enter a number from 0 to 3 to specify the port on the interface card. ***Note:*** Port allocation must be symmetric. The value 0 is the only valid entry for ports on TFI cards. Port numbers are validated against the front card and the number of fiber links supported for ports on SR512 cards.
	LIUSHELF	0 to 3	Link interface unit (LIU) shelf. Each cabinet contains a possible four shelves. This shelf number must be the shelf address within the frame. Enter 1 to 3 for LIU shelves with an LPP. Enter 1 to 2 for LIU shelves with an MS, regardless of the position within the frame. A maximum of two LIU shelves can be equipped with MS tuples. Any entry outside the range indicated for this field is invalid.
FLOOR		0 to 99	Floor. Enter the floor on which the cabinet resides.
ROW		A to Z and AA to ZZ (except I, O, II, OO)	Row. Enter the row on the floor in which the cabinet resides, with the exception of I, O, II, and OO. The row numbers are indicated on the frame.
FRAMEPOS		0 to 99	Frame position. Enter the position of the LIS cabinet in the row.
FRAMETYP		DPCC or LIM	Frame type. Enter the type of LIS cabinet, either DPCC or LIM.
FRAMENUM		0 to 511	Frame number. Enter the number of the frame.
SHELFPOS		0 to 77	Shelf position. Enter the base mounting position of the shelf. Standard base mounting positions are 0, 13, 26, and 39. For LIU shelves, enter 0 to 3.

DataSPAN FRS (continued)

Datafilling table SUSHELF (Sheet 3 of 4)

Field	Subfield or refinement	Entry	Explanation and action
SHELFPEC		NT9X72AA, NT9X72BA, NT9X72CA, NT9X0810, or NT9X7204	Shelf PEC. Enter the PEC of the shelf. This PEC identifies the maximum number of LIUs on the shelf. ***Note 1:*** All LIU shelves belonging to the same controller must have the same shelf PEC. ***Note 2:*** The NT9X72BA LIU shelf cannot be supported by an NT9X73AA TFI card. Any entry outside the range indicated for this field is invalid.
CARDINFO		see subfields	Card information. This field consists of subfields SLOT, FRONTPEC, and BACKPEC. It contains information on the cards for F-bus 0 and F-bus 1 on the LIS. Data is required for at least one card for each F-bus. All cards for F-bus 0 must be entered before F-bus 1 cards are entered.
	SLOT	4, 8, 31, or 32	Slot number. Enter the slot number of the card on the LIS as follows: • slot 7 for the required F-bus 0 card • slot 32 for the required F-bus 1 card • slot 31 for optional F-bus 0 termination on NT9X72AA shelf; slot 30, for SSLPP • slot 8 for optional F-bus 1 termination on NT9X72AA shelf

DataSPAN FRS (continued)

Datafilling table SUSHELF (Sheet 4 of 4)

Field	Subfield or refinement	Entry	Explanation and action
	FRONTPEC	NT9X74AA/BA/CA, NT9X96AA, or NIL	Front card PEC. Enter the PEC of the front card as follows: • NT9X74AA/BA/CA—F-bus repeater card for TFI-supported LIS only • NT9X96AA—LFC card for SR512-supported LIS only • NIL—for optional termination datafill only, no front card
	BACKPEC	NT9X79AA/BA NT9X98AA or NTEX20AA/BA	Back card PEC. Enter the PEC of the back card: • NT9X79AA/BA —F-bus extension paddle board • NT9X98AA —LIS fiber interface paddle board • NTEX20AA/BA—optional DS-512 interface paddle board. NTEX20AA terminates F-bus 0. NTEX20BA terminates F-bus 1.

Datafill example for table SUSHELF

The following example shows sample datafill for table SUSHELF. Two tuples are shown: one for an FRIU provisioned in a LIS, and the other for an FRIU provisioned in an SSLPP.

MAP display example for table SUSHELF

```
SHELFKEY FLOOR ROW FRAMEPOS FRAMETYP FRAMENUM SHELFPOS SHELFPEC
CARDINFO
________________________________________________________________________
LIM 1 12 0 3 3 Z 0 LIM 502 0 NT9X72AA (7 NT9X74AA NT9X79BA) $
(32 NT9X74AA NT9X79BA) $

MS NIL 17 0 1 1 A 2 EMC 4 26 NT9X72CA (7 NT9X96AA NT9X98AA)
(30 NIL NTEX20AA) $ (32 NT9X96AA NT9X98AA) (8 NIL NTEX20BA) $
```

Datafilling table LIUINV

This table is used to define the configuration data for each FRIU or other application specific unit (ASU) in an LPP.

The following table shows the datafill specific to DataSPAN FRS for table LIUINV. Only those fields that apply directly to DataSPAN FRS are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table LIUINV (Sheet 1 of 3)

Field	Subfield or refinement	Entry	Explanation and action
LIUNAME		see subfields	Link interface unit name. This key field contains subfields LIUTYPE and LIUNO.
	LIUTYPE		Link interface unit type. Enter the LIU type.
	LIUNO	0 to 511	Link interface unit number. Enter a number assigned to the FRIU.
LOCATION		see subfields	Location. This field specifies the location of the FRIU. It contains subfields CTRL, SHELFNUM, and LIUSLOT.
	CTRL	see subfield	Controlling host entity. For an SSLPP or TFI supported LIS, enter MS and complete subfields MSCARD, MSPORT, SHELFNUM and LIUSLOT. If the control is a LIM, enter LIM and complete subfields LIMNUM, SHELFNUM and, LIUSLOT.
	MSCARD	5 to 23	MS card. Enter the message switch card number. For an SSLPP, enter a number from 6 to 10. For a TFI-supported LIS, enter 12.
	MSPORT	0, 1, 2, or 3	MS port. Enter the message switch port number.
	SHELFNUM	0 to 3	Shelf number. Enter 1 or 2 to specify the shelf number. For an FRIU on the LIS, enter 2. For an SSLPP, enter 1.

DataSPAN FRS (continued)

Datafilling table LIUINV (Sheet 2 of 3)

Field	Subfield or refinement	Entry	Explanation and action
	LIMNUM	0 to 16	Link interface module number. Enter the host LIM number on which the LIU resides.
	LIUSLOT	8 to 31	Link interface slot. Enter the slot number, at the host LIM, on which the LIU resides.
LOAD		alphanumeric (vector of up to 8 characters)	Software load name. Enter the table software load name applicable to the LIU as datafilled in table PMLOADS. This field consists of subfield PROCPEC.
PROCINFO		see subfield	Processor information. This field specifies the product engineering code (PEC) of the processors used in the LIU. Only PROCPEC is valid for FRIU provisioning.
	PROCPEC	NTEX22BB	Processor PEC. Enter the PEC of the processor card used in the LIU.
CARDINFO		see subfields	Card information. This field specifies the card data and consists of subfields APPLPEC and PBINFO.
	APPLPEC	NTEX31BA	Application PEC. Enter NTEX31BA, the PEC of the signaling terminal card.
	PBINFO	see subfield	Paddle board information. This field contains subfield PBPEC.
	PBPEC	NTEX30AA	Paddle board PEC. Enter the PEC of the paddle board.
	CLKSRCE	FBUS or EXTERNAL	Clock source. Enter the clock source for the paddle board. FBUS is normally selected.
	T1_FRAMING	CHAN FRACT or UNCHAN	T1 carrier framing. Enter CHAN for channelized framing. Enter UNCHAN for non-channelized framing. Enter FRACT for fractional framing. Complete subfield NUMCHANS.
	NUMCHANS	1, 2, 3, or 4	Number of fractional channels on T1 carrier. Enter a value between 1 and 4.

Datafilling table LIUINV (Sheet 3 of 3)

Field	Subfield or refinement	Entry	Explanation and action
	PB_LLEQ	see list	Line length equalization. This subfield specifies the length of the cable equalization to be used by the T1 paddle board. Valid entries are as follows: • DS1_LLEQ_125 • DS1_LLEQ_250 • DS1_LLEQ_450 • DS1_LLEQ_550 • DS1_LLEQ_660
	PB_CARRIDX	DEFAULT or see table CARRMTC	Index to table CARRMTC. Enter DEFAULT, or the template name entered in field TMPLTNM in table CARRMTC.
	PB_OSACTION	Y or N	Out of service action. Enter Y if the T1 carrier should be placed out of service when the OS thresholds are reached. Otherwise, enter N.
	ZLG	ZCS or B8ZS	Zero logic. Enter ZCS or B8ZS. The entry in this subfield must match the setting on the customer service/data service unit (CSU/DSU).

Datafill example for table LIUINV

The following example shows sample datafill for table LIUINV.

MAP display example for table LIUINV

```
LIUNAME LOCATION LOAD PROCINFO CARDINFO
________________________________________________________________________
FRIU 1 LIM 0 1 8 F8X36CJ NTEX22BB NTEX31BA NTEX30AA FBUS UNCHAN
DS1_LLEQ_660
ESF Y B8ZS
```

Datafilling table FRSCCTRL

This table is used to define the congestion control parameters required for the Explicit Congestion Notification (ECN) and for rate enforcement for the DE=1 frames discard mechanism.

The following table shows the datafill specific to DataSPAN FRS for table FRSCCTRL. Only those fields that apply directly to DataSPAN FRS are

DataSPAN FRS (continued)

shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table FRSCCTRL

Field	Subfield or refinement	Entry	Explanation and action
KEY		see subfield	Key. This field is the key to the table and consists of subfield CTRL_IDX. This field is used as a reference in table PVDNAGEN.
	CTRL_IDX	0 to 100	Control index. Enter the control index. 0 (zero) cannot be datafilled because it contains the default values. Index 0 is also used if no index is specified in table PVDNAGEN.
ECNOFF		1 to 100	Explicit congestion notification (ECN) off. Used to specify the percentage of buffer capacity at which ECN notification stops. The default is 50 (50%).
ECNON		1 to 100	Explicit congestion notification (ECN) on. Used to specify the percentage of buffer capacity at which ECN notification starts. The default is 50 (50%).
DISCARD1		1 to 100	Discard on. Used to specify the percentage of buffer capacity at which DE=1 (discard eligible) frame discard starts. The default is 80 (80%).

Datafill example for table FRSCCTRL

The following example shows sample datafill for table FRSCCTRL.

MAP display example for table FRSCCTRL

```
KEY ECNOFF ECNON DISCARD1
________________________________________________________
  0      50    50        80
```

Datafilling table PVDNCUST

The following table shows the datafill specific to DataSPAN FRS for table PVDNCUST. Only those fields that apply directly to DataSPAN FRS are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table PVDNCUST

Field	Subfield or refinement	Entry	Explanation and action
CUSTOMER		alphanumeric (up to 20 characters)	Customer. Enter the unique customer name.

Datafill example for table PVDNCUST

The following example shows sample datafill for table PVDNCUST.

MAP display example for table PVDNCUST

```
CUSTOMER
________________________________________________________________
XYZ_IND
```

Datafilling table PVDNAGEN

This table contains information on each logical connection between FRIUs and is used to define the DataSPAN FRS agents in the PVDN database. The FRS agent represents a logical access termination point for data exchange.

The following table shows the datafill specific to DataSPAN FRS for table PVDNAGEN. Only those fields that apply directly to DataSPAN FRS are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table PVDNAGEN (Sheet 1 of 6)

Field	Subfield or refinement	Entry	Explanation and action
AGENTKEY		see subfield	Agent key. This field consists of subfield AGENT and is the key to the table.
	AGENT	0 to 2200	Agent. Enter the agent number.
AGTTYPE		ACCESS or T1TRUNK	Agent type. Enter ACCESS to specify access connection and complete subfields DN and CUSTOMER. Enter T1TRUNK to specify trunk connections and complete subfield DN.

DataSPAN FRS (continued)

Datafilling table PVDNAGEN (Sheet 2 of 6)

Field	Subfield or refinement	Entry	Explanation and action
	DN	see subfield	Directory number. This subfield contains subfield DNTYPE.
	DNTYPE	NIL or VALID	Directory number type. Enter NIL if there is no DN associated with this agent. Enter VALID if there is a DN associated with this agent. Complete subfields DN and NUMPLAN.
	DN	0 to 9 (vector of up to 15 digits)	Directory numberEnter the directory number of the subscriber station in the numbering plan area.
	NUMBPLAN	INTL, NATL, or X121INTL	Numbering plan identification. The numbering plan adds support to internetworking with other networks. This field is based on the Q.931 origination message type of number and numbering plan identification fields. Enter one of the following: • INTL • NATL • X121INTL The default value is NATL.
	CUSTOMER	alphanumeric (vector of up to 20 characters)	Customer. Enter the customer name.
SPEED		LS_56KBS LS_64KBS LS_384KBS LS_1344KBS or LS_1536KBS	Speed of the agent. Enter the speed at which the data is transferred across the medium to which the agent is connected. LS_1344KBS is used for T1 trunking.
ABSIGN		Y or N	A/B bit signaling, on or off. Enter Y if A/B bit signaling is supported. Otherwise, enter N.

DataSPAN FRS (continued)

Datafilling table PVDNAGEN (Sheet 3 of 6)

Field	Subfield or refinement	Entry	Explanation and action
CONDEV		DDS_LATCH _LPBK or NIL	Connected circuit device. Enter the connected circuit device. DDS_LATCH_LPBK is a digital data system modem that supports latching loopback. When NIL is entered the far-end device is not specified.
TUNING		see subfield	Tuning. This field consists of subfield OPTION.
	OPTION	WINDOW, KEEP, BUFFER, FLAG, or INVERSION	Option. To fine tune datafill channel, do one of the following: • Enter WINDOW, to specify layer two window size. Complete subfield VALUE. • Enter KEEP to specify the number of transmit buffers retained after a period of heavy traffic. Complete subfield VALUE. • Enter BUFFER to specify the number of buffers that can be borrowed from the common buffer pool. Complete subfield VALUE. • Enter FLAG to specify the number of flags between frames. Complete subfield VALUE. • Enter INVERSION to specify whether or not the subscriber has an inverted bit stream. Complete subfield YES_NO. Enter $ to specify the end of the vector.
	VALUE	0 to 255	Value. If the entry in subfield OPTION is WINDOW, enter a number from 1 to 128. The default is 16. If the entry in subfield OPTION is KEEP, enter a number from 0 to 100. The default is 5. If the entry in subfield OPTION is BUFFER, enter a number from 4 to 100. The default is 75. If the entry in subfield OPTION is FLAG, enter a number from 1 to 255. The default is 1.
	YES_NO	Y or N	Yes or no. If the entry in subfield OPTION is INVERSION enter Y if subscriber has inverted bit stream. Otherwise, enter N.

DataSPAN FRS (continued)

Datafilling table PVDNAGEN (Sheet 4 of 6)

Field	Subfield or refinement	Entry	Explanation and action
ERAM		Y or N	ERAM. Used to specify the index in table FRSCCTRL that will be used for the agent to enforce congestion control. The default is N.
CTRL_IDX		0 to 100	Control index. Used to specify the index in table FRSCCTRL that will be used for the agent to enforce congestion control. The default is 0
LMI		ANSI, BADENV, BADMSG, BACKCOMP, KARXTIME, CCITT, BIDIR, or ASYNUPDT	Local management interface. Enter the type of local management interface. • Enter ANSI to indicate that ANSI format LMI is shared with the customer premise equipment (CPE). Complete subfield YES_NO. • Enter BADENV to specify the size of the error counting window. Complete subfield VALUE. • Enter BADMSG, to specify the error threshold (within BADENV window). Complete subfield VALUE. • Enter BACKCOMP for backward compatibility. This entry applies to enhanced trunk FRIUs. Complete subfield YES_NO. • Enter KARXTIME to specify the timeout for receipt of Status Enquiry messages. Complete subfield VALUE. • Enter CCITT to indicate that CCITT format is shared with the customer premise equipment (CPE). Complete subfield YES_NO. • Enter BIDIR to indicate that bidirectional LMI procedures are used on the network. Complete subfield YES_NO. • Enter ASYNUPDT to indicate that the CPE can send asynchronous PVC status messages. Complete subfield YES_NO. Enter $ to specify the end of the vector.

DataSPAN FRS (continued)

Datafilling table PVDNAGEN (Sheet 5 of 6)

Field	Subfield or refinement	Entry	Explanation and action
	YES_NO	Y or N	Yes or no. If the entry in field LMI is ANSI, enter Y to indicate that LMI messages are to be expected in ANSI. Enter N for ILMI format. The default value is N. If the entry in field LMI is BACKCOMP, enter Y to indicate that the T1 trunk is connected to a pre-BCS35 node. The default value is N. If the entry in field LMI is BIDIR, enter Y to indicate that bidirectional LMI procedures are used on the network. Y can be entered only when ANSI format is used. The default value is N. If the entry in field LMI is ASYNUPDT, enter Y to indicate that the CPE can send asynchronous PVC status messages. Y can be entered only when ANSI format is used. The default value is N. If the entry in field LMI is CCITT, enter Y to indicate that CCITT format is shared with the customer premise equipment (CPE). Enter N for ILMI format. The default value is N.
	VALUE	0 to 30 or 1 to 10	Value. If the entry in field LMI is KARXTIME, enter a number from 0 to 30 in increments of five. The default value for LMI format is 20. An entry of 0 disables LMI. The default value for ANSI format is 15. If the entry in field LMI is BADENV, enter a number from 1 to 10. The default value is 4. If the entry in field LMI is BADMSG, enter a number from 1 to 10. The entry in this field must be smaller than or equal to the value in this subfield if the entry in field LMI is BADENV. The default value for LMI format is 2. The default value for ANSI format is 3.

DataSPAN FRS (continued)

Datafilling table PVDNAGEN (Sheet 6 of 6)

Field	Subfield or refinement	Entry	Explanation and action
ITS		KATXTIME, ASYNUPDT, or BIDIR	Interim trunk signaling. Enter KATXTIME to determine how often a keep-alive message is transmitted and datafill refinement VALUE. Enter ASYNUPDT to indicate that the CPE is sent asynchronous PVC status messages and datafill refinement YES_NO. Enter BIDIR to indicate that bidirectional LMI procedures are used by the network and datafill refinement YES_NO. Enter $ to specify the end of the vector.
	VALUE	0 to 30	Value. If the entry in field ITS is KATXTIME, enter a number from 0 to 30 in increments of five. An entry of 0 disables cross-network signaling. The default value for ANSI format is 10. The default value for LMI format is 15.
	YES_NO	Y or N	Yes or no. If the entry in field ITS is BIDIR, enter Y to indicate that bidirectional LMI procedures are to be used by the network. The subfield may be set to Y only when ANSI format is used. Otherwise enter N. The default value is N. If the entry in field ITS is ASYNUPDT, enter Y to indicate that the CPE wishes to be sent asynchronous PVC status messages. The subfield may be set to Y only when ANSI format is used. Otherwise enter N. The default value is N.

Datafill example for table PVDNAGEN

The following example shows sample datafill for table PVDNAGEN.

MAP display example for table PVDNAGEN

```
AGENTKEY AGTTYPE SPEED ABSIGN CONDEV TUNING LMI ITS
________________________________________________________________________
1 ACCESS VALID 1 X121INTL OTTAWA LS_1536KBS N NIL (INVERSION N) (ERAM
N)
(CTRL_IDX 0) $ (KARXTIME 0) $ (KATXTIME 0) $
```

Datafilling table CLLI

This table is used to define the common language location identifiers (CLLI) in the network.

The CLLI is a code that uniquely identifies the far end of tones, announcements, trunk groups, test trunks, national milliwatt test lines, and service circuits.

For optimum use, a CLLI code should not contain more than 12 characters because only the first 12 characters are displayed on the visual display unit, the maintenance and administration position (MAP) display, and the trunk test position terminal. When a CLLI appears in a log report, the entire CLLI appears, and is not limited to 12 characters.

The CLLI code must be deleted from all tables before it can be deleted from table CLLI.

The following table shows the datafill specific to DataSPAN FRS for table CLLI. Only those fields that apply directly to DataSPAN FRS are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table CLL (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
CLLI		see subfield	CLLI. This field contains subfield C.
	C	alphanumeric (vector of up to 16 characters)	Character key. Enter a string of up to 16 alphanumeric characters to specify the trunk group. The first character must be alphabetic. The CLLI code cannot contain special characters, such as these: * -,+ ?
ADNUM		0 to 8191	Administrative trunk group number. Enter a number from 0 to 8191 to specify the administrative trunk group number.

DataSPAN FRS (continued)

Datafilling table CLL (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
TRKGRSIZ		0 to 2047	Trunk group size. Enter a number from 0 to 2047 to specify the maximum number of trunk members expected to be assigned in the trunk group. The value must be less than the CLLI number in table DATASIZE.
ADMININF		alphanumeric (vector of up to 32 characters)	Administrative information. Enter a string of up to 32 characters to record administration information.

Datafill example for table CLLI

The following example shows sample datafill for table CLLI.

MAP display example for table CLLI

```
CLLI ADNUM TRKGRSIZ ADMININF
________________________________________________________
TO_BELLEVILLE 794 10 FRAME_RELAY_TRUNK_TO_BELEVILLE
```

Datafilling table FRSCIR

This table is used to define committed information rate templates that are used to enforce the UNI rate on permanent virtual circuits.

The following table shows the datafill specific to DataSPAN FRS for table FRSCIR. Only those fields that apply directly to DataSPAN FRS are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table FRSCIR (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
KEY		see subfield	Key. This field consists of subfield CIRINDEX. Enter a value between 0 and 1 536 000.
	CIRINDEX	1 to 100	Committed information rate index. Enter the table index.

DataSPAN FRS (continued)

Datafilling table FRSCIR (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
CIR		0 to 1536000	Committed information rate. Used to define the access rate for the physical access line for the subscriber. This is the maximum bit rate at which the CPE transfers data. Enter a value between 0 and 1 536 000.
BC		0 to 1536000	Committed burst size. Defines the maximum number of data bits that will be transferred over the time interval defined by USERPARM. Enter a value between 0 and 1 536 000.
BE		0 to 1536000	Excess burst size. Defines the maximum number of uncommitted data bits beyond the committed burst size. Enter a value between 0 and 1 536 000.
USERPARM		1 to 1000	Period. The period over which the committed burst size and the excess burst size is measured. Enter a value between 1 and 1000.

Datafill example for table FRSCIR

The following example shows sample datafill for table FRSCIR.

MAP display example for table FRSCIR

```
KEY CIR BC BE USERPARM
________________________________________________________
1 56000 5000 1200 $
```

Datafilling table FRSACCCN

This table is used to define DataSPAN FRS connections that join an access point at both ends of the internal connection. Connections that do not involve trunking are reflected in this table.

The following table shows the datafill specific to DataSPAN FRS for table FRSACCCN. Only those fields that apply directly to DataSPAN FRS are

DataSPAN FRS (continued)

shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table FRSACCCN (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
SOURCE		see subfields	Source. See subfields.
	SRCAGEN	0 to 2200	Source agent. Enter a value to identify the source agent.
	SRCDLCI	0 to 1023	Source data link connection identifier. Enter a value to identify the source CPE agent.
SRCCIR		Y or N	Source committed information rate Defines the committed information rate for the source DLCI. If a CIR index is required, this field contains the subfield SRCINDEX. Enter N if no committed information rate index is required, or a value for SRCINDEX if an index is required. Default is N.
	SRCINDEX	1 to 100	Source index. Defines the FRSCIR index for the destination. Enter a value between 1 and 100.
DESTAGEN		0 to 2200	Destination agent. Enter a number from 0 to 2200 to specify the identifier of the agent involved in the destination connection.
DESTDLCI		16 to 1007	Destination data link connection identifier . For non-channelized access, enter a number from 16 to 1007 to specify the DLCI used by the destination. For channelized or fractional access, enter a number from 16 to 215.

Datafilling table FRSACCCN (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
DESTCIR		Y or N	Destination committed information rate index. Defines the committed information rate for the destination DLCI. If a CIR index is required, this field contains the subfield DESTINDEX. Enter N if no committed information rate index is required, or a value for DESTINDEX if an index is required. Default is N.
	DESTINDEX	0 to 100	Destination index. Defines the FRSCIR index for the destination. Enter a value between 0 and 100.

Datafill example for table FRSACCCN

The following example shows sample datafill for table FRSACCCN.

MAP display example for table FRSACCCN

```
SOURCE SRCCIR DESTAGEN DESTDLCI DESTCIR
________________________________________________________
1 100 N 2 100 N
```

Datafilling table FRSTRKGP

This table is used to define the DataSPAN FRS T1 trunk groups in the office.

The following table shows the datafill specific to DataSPAN FRS for table FRSTRKGP. Only those fields that apply directly to DataSPAN FRS are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table FRSTRKGP

Field	Subfield or refinement	Entry	Explanation and action
GRPNAME		alphanumeric (vector of up to 16 characters)	Group name. Enter the common language location identifier (CLLI) of the trunk group (also identifies the destination).

DataSPAN FRS (continued)

Datafill example for table FRSTRKGP

The following example shows sample datafill for table FRSTRKGP.

MAP display example for table FRSTRKGP

```
GRPNAME
________________________________________________________________
FRS60
```

Datafilling table FRSTRKS

This table is used to define the DataSPAN FRS T1 trunks in the office.

The following table shows the datafill specific to DataSPAN FRS for table FRSTRKS. Only those fields that apply directly to DataSPAN FRS are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table FRSTRKS

Field	Subfield or refinement	Entry	Explanation and action
TRUNK		see subfields	Trunk. This field contains subfields GROUP and MEMBER.
	GROUP	alphanumeric (1 to 16 characters)	Group name. Enter a common language location identifier (CLLI) name that identifies the trunk group to which the trunk member belongs. The CLLI is datafilled in table CLLI.
	MEMBER	0 to 5	Member. Enter a number to indicate the member number within the trunk group. This identifies an individual trunk within a group.
AGENTID		0 to 2200	Agent identifier. Enter a number to indicate the Private Virtual Database Network (PVDN) agent number to which the trunk is assigned. The agent essentially determines which frame relay interface unit (FRIU) to which the trunk connects on the local side.

Datafill example for table FRSTRKS

The following example shows sample datafill for table FRSTRKS.

MAP display example for table FRSTRKS

```
TRUNK AGENTID
________________________________________________________
FRS64 0 10
```

Datafilling table PVDNCHAN

This table is used to define the relationship between the DataSPAN FRS agents and the physical FRIU channels.

For access-to-access connections, datafill table PVDNCHAN after table PVDNAGEN. For trunk-to-trunk or trunk-to-access connections, datafill table PVDNCHAN after tables FRSTRKS and PVDNAGEN.

The following table shows the datafill specific to DataSPAN FRS for table PVDNCHAN. Only those fields that apply directly to DataSPAN FRS are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table PVDNCHAN

Field	Subfield or refinement	Entry	Explanation and action
CHANKEY		0 to 2200	Channel key . Enter the DataSPAN FRS agent identifier.
DEVAREA		see subfields	Device area. This field contains subfields DEVTYPE and its refinements.
	DEVTYPE	FRIU	Device type. Enter FRIU. Complete subfields DEVNUM and CHANNEL.
	DEVNUM	0 to 500	Device number. Enter the device number.
	CHANNEL	1 to 24	Associated channel. Enter the channel number.

Datafill example for table PVDNCHAN

The following example shows sample datafill for table PVDNCHAN.

MAP display example for table PVDCHAN

```
CHANKEY DEVAREA
________________________________________________________
3 FRIU 3 1
```

DataSPAN FRS (continued)

Datafilling table FRSCNEND

This table is used to define a common method for datafilling all types of DataSPAN FRS connections. Connections are assigned a primary trunk and DLCI, and a secondary trunk.

Adding a tuple to table FRSCNEND

When a tuple is entered in table FRSCNEND, table FRSTRKCN is automatically datafilled if a T1 trunk group name is entered in the field ROUTING. If NULFRS is entered, table FRSACCCN is automatically datafilled.

The following table shows the datafill specific to DataSPAN FRS for table FRSCNEND. Only those fields that apply directly to DataSPAN FRS are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table FRSCNEND (Sheet 1 of 3)

Field	Subfield or refinement	Entry	Explanation and action
SOURCE		see subfields	Source connection endpoint identifier. This field contains subfields DN and DLCI.
	DN	0 to 9 (vector of up to 15 digits)	Directory number. Enter the DN identifying the source CPE for connection (0 to 999 999 999 999 999). This DN must be known at the node being datafilled.
	DLCI	1 to 1007	Data link connection identifier . This field specifies the DLCI that the source CPE uses to send data over the link. For channelized access, enter a number from 16 to 215. For non-channelized access, enter a number from 16 to 1007. For trunking access, enter a number from 1 to 1007.

Datafilling table FRSCNEND (Sheet 2 of 3)

Field	Subfield or refinement	Entry	Explanation and action
SRCCIR		see subfield	Source committed information rate. Defines the committed information rate for the source DLCI. If a CIR index is required, this field contains the subfield SRCINDEX. Enter N if no committed information rate index is required, or a value for SRCINDEX if an index is required. Default is N.
	SRCINDEX	0 to 100	Source index. Defines the FRSCIR index for the destination. Enter a value between 0 and 100.
DESTDN		0 to 9 (vector of up to 15 digits)	Destination directory number. Enter the 15-digit number representing the destination DN (0 to 999 999 999 999 999).
DESTDLCI		1 to 1007	Destination data link connection identifier . Enter a number from 16 to 1007 to specify the DLCI of the destination CPE. For trunking access, enter a number from 1 to 1007.
DESTCIR		see subfield	Destination committed information rate index. Defines the committed information rate for the destination DLCI. If a CIR index is required, this field contains the subfield DESTINDEX. Enter N if no committed information rate index is required, or a value for DESTINDEX if an index is required. Default is N.
	DESTINDEX	0 to 100	Destination index. Defines the FRSCIR index for the destination. Enter a value between 0 and 100.
ROUTING		alphanumeric (1 to 16 characters) or NULFRS	Routing. Enter the name of the T1 trunk group used to establish the connection from the near-end of the call. This entry must be a CLLI defined in table CLLI. Enter NULFRS to indicate no T1 trunk group is needed.

DataSPAN FRS (continued)

Datafilling table FRSCNEND (Sheet 3 of 3)

Field	Subfield or refinement	Entry	Explanation and action
ORIG		Y or N	Originate. Enter Y if this tuple is to originate the call. Otherwise, enter N.
STATE		PENDING or CONFIRMED	State. This field indicates the state of a call. When a tuple is first entered it must be PENDING. This field changes automatically to CONFIRMED once the call is processed.

Datafill example for table FRSCNEND

The following example shows sample datafill for table FRSCNEND.

MAP display example for table FRSCNEND

```
SOURCE SRCCIR DESTDN DESTDLCI DESTCIR ROUTING ORIG STATE
________________________________________________________
12245678101 101 N 12245671401 101 N FRS65 Y CONFIRMED
```

Datafilling table FRSTRKCN

This table is used to define the DataSPAN FRS connections in offices that involve a T1 trunk. Connections are assigned a primary trunk and DLCI, and a secondary trunk.

Table FRSTRKCN is automatically datafilled for automatic logical loop connections (ALLC) during the datafill of table FRSCNEND. If you have successfully datafilled an ALLC through table FRSCNEND, the use of table FRSTRKCN is not required for that connection.

The following table shows the datafill specific to DataSPAN FRS for table FRSTRKCN. Only those fields that apply directly to DataSPAN FRS are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table FRSTRKCN (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
PRIMCON		see subfields	Primary connection.. This field contains subfields GROUP, MEMBER and DLCI.
	GROUP	alphanumeric (1 to 16 characters)	Group. Enter the CLLI that identifies the trunk.
	MEMBER	0 to 5	Member. Enter the number indicating the trunk .
	DLCI	1 to 1007	Data link connection identifier. Enter a number to identify the DLCI for the trunk.
SECCON		0 to 5 or NONE	Secondary connection. This field identifies the secondary connection point to a T1 trunk. It consists of a trunk number. Enter trunk group number.
CONTYPE		TRUNK or ACCESS	Connection type. Enter TRUNK if the connection is tandem. Enter ACCESS if the connection terminates in this office.
ENDPOINT		see subfields	Endpoint. If the entry in field CONTYPE is ACCESS, this field contains subfield PVDNAGEN and its refinements. If the entry in field CONTYPE is TRUNK, this field contains subfields GROUP, MEMBER, DLCI, and SECCON. See the appropriate subfields for definitions.
	PVDNAGEN	0 to 2200	Private virtual data network agent. Enter the agent number. Complete subfields DLCI and DNTYPE.

DataSPAN FRS (continued)

Datafilling table FRSTRKCN (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	DLCI	1 to 1007	Data link connection identifier. If the entry in field CONTYPE is ACCESS, this field is datafilled with the DLCI on the trunk. For channelized access, enter a number from 16 to 215. For non-channelized access, enter a number from 16 to 1007. For trunking access, enter a number from 1 to 1007. If the entry in field CONTYPE is TRUNK, enter a number from 1 to 1007 to specify the trunk.
	DNTYPE	VALID or NIL	Directory number type. Enter NIL if there is no DN associated with this agent. Enter VALID if there is a DN associated with this agent. Complete subfield FARENDDN.
	CIR	Y or N	Committed information rate. Enter Y to define the CIR index; enter N to define no CIR. If the entry in this field is Y, enter a value for CIRINDEX.
	CIRINDEX	1 to 100	Committed information rate index. Enter a value between 1 and 100 to define the CIR template from table FRSCIR.
	FARENDDN	numeric (up to 15 digits)	Far-end directory number. If DNTYPE is VALID, this field contains vector of up to 15-digit directory number for far-end access to the trunk.
	GROUP	alphanumeric (1 to 16 characters)	Group. Enter the CLLI that identifies the trunk.
	MEMBER	0 to 5	Member. Enter the number indicating the trunk.
	SECCON	0 to 5 or NONE	Secondary connection. Enter the trunk group number to specify the secondary choice for trunk use.

Datafill example for table FRSTRKCN

The following example shows sample datafill for table FRSTRKCN.

MAP display example for table FRSTRKCN

```
PRIMCON SECCON CONTYPE ENDPOINT
________________________________________________________
FRS64 0 19 1 ACCESS 1401 19 VALID 12245678001 N
```

Datafilling table AGGREINT

This table is used to define the timing mechanism that is used in generating billing records for FRS data transmission usage.

Tuples cannot be added to this table. The subscriber is automatically datafilled in this table when it is added to table PVDNCUST. Default values are used for the aggregation start time and interval. Only the default values in fields STARTIME and INTERVAL can be modified in this table.

The following table shows the datafill specific to DataSPAN FRS for table AGGREINT. Only those fields that apply directly to DataSPAN FRS are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table AGGREINT

Field	Subfield or refinement	Entry	Explanation and action
CUSTOMER		alphanumeric	Customer's name. This field contains the valid customer name from table PVDNCUST.
STARTIME		0 to 23	Aggregation start time. This field specifies when the first billing record is generated after the tuple is added or changed. Enter an hour between 0 (midnight) and 23 (11 p.m.). The default value is 5.
INTERVAL		1 to 336	Aggregation interval. Enter a value between 1 and 336 to specify the length of aggregation interval in half-hour increments. The default value is 48 (24 hours).

Datafill example for table AGGREINT

The following example shows sample datafill for table AGGREINT.

DataSPAN FRS (end)

MAP display example for table AGGREINT

```
CUSTKEY STARTIME INTERVAL
________________________________________________________
XYZ_IND 5 48
```

Translation verification tools

DataSPAN FRS does not use translation verification tools.

SERVORD

DataSPAN FRS does not use SERVORD.

4 Introduction to ISDN BRI

Understanding ISDN Basic Rate Interface translations

An ISDN switch offers subscribers two methods of accessing the voice and data networks: basic rate interface (BRI) for line service, and primary rate interface (PRI) for trunk service. This section provides an introduction to Nortel Network's implementation of ISDN BRI, and describes the requirements for provisioning ISDN BRI services in a DMS-100 office.

This section contains information for datafilling the following functional groups that provide ISDN BRI functionality:

- NI000007—NI0 ISDN Base
- NI000008—NI0 NI-1 BRI
- NI000009—NI0 NI-1 BRI Enhanced Maintenance
- NI000010—NI0 NI-1 Packet
- NI000014—NI0 NI-1 Tandem

The individual chapters in this section may not correspond to a single functional group; that is, there is not always a one-to-one mapping of chapters to functional groups. For example, the chapter "ISDN Call Routing" describes the datafill requirements for circuit- and packet-switched services, and is applicable to local and tandem offices; therefore, the chapter maps to three different functional groups: NI0 NI-1 BRI, NI0 NI-1 Packet, and NI0 NI-1 Tandem.

Functional groups used in European and APC markets differ from those used in North America. For example, ETSI variations of PRI and BRI are used in Europe rather than the ANSI variations described in this chapter.

Functional groups for ISDN BRI

The BRI functional groups require the DMS SuperNode Platform—BASE0001, TEL00001, and BAS00003. The following paragraphs provide functional group names, ordering codes, and additional prerequisites for BRI.

NI0 ISDN Base, NI000007

To operate, NI0 ISDN Base has the following prerequisites:

- MDC Minimum, MDC00001
- MDC MBS Minimum, MDC00007
- TEL CCS7 Base, TEL00008

NI0 NI-1 BRI, NI000008

To operate, NI0 NI-1 BRI has the following prerequisites:

- NI0 ISDN Base, NI000007
- Base ISUP, ISP70001

NI0 NI-1 BRI Enhanced Maintenance, NI000009

To operate, NI0 NI-1 BRI Enhanced Maintenance requires NI0 NI-1 BRI, NI00008.

NI0 NI-1 Packet, NI00010

To operate, NI0 NI-1 Packet requires NI0 NI-1 BRI, NI00008.

NI0 NI-1 Tandem, NI000014

To operate, NI0 NI-1 Tandem requires Base ISUP, ISP70001.

The following table cross-references the ISDN BRI functional groups with the BRI translations chapters contained in this section.

Table 4-1 Chapters corresponding to functional groups (Sheet 1 of 2)

Functional group ordering code	Functional group name	Applicable chapters
NI000007	NI0 ISDN Base	Customer Groups
		ISDN Basic Access
		Calling Line Identification
		National ISDN-1 on LGCO
NI000008	NI0 NI-1 BRI	Additional Call Offering
		Electronic Key Telephone Service
		Flexible Calling
		ISDN BRI Routing
		Call Processing and ISUP Interworking

Table 4-1 Chapters corresponding to functional groups (Sheet 2 of 2)

Functional group ordering code	Functional group name	Applicable chapters
NI000009	NI0 NI-1 BRI Enhanced Maintenance	ESTU Interface
NI000010	NI0 NI-1 Packet	ISDN BRI Routing Changing Packet Service Defaults Packet Closed User Groups Permanent Virtual Circuits Packet Hunt Groups
NI000014	NI0 NI-1 Tandem	ISDN BRI Routing Call Processing and ISUP Interworking

BRI services

An ISDN BRI loop supports multiple subscriber terminals. BRI allows a variety of computers, data terminals, and telephone sets to access advanced circuit-switched and packet-switched features and services through a single modular connector at the subscriber premises.

BRI also provides access to third-party vendors, known as enhanced service providers (ESP), which provide, for example, weather report, ticket office, and stock market services.

BRI works with a number of existing telephony agents, including

- BRI functional terminals
- integrated business network (Meridian Digital Centrex) lines
- Meridian business sets
- data units
- Integrated Business Network (IBN) trunks
- POTS lines
- POTS local trunks and toll trunks
- intertoll trunks (includes the equal access feature)
- automatic number identification (ANI) trunks
- centralized automatic message accounting (CAMA) position
- PRI trunks

- ISDN user part (ISUP)
- private branch exchange (PBX) trunks

BRI also provides access to supplementary services based on standard Bellcore, Meridian Digital Centrex (MDC), and ETSI features, and on X.25 facilities.

Signaling for ISDN BRI

DMS-100 ISDN supports two signaling methods to communicate between the subscriber's terminal and the switch: functional (NI-1) and stimulus (Meridian feature transparency). (In Europe, ETSI standards are used instead of NI-1.)

Functional signaling

Functional signaling is based on a peer-to-peer exchange of information between an intelligent terminal and the network. This signaling method allows users to access new network features and services, and makes ISDN standardization easier. Functional signaling is used for NI-1-compliant ISDN and ETSI implementation.

Stimulus signaling (Meridian feature transparency)

Stimulus signaling provides a master/slave relationship between the network and the user terminal. The terminal reports feature key activation to the network, and the network interprets the report and returns prompts (such as audible tones and indicator lamp states) to the user terminal.

Meridian feature transparency for BRI (BRAMFT) is an extended stimulus signaling protocol supported by the M5317T, M5317TX, and M5317TDX sets. The BRAMFT protocol allows the M5317TX and M5317TDX sets to support all MDC features currently available on non-ISDN Meridian business sets.

BRI channels

BRI provides two 64-kbit/s bidirectional data channels, known as B-channels, and one 16-kbit/s signaling channel, known as the D-channel. This signaling method is referred to as 2B+D signaling. An additional 16-kbit/s channel is provided for maintenance purposes.

BRI provides access to

- circuit-switched voice and data services on the 64-kbit/s B-channels
- high-speed packet data services on a provisioned B-channel connection
- low-speed packet data services on the 16-kbit/s D-channel

A BRI line has a transmission speed of 192 kbit/s. If a network termination 1 (NT1) is present, the transmission speed is 160 kbit/s on the portion of the line between the NT1 and the enhanced line concentrating module with ISDN (LCME). BRI provides the following channels for call placement, call control, and maintenance:

- two bidirectional 64-kbit/s (data) B-channels
- one bidirectional 16-kbit/s (signaling) D-channel
- one bidirectional 8-kbit/s M-channel
- one one-way 800-bit/s Q-channel
- five one-way 800-bit/s S-channels

The remaining bits are used for sequencing and framing information.

B-channels

Each of the two B-channels is used for either circuit-switched voice and data or for provisioned high-speed access to a packet handler.

Circuit-switched connections on the B-channel are temporary; that is, they are established and subsequently disconnected for each call.

B-channel packet service is offered on dedicated connections. These connections must be provisioned at subscription time. A B-channel used for packet data can be reassigned to circuit-switched service only by changing the datafill in the ISDN node. Similarly, a B-channel used for circuit-switched service can be reassigned to B-channel packet service only by changing the datafill.

D-channel

BRI uses a single D-channel to carry

- call control messages associated with B-channel circuit-switched voice and data
- low-speed packet data and associated signaling

D-channel connections are provisioned at subscription time.

M-channel

The M-channel is an 8-kbit/s maintenance channel that carries messages between the LCME processor, line cards, and the NT1.

Q/S-channel

The Q-channel is an 800-bit/s maintenance channel that runs from the ISDN terminals to the NT1.

The S-channel is composed of five 800-bit/s channels. The first of the S-channels, S1, is the counterpart to the Q-channel, and runs from the NT1 to the ISDN terminals. The remaining S-channels are not currently used.

The Q- and S-channels are commonly discussed together as the Q/S-channel.

Preparing to datafill ISDN BRI

Before you can begin to datafill tables to provide BRI services, it is necessary to ensure that the appropriate ISDN BRI and packet handler hardware and software has been installed.

Once the hardware and software components are installed, datafill requirements involve three main areas of functionality:

- datafilling office configuration tables to configure the ISDN hardware, provide the logical connections, and specify default service parameters
- datafilling system tables for digit translation and call routing, and customer groups tables
- datafilling line service access tables to provide ISDN services to individual subscribers
- datafilling line maintenance tables

What this section contains

The following list provides a summary of the information contained in each chapter. Not all of the chapters apply to European and APC customers.

Call Processing and ISUP Interworking describes the tables used to generate tones and announcements, and provides a description of BRI-to-ISUP interworking.

ISDN BRI office configuration tables describes the tables used to configure the ISDN hardware, provide the logical connections through software, and specify default service parameters.

Customer Groups describes the tables used to set up customer groups and route calls based on customer group attributes. This information corresponds to the Basic Business Group supplementary service as defined in Bellcore TR849/850.

ISDN BRI Routing describes the tables used to route ISDN calls based on routing characteristics.

ISDN Basic Access describes the tables used to provision subscriber access to BRI services.

National ISDN-1 on LGCO describes the tables used to provision the LGCO for BRI services.

Flexible Calling describes the tables used to set up the Flexible Calling supplementary service, as defined in Bellcore TR858. (This chapter does not apply to European or APC customers.)

Additional Call Offering describes the tables used to set up the Additional Call Offering supplementary service, as defined in Bellcore TR857. (This chapter does not apply to European or APC customers.)

Electronic Key Telephone Service describes the tables used to set up the Electronic Key Telephone Service supplementary service, as defined in Bellcore TR205. (This chapter does not apply to European or APC customers.)

Calling Line Identification describes the tables used to set up the Calling Number Identification supplementary service, as defined in Bellcore TR858. (This chapter does not apply to European or APC customers. Use information about ETSI CLI instead.)

Changing packet service defaults provides information for changing default values for packet terminals on the DMS packet handler. This chapter also includes a quick reference table that cross-references the Bellcore-defined names for NI-1 packet service with the DMS-100 requirements for assigning those services.

Packet Closed User Groups describes the tables used to set up closed user groups.

Permanent Virtual Circuits describes the tables used to set up permanent virtual circuits.

Packet hunt groups describes the tables used to set up hunt groups for packet terminals.

ESTU Interface describes the tables used to provision the ESTU ITM hardware that provides BRI enhanced maintenance capabilities.

Additional information

For information about the following NI-1 supplementary services as defined in the Bellcore TRs, refer to the *National ISDN-1 Feature Provisioning Guide*, 297-2401-351. In Europe, refer to the ETSI specifications.

- ISDN Automatic Call Back (TR855)
- ISDN Call Forwarding (TR853)
- ISDN Hold Capability (TR856)

- ISDN Call Pickup (TR854)
- ISDN Multiline Hunt (TR859)
- ISDN Display Service (TR865)
- ISDN Message Service (TR866)

5 Datafilling NI0 ISDN Base

The following chapter describes the NI0 ISDN Base, NI000007, functionality.

Calling Line Identification

Functionality code

Functional group ordering code: NI000007

Release applicability

BCS35 and up

Prerequisites

To operate, Calling Line Identification requires the MDC Minimum (MDC00001) functional group.

Description

Calling Line Identification (CLID) is the identification of the calling line in BRI call processing.

Operation

The term Calling Line Identification (CLID) is an umbrella term which refers to various aspects of calling party number (CGN) processing. Processing of the CGN includes

- at call originating,
  - provision of the calling party number for presentation to the terminating party, or for purposes of billing or setting subscription parameters
  - screening the calling number
  - presenting the calling number at the terminating end
- at call termination, delivery of the calling number

For most aspects of CLID processing, there are directory number (DN) parameters that can be used to define its operation. These parameters affect processing at three different levels, as DN attributes can be defined at the network, group, or individual DN level. Table NETNAMES contains DN attributes (such as the network names) at the network level. The DNs in a DMS-100 switch are typically divided into groups of 1000 DNs, known as customer groups. A further set of DN attributes is defined at the customer group level in tables CUSTNTWK and CUSTSTN. Individual DN attributes are specified in tables DNATTRS and KSETLINE.

Provision of calling number

At the customer group level, the CLID option in table CUSTNTWK specifies whether calling line identification is provided for all network calls, calls within the network only, or calls within the customer group only.

The actual calling number used when a CGN is provided is the DN defined in table DNATTRS. (If there is no DN identified in table DNATTRS, the primary DN for the LTID, as assigned in table KSETLINE, is used as the default.) The DMS-100 switch also allows the user to specify a name for display in display sets. The name is also defined in table DNATTRS.

If the customer has display sets in more than one customer group, the DISPDIGS option in table CUSTSTN is set to define the number of digits to be displayed on the terminator's display set.

Calling number screening

Calling number screening consists of checking the user-provided CGN against a set of valid DNs stored in the switch. The screening set of DNs is those DNs associated in table KSETLINE with the originating terminal. The result of DMS-100 screening is always network provided (NP) for intra-network and inter-network calls.

Calling number screening is performed automatically, and requires no datafill input from the operating company.

Calling number presentation

Presentation of the CGN to the terminating end is determined by the default suppression status associated with the DN. Generally, the DMS-100 always delivers the CGN to the terminating end, in which case the default status of the CGN is unsuppressed. Alternatively, a default status of suppressed can be assigned to a DN, in which case the presentation of the CGN at the terminating end is suppressed for number privacy.

The main parameter for number privacy is SUPPRESS, which provides the user with a default suppression status of suppressed. The SUPPRESS parameter makes the CGN unavailable to the terminating end. SUPPRESS can be assigned at the following levels:

- to an individual DN in table DNATTRS using SERVORD
- at the customer group level in table DNGRPS
- at the network level in table NETNAMES

The Calling Number Delivery Blocking (CNDB) feature allows subscribers to control the availability of their DNs to called parties on an individual call basis. CNDB is a dial-access feature that allows the user to reverse the suppression status of the DN for each call. The subscriber's default suppression status is valid for all calls except those for which CNDB is activated.

Calling Line Identification (continued)

The CNDB option is assigned to customer groups in table CUSTSTN. CNDB toggles the SUPPRESS setting of the DN as assigned in tables DNATTRS or DNGRPS, but not the SUPPRESS setting assigned in table NETNAMES.

A CNDB subscriber whose DN has a default suppression status of suppressed (that is, the SUPPRESS option is assigned in table DNATTRS or DNGRPS), can unsuppress the DN for individual calls by activating CNDB. In this case the CGN is made available to the called party. Conversely, a subscriber whose DN has a default suppression status of unsuppressed (the SUPPRESS option is not assigned in table DNATTRS or DNGRPS), can suppress the DN for individual calls by activating CNDB. In this case the CGN is made unavailable to the called party.

The Calling Number Blocking (CNB) option enables subscribers to block the display of their DN on the set of the called party on an individual call basis. CNB allows a subscriber to block the display of the DN regardless of the default suppression value of the DN. The CNB option is automatically available to subscribers who have the CNDB option assigned (that is, subscribers who are members of a customer group that has the CNDB option assigned in table CUSTSTN).

The dial access codes for both CNDB and CNB are datafilled in table IBNXLA. Northern Telecom recommends the following access codes for these options:

- CNDB—1167 or *67 for DTMF lines
- CNB—1168 or *68 for DTMF lines

Neither option can be assigned to a feature key on ISDN terminals.

For more information about CNDB and CNB, refer to the section “Datafilling MDC Minimum" in this document.

Calling number delivery at termination

At the terminating end, it is possible to block the delivery of the calling number for incoming calls with the BLOCKCGN option, which is assigned through SERVORD to an individual DN in table KSETLINE.

Translations table flow

Not applicable

Limitations and restrictions

Not applicable

Interactions

The following paragraph describes interactions between Calling Line Identification and other functionalities.

Calling Line Identification interacts with the following features:

- AG0923—DN Attributes Service Order Enhancements (SUPPRESS)
- AG1550—Block Calling Name/Number Delivery Blocking Per Call (CNDB)
- AG1709—BRA Access to Enhanced Service Providers (BLOCKCGN)

Activation/deactivation by the end user

Subscribers must have the CNDB option assigned to their customer groups in table CUSTSTN. Once CNDB is assigned, subscribers can control the suppression status of their DNs from the default status by following the steps below.

Activation/deactivation of Calling Line Identification by the end user

At the subscriber's telephone

1 Go off hook and wait for dial tone.

2 Dial the CNDB or CNB access code.

Response:

The subscriber receives a special dial tone.

3 Dial the directory number.

Northern Telecom recommends the following access codes:

- CNDB—1167 or *67 for DTMF lines
- CNB—1168 or *68 for DTMF lines

> ***Note:*** If subscribers dial both the CNDB and CNB access codes, the last access code dialed is activated for that call.

Billing

Calling Line Identification does not affect billing.

Station Message Detail Recording

Calling Line Identification does not affect Station Message Detail Recording (SMDR).

Calling Line Identification (continued)

Datafilling office parameters

Calling Line Identification does not affect office parameters.

Datafill sequence

The following table lists the tables that require datafill to implement Calling Line Identification. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Calling Line Identification

Table	Purpose of table
NETNAMES	Network Names. Contains network-level DN attributes, including CLID suppression by network.
CUSTNTWK	Customer Network. Contains customer group level DN attributes, including the specification of CLID by customer group.
DNGRPS	Directory Number Groups. Contains customer group level DN attributes, including CLID suppression by customer group.
CUSTSTN	Customer Station. Contains customer group level DN attributes, including: • the number of digits to be displayed for CLID on display sets • the parameter used to toggle CLID suppression
KSETLINE	Keyset Lines. Defines the DNs associated with a keyset, which are used for calling line identification, and includes a parameter used to block the delivery of the CLID at terminating end. The table is datafilled through SERVORD; therefore, no datafill procedure or example is provided. Refer to “SERVORD" for an example of using SERVORD to datafill this table.
DNATTRS	Directory Number Attributes. Contains DN attributes, including the name specified for calling line identification and the parameters used for CLID suppression. The table is datafilled through SERVORD; therefore, no datafill procedure or example is provided. Refer to “SERVORD" for an example of using SERVORD to datafill this table.
IBNXLA	IBN Translator. Contains dial-access codes which enable control of DN suppression.

Datafilling table NETNAMES

Table NETNAMES contains network-level DN attributes, which enable the operating company to suppress CLID at the network level.

Note: Table NETNAMES needs to be datafilled only once for the network.

Calling Line Identification (continued)

The following table shows the datafill specific to Calling Line Identification for table NETNAMES. Only those fields that apply directly to Calling Line Identification are shown. Refer to the *Customer Data Schema Reference Manual* for a description of the other fields.

Datafilling table NETNAMES

Field	Subfield or refinement	Entry	Explanation and action
NETNAME		alphanumeric (1 to 32 characters)	Logical network name. Enter a unique network name.
EXTNETID		1 to 32 600	External network identifier. Enter the unique number used outside the network to identify the logical network.
NETDIGS		1 to 10	Network digits. Enter the number of digits from the DN used in the network.
NETOPTS		see subfield	Network options. This field consists of subfield OPTION and refinements.
	OPTION	SUPPRESS	Option. Enter SUPPRESS to specify CLID suppression at the network level, and datafill subfields INTRNLDN, INTRNLNM, EXTRNLDN, and EXTRNLNM.
	INTRNLDN	Y or N	Internal suppression of DN. Enter Y to mark an intraoffice/intranetwork number as private or enter N to allow number delivery on intraoffice/ intranetwork calls.
	EXTRNLDN	Y or N	External suppression of DN. Enter Y to mark an interoffice/intranetwork number as private or N to allow number delivery on interoffice/intra-network calls.
	INTRNLNM	Y or N	Internal suppression of name. Enter Y to mark intraoffice/intranetwork calls as private or enter N to allow name delivery on intraoffice/intranetwork calls.
	EXTRNLNM	Y or N	External suppression of name. Enter Y to mark interoffice/intranetwork calls as private or enter N to allow name delivery on interoffice/intra-network calls.

Calling Line Identification (continued)

Datafill example for table NETNAMES

The following example shows sample datafill for table NETNAMES. This example shows two tuples, the first of which is the default tuple present in the table at load time. The second tuple defines a network named BNR, which has an external identifier of 4, uses 5 of the DN digits, and has suppressed external name and number identification on a network basis.

MAP display example for table NETNAMES

```
NETNAME     EXTNETID    NETDIGS  NETOPTS
________________________________________________________________
PUBLIC          0           0     $
BNR             4           5   (SUPPRESS N N Y Y )
```

Limitations and restrictions

The following limitations and restrictions apply to the determination of the network identifier for a call.

- If the call is a trunk call, the network of the originating line and trunk are compared to verify if the call is a private or public network call. If the trunk does not have a network name, the call is assumed to be a public network call.
- If the originator of the call is a POTS line, the public network identifier is used.
- If the customer group of either the originator or the terminator is not datafilled in table CUSTNTWK, the public network identifier is used.
- If the customer groups for both the originator and the terminator are datafilled in table CUSTNTWK, but are associated with different networks, the public network identifier is used.
- If the customer groups of both the originator and the terminator are datafilled in table CUSTNTWK and are associated with the same network, the network identifier in table CUSTNTWK is used.

Datafilling table CUSTNTWK

Table CUSTNTWK contains customer group level DN attributes. It allows the operating company to specify CLID within the customer group, within the network, or within and outside the network.

> ***Note:*** Table CUSTNTWK needs to be datafilled only once for each customer group.

Calling Line Identification (continued)

The following table shows the datafill specific to Calling Line Identification for table CUSTNTWK. Only those fields that apply directly to Calling Line Identification are shown. Refer to the *Customer Data Schema Reference Manual* for a description of the other fields.

Datafilling table CUSTNTWK

Field	Subfield or refinement	Entry	Explanation and action
CUSTNAME		alphanumeric (1 to 16 characters)	Customer group name. Enter the name assigned to the customer group.
NETNAME		alphanumeric (1 to 32 characters)	Network name. Enter the network name assigned to the customer group in table NETNAMES.
NETCGID		0 to 4096	Network customer group identifier. Enter the number assigned to the customer group.
OPTIONS		CLID	Option. Enter CLID to assign the calling line identification option to the customer group, and datafill subfield CLIDOPT.
	CLIDOPT	ONNET, OFFNET, or INTRAGRP	CLID option. Enter ONNET to specify that CLID applies to all calls within the network. Enter OFFNET to specify that CLID applies to all network calls. Enter INTRAGRP to specify that CLID applies to all calls within the customer group.

Datafill example for table CUSTNTWK

The following example shows sample datafill for table CUSTNTWK. This example shows the CLID option specified to apply within the customer group named BNRGRP1.

MAP display example for table CUSTNTWK

```
CUSTNAME  NETNAME   NETCGID DNREVXLA  OPTIONS
________________________________________________________

BNRGRP1   BNR       22      $        (CLID INTRAGRP)$
```

Calling Line Identification (continued)

Datafilling table DNGRPS

Table DNGRPS contains customer group level DN attributes, defining a range of DNs as a customer group, and enabling CLID suppression by customer group.

> ***Note:*** Table DNGRPS needs to be datafilled only once for each customer group.

The following table shows the datafill specific to Calling Line Identification for table DNGRPS. Only those fields that apply directly to Calling Line Identification are shown. Refer to the *Customer Data Schema Reference Manual* for a description of the other fields.

Datafilling table DNGRPS (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
SNPA		3 digits	Serving NPA or STS. Enter the serving NPA or the serving translation scheme (area code).
OFC		3 digits	Office code. Enter the 3-digit office code (the next three digits of the directory number).
FROMDIGS		4 digits	From digits. Enter the lower boundary of the range of the next four digits of the directory number in this customer group.
TODIGS		4 digits	To digits. Enter the upper boundary of the range of the next four digits of the directory number in this customer group.
NETOPTS		see subfields	Network options. This field consists of subfields NETNAME and OPTION. Two network names and their associated options can be defined (that is, the field can be repeated once).
	NETNAME	alphanumeric (1 to 32 characters)	Network name. Enter the network name (1 to 32 characters) defined in table NETNAMES.
	OPTION	SUPPRESS	Option. Enter SUPPRESS, and datafill subfields SUPPDN and SUPPNAME.

Calling Line Identification (continued)

Datafilling table DNGRPS (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	SUPPDN	Y or N	Suppress directory number. Enter Y to indicate that CLID suppression applies to directory numbers, or N to indicate that it does not apply to directory numbers.
	SUPPNAME	Y or N	Suppress name. Enter Y to indicate that CLID suppression applies to names, or N to indicate that it does not apply to names.

Datafill example for table DNGRPS

The following example shows sample datafill for table DNGRPS. In the first tuple, the customer group is formed of DNs in the range 256-1000 to 256-3000, and the CLID suppression option applies to DNs and names. In the second tuple, the customer group is formed of DNs in the range 256-3001 to 256-5000, and the suppression option applies to names only.

MAP display example for table DNGRPS

```
SNPA OFC FROMDIGS TODIGS                     NETOPTS
______________________________________________________________
613   256     1000   3000  (PUBLIC (SUPPRESS Y Y) $ )  $
613   256     3001   5000  (PUBLIC (SUPPRESS N Y) $ )  $
```

Datafilling table CUSTSTN

Table CUSTSTN contains customer group level DN attributes. It allows the operating company to specify the following options for customer groups:

- the number of digits to be displayed for CLID on display sets, with option DISPDIGS
- DN suppression control, with option CNDB

When a customer has more than one group with display sets, option DISPDIGS is defined to determine the number of digits to be displayed for CLID.

When CNDB is assigned, the default suppression status of the DN is reversed using a dial-access code. For example, if subscribers do not have the SUPPRESS option assigned to their DN (at any level), they can dial an access

Calling Line Identification (continued)

code assigned to CNDB before the called number. In response to the access code, the switch suppresses the CGN at the terminating end for that one call.

The CNB option is automatically available to subscribers with CNDB assigned; CNB suppresses the DN regardless of its default suppression status. The dial access codes for both options are defined in table IBNXLA.

> ***Note:*** Table CUSTSTN needs to be datafilled only once for each customer group.

The following table shows the datafill specific to Calling Line Identification for table CUSTSTN. Only those fields that apply directly to Calling Line Identification are shown. Refer to the *Customer Data Schema Reference Manual* for a description of the other fields.

Datafilling table CUSTSTN

Field	Subfield or refinement	Entry	Explanation and action
CUSTNAME		alphanumeric (1 to 16 characters)	Customer name. Enter the customer name (1 to 16 characters), as defined in table CUSTNTWK.
OPTNAME		DISPDIGS or CNDB	Option name. Enter DISPDIGS to specify the number of display digits for CLID on display sets, and datafill the OPTION and NUMODIGS fields. Enter CNDB to enable CLID (number and name) suppression toggling for the customer group, and datafill the OPTION field (with CNDB).
OPTION		DISPDIGS or CNDB	Option. If you entered DISPDIGS in field OPTNAME, enter DISPDIGS in this field, and datafill the NUMODIGS field. If you entered CNDB in field OPTNAME, enter CNDB in this field.
	NUMODIGS	1 to 12	Number of digits. Enter the number of digits to be displayed.

Datafill example for table CUSTSTN

The following example shows sample datafill for table CUSTSTN. In this example, the first customer group has been assigned the CNDB option to enable CLID toggling, and the second group has been assigned a display digits value of 10.

MAP display example for table CUSTSTN

```
CUSTNAME OPTNAME                  OPTION
________________________________________________________________

BNRGRP1  (CNDB CNDB)                    $
BNRGRP2  (DISPDIGS DISPDIGS 10)         $
```

Datafilling table IBNXLA

Table IBNXLA is datafilled to define the dial-access codes for parameters CNDB, which reverses the default suppression status of a DN, and CNB, which suppresses a DN regardless of its default suppression status. The table is datafilled once to define each access code.

The following table shows the datafill specific to Calling Line Identification for table IBNXLA. Only those fields that apply directly to Calling Line Identification are shown. Refer to the *Customer Data Schema Reference Manual* for a description of the other fields.

Datafilling table IBNXLA (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
KEY		see subfields	Key. This field consists of subfields XLANAME and DGLIDX.
	XLANAME	alphanumeric (1 to 8 characters)	Translator name. Enter the name assigned to the translator.
	DGLIDX	vector of up to 18 digits	Digilator index. Enter the access code that will represent CNDB or CNB. Northern Telecom recommends the following access codes: • CNDB 1167 or *67 for DTMF lines • CNB 1168 or *68 for DTMF lines
RESULT		see subfields	Result. This field consists of subfields TRSEL, ACR, SMDR, and FEATURE.
	TRSEL	FEAT	Translation selector. Enter FEAT.

Calling Line Identification (continued)

Datafilling table IBNXLA (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	ACR	Y or N	Account code entry. Enter Y if an account code entry is required for all calls to the special feature access code; otherwise enter N.
	SMDR	Y or N	Station message detail recording. Enter Y if all calls from a customer group station to any station on the block of station numbers are recorded. Enter N if recording is not required.
	FEATURE	CNDB or CNB	Feature. Enter CNDB or CNB for the feature name.

Datafill example for table IBNXLA

The following example shows sample datafill for table IBNXLA. In this example, the CNDB option is assigned access code 67.

MAP display example for table IBNXLA

```
KEY       RESULT
________________________________________________________

XLC 67    FEAT N N N CNDB
```

Translation verification tools

Calling Line Identification does not use translation verification tools.

SERVORD

SERVORD is used to

- assign the BLOCKCGN option to the DN
- assign the NAME option to the DN
- assign the SUPPRESS option to the DN

SERVORD is used to datafill table KSETLINE to specify the DNs associated with an LTID, and to define various DN parameters. Datafill in table KSETLINE includes blocking the delivery of the calling number for incoming calls at the terminating end with the BLOCKCGN option.

SERVORD is used to datafill table DNATTRS to specify DN-level DN attributes, including

- the DN and name defined for calling line identification
- the SUPPRESS parameter, which is used to specify CLID suppression by DN

SERVORD limitations and restrictions

Calling Line Identification has no SERVORD limitations and restrictions.

SERVORD prompts

The following table shows the SERVORD prompts used to assign the BLOCKCGN option to a DN.

SERVORD prompts for Calling Line Identification—option BLOCKCGN

Prompt	Valid input	Explanation
DN_OR_LEN	7 digits	Directory or line equipment number. Enter the directory number.
OPTKEY	1 to 69	Option key. Enter the number of the key associated with the DN.
OPTION	BLOCKCGN	Option. Enter the BLOCKCGN option to block the delivery of the CLID for incoming calls at the call termination end.

The following table shows the SERVORD prompts used to assign the NAME option to a DN.

SERVORD prompts for Calling Line Identification—option NAME (Sheet 1 of 2)

Prompt	Valid input	Explanation
DN_OR_LEN	7 digits	Directory or line equipment number. Enter the directory number.
OPTKEY	1 to 69	Option key. Enter the number of the key associated with the DN.
OPTION	NAME	Option. Enter the NAME option to define the display name for CLID provision.

Calling Line Identification (continued)

SERVORD prompts for Calling Line Identification—option NAME (Sheet 2 of 2)

Prompt	Valid input	Explanation
NETNAME	1 to 32 characters	Network name. Enter the name of the network in which the NAME option will apply.
DISPLAYNAME	up to 15 characters	Display name. Enter the name to be displayed when CLID is provided to the terminating agent.

The following table shows the SERVORD prompts used to assign the SUPPRESS option to a DN.

SERVORD prompts for Calling Line Identification—option SUPPRESS

Prompt	Valid input	Explanation
DN_OR_LEN	7 digits	Directory or line equipment number. Enter the directory number.
OPTKEY	1 to 69	Option key. Enter the number of the key associated with the DN.
OPTION	SUPPRESS	Option. Enter the SUPPRESS option to suppress CLID provision for the DN.
NETNAME	1 to 32 characters	Network name. Enter the name of the network in which the SUPPRESS option will apply.
SUPPRESS_DN	Y or N	DN suppression. Enter Y to specify that the DN display should be suppressed, or N to specify that it should not be suppressed.
SUPPRESS_NAME	Y or N	Name suppression. Enter Y to specify that the name display should be suppressed, or N to specify that it should not be suppressed.

SERVORD examples for adding Calling Line Identification

The following SERVORD example shows how Calling Line Identification option BLOCKCGN is added to DN 8323474 using SERVORD command ADO.

Calling Line Identification (continued)

SERVORD example for Calling Line Identification—option BLOCKCGN in prompt mode

```
SO
> ADO
SONUMBER: NOW 93 04 12
> (CR)
DN_OR_LEN:
> 8323474
OPTKEY:
> 1
OPTION:
> BLOCKCGN
OPTKEY:
> $
```

SERVORD example for Calling Line Identification—option BLOCKCGN in no-prompt mode

```
> ADO  $ 8323474 1 BLOCKCGN  $
```

The following SERVORD example shows how Calling Line Identification option NAME is added to DN 8387788 using the SERVORD command ADO.

SERVORD example for Calling Line Identification—option NAME in prompt mode

```
SO:
> ADO
SONUMBER: NOW 93 04 22
>  (CR)
DN_OR_LEN:
> 8387788
OPTKEY:
> 1
OPTION:
> NAME
NETNAME:
> PUBLIC
DISPLAYNAME:
> JANE_SPOCK
NETNAME:
> $
OPTKEY:
> $
```

Calling Line Identification (end)

SERVORD example for Calling Line Identification—option NAME in no-prompt mode

```
> ADO  $ 8387788 1 NAME PUBLIC JANE_SPOCK $  $
```

The following SERVORD example shows how Calling Line Identification option SUPPRESS is added to DN 8387789 using the SERVORD command ADO.

SERVORD example for Calling Line Identification—option SUPPRESS in prompt mode

```
SO:
> ADO
SONUMBER: NOW 93 04 22
> (CR)
DN_OR_LEN:
> 8387789
OPTKEY:
> 1
OPTION:
> SUPPRESS
NETNAME:
> PUBLIC
SUPPRESS_DN:
> Y
SUPPRESS_NAME:
> Y
NETNAME:
> $
OPTKEY:
> $
```

SERVORD example for Calling Line Identification—option SUPPRESS in no-prompt mode

```
>ADO  $  8387789  1  SUPPRESS  PUBLIC  Y  Y  $  $
```

Customer Groups

Functionality code

Functional group ordering code: NI000007

Release applicability

BCS31 and up

Prerequisites

To operate, the Customer Groups functionality requires the MDC Minimum (MDC00001) functional group.

Description

The Customer Groups capability for BRI provides distinctions between groups of directory numbers (DN) in the DMS-100 network. The DNs in a DMS-100 switch are typically divided into groups of 1000 that are known as customer groups. A DMS-100 switch can have up to 4095 customer groups.

Provisioning a customer group involves defining the characteristics of the group, and specifying DN attributes that are defined at the customer group level. Each DN is allocated to a customer group when it is defined during base service provisioning.

Most customer group parameters are defined using datafill, but some are specified using the SERVORD system.

Operation

Provision customer group parameters by performing the following five major steps:

1. Datafill the network parameters.
2. Datafill the basic customer group parameters.
3. Datafill the translation and routing parameters.
4. Datafill the virtual facility groups (VFG).
5. Provision the special lines.

Network parameters

Some of the parameters relating to customer groups are defined at the network level. These include network identifiers and any appropriate network-level DN attributes. Typically, a DMS-100 switch is defined as belonging to the public network and one or more private networks. Each private network is specified with a name for internal use (NETNAME) and an identifier for use outside the network (EXTNETID) in table NETNAMES.

Customer Groups (continued)

DN characteristics are defined at one of three levels: the network level, the customer group level, or the DN level. Attributes defined at the network level apply to all DNs in the network, those defined at the customer group level apply to all DNs in the customer group, and those at the DN level to that DN specifically. At the network level, the SUPPRESS parameter can be datafilled in table NETNAMES to specify Calling Line Identification (CLID) suppression at the network level. For more information on datafilling SUPPRESS, refer to the section “Calling Line Identification”.

The network name is associated with the customer group (CUSTNAME) in table CUSTNTWK, which also defines an identifier (NETCGID) for the customer group within the network. Also assigned in table CUSTNTWK are customer group-level DN attributes such as CLID. For more information on datafilling CLID, refer to the section “Calling Line Identification”.

> ***Note:*** Other CUSTNTWK options are described in the MDC section of this document.

Basic customer group parameters

Basic customer group parameters include

- basic customer group translation characteristics
- engineering parameters
- customer group-level DN attributes

Basic customer group translation characteristics

Basic translation characteristics for the customer group are defined in table CUSTHEAD. These parameters must be assigned before the routing tables are datafilled, and include the following.

- the customer translator (CUSTXLA), which is the digit translator associated with this customer group
- the optional feature (*) translator (FETXLA), which is the translator for access codes that begin with a star (typically used to access features)
- the optional octothorpe (#) translator (OCTXLA), which is the translator for access codes that begin with an octothorpe (typically used for abbreviated dialing)
- the optional preliminary translator (PLMXLA), which is checked before the CUSTXLA, and can be used to differentiate between members of the customer group

- the digit collection name (DIGCOLNM), which is used to indicate digit collection rules for the customer group
- the vacant treatment (VACTRMT), which specifies the treatment to be used for digits that cannot be translated

Note: Other CUSTHEAD options are described in the MDC section of this document.

A facility known as network class of service (NCOS) allows the operating company to subdivide a customer group for purposes of digit translation and routing. NCOS numbers are assigned to the customer group in table NCOS. Each NCOS can be assigned different digit, feature, octothorpe, and flash translators, and different digit collection rules. Line restrictions can also be specified using NCOS-defined subdivisions of customer groups (refer to “Special lines” section in this chapter). Each DN is assigned to an NCOS when it is defined during base service provisioning.

Engineering parameters

Engineering parameters for the customer group are defined in table CUSTENG, and include

- the number of NCOS numbers (NONCOS)
- the number of treatments required (NOIBNTMT)
- whether or not the group can be equipped with attendant consoles (CONSOLES)
- the customer group type

Customer group type (public, private, or family) is specified to determine the extent of feature operation among customer groups. When a customer group is defined as *private*, those features that are affected by customer group boundaries (such as Call Forward or Flexible Calling) are permitted to operate only within the customer group. If the customer group is defined as *public*, this restriction does not apply, and the features can operate across customer group boundaries. The customer group can also be assigned to a *family*, which itself may be defined as private or public. For a *private family*, features can operate only within the set of customer groups that belong to the family. In a *public family*, feature operation can cross family boundaries. Family names and their status (as public or private) are listed in table CUSTFAM.

The following features are affected by customer group boundaries:

- Call Back Queuing (Basic)
- Call Forward Busy

Customer Groups (continued)

- Call Forward Don't Answer
- Call Forwarding Intragroup
- Call Transfer Station
- Call Hold
- Call Park
- Call Pickup
- Call Waiting
- Call Waiting—Originating
- Conference Call Announcement
- Dial—Call Waiting
- Directed Call Pickup—Barge In
- Directed Call Pickup—Non Barge In
- DISA
- Do Not Disturb
- Executive Right of Way
- Meet Me Conference
- Off-Hook Queuing
- OHQ, CBQ for OUTWATS VFG
- Preset Conference
- Ring Again
- Station Message Waiting
- Three Way Calling
- Toll Call Forwarding
- Uniform Call Distribution

Table CUSTENG also allows the specification of engineering options, such as packet suppression (PKTSUP), which allows billing suppression for packet service within a customer group, and conference circuits (CONF6C), which is used to specify the number of six-port conference circuits for the group. For more information on datafilling CONF6C, refer to the section “Flexible Calling”.

Customer group-level DN attributes

Customer group-level DN attributes are assigned to a range of DNs in table DNGRPS. These optional attributes include SUPPRESS, which is used to specify CLID suppression at the network level. For more information on datafilling SUPPRESS, refer to the section “Calling Line Identification”.

Translations table flow

The following figure is a simplified flowchart showing the process of call origination and call termination. When a call originates from a line, the associated line tables are read and interpreted. The call then enters the translation tables selected in the line tables for the analysis of the dialed digits. After translation is performed, and the screening tests are passed, the call proceeds to the designated routing tables for its final destination, which may be an outgoing trunk.

> ***Note:*** Screening tables are described in the core translations section of this document.

When the call originates on an incoming trunk, the appropriate trunk tables are accessed. Again, the digits are analyzed in the translation tables indicated by the trunk tables, and the call goes through screening to the specified routing tables, before being routed to the specified line.

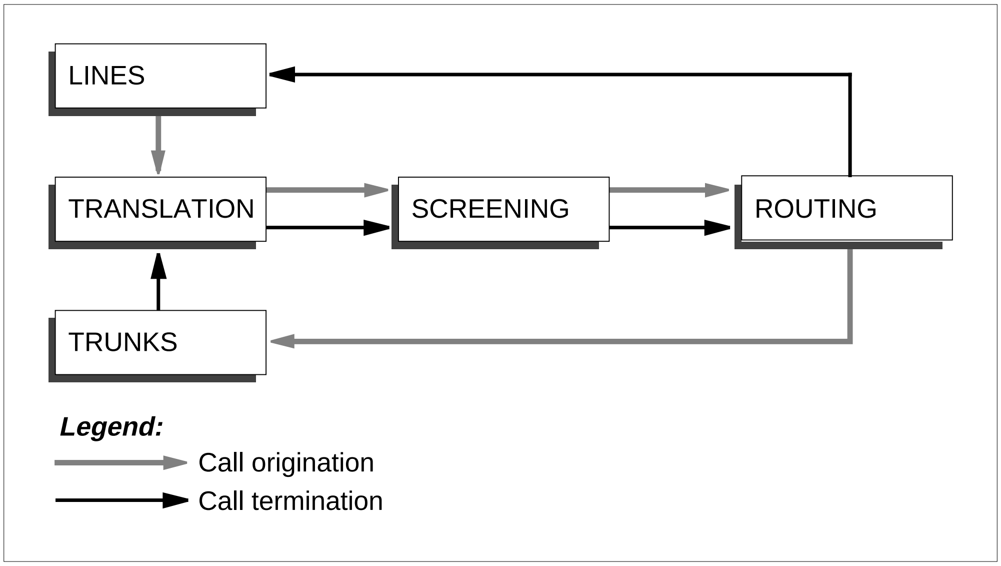
To implement the translation process for the customer group, the translation and routing tables must be datafilled. The main translation parameters for the customer group are defined in table IBNXLA, which contains the dialing plan for each translator defined in tables CUSTHEAD and NCOS. Table IBNXLA allows the operating company to define translations for attendant access, extension dialing, and public, private, and Outward Wide-Area Telecommunications Service (OUTWATS) network access codes.

A default translation for each translator name can be defined in table XLANAME, which lists all the translators defined for the customer group. The default is used when there is no translation data specified in table IBNXLA for the access code dialed.

The Customer Groups translation process is shown in the flowchart that follows.

Customer Groups (continued)

Call origination and termination



Note: If there is no default defined in table XLANAME, the vacant treatment (VACTRMT) defined in table CUSTHEAD is used.

Digit collection rules are specified in table DIGCOL. This table defines how many digits to collect after the initial digit (or star or octothorpe), and the interdigital timing required.

Incoming calls are directed from table IBNXLA through the standard Integrated Business Network (IBN) or POTS tables to the DN required.

Once the digits have been translated for outgoing calls, one of the routing tables is accessed. Typically, table IBNRTE and table OFRT are used for calls terminating within the same central office, and subtable HNPACONT.RTEREF or universal translations is used for calls terminating in the same NPA. Inward Wide-Area Telecommunications Service (INWATS) and OUTWATS calls are usually routed through IBNRTE, as its associated table, DIGMAN, provides more scope for digit manipulation.

The call is routed in one of tables IBNRTE, OFRT, or RTEREF according to one of a number of selectors, which enable

- routing to a DN or a trunk
- routing on a set of digits modified from the original dialed digits
- routing an INWATS or OUTWATS call

- routing a call to treatment
- routing a call by call type (refer to the section “ISDN BRI Routing”)

In some cases, it is necessary to delete digits from the translated digits or to add prefix digits. For instance, the operating company may need to substitute one private network code for another, or substitute an office code for a private network code when routing a call over public instead of private facilities. In the IBN environment, this is achieved through datafill in table DIGMAN, which is accessed from table IBNRTE; in the office route environment, it is datafilled directly in table OFRT.

CAUTION
Use of table DIGMAN in DMS packet call translation causes packet calls to fail to complete.
The DMS packet handler for ISDN BRI call translation does not support table DIGMAN. Refer to “ISDN BRI Routing” for more details on translations and routing capabilities that apply to individual bearer capabilities.

Virtual facility groups

VFGs simulate trunk groups for the operating company, reducing the need for physical resources. VFGs are created through datafill in table VIRTGRPS, and can be defined, like a trunk group, as one-way (incoming or outgoing) or two-way facilities. Up to 4095 VFGs can be datafilled for each switch, and each VFG can be datafilled to handle up to 2047 simultaneous active calls.

VFGs are typically used for INWATS and OUTWATS services for users who receive or make a large number of long-distance calls. Instead of having dedicated circuit groups for these services, the operating company can datafill the size of a VFG to determine the number of terminations on an INWATS DN or the number of outgoing calls on an OUTWATS facility.

Note: Packet data calls cannot be routed through VFGs. Instead, they are routed using bearer capability routing. Refer to the section “ISDN BRI Routing”.

Calls involving VFGs have two legs: they are routed into the VFG, and then retranslated with any new attributes (such as a new DN) provided by table VIRTGRPS.

Customer Groups (continued)

Special lines

Typically, each customer needs to define some special lines in the group. Types of special lines include

- special intercept lines
- restricted lines
- non-LTID lines
- automatic or warm (manual) lines

Automatic and warm lines, and some restricted lines, are provisioned using SERVORD. The rest of the special lines are provisioned using table datafill.

Special intercept lines

A special line can be defined to intercept blocked calls, undefined codes, or incoming calls. These lines are specified in IBNXLA, using the flex intercept (FLEXI) translation selector. The tuple in IBNXLA indicates a treatment code for the call, or routes it to an attendant. For example, incoming calls on a changed number could be routed through a particular treatment to an announcement stating the new number.

Restricted lines

An originating line can be semi-restricted, fully restricted, or restricted based on individual office or area codes, public or private network numbers, or OUTWATS numbers. A semi-restricted line is permitted access to the exchange network only through an attendant, and a fully restricted line is not permitted access to the exchange network. Lines can also be denied all originations or terminations, or denied access to toll carriers.

Fully restricted lines for originations are assigned a particular NCOS value, and table IBNXLA is used to route calls from the lines in that NCOS to a treatment.

Fully restricted lines (within a customer group) for terminations have the SERVORD option DIN (denied incoming calls). DIN can also be used to semi-restrict a line, depending on the trunk carrying the incoming call, or on the origination of a transferred call. SERVORD automatically datafills table KSETFEAT with option DIN for the specified lines.

For lines restricted on the basis of office or area codes (or specific public or private numbers), up to 15 levels of code restrictions can be specified for a customer group. Table CODEBLK lists the codes assigned to each level, and table NCOS specifies whether the level is blocked or allowed for each NCOS defined for the customer group.

> ***Note:*** Because code restriction can be done on either a restriction basis or an allowance basis for each level, the operating company is free to decide which method requires less datafill. For instance, if an NCOS group is to be allowed access only to the home numbering plan area (NPA), it is better to datafill on an allowance basis, but if it is to be allowed access to all except one or two NPAs, it is better to datafill on a restriction basis.

Code restriction and allowance is enabled in table IBNXLA. If the CRL field is set to Y, code restriction/allowance is in effect. If the CRL field is set to N, the code restriction level in table NCOS is ignored and table CODEBLK is not accessed. Calls to restricted codes are routed to vacant code treatment.

To deny a line all originations or terminations, use the SERVORD option DOR (denied origination) or DTM (denied termination). SERVORD automatically datafills table KSETFEAT with option DOR or DTM for the specified DN.

To deny access to up to 21 toll carriers, apply the SERVORD option CTD (carrier toll denied) to the line. SERVORD automatically datafills table KSETFEAT with option CTD for the specified DN.

Non-LTID lines

Any DNs that are not associated with an LTID are defined in table DNROUTE. A non-LTID DN is one that defines a route, rather than being assigned to a BRI terminal. For example, INWATS lines, which are not assigned to an LTID, are defined in table DNROUTE. Table DNROUTE allows the operating company to route these DNs to a trunk or to treatment.

Automatic and warm lines

SERVORD option AUL (automatic line) is used to define an automatic line, which provides an automatic connection to a predetermined location when the line goes off-hook. SERVORD automatically datafills table KSETFEAT with AUL for the specified line.

SERVORD option WML (warm line) is used to define a warm (or manual) line, for which calls are forwarded to a predefined DN if they are not answered within a specific time period. SERVORD automatically assigns option WML to the specified line in table KSETFEAT.

Translations table flow for call terminations

The Customer Groups capability translation process for call terminations and INWATS call terminations is shown in the “Table flow for Customer Groups

Customer Groups (continued)

capability, call termination” and “Table flow for Customer Groups capability, INWATS call termination” flowcharts.

The routing of BRI call terminations (calls that are coming in to the switch) is shown in the “Table flow for Customer Groups capability, call termination” and “Table flow for Customer Groups capability, INWATS call termination” flowcharts. These flowcharts show the major tables accessed during the process of routing the incoming call through the switch to the DN.

> ***Note:*** In the following table descriptions, some minor tables and standard core or IBN tables are not included, so that the flow through the BRI tables is easier to follow. Standard core translations tables and IBN translations tables are described in the 10-digit translations and MDC translations sections of this document.

Call terminations

When a call terminates at the switch, table CLLI identifies the trunk group, and table TRKMEM determines the physical location of the circuit carrying the call. The trunk identifier, or CLLI, is used to access table TRKSGRP, which defines the signaling protocol used by the trunk, and table TRKGRP. Table TRKGRP provides the next step in translating the call, depending on the type of trunk the call has come in on. If the call arrives on an IBN trunk, table TRKGRP provides the name of the customer group and the NCOS assigned to the group. The NCOS (if NCOS groupings are in use) or the customer group name is the key to either table NCOS or table CUSTHEAD, which begins the translation process.

If the call arrives on a POTS trunk, table TRKGRP provides a standard pretranslator (PRTNM) to index the standard pretranslator control table, STDPRTCT, which begins the translation process.

Table NCOS is accessed using the NCOS value from table TRKGRP, and is searched for a preliminary translator (PRELMXLA). If there is a translator in table NCOS, it is used to access table IBNXLA. If there is no translator in table NCOS, table CUSTHEAD is accessed for a translator.

Table CUSTHEAD is accessed using the customer group name (CUSTGRP) from table TRKGRP, and provides a customer translator (CUSTXLA) as the key to table IBNXLA. (Table CUSTHEAD also contains the name of the digit collection table, which is used to access table DIGCOL; however, the DIGCOL entry is used only for a call origination.)

Table IBNXLA is indexed with the dialed digits and the translator named in table NCOS or CUSTHEAD, and specifies the translations for the call, using a different translation selector for each type of call.

In the case of an IBN call coming in to a BRI line, the IBNXLA tuple typically contains the EXTN selector, and provides the NPA and office code used to key into tables TOFCNAME and DNINV.

For the incoming POTS call, the standard pretranslator name (PRTNM) from table TRKGRP indexes table STDPRTCT. Using the dialed digits, subtable STDPRTCT.STDPRT is accessed, and the N selector in subtable STDPRT indicates that further translation is required. The tuple for an incoming call contains the North American translation system code, NA, which routes the call to table HNPACONT.HNPACODE. Subtable HNPACODE is accessed using the office code portion of the dialed digits, and provides the NPA and office code used to key into tables TOFCNAME and DNINV.

INWATS call terminations

When an INWATS call terminates at the switch, it typically arrives on a POTS trunk, so the translations process begins with the same tables as an ordinary incoming POTS call. INWATS numbers, being non-LTID numbers, are typically datafilled in table DNROUTE. However, the DNs in DNROUTE are automatically referenced from table DNINV.

The tuple in table DNROUTE provides a route reference to routing table IBNRTE.

Table IBNRTE contains the name of the VFG in table VIRTGRPS used to retranslate the INWATS call, and the index to table DIGMAN.

Table DIGMAN is used to alter the dialed digits to a new value to provide a new DN for the retranslation. Once the digits are converted, table VIRTGRPS is accessed. (Table DIGMAN is not supported for packet calls.)

Table VIRTGRPS contains the customer group name and NCOS value used to begin the retranslation process.

Customer Groups (continued)

Table flow for Customer Groups capability, call termination

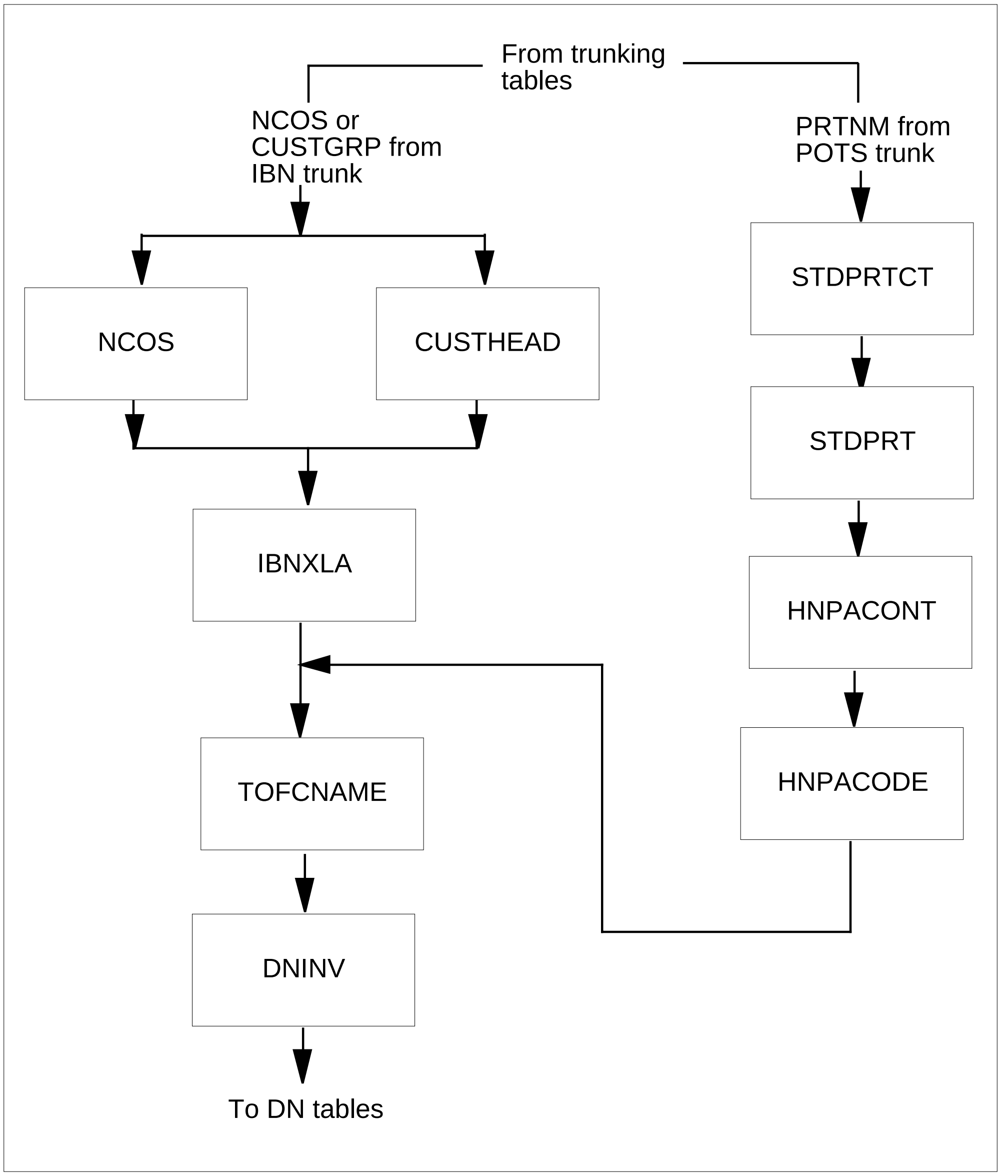
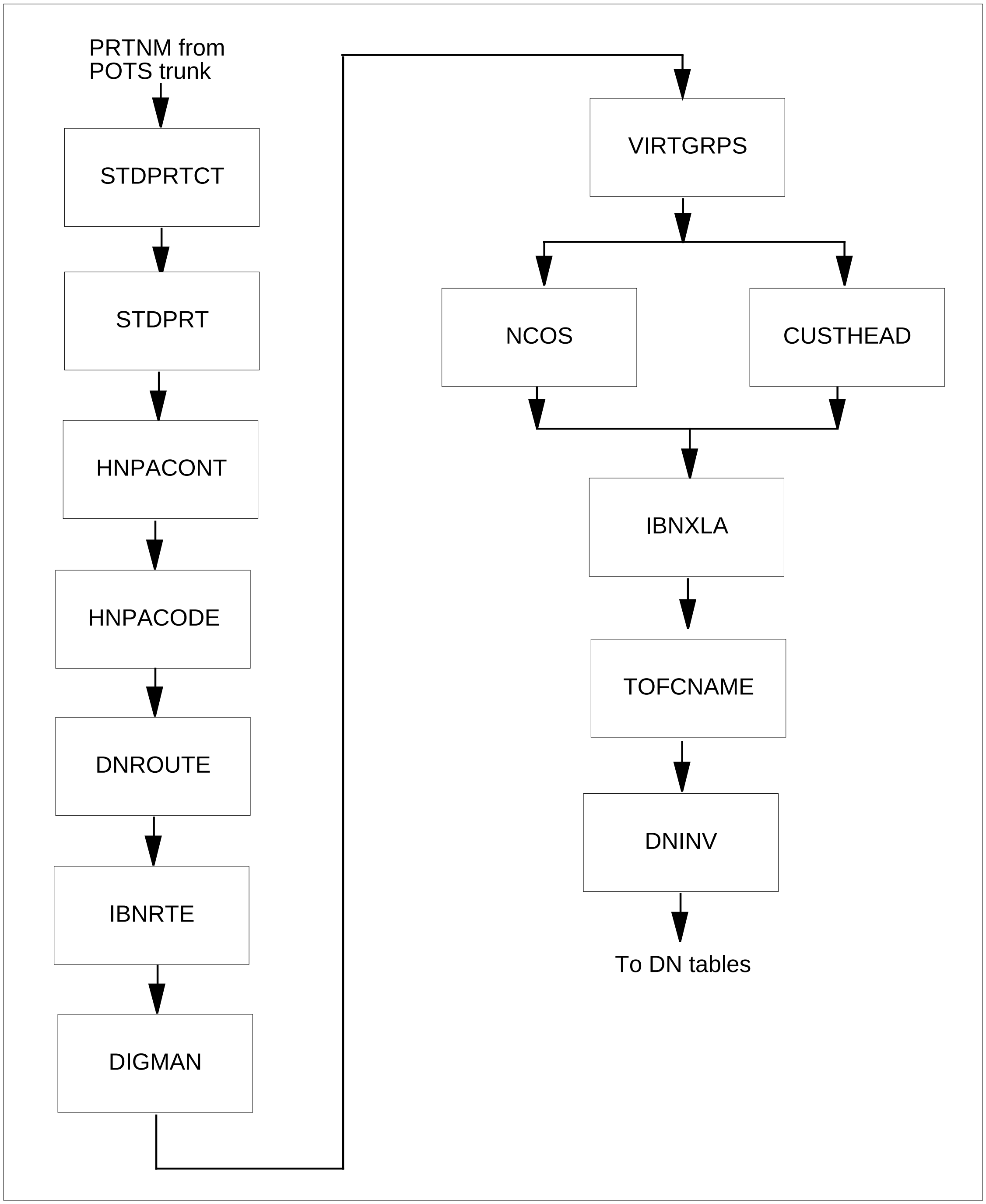


Table flow for Customer Groups capability, INWATS call termination



Customer Groups (continued)

The following table lists the datafill content of the tables in the “Table flow for Customer Groups capability, call termination” flowchart.

> ***Note:*** The TRAVER examples at the end of this feature description provide further explanation of the table contents.

Datafill example for Customer Groups capability, call termination

Item or datafill table	Example data
Trunk CLLI	TR7345582
Called number	96215902
TRKGRP	TR7345582 IBNT2 0 TLD NCRT IBNTST 0 MIDL 0 6215887 ANSDISC 0 Y N N N N N N 0 0 0 0 N N N N N N N N N NATL $
NCOS	IBNTST 0 0 0 TST10 (XLAS CXT1 RXCFN NDGT) (OHQ 0 TONE_OHQ) (CBQ 0 1 Y 2) $
CUSTHEAD	IBNTST NXLA CXT2 RXCFN 0 TST1
IBNXLA	CXT1 5 EXTN N N Y 613 621 4 $
TOFCNAME	613 621
DNINV	613 621 5902 ILC ISDN 2

Translations table flow for call originations

The routing of a BRI call origination (a call that is going out from the switch) is shown in the “Table flow for Customer Groups capability, call origination” flowchart. Three types of call origination are shown: an extension call, a DOD call over a trunk, and an OUTWATS call. The flowchart shows the major tables accessed during the process of routing the outgoing call from the DN through the switch.

> ***Note:*** Some minor tables and standard core or IBN tables are not included, so that the flow through the BRI tables is easier to follow. Standard core translations tables and IBN translations tables are described in the *Data Schema Reference Manual*.

A BRI call origination begins at the terminal with table KSETLINE and moves through the standard tables to table IBNXLA.

Table KSETLINE begins the translations of the call originating at a BRI terminal with the NCOS value (if the operating company is using NCOS groupings) or customer group name, which is used to access table NCOS or CUSTHEAD.

Table NCOS is accessed using the NCOS value from table KSETLINE, and is searched for a preliminary translator (PRELMXLA). If there is a translator in table NCOS, it is used to access table IBNXLA. If there is no translator in table NCOS, table CUSTHEAD is accessed for a translator.

Table CUSTHEAD is accessed using the customer group name (CUSTGRP) from table KSETLINE, and provides a customer translator (CUSTXLA) as the key to table IBNXLA. Table CUSTHEAD also contains the name of the digit collection table.

Table DIGCOL is accessed using the digit collection table name (DIGCOLNM) from table CUSTHEAD to obtain the digit collection rules for the call. Table DIGCOL specifies the number of digits to collect after the first one, and the timing intervals between digits.

Table IBNXLA is indexed with the dialed digits and the translator named in table NCOS or CUSTHEAD, and specifies the translations for the call, using a different translation selector for each type of call.

For an extension call within the switch, table IBNXLA contains the extension (EXTN) selector. The EXTN tuple contains the NPA and office code used to key into tables TOFCNAME and DNINV.

For a direct outward dial (DOD) call, table IBNXLA contains the network (NET) selector and network type DOD. The tuple specifies a line attribute (LINEATTR) that indexes table LINEATTR, which contains a standard pretranslator name (PRTNM) that in turn indexes the standard pretranslator control table STDPRTCT. Using the dialed digits, subtable STDPRTCT.STDPRT is accessed, and depending on the selector in subtable STDPRT, the next stage of translations is determined. The N selector indicates that further translation is required, and the tuple in this case contains the North American translation system code, NA, which routes the call to table HNPACONT.HNPACODE. Subtable HNPACODE is accessed using the office code portion of the dialed digits, and provides an index to subtable RTEREF, which specifies a trunk to carry the call out of the switch. The trunk identifier is used to access table CLLI, which then invokes the trunking tables.

OUTWATS call originations

For an OUTWATS call, table IBNXLA contains the NET selector and network type OWT. The tuple in this case specifies a line attribute, an OUTWATS zone, a treatment for calls that cannot be completed, and a route for the call in table IBNRTE or OFRT. The call follows the same flow through the tables as does

Customer Groups (continued)

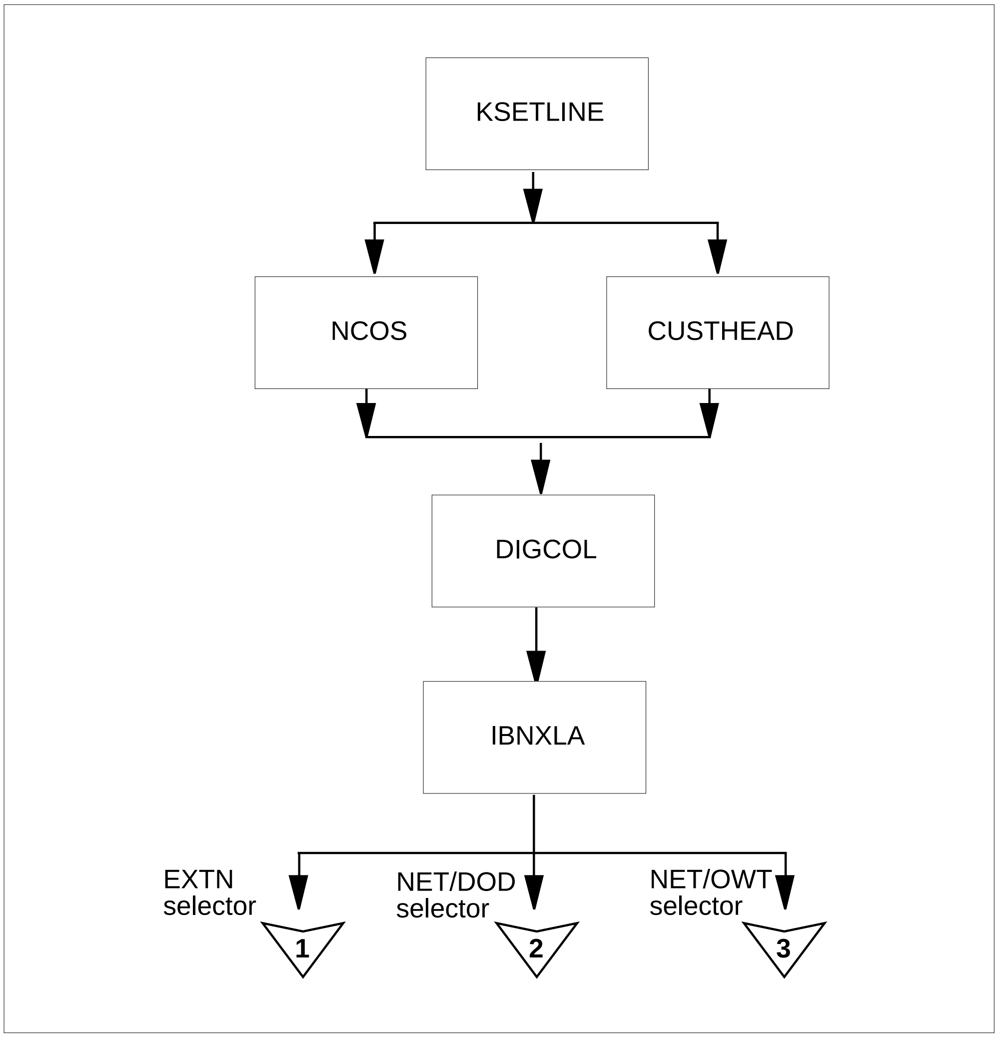
the DOD trunk call, until subtable RTEREF is reached. After subtable RTEREF is accessed, table OWATZONE is accessed with the dialed digits and the NPA (from table LINEATTR) to obtain the valid OUTWATS zones for the calling DN. The zone in the dialed number is used to access table ZONEORDR to ensure that the zone is valid for the call. If it is, the call continues, and table IBNRTE is accessed.

Table IBNRTE contains the name of the VFG in table VIRTGRPS used to retranslate the OUTWATS call.

Table VIRTGRPS contains a line attribute (LINEATTR), the index to table LINEATTR, which begins the retranslation process. Once a trunk route is found in subtable RTEREF, tables OWATZONE and ZONEORDR are checked to ensure that the called zone is valid for the DN. If it is, the call goes out on the trunk.

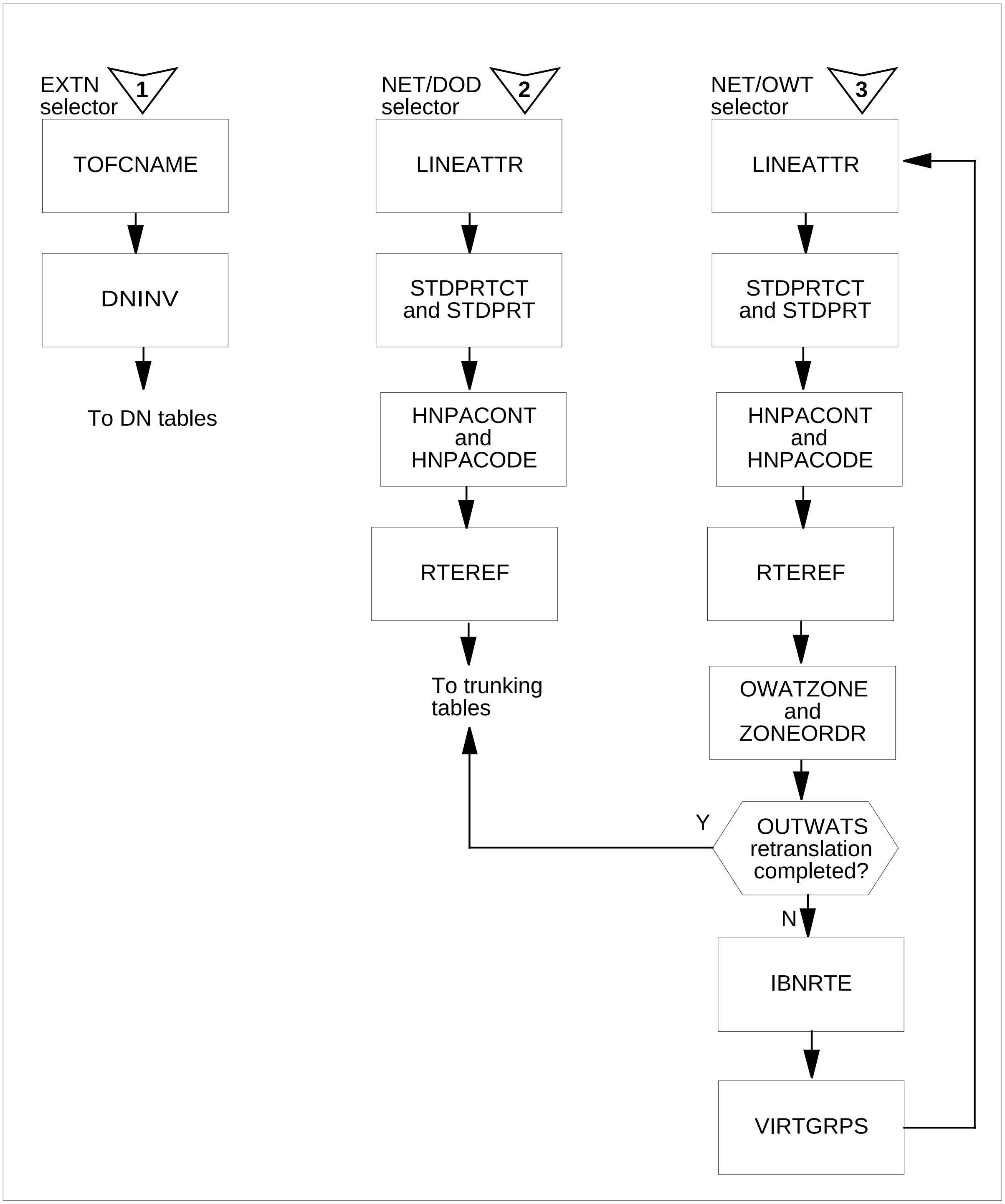
Customer Groups (continued)

Table flow for Customer Groups capability, call origination



Customer Groups (continued)

Table flow for Customer Groups capability, call origination (continued)



Customer Groups (continued)

The following table lists the datafill content of the tables in the flowchart example of call origination.

Note: The TRAVER examples at the end of this chapter provide further explanation of the table contents.

Datafill example for Customer Groups capability

Item or datafill table	Example data
Calling number	6215901
Called number	96675902
KSETLINE	ISDN 1 1 DN Y 6215901 IBNTST 0 0 613 (RAG) (PRK) (LNR) (SFC) (CFX) (MWT) $
NCOS	IBNTST 0 0 0 TST10 (XLAS CXT1 RXCFN NDGT) (OHQ 0 TONE_OHQ) (CBQ 0 1 Y 2) $
CUSTHEAD	IBNTST NXLA CXT3 RXCFN 0 TST1
DIGCOL	TST1 9 POTS Y
IBNXLA	CXT1 9 NET N Y N 1 Y NDGT N Y DOD Y 27 NONE $
LINEATTR	27 1FR NONE NT FR01 0 613 P621 L613 TSPS 10 NIL NILSFC LATA1 0 NIL NIL 00 Y $
STDPRTCT	P621 (1) (0) 0
STDPRT	69 69 N NP 0 NA
HNPACONT	613 911 2 (39) (1) (0) (0) 0
HNPACODE	667 667 LRTE 19
RTEREF	19 N D TR7345582 3 819 N

Limitations and restrictions

Customer Groups has no limitations or restrictions.

Interactions

Customer Groups has no functionality interactions.

Activation/deactivation by the end user

Customer Groups requires no activation or deactivation by the end user.

Customer Groups (continued)

Billing

Customer Groups capability does not affect billing.

Station Message Detail Recording

Customer Groups does not affect Station Message Detail Recording (SMDR).

Datafilling office parameters

Customer Groups does not affect office parameters.

Datafill sequence

The following table lists the tables that require datafill to implement Customer Groups capability. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Customer Groups capability (Sheet 1 of 2)

Table	Purpose of table
NETNAMES	Contains network identification and network-level DN attributes.
CUSTFAM	Contains the list of all customer family names in use in the DMS-100 network.
CUSTENG	Contains engineering parameters for customer groups.
CUSTHEAD	Defines basic translation characteristics for the customer group, and specifies customer group-level system options.
CUSTNTWK	Associates the network name with the customer group name and identifier, and contains customer group-level DN attributes.
DNGRPS	Defines the DN range of a customer group and contains customer group-level DN attributes.
NCOS	Contains translation and routing characteristics for an NCOS.
CODEBLK	Lists up to 15 levels of codes to which a customer group or NCOS may be restricted or allowed access.
DIGCOL	Contains digit collection rules.
DIGMAN	Used in the IBN environment to alter the dialed digits.
XLANAME	Contains a list of all translator names, and a default translation for each name.
IBNRTE	Contains routes for the translated digits for IBN calls.

Note: This table is datafilled through SERVORD; therefore, no datafill procedure or example is provided. Refer to “SERVORD” for an example of using SERVORD to datafill this table.

Customer Groups (continued)

Datafill tables required for Customer Groups capability (Sheet 2 of 2)

Table	Purpose of table
OFRT	Contains routes for the translated digits in the central office area.
RTEREF	Contains routes for the translated digits within the home NPA.
VIRTGRPS	Contains the definitions of VFGs.
KSETFEAT (note)	Lists the features and options associated with special lines.
KSETLINE (note)	Specifies DN parameters and options for special lines.
DNROUTE	Specifies a route or treatment for non-LTID lines (such as INWATS numbers).
IBNXLA	Contains the translators used to translate the digits in calls originating at BRI terminals or incoming trunks.

Note: This table is datafilled through SERVORD; therefore, no datafill procedure or example is provided. Refer to “SERVORD” for an example of using SERVORD to datafill this table.

Datafilling table NETNAMES

Table NETNAMES contains network identifiers and network-level DN attributes. Typically, a DMS-100 switch is defined as belonging to the public network and one or more private networks. The first tuple in table NETNAMES, which defines the public network, is entered in the table at load-building time. The operating company specifies each private network to which the DMS-100 switch belongs with

- an internal name in the NETNAME field
- an identifier for use outside the network in the EXTNETID field
- the number of digits of the DN in use within the network (for instance, a private network frequently uses only four or five digits of the DN internally)

Table NETNAMES also enables the user to specify the SUPPRESS option, which specifies suppression of CLID at the network level (refer to the section “Calling Line Identification”.

Note: Table NETNAMES needs to be datafilled only once for the network.

The following table shows the datafill specific to Customer Groups for table NETNAMES. Only those fields that apply directly to Customer Groups are

Customer Groups (continued)

shown. For a description of the other fields, refer to the *Data Schema Reference Manual*.

Datafilling table NETNAMES

Field	Subfield	Entry	Explanation and action
NETNAME		alphanumeric (1 to 32 characters)	Logical network name. Enter a unique network name.
EXTNETID		numeric (0 to 32 600)	External network identifier. Enter the unique number used outside the network to identify the logical network.
NETDIGS		numeric (1 to 10 digits)	Network digits. Enter the number of digits from the DN used in the network.

Datafill example for table NETNAMES

The following example shows sample datafill for the Customer Groups capability in table NETNAMES. The example shows two tuples, the first of which is the default tuple present in the table at load build time. The second tuple defines a network named BNR, which has an external identifier of 4, and uses 5 of the DN digits.

MAP display example for table NETNAMES

```
NETNAME     EXTNETID    NETDIGS NETOPTS
________________________________________________________
PUBLIC      0           0       $
BNR         4           5       $
```

Datafilling table CUSTFAM

Table CUSTFAM contains an entry for the name of each family of customer groups in the network, and specifies whether it is private or public. In a private family, the features listed in the “Features affected by customer group boundaries” table can operate only within the customer groups assigned to the family. In a public family, the features can operate across family boundaries. Up to 64 families may be specified for the network.

The following table shows the datafill specific to Customer Groups for table CUSTFAM. Only those fields that apply directly to Customer Groups are shown. For a description of the other fields, refer to the *Data Schema Reference Manual*.

Datafilling table CUSTFAM

Field	Subfield	Entry	Explanation and action
FAMNAME		alphanumeric (1 to 16 characters)	Family name. Enter the name to be assigned to the customer group family.
FAMTYPE		PRIVATE or PUBLIC	Family type. Enter PRIVATE to define the family as private. Enter PUBLIC to define the family as public.

Datafill example for table CUSTFAM

The following example shows sample datafill for the Customer Groups capability in table CUSTFAM. The example shows a customer group family named BNR1, which is defined as a private family.

MAP display example for table CUSTFAM

```
FAMNAME       FAMTYPE
________________________________________________
BNR1          PRIVATE
```

Datafilling table CUSTENG

Table CUSTENG defines the engineering parameters for the customer group, including

- NONCOS, which is the number of NCOS numbers required
- NOIBNTMT, which specifies the number of treatments required
- CONSOLES, which indicates whether or not the group can be equipped with attendant consoles
- CUSTTYPE, which defines the type of customer group as one of
  - — private, which indicates that the features listed in the “Features affected by customer group boundaries” table can operate only within the group
  - — public, which indicates that the features can operate across customer group boundaries
  - — family, which indicates that the customer group is assigned to a family, which itself can be defined as private or public (in table CUSTFAM)

Customer Groups (continued)

Two of the options that can be specified in table CUSTENG are applicable to BRI customer groups:

- PKTSUP, which enables suppression of billing for packet service within a customer group
- CONF6C, which is used to specify the number of six-port conference circuits for the group (refer to the section “Flexible Calling”.

The following table shows the datafill specific to Customer Groups for table CUSTENG. Only those fields that apply directly to Customer Groups are shown. For a description of the other fields, refer to the *Data Schema Reference Manual*.

Datafilling table CUSTENG (Sheet 1 of 2)

Field	Subfield	Entry	Explanation and action
CUSTNAME		alphanumeric (1 to 16 characters)	Customer group name. Enter the name (1 to 16 characters) assigned to the customer group.
NONCOS		numeric (0 to 511)	Number of network class of service (NCOS) numbers. Enter the highest-numbered NCOS to be assigned to the customer group.
NOIBNTMT		numeric (0 to 63)	Number of IBN treatments. Enter the number of treatments required for this group.
CONSOLES		Y or N	Attendant consoles. Enter Y if the group can be equipped with attendant consoles, or N if it cannot.
DOMAIN		see subfields	Domain. The DOMAIN field contains subfields CUSTTYPE and FAMILY.
	CUSTTYPE	PRIVATE, PUBLIC, or FAMILY	Customer group type. Enter PRIVATE to define the customer group as private. Enter PUBLIC to define the customer group as public. Enter FAMILY to define the customer group as part of a family, and datafill subfield FAMILY.
	FAMILY	alphanumeric (1 to 16 characters)	Family. Enter the name of the family to which this customer group belongs. ***Note:*** The family name must be defined in table CUSTFAM before it can be used in other tables.

Datafilling table CUSTENG (Sheet 2 of 2)

Field	Subfield	Entry	Explanation and action
OPTIONS		PKTSUP	Options. Enter PKTSUP to indicate whether billing should be suppressed for packet service calls within the customer group, and datafill subfield PKTSUP.
	PKTSUP	Y or N	Packet suppression. Enter Y if packet service calls within the customer group should not be billed. Enter N if packet service calls within the customer group should be billed.

Datafill example for table CUSTENG

The following example shows sample datafill for the Customer Groups capability in table CUSTENG. The example shows a customer group named BNRGRP1, which belongs to a family named BNR1, has 100 NCOS numbers allocated, requires 40 treatments, contains attendant consoles, and has no billing for intragroup packet service calls.

MAP display example for table CUSTENG

```
CUSTNAME    NONCOS      NOIBNTMT    CONSOLES
   DOMAIN       OPTIONS
________________________________________________________
BNRGRP1     100         40          Y
   FAMILY BNR1  PKTSUP Y $
```

Datafilling table CUSTHEAD

Table CUSTHEAD defines the basic translation and routing characteristics for the customer group.

The primary translator for the customer group is defined in the CUSTXLA field. CUSTXLA is the name assigned to the block of data in table IBNXLA that specifies digit translation for this customer group, including any access codes that start with a digit. In addition to the digit translator, table CUSTHEAD also specifies the feature (*) and octothorpe (#) translators with options FETXLA and OCTXLA. These translators indicate the areas in table IBNXLA that define feature and octothorpe translations, which translate any access codes beginning with a star or octothorpe, respectively. The operating company may also specify a preliminary translator (PLMXLA).

Customer Groups (continued)

Table CUSTHEAD also specifies the method of digit collection required for the group. The DIGCOLNM field specifies the area in table DIGCOL that defines digit collection for terminals in the group.

Specify a treatment for situations in which the digits cannot be translated using option VACTRMT, which contains the number of the treatment in table IBNTREAT.

The following table shows the datafill specific to Customer Groups for table CUSTHEAD. Only those fields that apply directly to Customer Groups are shown. For a description of the other fields, refer to the *Data Schema Reference Manual*.

Datafilling table CUSTHEAD

Field	Subfield	Entry	Explanation and action
CUSTNAME		alphanumeric (1 to 16 characters)	Customer group name. Enter the name assigned to the customer group.
CUSTXLA		alphanumeric (1 to 8 characters)	Customer translator. Enter the name to be used in table IBNXLA to identify the data block that specifies translations of digits for the group.
DIGCOLNM		alphanumeric (1 to 8 characters)	Digit collection name. Enter the name to be used in table DIGCOL to identify the data block that specifies digit collection for BRI lines in the group.
OPTION		FETXLA, OCTXLA, PLMXLA, or VACTRMT	Option. Enter FETXLA to define the feature (*) translator, and datafill subfield XLANAME. Enter OCTXLA to define the octothorpe (#) translator, and datafill subfield XLANAME. Enter PLMXLA to define the preliminary translator, and datafill subfield XLANAME. Enter VACTRMT to identify the treatment in table IBNTREAT to be used when digits cannot be translated, and datafill subfield VACTRMT.
	XLANAME	alphanumeric (1 to 8 characters)	Translator name. Enter the name to be used in table IBNXLA to identify the data block that specifies feature (*), octothorpe (#), or preliminary translation for the group.
	VACTRMT	1 to 63	Vacant number treatment. Enter the number that identifies vacant treatment in table IBNTREAT.

Datafill example for table CUSTHEAD

The following example shows sample datafill for the Customer Groups capability in table CUSTHEAD. The example shows a customer group named BNRGRP1, which is assigned the customer translator GRP1XLA, the digit collection name ISDN, the feature translator GRP1FET, the octothorpe translator GRP1OCT, the preliminary translator GRP1PLM, and the vacant treatment identified as 13 in table IBNTREAT.

MAP display example for table CUSTHEAD

```
CUSTNAME CUSTXLA DIGCOLNM OPTION
________________________________________________________________
BNRGRP1  GRP1XLA ISDN     GRP1FET GRP1OCT GRP1PLM 13 $
```

Datafilling table CUSTNTWK

Table CUSTNTWK associates the network name with the customer group name and identifier, and contains customer group-level DN attributes.

The identification parameters are

- CUSTNAME, which specifies the name of the customer group
- NETNAME, which is the name of the network
- NETCGID, which is the identifier of the customer group within the network

The customer group-level attributes include CLID, which enables Calling Line Identification at the customer group level (refer to the section “Calling Line Identification”.)

The following table shows the datafill specific to Customer Groups for table CUSTNTWK. Only those fields that apply directly to Customer Groups are

Customer Groups (continued)

shown. For a description of the other fields, refer to the *Data Schema Reference Manual*.

Datafilling table CUSTNTWK

Field	Subfield	Entry	Explanation and action
CUSTNAME		alphanumeric (1 to 16 characters)	Customer group name. Enter the name assigned to the customer group.
NETNAME		alphanumeric (1 to 32 characters)	Network name. Enter the network name (from table NETNAMES) of the network to which the customer group belongs.
NETCGID		0 to 4096	Network customer group identifier. Enter the number assigned to the customer group.

Datafill example for table CUSTNTWK

The following example shows sample datafill for the Customer Groups capability in table CUSTNTWK. The example shows a customer group named BNRGRP1, which is assigned the identifier 22 within the network named BNR.

MAP display example for table CUSTNTWK

```
CUSTNAME    NETNAME NETCGID OPTION
__________________________________________________________
BNRGRP1     BNR     22      $
```

Datafilling table DNGRPS

Table DNGRPS assigns customer group-level DN attributes to a range of DNs. The optional attributes include SUPPRESS, which specifies CLID suppression for the range of DNs. For more information on SUPPRESS, refer to the section “Calling Line Identification”.

The following table shows the datafill specific to Customer Groups capability in table DNGRPS. Only those fields that apply directly to Customer Groups are shown. For a description of the other fields, refer to the *Data Schema Reference Manual*.

Datafilling table DNGRPS

Field	Subfield	Entry	Explanation and action
AREACODE		0 to 7digits	Serving NPA or STS. Enter the serving NPA number or the serving translation scheme number (the area code, or the first three digits of the directory number).
OFCCODE		0 to 7 digits	Office code. Enter the office code (the next three digits of the directory number).
FROMDIGS		0 to 8 digits	From digits. Enter the lower boundary of the range of the next four digits of the directory number in this customer group.
TODIGS		0 to 8 digits	To digits. Enter the upper boundary of the range of the next four digits of the directory number in this customer group.
NETOPTS		see subfields	Network options. This field consists of subfields NETNAME and OPTION. Two network names and their associated options can be defined (that is, the field can be repeated once).

Datafill example for table DNGRPS

The following example shows sample datafill for the Customer Groups capability in table DNGRPS. In the example, one customer group contains DNs in the range 256-1001 to 256-2000, and the other contains DNs in the range 256-2001 to 256-3000.

MAP display example for table DNGRPS

```
SNPA    OFC FROMDIGS    TODIGS      NETOPTS
____________________________________________________________
613     256 1001        2000        $
613     256 2001        3000        $
```

Datafilling table NCOS

Table NCOS allows the operating company to define basic translation and routing characteristics on the basis of a subset of the customer group lines. The characteristics of the NCOS grouping, which is identified by a numerical

Customer Groups (continued)

value, are assigned in table NCOS. The NCOS grouping is allocated individual lines during base service provisioning of BRI terminals.

For each NCOS, the following optional parameters can be defined:

- XLAS, which defines preliminary, feature (*), and octothorpe (#) translators, and a digit collection name for the NCOS
- FLSHXLA, which defines preliminary, feature, and octothorpe flash translators for the NCOS
- OCTXLA, which defines an octothorpe translator for the NCOS

If these options are datafilled, their values override the corresponding values datafilled in table CUSTHEAD during the call translation process.

Table NCOS is also used to specify code restriction on an NCOS basis. The CRL option defines the code restriction level that applies to the NCOS, and specifies whether the codes in that level are allowed or blocked. (The codes belonging to the code level are identified in table CODEBLK.)

The following table shows the datafill specific to Customer Groups capability in table NCOS. Only those fields that apply directly to Customer Groups are shown. For a description of the other fields, refer to the *Data Schema Reference Manual*.

Datafilling table NCOS (Sheet 1 of 3)

Field	Subfield	Entry	Explanation and action
CUSTGRP		alphanumeric (1 to 16 characters)	Customer group name. Enter the name assigned to the customer group.
NCOS		0 to 511	Network class of service number. Enter a number to identify this NCOS.
NCOSNAME		alphanumeric (1 to 6 characters)	Network class of service name. Enter an NCOS name for attendant console display purposes.
LSC		0 to 31	Line screening code. Enter a number to assign a line screening code to the NCOS.
TRAFSNO		10 to 127 or 0	Traffic separation number. When traffic separation measurements are required, enter a traffic separation number (in the range 10 to 127). Otherwise, enter zero (0).

Customer Groups (continued)

Datafilling table NCOS (Sheet 2 of 3)

Field	Subfield	Entry	Explanation and action
NCOSOPTN		XLAS, OCTXLA, FLSHXLA, or CRL	Network class of service options. Enter XLAS to specify translators and a digit collection name for the NCOS, and datafill subfields PRELMXLA, FEATXLA, and DIGCOLNM. Enter OCTXLA to specify an octothorpe translator for the NCOS, and datafill subfield OCTXLA. Enter FLSHXLA to specify flash translators for the NCOS, and datafill subfields PRELMXLA, FEATXLA, and OCTXLA. Enter CRL to specify code restriction levels for the NCOS, and datafill subfields CRL and CRLACT.
	PRELMXLA	alphanumeric (1 to 8 characters)	Preliminary translator. Enter the name to be used in table IBNXLA to identify the data block that specifies preliminary digit translation (or preliminary flash translation) for the NCOS. Enter NXLA to cause the translations process to use the preliminary translator in table CUSTHEAD.
	FEATXLA	alphanumeric (1 to 8 characters)	Feature translator. Enter the name to be used in table IBNXLA to identify the data block that specifies feature (*) translation (or feature flash translation) for the NCOS. Enter NXLA to cause the translations process to use the feature translator in table CUSTHEAD.
	OCTXLA	alphanumeric (1 to 8 characters)	Octothorpe translator. Enter the name to be used in table IBNXLA to identify the data block that specifies octothorpe (#) translation (or octothorpe flash translation) for the NCOS. Enter NXLA to cause the translations process to use the octothorpe translator in table CUSTHEAD.
	DIGCOLNM	alphanumeric (1 to 8 characters)	Digit collection name. Enter the name to be used in table DIGCOL to identify the data block that specifies digit collection for BRI lines in the NCOS. Enter NDGT to cause the translations process to use the digit collection name in table CUSTHEAD.

Customer Groups (continued)

Datafilling table NCOS (Sheet 3 of 3)

Field	Subfield	Entry	Explanation and action
	CRL	1 to 15	Code restriction level. Enter the code restriction level that applies to the NCOS.
	CRLACT	ALLOWED or BLOCKED	Code restriction action. If all calls to codes specified by this code restriction level (in table CODEBLK) are to be allowed to complete, enter ALLOWED. If they are to be blocked, enter BLOCKED.

Datafill example for table NCOS

The following example shows sample datafill for the Customer Groups capability in table NCOS. The example shows a customer group named BNRGRP1, which is subdivided into two NCOS groups, numbered 1 and 2. NCOS 1 is assigned an individual feature translator, but defaults to the preliminary and octothorpe translators and the digit collection name in table CUSTHEAD. The second tuple indicates that terminals in NCOS 2 are blocked from the codes listed in code restriction level 1.

MAP display example for table NCOS

```
CUSTGRP     NCOS    NCOSNAME    LSC     TRAFSNO
   NCOSOPTN
________________________________________________________
BNRGRP1     1       BLDG1       0       0
   XLAS NXLA BL1 NXLA NDGT  $
BNRGRP1     2       BLDG2       0       0
   CRL 1 BLOCKED    $
```

Datafilling table CODEBLK

Table CODEBLK contains the codes in each code restriction level assigned to the customer group or NCOS. The table is designed so that the customer group and code are specified, followed by a list of the code restriction levels (up to 15) that apply to the code. Table NCOS specifies whether a level is restricted or allowed for the NCOS, and table IBNXLA enables and disables code restriction and allowance.

The following table shows the datafill specific to Customer Groups capability in table CODEBLK. Only those fields that apply directly to Customer Groups are shown. For a description of the other fields, refer to the *Data Schema Reference Manual*.

Datafilling table CODEBLK

Field	Subfield	Entry	Explanation and action
CRLKEY		see subfields	Code restriction level key. This field contains subfields CUSTOMER and NUMBER.
	CUSTOMER	alphanumeric (1 to 16 characters)	Customer group. Enter the name of the customer group.
	NUMBER	3 to 18 digits	Number. Enter the code to be restricted. ***Note:*** This value can be an NPA, an office code, or a public or private number.
CRLDATA		1 to 15	Code restriction level data. Enter the code restriction levels that are to include the restricted code, separating each level from the next by a blank.

Datafill example for table CODEBLK

The following example shows sample datafill for the Customer Groups capability in table CODEBLK. In the first tuple, BNRGRP1 is assigned two code restriction levels. The first level includes NPAs 819 and 613, and the second level includes only NPA 819. In the second tuple, code restriction levels 1, 3, and 4 contain office code 459 in NPA 819, and level 2 contains office codes 256, 257, and 259 in NPA 613.

MAP display example for table CODEBLK

```
CRLKEY                  CRLDATA
________________________________________________________
BNRGRP1 819             1 2     $
        613             1       $
BNRGRP2 819459          1 3 4   $
        613256          2       $
        613257          2       $
        613259          2       $
```

Datafilling table DIGCOL

Table DIGCOL is datafilled to provide the digit collection algorithm for the customer group or NCOS. Digit collection is based on the digit collection

Customer Groups (continued)

selector (DGCOLSEL) field. For BRI applications, the following selectors are typically used:

- COL, when more than one digit is to be collected
- RPT, when only one digit is to be collected (for example, 0 for attendant access)
- POTS, when a transfer to regular POTS digit translation is required after the digit has been received

The following table shows the datafill specific to Customer Groups capability in table DIGCOL. Only those fields that apply directly to Customer Groups are shown. For a description of the other fields, refer to the *Data Schema Reference Manual*.

Datafilling table DIGCOL (Sheet 1 of 2)

Field	Subfield	Entry	Explanation and action
DGKEY		see subfields	Digit collection key. This field consists of subfields DATANAME and DIGIT.
	DATANAME	alphanumeric (1 to 8 characters)	Name of digit collection table. Enter the name assigned to this digit collection algorithm. ***Note:*** The name is used in table IBNXLA to refer to this area of table DIGCOL during translations.
	DIGIT	0 to 9, STAR, or OCT	Digit. Enter the number that begins digit collection for this algorithm. The value can be a a number from 0 to 9, STAR for star (*), or OCT for octothorpe (#).
DGDATA		see subfields	Digit collection data. This field consists of subfields DGCOLSEL and other fields that vary depending on the value of the selector.
	DGCOLSEL	COL, RPT, or POTS	Digit collection selector. Enter COL to specify further digit collection, and datafill subfield COLDATA. Enter RPT to specify no further digit collection. Enter POTS to specify POTS digit collection after this digit has been received, and datafill subfield DTONE. ***Note:*** If the customer group is a mixed group of ISDN and IBN lines, and subfield DATANAME is POTS, enter RPT in this field.

Customer Groups (continued)

Datafilling table DIGCOL (Sheet 2 of 2)

Field	Subfield	Entry	Explanation and action
	COLDATA	see subfields	Collect data. This field consists of subfields TMODE and NUMDIGS.
	TMODE	S or L	Timing mode. Enter S for short timing between digits, or L for long timing. ***Note:*** For NI-1 compatibility, enter L.
	NUMDIGS	1 to 3 (for short timing) 1 to 7 (for long timing)	Number of digits. For short timing, enter the number of digits (in the range of 1 to 3) after which timing is required. ***Note:*** NUMDIGS does not include the first digit dialed. For long timing, enter the number of digits (in the range of 1 to 7) after which timing is required. ***Note 1:*** NUMDIGS does not include the first digit dialed. ***Note 2:*** The specific time intervals for short and long timing are defined by office parameters LN_SHORT_PARTIAL_DIAL_TIME and LN_LONG_PARTIAL_DIAL_TIME. These parameters are described in the section “BRI Call Processing and ISUP Interworking”.
	DTONE	Y or N	Dial tone. Enter Y if a dial tone is required after the first digit is received, or N if no dial tone is needed.

Datafill example for table DIGCOL

The following example shows sample datafill for the Customer Groups capability in table DIGCOL. In the example, the operating company has defined

- RPT selection for digit 0, which is the attendant access code
- POTS selection (with a second dial tone) following a 9, used for DOD access
- POTS selection (without a second dial tone) following an 8, used for private network access
- COL selection and long timing intervals for four digits following a 6, used for extension dialing

Customer Groups (continued)

- COL selection and short timing intervals for two digits following the star (*), used for feature access codes
- RPT selection for the octothorpe (#), which is used to indicate end-of-dialing in feature access codes

MAP display example for table DIGCOL

```
DGKEY        DGDATA
________________________________________________________
ISDN  0      RPT
ISDN  9      POTS Y
ISDN  8      POTS N
ISDN  6      COL  L  4
ISDN  STAR   COL  S  2
ISDN  OCT    RPT
```

Datafilling table DIGMAN

Table DIGMAN is accessed from table IBNRTE to specify digits to be deleted from the translated number or digits to be used as a prefix for the number. The digit command (DIGCOM) field specifies the type of alteration to be made to the digits. Up to six different alterations can be made to one set of digits. For the Customer Groups capability, two DIGCOMs are used: REM to delete digits, and INC to add prefix digits.

The table is composed of groups of records. Each group is identified by a digit manipulation key (DMIKEY), and contains up to six records. Each record is identified by a digit command (DIGCOM).

CAUTION
Use of table DIGMAN in DMS packet call translation causes packet calls to fail to complete.
The DMS packet handler for ISDN BRI call translation does not support table DIGMAN.

The following table shows the datafill specific to Customer Groups capability in table DIGMAN. Only those fields that apply directly to Customer Groups

Customer Groups (continued)

are shown. For a description of the other fields, refer to the *Data Schema Reference Manual*.

Datafilling table DIGMAN

Field	Subfield	Entry	Explanation and action
DMIKEY		1 to 32 766 or blank	Digit manipulation key. For the first record in the group only, enter the number of the digit manipulation key. For other records in the group, leave the field blank.
DMIDATA		see subfield	Digit manipulation data. This field contains subfield DIGCOM and other subfields that vary depending on the value of the digit command.
	DIGCOM	INC or REM	Digit command. Enter INC to specify digits to be added as a prefix to the number, and datafill subfield INCDIGS. Enter REM to specify the number of digits to be removed from the number, and datafill subfield REMCOUNT.
	INCDIGS	numeric (up to 11 digits)	Included digits. Enter the numbers to be added as a prefix to the translated number.
	REMCOUNT	0 to 15	Remove digits count. Enter the number of digits to be removed from the beginning of the translated number.

Datafill example for table DIGMAN

The following example shows sample datafill for the Customer Groups capability in table DIGMAN. In this example, the tuple for index 344 adds two prefix digits, 72, to the number.

> ***Note:*** Referring also to the example in table IBNRTE for the S and N selectors, this digit manipulation could be the result of a second route indicated for use when a tie-trunk is busy. By adding two prefix digits, an ordinary outgoing trunk can be used for the call.

The tuple for index 345 illustrates the substitution of one private network code, 733, for another.

Customer Groups (continued)

MAP display example for table DIGMAN

```
DMIKEY  DMIDATA
________________________________________________________
344     INC 72  $
345     REM 3
        INC 733 $
```

Datafilling table XLANAME

Table XLANAME contains a list of the translator names used for the customer group, and defines the default translations to be used when no translations are defined in table IBNXLA for the access code dialed. The default translations data must take the same form as the original translations data in table IBNXLA, so the DEFAULT field in table XLANAME is identical to the RESULT field in table IBNXLA.

If there is no translations data for an access code in table IBNXLA, and no default data in table XLANAME, the vacant treatment (VACTRMT) defined in table CUSTHEAD is applied to the call.

The following table shows the datafill specific to Customer Groups capability in table XLANAME. Only those fields that apply directly to Customer Groups are shown. For a description of the other fields, refer to the *Data Schema Reference Manual*.

Datafilling table XLANAME

Field	Subfield	Entry	Explanation and action
XLANAME		alphanumeric (1 to 16 characters)	Translator name. Enter the name assigned to the translator.
DEFAULT		see RESULT field in table IBNXLA	Default data. This field is identical to the RESULT field in table IBNXLA. Refer to table IBNXLA for information of how to datafill this field.

Datafill example for table XLANAME

The following example shows sample datafill for the Customer Groups capability in table XLANAME. In this example, the first tuple shows a default translation for translator BNR1, which is the treatment numbered 13 in table IBNTREAT.

MAP display example for table XLANAME

KEY	RESULT	
GRP1EX	FLEXI	13

Datafilling table IBNRTE

Table IBNRTE is typically used to provide a route for the translated digits in the IBN environment. Routing is based on the routing selector field (IBNRTSEL), which specifies the type of routing. The following selectors are used in the BRI environment:

- DN, which routes the call to a DN on the switch
- IW, which routes an INWATS call
- N, which routes an outgoing call that has dialed digits that are not the same as the outpulsed digits (that is, a call that requires prefixing or deleting digits in table DIGMAN)
- OW, which routes an OUTWATS call
- S, which routes an outgoing call to a trunk
- T, which routes the call to another route in table INBRTE or another routing table
- TRMT, which routes the call to a treatment
- VFG, which routes the call to a VFG, for example for a virtual tie-trunk

> ***Note:*** Routing with the ISA selector is described in the section “ISDN BRI Routing”.

The table is composed of route lists, each identified by a route reference index, and containing up to eight alternative routes for the call.

> ***Note:*** There are four IBN routing tables, named IBNRTE, IBNRT2, IBNRT3, and IBNRT4, all of which operate identically. In this document, IBNRTE refers to all of these IBN routing tables.

The following table shows the datafill specific to Customer Groups capability in table IBNRTE. Only those fields that apply directly to Customer Groups are

Customer Groups (continued)

shown. For a description of the other fields, refer to the *Data Schema Reference Manual*.

Datafilling table IBNRTE (Sheet 1 of 4)

Field	Subfield	Entry	Explanation and action
RTE		1 to 1023 or blank	Route reference index. Enter the route reference index for the first route in the route list only. For other routes in this route list, leave the field blank.
RTELIST		see subfields	Route list. This field contains subfield IBNRTSEL and other subfields that vary depending on the value of the selector.
	IBNRTSEL	DN, IW, N, OW, S, T, TRMT, or VFG	IBN route selector. Enter DN to specify a route to a DN in the switch, and datafill subfields SNPA, NXX, EXP, and DMI. Enter IW to route an INWATS call, and datafill LINEATTR, NXX, VFG, and DMI. Enter N to route a call that has dialed digits that are not the same as the digits to be outpulsed, and datafill subfields OHQ, CBQ, EXP, MBG, CLLI, and DMI. Enter OW to route an OUTWATS call, and datafill subfields OHQ, CBQ, EXP, ZONE, and ROUTE. Enter S to specify a route to a trunk, and datafill subfields OHQ, CBQ, EXP, MBG, and CLLI. Enter T to route the call to another route index in table IBNRTE or to another routing table, and datafill subfield EXTRTEID. Enter TRMT to route the call to a treatment, and datafill subfield RTETRMT. Enter VFG to route the call to a VFG, and datafill subfields OHQ, CBQ, EXP, VFG, and DMI.
	SNPA	3 digits	Serving NPA. Enter the serving NPA of the DN on which the call should terminate.
	NXX	3 digits	Office code. Enter the office code of the DN on which the call should terminate.

Datafilling table IBNRTE (Sheet 2 of 4)

Field	Subfield	Entry	Explanation and action
	EXP	Y or N	Expensive. Enter Y if an expensive route and expensive route warning tone is applied to the trunk. Otherwise, enter N.
	DMI	0 to 32 767	Digit manipulation index. Enter the index in table DIGMAN that provides digit alteration for this call. Enter 0 (zero) if no digit alteration is required.
	LINEATTR	0 to 2047	Line attribute. Enter the line attribute of the virtual line associated with the INWATS call.
	VFG	alphanumeric (1 to 6 characters)	Virtual facility group. Enter the name of the VFG (from table VIRTGRPS) through which the call should be routed.
	OHQ	Y or N	Off-hook queuing. Enter Y if off-hook queueing is allowed for the call, or N if it is not allowed.
	CBQ	Y or N	Call-back queuing. Enter Y if call-back queueing is allowed for the call, or N if it is not allowed.
	MBG	Y or N	Multi-switch business group. Enter Y if the call is to a switch within a multi-switch business group. Otherwise, enter N.
	CLLI	alphanumeric (1 to 16 characters)	Common language location identifier. Enter the code (assigned in table CLLI) of the trunk on which the call should terminate.
	ZONE	0 to 13	OUTWATS zone. Enter the OUTWATS zone number for the virtual circuit. ***Note:*** The zone of the call's destination must be valid in this zone.
	ROUTE	see subfields	Route. This field contains subfields RTETYPE and other subfields that vary depending on the value of RTETYPE.

Customer Groups (continued)

Datafilling table IBNRTE (Sheet 3 of 4)

Field	Subfield	Entry	Explanation and action
	RTETYPE	S, T, or V	Route type. Enter S to route the call to a trunk, and datafill subfields CLLI and DMI. Enter T to route the call to another route index in this table or another routing table, and datafill subfields TABID and INDEX. Enter V to route the call through a VFG, and datafill subfields VFG and DMI.
	CLLI	alphanumeric (1 to 16 characters)	Common language location identifier. Enter the code from table CLLI that is assigned to the trunk on which the call should terminate.
	DMI	1 to 32 767, 0	Digit manipulation index. Enter the index into table DIGMAN that provides digit alteration for the call. Enter 0 (zero) if no digit alteration is required.
	TABID	IBNRTE, IBNRT2, IBNRT3, IBNRT4, OFRT, OFR2, OFR3, or OFR4	Table identifier. Enter the name of the table to which the call is routed.
	INDEX	0 to 1023	Key. Enter the route index in the specified table.
	VFG	alphanumeric (1 to 6 characters)	Virtual facility group. Enter the name of the virtual facility group from table VIRTGRPS to which the call should be routed.
	RTETRMT	alphanumeric (4 characters)	Route treatment. Enter the name of the treatment in table TMTCNTL.TREAT to which the call should be routed.
	EXTRTEID	see subfields	External route identifier. This field contains subfields TABID and KEY.

Datafilling table IBNRTE (Sheet 4 of 4)

Field	Subfield	Entry	Explanation and action
	TABID	IBNRTE, IBNRT2, IBNRT3, IBNRT4, OFRT, OFR2, OFR3, or OFR4	Table identifier. Enter the name of the table to which the call is routed.
	KEY	0 to 1023	Key. Enter the route index in the specified table.

Datafill examples for table IBNRTE

The following examples show sample datafill for the Customer Groups capability in table IBNRTE.

DN selector

The example below shows a route to a DN in area code 613, office code 245.

MAP display example for table IBNRTE, DN selector

```
RTE     RTELIST
________________________________________________________
44      DN 613 245 N 202
```

IW selector

The example below shows an INWATS call routed through a VFG named INWATS1. The DMI index of 6 is used to alter the digits to provide a new DN for the retranslation.

MAP display example for table IBNRTE, IW selector

```
RTE     RTELIST
________________________________________________________
77      IW  5  456  INWATS1  6  $
```

OW selector

The example below shows an OUTWATS call routed through a VFG.

Customer Groups (continued)

MAP display example for table IBNRTE, OW selector

```
RTE      RTELIST
________________________________________________________
77       OW  N N N 2 V OUTWATS1 0  $
```

S and N selectors

In the example below, the first route for route index 55 directs the call, which has specified a five-digit number, to a tie trunk, BNRPRIOG1. For cases in which the tie trunk is busy, the second route directs the call to outgoing trunk BNRPRIOG22, and specifies a digit manipulation index of 344. In table DIGMAN, the tuple for index 344 adds two prefix digits to the number to provide a full seven-digit number (refer also to the examples for table DIGMAN).

MAP display example for table IBNRTE, S and N selectors

```
RTE      RTELIST
________________________________________________________
55       S N N N N BNRTROG1
         N N N N N BNRTROG22 344 $
```

T selector

The example below shows a route to index 212 in table OFRT.

MAP display example for table IBNRTE, T selector

```
RTE      RTELIST
________________________________________________________
11       T OFRT 212
```

TRMT selector

The example below shows a route to reorder treatment, which is defined in table TMTCNTL.TREAT.

MAP display example for table IBNRTE, TRMT selector

```
RTE      RTELIST
________________________________________________________
33       TRMT  RODR
```

VFG selector

The example below shows a route to a virtual tie trunk with call-back queueing.

MAP display example for table IBNRTE, VFG selector

```
RTE     RTELIST
________________________________________________________
80      VFG  N  Y  N  TIETRK2  0  $
```

Datafilling table OFRT or subtable HNPACONT.RTEREF

> ***Note:*** Use this section only in North America. For European and APC applications, use universal translations rather than table OFRT or subtable HNPACONT.RTEREF.

Table OFRT and subtable HNPACONT.RTEREF are typically used to provide a route for the translated digits within the central office and within the home NPA, respectively. Routing in these tables is based on the routing selector field (RTESEL), which specifies the type of routing. The following selectors are used in the BRI environment:

- DN, which routes the call to a DN on the switch
- N, which routes an outgoing call that has dialed digits that are not the same as the outpulsed digits (that is, a call that requires prefixing or deleting digits)

  > ***Note:*** For office routing, digit manipulation is performed in tables OFRT and RTEREF.

- S, which routes an outgoing call to a trunk
- SX, which routes an outgoing call to a route in ROUTATTR
- T, which routes the call to another route in OFRT or RTEREF or another routing table
- TRMT, which routes the call to a treatment

The tables are composed of route lists, each identified by a route reference index, and containing up to eight alternative routes for the call.

Customer Groups (continued)

The structure of OFRT and RTEREF is essentially the same as that of table IBNRTE. However, they differ in that some fields are not found in all the tables, and some of the names of common fields are not identical.

Note: There are four office routing tables, named OFRT, OFR2, OFR3, and OFR4, all of which operate identically. In this document, OFRT refers to all of these office routing tables.

The following table shows the datafill specific to Customer Groups capability in table OFRT or RTEREF. Only those fields that apply directly to Customer Groups are shown. For a description of the other fields, refer to the *Data Schema Reference Manual*.

Datafilling table OFRT or subtable HNPACONT.RTEREF (Sheet 1 of 3)

Field	Subfield	Entry	Explanation and action
RTE		0 to 1023 or blank	Route reference index. Enter the route reference index for the first route in the route list only. For other routes in the route list, leave the field blank.
RTELIST		see subfields	Route list. This field contains the subfield RTESEL and other subfields that vary depending on the value of the selector.

Customer Groups (continued)

Datafilling table OFRT or subtable HNPACONT.RTEREF (Sheet 2 of 3)

Field	Subfield	Entry	Explanation and action
	RTESEL	DN, S, SX, N, N2, T, or TRMT	Route selector. Enter DN to specify a route to a DN in the switch, and datafill subfields SNPA and OFCCODE. Enter S to specify a route to a trunk, and datafill subfields CONNTYPE and CLLI. Enter SX to specify an expanded route to a trunk, and datafill subfields CLLI and ROUTATTR_INDEX. Enter N to route a call that has dialed digits that are not the same as the digits to be outpulsed, and datafill subfields CONNTYPE, CLLI, DELDIGS, PRFXDIGS, and CANCNORC. Enter N2 to achieve a uniform outpulsing schema, and datafill subfields CONNTYPE, CLLI, DELDIGS, PRFXDIGS, CANCNORC, DDLS, and ADLS. Enter T to route a call to another route index in table OFRT or to another routing table, and datafill subfield EXTRTEID. Enter TRMT to route a call to a treatment, and datafill subfield RTETRMT.
	SNPA	3 digits	Serving NPA. Enter the number of the serving NPA of the DN on which the call should terminate.
	OFCCODE	3 digits	Office code. Enter the office code of the DN on which the call should terminate.
	CONNTYPE	D	Connection type. Enter D.
	CLLI	alphanumeric (1 to 16 characters)	Common language location identifier. Enter the code (assigned in table CLLI) of the trunk on which the call should terminate.
	ROUTATTR_ INDEX	alphanumeric (1 to 16 characters)	Route attribute index. Enter the index in table ROUTATTR containing the expanded routing information to be applied to the call.

Customer Groups (continued)

Datafilling table OFRT or subtable HNPACONT.RTEREF (Sheet 3 of 3)

Field	Subfield	Entry	Explanation and action
	DELDIGS	0 to 15	Delete digits. Enter the number of digits to be deleted from the beginning of the translated number. Enter 15, which must be the number of digits to be deleted before outpulsing if route selector N2 is to be used.
	PRFXDIGS	0 to 9 or N	Prefix digits. Enter the prefix digits (0 to 9) to be applied to the translated number. Enter N if no prefixing is required.
	CANCNORC	N	Cancel normal charge. Enter N.
	DDLS	0 to 15	Delete digits last stage. Enter the number of digits, from 0 to 15, to be deleted from the front of the called number to be outpulsed.
	ADLS	0 to 15	Add digits last stage. Enter the actual digits which are prefixed onto the front of the called number to be outpulsed. Enter N if no digits are to be prefixed onto the front of the called number to be outpulsed.
	RTETRMT	alphanumeric (4 characters)	Route treatment. Enter the name of the treatment (from table TMTCNTL.TREAT) to which the call should be routed.
	EXTRTEID	see subfields	External route identifier. This field contains subfields TABID and KEY.
	TABID	IBNRTE, IBNRT2, IBNRT3, IBNRT4, OFRT, OFR2, OFR3, or OFR4	Table identifier. Enter the name of the table to which the call is routed.
	KEY	0 to 1023	Key. Enter the route index in the specified table.

Datafill examples for table OFRT or subtable HNPACONT.RTEREF

The following examples show sample datafill for the Customer Groups capability in table OFRT or subtable HNPACONT.RTEREF.

DN selectors

The example below shows a route to a DN in area code 616, office code 737.

MAP display example for table OFRT or subtable HNPACONT.RTEREF, DN selector

```
RTE     RTELIST
________________________________________________________
44      DN 616 737 $
```

S and SX and N and N2 selectors

In example below, the first route for route index 55 directs the call, which has specified a five-digit number, to a tie trunk, BNRPRIOG1. For cases in which the tie trunk is busy, the second route directs the call to outgoing trunk BNRPRIOG22, and adds two prefix digits, 72, to the number before outpulsing to provide a full seven-digit number.

MAP display example for table OFRT or subtable HNPACONT.RTEREF, S and SX and N and N2 selectors

```
RTE     RTELIST
________________________________________________________
55      S D BNRPRIOG1 $
        N D BNRPRIOG22 0 72 N $
```

T selector

The example below shows a route to index 414 in table OFRT.

MAP display example for table OFRT or subtable HNPACONT.RTEREF, T selector

```
RTE     RTELIST
________________________________________________________
11      T OFRT 414 $
```

TRMT selector

The example below shows a route to reorder treatment (which is defined in table TMTCNTL.TREAT).

Customer Groups (continued)

MAP display example for table OFRT or subtable HNPACONT.RTEREF, TRMT selector

```
RTE     RTELIST
________________________________________________________
33      TRMT RODR $
```

Datafilling table VIRTGRPS

Table VIRTGRPS contains the definitions of VFGs, which simulate trunk groups. Like trunk groups, VFGs can be defined as one-way (incoming or outgoing) or two-way facilities. To simulate a one-way trunk group, the VFG is assigned one entry, or member. To simulate a two-way facility, the VFG is assigned two members. The relationship between the two members is indicated by entering USES for the second member in subfield VFGTYPE.

Calls using VFGs have two legs: they are routed into the VFG, and then retranslated with any new attributes (such as a new DN) provided by table VIRTGRPS. Subfield INCTYPE indicates the environment in which the second leg of the call (that is, after the VFG) will be translated, as either POTS or IBN.

The following table shows the datafill specific to Customer Groups capability in table VIRTGRPS. Only those fields that apply directly to Customer Groups are shown. For a description of the other fields, refer to the *Data Schema Reference Manual*.

Datafilling table VIRTGRPS (Sheet 1 of 3)

Field	Subfield	Entry	Explanation and action
KEY		alphanumeric (1 to 6 characters) or blank	Virtual facility group key. Enter a name for the first member of the VFG only. For the second member, leave the field blank.
DATA		see subfields	Virtual facility group data. This field contains subfields VFGTYPE and INCTYPE, and other subfields that vary depending on the value of INCTYPE.

Datafilling table VIRTGRPS (Sheet 2 of 3)

Field	Subfield	Entry	Explanation and action
	VFGTYPE	SIZE followed by space and numeric value (0 to 2047) or USES followed by space and alphanumeric name (1 to 6 characters)	Virtual facility group type. For the first member of the VFG only, enter SIZE, a blank character, and a number to specify the number of simultaneous accesses for the VFG. For the second member of the VFG, enter USES, a blank character, and the name of the VFG (as defined in the KEY field for the first member).
	INCTYPE	POTS, IBN, NIL, or blank	Incoming type. For the first member of the VFG: • Enter POTS to specify that the call is entering the POTS environment, and datafill subfields BILLNUM, LINEATTR, and LINECDR. • Enter IBN to specify that the call is entering the IBN environment, and datafill subfields BILLNUM, CUSTNAME, SUBGRP, TRC, NCOS, INTRAGRP, SMDR, and CDR. • Enter NIL to specify that there is no associated screening information for the first member of the VFG. For the second member of the VFG: • Leave the field blank if the second leg of the call is in the POTS environment. • Enter IBN to specify that the call is entering the IBN environment, and datafill subfields BILLNUM, CUSTNAME, SUBGRP, TRC, NCOS, INTRAGRP, SMDR, and CDR.
	BILLNUM	1 to 11 digits or N	Billing number. Enter the number to which the second leg of the call should be charged. Enter N to indicate that the call should be charged to the originator.
	LINEATTR	0 to 2047	Line attribute index. Enter the line attribute index in table LINEATTR that specifies the translators and screening tables to be used for the next leg of the call.
	LINECDR	Y or N	Line call detail recording. Enter Y if CDR is required to record virtual line calls. Otherwise, enter N.

Customer Groups (continued)

Datafilling table VIRTGRPS (Sheet 3 of 3)

Field	Subfield	Entry	Explanation and action
	CUSTNAME	alphanumeric (1 to 16 characters)	Customer group name. Enter the name assigned to the customer group in which the call should terminate.
	SUBGRP	0 to 7	Subgroup number. Enter the customer subgroup number.
	TRC	0 to 7	Terminating restriction code. Enter the terminating restriction code that determines whether calls on this virtual trunk can terminate on a specific line. The TRC values in this field must be matched by the SERVORD DIN option TRC values for the line. (Refer to table KSETFEAT.)
	NCOS	0 to 511	Network class of service. Enter the NCOS number used in the translation of the second leg of the call.
	INTRAGRP	Y or N	Intragroup. Enter Y to handle the incoming call as if it were a call from within the customer group. Otherwise, enter N.
	SMDR	Y or N	Station message detail recording. Enter Y if SMDR records should be produced for the next leg of the call. Otherwise, enter N.
	CDR	Y or N	Call detail recording. Enter Y if CDR records should be produced unconditionally for the next leg of the call. Otherwise, enter N.

Datafill example for table VIRTGRPS

The following example shows sample datafill for the Customer Groups capability in table VIRTGRPS. In this example, the first tuple defines a VFG used for OUTWATS service called OUT1, which provides six simultaneous accesses. The POTS translations for the next leg of the call are defined in index 34 of table LINEATTR. The second tuple specifies an INWATS trunk and provides the IBN attributes for the translation of the second leg of the call. The third tuple defines a two-way tie trunk.

MAP display example for table VIRTGRPS

```
KEY      DATA
________________________________________________________
OUT1     SIZE  6 POTS  N  34  N  $
INW1     SIZE  8 IBN  3031122  BNR1 0 3 4 N N N $
TIE1     SIZE  6 POTS  N  12  N  $
    USES TIE1   IBN  3031221  BNR1 0 2 2 N N N $
```

Datafilling table DNROUTE

Table DNROUTE is used to direct non-LTID DNs, such as INWATS lines, to a route or treatment. Various DN selectors (in field DNSEL) are used to specify different types of routing for calls to the specified DNs:

- selector D is used to route calls to a treatment
- selector M is used to route calls to a listed DN on the attendant console for a customer group
- selector MEM is used to route calls to a trunk member
- selector T is used to direct calls to a specific route in a routing table

The following table shows the datafill specific to Customer Groups capability in table DNROUTE. Only those fields that apply directly to Customer Groups are shown. For a description of the other fields, refer to the *Data Schema Reference Manual*.

Datafilling table DNROUTE (Sheet 1 of 3)

Field	Subfield	Entry	Explanation and action
AREACODE		3 digits	Area code. Enter the area code or serving NPA number (the first three digits of the DN).
OFCCODE		3 digits	Office code digit register. Enter the office code (the next three digits of the DN).

Customer Groups (continued)

Datafilling table DNROUTE (Sheet 2 of 3)

Field	Subfield	Entry	Explanation and action
STNCODE		1 to 4 digits	Station code. Enter the remaining digits of the DN. ***Note:*** If only one digit is entered, it represents all DNs that have a station code beginning with that digit. For example, if AREACODE is 613, OFCCODE is 423, and STNCODE is 6, all calls beginning with 6134236 are handled with the corresponding DNRESULT value. A similar effect occurs if two or three digits are entered.
DNRESULT		see subfields	Directory number result. This field contains subfield DNSEL and other subfields that vary depending on the value of the DN selector.
	DNSEL	D, M, MEM, or T	Directory number selector. Enter D to specify a treatment for the DN, and datafill subfield TRMT. Enter M to route calls to the attendant console for a customer group, and datafill subfields CUSTGRP, SUBGRP, ICI, and LDN_OM_REPORT. Enter MEM to route calls to a trunk member, and datafill subfields CLLI and MEMNUM. Enter T to send calls to a specific routing table, and datafill subfield TUPLID.
	TRMT	alphanumeric (4 characters)	Treatment. Enter the name of the treatment in table TMTCNTL.TREAT to which the calls for this DN should be routed.
	CUSTGRP	alphanumeric (1 to 16 characters)	Customer group. Enter the name of the customer group.
	SUBGRP	0 to 7	Subgroup. Enter the number of the customer subgroup.

Customer Groups (continued)

Datafilling table DNROUTE (Sheet 3 of 3)

Field	Subfield	Entry	Explanation and action
	ICI	0 to 255	Incoming call identification code. Enter the incoming call identification code assigned to the attendant console for this listed DN. ***Note:*** Assignment of ICI to keys and lamps on the attendant console is defined in table FNMAP, which is described in the *Data Schema Reference Manual*.
	LDN_OM_REPORT	Y or N	Listed directory number report. Enter Y to indicate that the listed DN should be monitored by the OM file. Otherwise, enter N.
	CLLI	alphanumeric (1 to 16 characters)	Common language location identifier. Enter the code assigned to the trunk group in table CLLI.
	MEMNUM	0 to 9999	Member number. Enter the external trunk number of the trunk circuit assigned in table TRKMEM.
	TUPLID	see subfields	Tuple identifier. This field contains subfields TABID and KEY.
	TABID	IBNRTE, IBNRT2, IBNRT3, IBNRT4, OFRT, OFR2, OFR3, or OFR4	Table name. Enter the routing table name.
	KEY	1 to 1023	Key. Enter the routing table index.

Datafill example for table DNROUTE

The following example shows sample datafill for the Customer Groups capability in table DNROUTE. In the first tuple, selector D is used to route all calls beginning with 6137448 to operator treatment. In the second tuple, selector M routes calls for the specified listed DN, 6137445679, to ICI 22 for customer group BNRGRP1. In the third tuple, the DN is routed to trunk member 5 of CLLI BNRTRIO2. In the fourth tuple, a route in table OFRT is specified for an INWATS line, DN 6137445689.

Customer Groups (continued)

MAP display example for table DNROUTE

```
AREACODE     OFCCODE STNCODE DNRESULT
________________________________________________________
613          744     8       D  OPRT
613          744     5679    M  BNRGRP1 22 N
613          744     5680    MEM BNRTRIO2 5
613          744     5689    T  OFRT 22
```

Datafilling table IBNXLA

Table IBNXLA is used to translate the digits in calls originating at BRI terminals or incoming trunks. Each tuple in the table, which is known as a translator, is identified by a translator name assigned in table XLANAME, and a translation selector (TRSEL), which specifies the type of translation to be performed. Depending on the type of translation, the RESULT field provides a route or treatment for the digits.

Datafill for the Customer Groups capability uses the following types of TRSEL:

- ATT (attendant access) is used to route calls to the attendant.
- EXTN (extension) is used to route calls on an extension basis when abbreviated numbers are dialed.
- FLEXI (route to IBN treatment table) is used to translate calls on special intercept lines and route them to treatments.
- NET (networks) is used for translations of network calls; the NETTYPE field distinguishes between types of networks, such as direct outward dial (DOD), private network (PVT), or OUTWATS (OWT) calls.

Within the NET TRSEL for DOD calls, the CRL field allows the operating company to enable or disable code restriction or allowance.

If there is no datafill for the dialed digits, translation is performed according to the default given in table XLANAME. If there is no default in table XLANAME, translation automatically defaults to the VACTRMT specified in table CUSTHEAD.

The following table shows the datafill specific to Customer Groups capability in table IBNXLA. Only those fields that apply directly to Customer Groups are shown. For a description of the other fields, refer to the *Data Schema Reference Manual*.

Datafilling table IBNXLA (Sheet 1 of 4)

Field	Subfield	Entry	Explanation and action
KEY		see subfields	Key. This field consists of subfields XLANAME and DGLIDX.
	XLANAME	alphanumeric (1 to 8 characters)	Translator name. Enter the name of the translator. ***Note:*** The translator name must be listed in table XLANAME.
	DGLIDX	numeric (up to 18 digits)	Digilator index. Enter the digits to be translated.
RESULT		see subfields	Result. The RESULT field contains subfield TRSEL and a number of other subfields that differ depending on the translation selector.
	TRSEL	ATT, EXTN, FLEXI, or NET	Translation selector. Enter ATT to specify calls to the attendant, and datafill subfield ICI. Enter EXTN to specify extension calls, and datafill subfields SMDR, INTRAGROUP, SNPA, NNX, DIGINEXT, and FILLDIGS. Enter FLEXI to specify a special intercept line, and datafill subfield FLEX_INTCPT. Enter NET to specify DOD, PVT, or OWT calls, and datafill subfields ACR, SMDR, NOACDIGS, SDT, DGCOLNM, CRL, INTRAGRP, and NETTYPE.
	ICI	0 to 255	Incoming call identification code. Enter the incoming call identification code assigned to the attendant console for this listed DN. ***Note:*** Assignment of ICI to keys and lamps on the attendant console is defined in table FNMAP, which is described in the *Data Schema Reference Manual*.

Customer Groups (continued)

Datafilling table IBNXLA (Sheet 2 of 4)

Field	Subfield	Entry	Explanation and action
	FLEX_INTCPT	0 to 63	Flexible intercept. Enter the number of the treatment in table IBNTREAT to which the intercepted calls should be route.
	ACR	Y or N	Account code entry. Enter Y if an account code entry is required, or N if it is not.
	SMDR	Y or N	Station message detail recording. Enter Y when all calls within the customer group should be recorded. Enter N if no recording is required.
	NOACDIGS	0 to 7	Number of access code digits. Enter the number of access code digits in the access code (typically 1 for DOD and PVT).
	SDT	Y or N	Second dial tone. Enter Y if a dial tone is required after the access digit is dialed. Otherwise, enter N.
	DGCOLNM	alphanumeric (1 to 8 characters)	Digit collection name. Enter the digit collection name assigned to the customer group in table CUSTHEAD.
	CRL	Y or N	Code restriction level. Enter Y to enable code restriction and allowance for DOD calls. Enter N to disable code restriction and allowance.
	INTRAGROUP	Y or N	Intragroup. Enter Y if calls are for the same customer group, or N if they are not.
	NETTYPE	DOD, PVT, or OWT	Network type. Enter DOD to specify direct outward dial, and datafill subfields SMDRB, LINEATTR, and TOLLREST. Enter PVT to specify a private network, and datafill subfields STS, ORIGSCRE, and SCRNCL. Enter OWT to specify an OUTWATS call, and datafill subfields LNATTR, OWATZONE, INVZNFLX, and EXTRTEID.

Datafilling table IBNXLA (Sheet 3 of 4)

Field	Subfield	Entry	Explanation and action
	SMDRB	Y or N	Station message detail recording. Enter Y to record the call as chargeable. Enter N if the call is not chargeable.
	LINEATTR	0 to 2047	Line attribute. Enter the line attribute assigned to the DOD access code.
	TOLLREST	TDN, TDV, or NONE	Toll restriction. Enter TDN to specify that DOD calls should be diverted to toll denied treatment (TDND). Enter TDV to specify that DOD calls should be diverted to the attendant console intercept. Enter NONE to specify no diversion.
	STS	numeric	Serving translation scheme. Enter the number of the table assigned to the home NPA to which these calls must route.
	ORIG_SOURCE	LCL or NLCL	Origination source. Enter the originating source of the call as LCL to indicate that the source of the call is local (inside the central office) or enter NLCL to indicate that the call is not local.
	SCRNCL	alphanumeric or NSCR	Screening class. Enter the name of the class of screening subtable if class of service screening is required. Otherwise, enter NSCR.
	INTRAGROUP	Y or N	Intragroup. Enter Y if the call is within the same customer group, or N if it is not.
	SNPA	3 digits	Serving numbering plan area. Enter the destination NPA number to be applied to the dialed code as a prefix.
	NNX	3 digits	Central office code. Enter the destination central office code to be applied to the dialed code as a prefix.
	DIGINEXT	1 to 7	Digits in extension. Enter the number of digits (1 to 7) in the extension.

Customer Groups (continued)

Datafilling table IBNXLA (Sheet 4 of 4)

Field	Subfield	Entry	Explanation and action
	FILLDIGS	up to 3 digits	Fill digits. Enter up to three digits to be used as a prefix for the dialed digits in extension dialing.
	LNATTR	0 to 2047	Line attribute. Enter the line attribute assigned to the OUTWATS access code.
	OWATZONE	0 to 9, A, B, C, or AUTO	OUTWATS zone. Enter the OUTWATS zone (0 to 9, A, B, or C) in which this call should be screened. Enter AUTO to indicate the zone specified in table OWATZONE for the NPA of the called number. ***Note:*** Entries A, B, and C correspond, respectively, to zones 10, 11, and 12.
	INVZNFLX	0 to 63	Zone flexible intercept. Enter the number of the IBN treatment (from table IBNTREAT) to which out-of-zone calls should be routed.
	EXTRTEID	see subfields	External route identifier. This field contains subfields TABID and KEY.
	TABID	INBRTE, IBNRT2, IBNRT3, IBNRT4, OFRT, OFR2, OFR3, or OFR4	Table identifier. Enter the name of the table to which the call is routed.
	KEY	0 to 1023	Key. Enter the route index in the specified table.

Datafill examples for table IBNXLA

The following examples show sample datafill for the Customer Groups capability in table IBNXLA.

Translation selector EXTN

The example below shows the translator for a five-digit extension dialing beginning with the number 6. The NPA 613 and the office code 723 are automatically applied to the extension as prefixes in this translator.

Customer Groups (continued)

MAP display example for table IBNXLA, EXTN translation selector

```
KEY          RESULT
______________________________________________________________
GRP1EX 6     EXTN N N Y 613 723 5 $
```

Translation selector FLEXI

In the example below, the translator specifies that any calls to 4235 should be routed to IBN treatment number 13 (in table IBNTREAT).

MAP display example for table IBNXLA, FLEXI translation selector

```
KEY               RESULT
______________________________________________________________
GRP1FLX 4235      FLEXI 13
```

Translation selector NET/DOD

In the example below, the translator defines 9 as the access code for DOD calls, and specifies line attribute 12 in table LINEATTR as the next step in translations for the call.

MAP display example for table IBNXLA, NET/DOD translation selector

```
KEY          RESULT
______________________________________________________________
GRP1DOD 9    NET N N 1 Y ISDN Y N DOD N 12 NONE $
```

Translation selector NET/PVT

In the example below, the translator defines 8 as the access code for this private network.

MAP display example for table IBNXLA, NET/PVT translation selector

```
KEY          RESULT
______________________________________________________________
GRP1PVT 8    NET N   N 1 N ISDN Y Y PVT 001 LCL NSCR $
```

Customer Groups (continued)

Translation selector NET/OWT

In the example below, the translator defines 5 as the access code for OUTWATS calls, and specifies a line attribute of 23, an OUTWATS zone of 2, IBN treatment number 12 for out-of-zone calls, and route 52 in table OFRT.

MAP display example for table IBNXLA, NET/OWT translation selector

```
KEY          RESULT
________________________________________________________
GRP1OWT 5    NET N N 1 Y ISDN Y N OWT 23 2 12 OFRT 52 $
```

Translation verification tools

The following examples show the output from the translation verification (TRAVER) tool when it is used to simulate the Customer Groups capability. The examples show TRAVER outputs for an extension call, an originating DOD call, an OUTWATS call, a call terminating on a BRI terminal, and an INWATS call.

> ***Note:*** Some messages and table accesses that are not directly related to the capability do not appear in the TRAVER examples, so that it is easier to follow the progression of the call.

Extension call

The following example shows the output from TRAVER when it is used to verify the Customer Groups capability for an extension call originating and terminating in the same DMS-100 switch.

In a simulation, the TRAVER command replaces the SETUP message that the DMS-100 switch would receive in a real situation, and provides all the information normally contained in the SETUP message. In the TRAVER command shown at the top of the example,

l
indicates that the DN of the originating line follows

6214901
is the DN

5902
represents the dialed digits

b
indicates that both a table trace and a digit trace are required

Customer Groups (continued)

The translation process shown in the TRAVER example is as follows:

1. In lines 1 and 2 of the example, table KSETLINE is accessed to begin the translation of the call.
2. In lines 3 through 6, tables NCOS and CUSTHEAD are accessed using the customer group name from table KSETLINE, IBNTST. Table NCOS provides a preliminary translator, CXT1, which is used to access table IBNXLA.
3. The tuple in table IBNXLA for translator CXT1 contains the translations selector EXTN, which indicates an extension call. The tuple contains the area code and office code of the terminating DN (613 and 621), which are used to index tables TOFCNAME and DNINV.

TRAVER output example for Customer Groups capability, extension call

```
     traver l 6215901 5902 b
1    TABLE KSETLINE
2    ISDN 1 1 DN Y 6215901 IBNTST 0 0 613 (RAG) (PRK) (LNR) (SFC) (CFX) (MWT) $
3    TABLE NCOS
4    IBNTST 0 0 0 TST10 (XLAS CXT1 RXCFN NDGT) (OHQ 0 TONE_OHQ) (CBQ 0 1 Y 2)
5    TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
6    IBNTST NXLA CXT3 RXCFN 0 NDGT
7    TABLE IBNXLA: XLANAME CXT1
8    CXT1 5 EXTN N N Y 613 621 4 $
9    TABLE TOFCNAME
10   613 621
11   TABLE DNINV
12   613 621 5902 ILC ISDN 2
13
14
15   +++ TRAVER: SUCCESSFUL CALL TRACE +++
16
17
18   DIGIT TRANSLATION ROUTES
19
20   1 LINE              6136215902           ST
21
22   TREATMENT ROUTES.  TREATMENT IS:  GNCT
23   1 T120
24
25   +++ TRAVER: SUCCESSFUL CALL TRACE +++
```

Note: The line numbers in this example are shown for reference purposes only and do not appear in an actual TRAVER session.

Customer Groups (continued)

Originating call

The following example shows the output from TRAVER when it is used to verify the Customer Groups capability for a DOD call originating in the DMS-100 switch.

In a simulation, the TRAVER command replaces the SETUP message that the DMS-100 switch receives in a real situation, and provides all the information normally contained in the SETUP message. In the TRAVER command shown at the top of the example,

l
indicates that the DN of the originating line follows

6215901
is the DN

96215902
represents the dialed digits

b
indicates that a table trace and a digit trace are required

The translation process shown in the TRAVER example is as follows:

1. In lines 1 and 2 of the example, table KSETLINE is accessed to begin the translation of the call.
2. In lines 3 to 6, tables NCOS and CUSTHEAD are accessed using the customer group name from table KSETLINE, IBNTST. Table NCOS provides a preliminary translator, CXT1, which is used to access table IBNXLA.
3. In lines 7 and 8, the digit collection name from table CUSTHEAD, TST1, is used to obtain digit collection rules from table DIGCOL.
4. The tuple in table IBNXLA for translator CXT1 contains the translations selector NET, which indicates a network call, and NETTYPE DOD, which indicates a DOD call. The tuple specifies line attribute 27, which identifies index 27 in table LINEATTR.
5. Table LINEATTR contains standard pretranslator name P621, which indexes the standard pretranslator control table, STDPRTCT. Using the dialed digits, subtable STDPRTCT.STDPRT is accessed in lines 17 and 18. The tuple in subtable STDPRT contains selector N and translation system code NA, which route the call to table HNPACONT. Table HNPACONT is indexed with the area code from table LINEATTR.
6. In lines 21 and 22, table HNPACONT.HNPACODE is accessed using the office code portion of the dialed digits, and provides a route in subtable

RTEREF for the call. Subtable RTEREF contains the name of the outgoing trunk, TR7345582.

TRAVER output example for Customer Groups capability, originating call

```
traver l 6215901 96675902 b
TABLE KSETLINE
ISDN 1 1 DN Y 6215901 IBNTST 0 0 613 (RAG) (PRK) (LNR) (SFC) (CFX) (MWT) $
TABLE NCOS
IBNTST 0 0 0 TST10 (XLAS CXT1 RXCFN NDGT) (OHQ 0 TONE_OHQ) (CBQ 0 1 Y 2)
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
IBNTST NXLA CXT3 RXCFN 0 TST1
TABLE DIGCOL
TST1 9 POTS Y
TABLE IBNXLA: XLANAME OWT
CXT1 9 NET N Y N 1 Y NDGT N Y DOD Y 27 NONE $
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
27 1FR NONE NT FR01 0 613 P621 L613 TSPS 10 NIL NILSFC LATA1 0 NIL NIL 0 0 Y
TABLE STDPRTCT
P621 ( 1) ( 0) 0
 .  SUBTABLE STDPRT
 .  66 69 N NN 0 NA
TABLE HNPACONT
613 911 2 ( 39) ( 1) ( 0) ( 0) 0
 .  SUBTABLE HNPACODE
 .  667 667 LRTE 19
 .  SUBTABLE RTEREF
 .  19 N D TR7345582 3 819 N
 .  EXIT TABLE RTEREF
EXIT TABLE HNPACONT


+++ TRAVER: SUCCESSFUL CALL TRACE +++


DIGIT TRANSLATION ROUTES

1 TR7345582             8195902          ST

TREATMENT ROUTES.  TREATMENT IS:  GNCT
1 T120

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

Note: The line numbers in this example are shown for reference purposes only and do not appear in an actual TRAVER session.

Customer Groups (continued)

OUTWATS call

The following examples show the output from TRAVER when it is used to verify the Customer Groups capability for an OUTWATS call originating in the DMS-100 switch.

An OUTWATS call routed through a VFG has two legs: the first routes from the line into the VFG, and the second routes to a trunk with the attributes defined in the VFG. In a simulation, two TRAVER commands (one for each leg of the call) replace the SETUP message that the DMS-100 switch receives in a real situation, and provide all the information normally contained in the SETUP message. In the TRAVER command shown at the top of example for the first leg,

l
indicates that the DN of the originating line follows

6225922
is the DN

1419182412323
represents the dialed digits

b
indicates that both a table trace and a digit trace are required

The translation process shown in the TRAVER example is the same as for an ordinary originating call until table IBNXLA is reached. From that point, the process is as follows:

1. In lines 9 and 10, the tuple in table IBNXLA for translator OWTSA contains the translations selector NET and NETTYPE OWT, which indicates an OUTWATS call. The tuple specifies line attribute 8, which identifies index 8 in table LINEATTR. The tuple also specifies the outwats zone, 2, treatment 9 (to be used if the call doesn't go through), and the route for the call, IBNRTE 72.
2. Translations proceeds through the standard tables LINEATTR, STDPRTCT, and HNPACONT. After table HNPACONT, tables OWATZONE and ZONEORDR are accessed in lines 27 to 30 with the calling number to ensure that the zone is valid for the originating DN.
3. In lines 32 and 33, table IBNRTE is accessed with the index from table IBNXLA. The tuple in table IBNRTE provides the name of the VFG through which the call will be routed, OWZNE2.

TRAVER output example for Customer Groups capability, OUTWATS call (1)

traver l 6225922 1419182412323 b

```
TABLE KSETLINE
ISDN 1 1 DN Y 6225922 IBNTST 0 0 613 (RAG) (PRK) (LNR) (SFC) (CFX) (MWT) $
TABLE NCOS
IBNTST 0 0 0 TST10 ( XLAS OWTSA RXCFN NDGT) (OHQ 0 TONE_OHQ) (CBQ 0 1 Y 2)
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
IBNTST NXLA CXT3 RXCFN 0 TST1
TABLE DIGCOL
TST1 1 COL S 2
TABLE IBNXLA: XLANAME OWT
OWTSA 141 NET N Y N 3 Y POTS N N OWT 8 2 9 IBNRTE 72 $
TABLE DIGCOL
POTS specified: POTS digit collection
TABLE LINEATTR
8 OWT NONE NT NSCR 0 613 OWT1 NLCA NONE N 10 NIL NILSFC NILLATA 0 NIL
TABLE STDPRTCT
OWT1 ( 1) ( 0) 0
 .  SUBTABLE STDPRT
 .  9 9 N DD 0 NA
TABLE HNPACONT
613 911 2 ( 39) ( 1) ( 0) ( 0) 0
 .  SUBTABLE HNPACODE
 .  918 918 FRTE 9 N
 .  SUBTABLE RTEREF
 .  9 S D OW345582
 .  EXIT TABLE RTEREF
EXIT TABLE HNPACONT
TABLE OWATZONE
613 9182412323 1
TABLE ZONEORDR
613 ( 0) ( 1234567) ( 8) (9) $
VALID ZONE 2 OUTWATS CALL
TABLE IBNRTE
72 OW N N N 1 V OWZNE2 0
EXIT TABLE IBNRTE

+++ TRAVER: SUCCESSFUL CALL TRACE +++
DIGIT TRANSLATION ROUTES

1 VFG: OWZNE2             9182412323

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

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

Note: The line numbers in this example are shown for reference purposes only and do not appear in an actual TRAVER session.

In the TRAVER command shown at the top of example for the second leg,

Customer Groups (continued)

v
indicates that the name of a VFG follows

OWZNE2
is the VFG

ow
specifies an OUTWATS call

2
specifies the OUTWATS zone

9182412323
represents the calling address

b
indicates that a table trace and a digit trace are required

The translation process begins in the VFG identified by table IBNRTE in the first leg of the call, and continues as follows:

1. In lines 1 and 2, the VFG tuple specifies a billing number and line attribute 8, which is the index to table LINEATTR.
2. Translations proceeds through the standard tables LINEATTR, STDPRTCT, and HNPACONT. In table HNPACONT.RTEREF, in lines 13 and 14, a trunk route (OW345582) is obtained for the call. Tables OWATZONE and ZONEORDR are then checked to ensure that the zone is valid for the originating DN, and the call goes out on the trunk.

Customer Groups (continued)

TRAVER output example for Customer Groups capability, OUTWATS call (2)

traver v owzne2 ow 2 9182412323 b

```
TABLE VIRTGRPS
OWZNE2 SIZE 2 POTS 6223333 8 Y
TABLE LINEATTR
8 OWT NONE NT NSCR 0 613 OWT1 NLCA NONE N 10 NIL NILSFC NILLATA 0 NIL
TABLE STDPRTCT
OWT1 ( 1) ( 0) 0
 .  SUBTABLE STDPRT
 .  9 9 N DD 0 NA
TABLE HNPACONT
613 911 2 ( 39) ( 1) ( 0) ( 0) 0
 .  SUBTABLE HNPACODE
 .  918 918 FRTE 9 N
 .  SUBTABLE RTEREF
 .  9 S D OW345582
 .  EXIT TABLE RTEREF
EXIT TABLE HNPACONT
THIS IS A ZONE 2 OUTWATS LINE
TABLE OWATZONE
613 9182412323 1
TABLE ZONEORDR
613 ( 0) ( 1234567) ( 8) (9) $
VALID ZONE 2 OUTWATS CALL
VALID OUTWATS CALL

+++ TRAVER: SUCCESSFUL CALL TRACE +++

DIGIT TRANSLATION ROUTES

1 OW345582             9182412323  ST

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

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

Note: The line numbers in this example are shown for reference purposes only and do not appear in an actual TRAVER session.

Terminating call

The following example shows the output from TRAVER when it is used to verify the Customer Groups capability for a call terminating in the DMS-100 switch on a POTS trunk.

In a simulation, the TRAVER command replaces the SETUP message that the DMS-100 switch would receive in a real situation, and provides all the information normally contained in the SETUP message. In the TRAVER command shown at the top of the example,

Customer Groups (continued)

tr
indicates that a trunk name follows

TR7345582
is the trunk name

96215902
represents the dialed digits

b
indicates that a table trace and a digit trace are required

The translation process shown in the TRAVER example is as follows:

1. In lines 1 and 2, table TRKGRP is accessed using the trunk group CLLI, TR7345582, and provides the standard pretranslator name P621, which indexes the standard pretranslator control table, STDPRTCT.
2. Using the dialed digits, subtable STDPRTCT.STDPRT is accessed in lines 5 and 6. The tuple in table STDPRT contains selector N and translation system code NA, which route the call to table HNPACONT. Table HNPACONT is indexed with the area code from table LINEATTR.
3. In lines 9 and 10, table HNPACONT.HNPACODE is accessed using the office code portion of the dialed digits, and provides the area code and office code to index tables TOFCNAME and DNINV.

TRAVER output example for Customer Groups capability, terminating call

traver tr TR7345582 96215902 b

```
TABLE TRKGRP
TR7345582 TI 0 ELO NCRT NIL P621 NSCR 613 LCL N N $
TABLE STDPRTCT
P621 ( 1) ( 0) 0
 .  SUBTABLE STDPRT
 .  621 632 N NP 0 NA
TABLE HNPACONT
613 911 2 ( 39) ( 1) ( 0) ( 0) 0
 .  SUBTABLE HNPACODE
 .  667 667 DN 613 621
TABLE TOFCNAME
613 621
TABLE DNINV
613 621 5902 ILC ISDN 2
+++ TRAVER: SUCCESSFUL CALL TRACE +++
DIGIT TRANSLATION ROUTES
1 LINE                 6136215902          ST
TREATMENT ROUTES.  TREATMENT IS:  GNCT
1 T120
+++ TRAVER: SUCCESSFUL CALL TRACE +++
```

Note: The line numbers in this example are shown for reference purposes only and do not appear in an actual TRAVER session.

INWATS call

The following examples show the output from TRAVER when it is used to verify the Customer Groups capability for an INWATS call terminating in the DMS-100 switch.

An INWATS call routed through a VFG has two legs: the first routes from the trunk into the VFG, and the second routes to a DN with the attributes defined in the VFG. In a simulation, two TRAVER commands (one for each leg of the call) replace the SETUP message that the DMS-100 switch would receive in a real situation, and provide all the information normally contained in the SETUP message. In the TRAVER command shown at the top of example for the first leg,

tr
indicates that a trunk name follows

TR7345582
is the trunk name

Customer Groups (continued)

96215912
represents the dialed digits

b
indicates that both a table trace and a digit trace are required

The translation process shown in the TRAVER example is the same as for an ordinary terminating call until table DNROUTE is reached. From that point, the process is as follows:

1. In lines 13 and 14, table DNROUTE is accessed with the NPA and office code from table HNPACONT, and the dialed digits. The tuple in DNROUTE provides an index to table IBNRTE.
2. In lines 15 and 16, table IBNRTE is accessed with that index, and provides the name of the VFG through which translations is to continue, and an index to table DIGMAN.
3. In lines 17 and 18, table DIGMAN is accessed with the dialed digits. The DIGMAN tuple replaces the digits with the new digits, 9000. These digits are used in extension dialing in the next leg of the call.

Customer Groups (continued)

TRAVER output example for Customer Groups capability, INWATS call (1)

```
     traver tr TR7345582 96215912 b
1    TABLE TRKGRP
2    TR7345582 TI 0 ELO NCRT NIL P621 NSCR 613 LCL N N $
3    TABLE STDPRTCT
4    P621 ( 1) ( 0) 0
5     .  SUBTABLE STDPRT
6     .  621 632 N NP 0 NA
7    TABLE HNPACONT
8    613 911 2 ( 39) ( 1) ( 0) ( 0) 0
9     .  SUBTABLE HNPACODE
10    .  667 667 DN 613 621
11   TABLE TOFCNAME
12   613 621
13   TABLE DNROUTE
14   613 621 5912 T IBNRTE 32
15   TABLE IBNRTE
16   32 IW 17 621 INWVFG 202
17   TABLE DIGMAN
18   202 REM 7 INC 9000
19
20   +++ TRAVER: SUCCESSFUL CALL TRACE +++
21
22
23   DIGIT TRANSLATION ROUTES
24
25   1 VFG:  INWVFG                  9000           ST
26
27   TREATMENT ROUTES.  TREATMENT IS:  GNCT
28   1 T120
29
30   +++ TRAVER: SUCCESSFUL CALL TRACE +++
```

Note: The line numbers in this example are shown for reference purposes only and do not appear in an actual TRAVER session.

In the TRAVER command shown at the top of the example for the second leg,

v
: indicates that a VFG name follows

inwvfg
: is name of the VFG

9000
: represents the digits obtained from the translations in the first leg of the call

b
: indicates that both a table trace and a digit trace are required

In lines 1 and 2 of the TRAVER example, table VIRTGRPS is accessed using the name of the VFG, INWVFG. Table VIRTGRPS provides a charge number

Customer Groups (continued)

for the call, and the customer group name, IBNTST, which begins the second leg of IBN translations. The rest of the second leg is the same as for an ordinary incoming call.

TRAVER output example for Customer Groups capability, INWATS call (2)

traver v inwvfg 9000 b

```
TABLE VIRTGRPS
INWVFG SIZE 1 IBN 6136219999 IBNTST 0 0 0 N N N $
TABLE NCOS
IBNTST 0 0 0 TST10 (XLAS CXT1 RXCFN NDGT) (OHQ 0 TONE_OHQ) (CBQ 0 1 Y 2)
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
IBNTST NXLA CXT3 RXCFN 0 TST1
TABLE DIGCOL
TST1 9 POTS Y
TABLE IBNXLA: XLANAME CXT1
CXT1 9 EXTN N N Y 613 621 4 $
TABLE TOFCNAME
613 621
TABLE DNINV
613 621 9000 ILC ISDN 101

+++ TRAVER: SUCCESSFUL CALL TRACE +++


DIGIT TRANSLATION ROUTES

1 LINE                  6136219000          ST
  BILL                  6136219999

TREATMENT ROUTES.  TREATMENT IS:  GNCT
1 T120

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

Note: The line numbers in this example are shown for reference purposes only and do not appear in an actual TRAVER session.

SERVORD

SERVORD is used to assign the following options to the DN:

- DIN
- DOR
- DTM
- CTD
- AUL
- WML

Table KSETFEAT can be datafilled with the following options for the Customer Groups capability:

- DIN, which prevents a terminal from accepting calls from outside the customer group
- CTD, which prevents access to specified toll carriers
- AUL, which creates an automatic line
- WML, which creates a warm (manual) line

Refer to “SERVORD examples for adding Customer Groups capability” for an example of how to datafill table KSETFEAT with these options using SERVORD commands.

Table KSETLINE lists each call appearance on the LTID. For each DN, the following parameters are defined: customer group and subgroup, NCOS, NPA (area code), and ring status. Table KSETLINE also specifies DN options. For the Customer Group capability, the following options may be entered in the table:

- DOR, which prevents the DN from originating any calls
- DTM, which prevents any calls from terminating on the DN

Refer to “SERVORD examples for adding Customer Groups capability” for an example of how to datafill table KSETLINE using SERVORD commands.

SERVORD limitations and restrictions

Customer Groups has no SERVORD limitations and restrictions.

SERVORD prompts

The following table shows the SERVORD prompts used to used to assign the DIN option to the DN.

SERVORD prompts for Customer Groups capability, option DIN (Sheet 1 of 2)

Prompt	Valid input	Explanation
DN_OR_LEN	1 to 15 digits	Directory or line number. Enter the directory number.
OPTKEY	1 to 64	Option key. If the DINE suboption is to be assigned, enter the number of the key to be associated with it.
OPTION	DIN	Option. Enter DIN to restrict all incoming calls to the LTID.

Customer Groups (continued)

SERVORD prompts for Customer Groups capability, option DIN (Sheet 2 of 2)

Prompt	Valid input	Explanation
TRC	a list of from one to eight digits, 0 to 7, in a continuous numerical sequence	Terminating restriction code. Enter a terminating restriction code (TRC) for each class of incoming call allowed to terminate on the terminal (the TRC must be matched by the same TRC in table TRKGRP).
ALTTRC	a list of from one to eight digits, 0 to 7, in a continuous numerical sequence	Alternate terminating restriction code. Enter an alternate terminating restriction code (TRC) for each class of incoming call allowed to terminate on the terminal (the TRC must be matched by the same TRC in table TRKGRP).
DINOPT	DINE or N	DIN option. Enter DINE to specify that an incoming call transferred from within the customer group can terminate on the line. Enter N to specify that no transferred calls are accepted.

The following table shows the service order prompts used to assign the DOR option to the line.

SERVORD prompts for Customer Groups capability, option DOR

Prompt	Valid input	Explanation
DN_OR_LEN	1 to 15 digits	Directory or line equipment number. Enter the directory number.
OPTION	DOR	Option. Enter DOR to restrict the LTID from originating any calls.

Customer Groups (continued)

The following table shows the service order prompts used to assign the DTM option to the line.

SERVORD prompts for Customer Groups

Prompt	Valid input	Explanation
DN_OR_LEN	1 to 15 digits	Directory or line equipment number. Enter the directory number.
OPTION	DTM	Option. Enter DTM to restrict any calls from terminating on the LTID.

The following table shows the service order prompts used to assign the CTD option to the line.

SERVORD prompts for Customer Groups

Prompt	Valid input	Explanation
DN_OR_LEN	1 to 15 digits	Directory or line equipment number. Enter the directory number.
OPTKEY	1	Option key. Enter 1 for the number of the key to be associated with the option (the primary DN).
OPTION	CTD	Option. Enter CTD to deny toll access to the specified trunks.
CARRIERS	a valid carrier name (1 to 16 characters), as listed in table OCCNAME	Carrier name. Enter the name of the carrier to which access is being denied.

Customer Groups (continued)

The following table shows the service order prompts used to assign the AUL option to the line.

SERVORD prompts for Customer Groups

Prompt	Valid input	Explanation
DN_OR_LEN	1 to 15 digits	Directory or line equipment number. Enter the directory number.
OPTKEY	1	Option key. Enter 1 for the number of the key to be associated with the option (the primary DN).
OPTION	AUL	Option. Enter AUL to create an automatic line.
DN	up to 15 digits	Directory number. Enter the DN to which this automatic line is to be connected.

The following table shows the service order prompts used to assign the WML option to the line.

SERVORD prompts for Customer Groups capability, option WML

Prompt	Valid input	Explanation
DN_OR_LEN	1 to 15 digits	Directory or line equipment number. Enter the directory number.
OPTKEY	1	Option key. Enter 1 for the number of the key to be associated with the option (the primary DN).
OPTION	WML	Option. Enter WML to create a warm (or manual) line.
CUSTMOD	Y or N	Customer modifiable. Enter Y if the user will be able to change the DN to which the call is forwarded. Otherwise, enter N.
ACTIVE	Y or N	Active. Enter Y if the option is active. Otherwise, enter N.
WMLDN	up to 15 digits	Warm line directory number. Enter the DN to which this warm line will be forwarded when the time expires.
TIMEOUT	1 to 20	Timeout duration. Enter the time, in seconds, that must elapse before the call is forwarded.

SERVORD examples for adding Customer Groups capability

In the following example, option DIN is assigned to the DN using the SERVORD command ADO.

Setting up DIN using ADO in prompt mode

```
SO:
>ADO
SONUMBER:  NOW 93 08 05
> (CR
DN_OR_LEN:
> 8334662
OPTKEY:
> 1
OPTION:
> DIN
TRC:
> 37
ALTTRC:
> 8
DINOPT:
> DINE
OPTKEY:
> $
```

Setting up DIN using ADO in no-prompt mode

```
>ADO 8334662 1 DIN 37 8 DINE $
```

In the following example, option DOR is assigned to the DN using the SERVORD command ADO.

Customer Groups (continued)

Setting up DOR using ADO in prompt mode

```
SO:
> ADO
SONUMBER:  NOW 93 08 06
>(CR)
 DN_OR_LEN:
> 8245678
OPTION:
> DOR
OPTION:
> (CR)
```

Setting up DOR using ADO in no-prompt mode

```
>ADO $ 8245678 DOR $
```

In the following example, option DTM is assigned to the DN using the SERVORD command ADO.

Setting up DTM using ADO in prompt mode

```
SO:
> ADO
SONUMBER:  NOW 93 08 07
>(CR)
DN_OR_LEN:
> 2334589
OPTION:
> DTM
OPTION:
> (CR)
```

Setting up DTM using ADO in no-prompt mode

```
>ADO $ 2334589 DTM $
```

In the following example, option CTD is assigned to the DN using the SERVORD command ADO.

Customer Groups (continued)

Setting up CTD using ADO in prompt mode

```
SO:
> ADO
SONUMBER:  NOW 93 08 08
> (CR)
DN_OR_LEN:
> 2351122
OPTION:
> CTD
CARRIERS:
> MCI33
CARRIERS:
> MCI34
CARRIERS:
> (CR)
OPTION:
> (CR)
```

Setting up CTD using ADO in no-prompt mode

```
>ADO $ 2351122 CTD MCI33 MCI34 $
```

In the following example, option AUL is assigned to the DN using the SERVORD command ADO.

Setting up AUL using ADO in prompt mode

```
SO:
> ADO
SONUMBER:  NOW 93 08 09
> (CR)
DN_OR_LEN:
> 2231234
OPTION:
> AUL
AULDN:
> 7310432
OPTION:
> (CR)
```

Customer Groups (end)

Setting up AUL using ADO in no-prompt mode

```
> ADO $ 2331234 AUL 7310432 $
```

In the following example, option WML is assigned to the DN using the SERVORD command ADO.

Setting up WML using ADO in prompt mode

```
SO:
> ADO
SONUMBER:  NOW 93 08 10
> (CR)
DN_OR_LEN:
> 4582344
OPTION:
> WML
CUSTMOD:
> N
ACTIVE:
> Y
WMLDN:
> 4582211
TIMEOUT:
> 12
OPTION:
> (CR)
```

Setting up WML using ADO in no-prompt mode

```
>ADO $ 252344 WML N Y 4582211 12 $
```

ISDN Basic Access

Ordering codes

Functional group ordering codes: NI000007, NI000010

Functionality ordering code: not applicable

Release applicability

BCS36 and up

Prerequisites

To operate, ISDN Basic Access requires the following functional groups:

- MDC - MDC Minimum, MDC00001
- NI0 NI-1 BRI, NI000008

Description

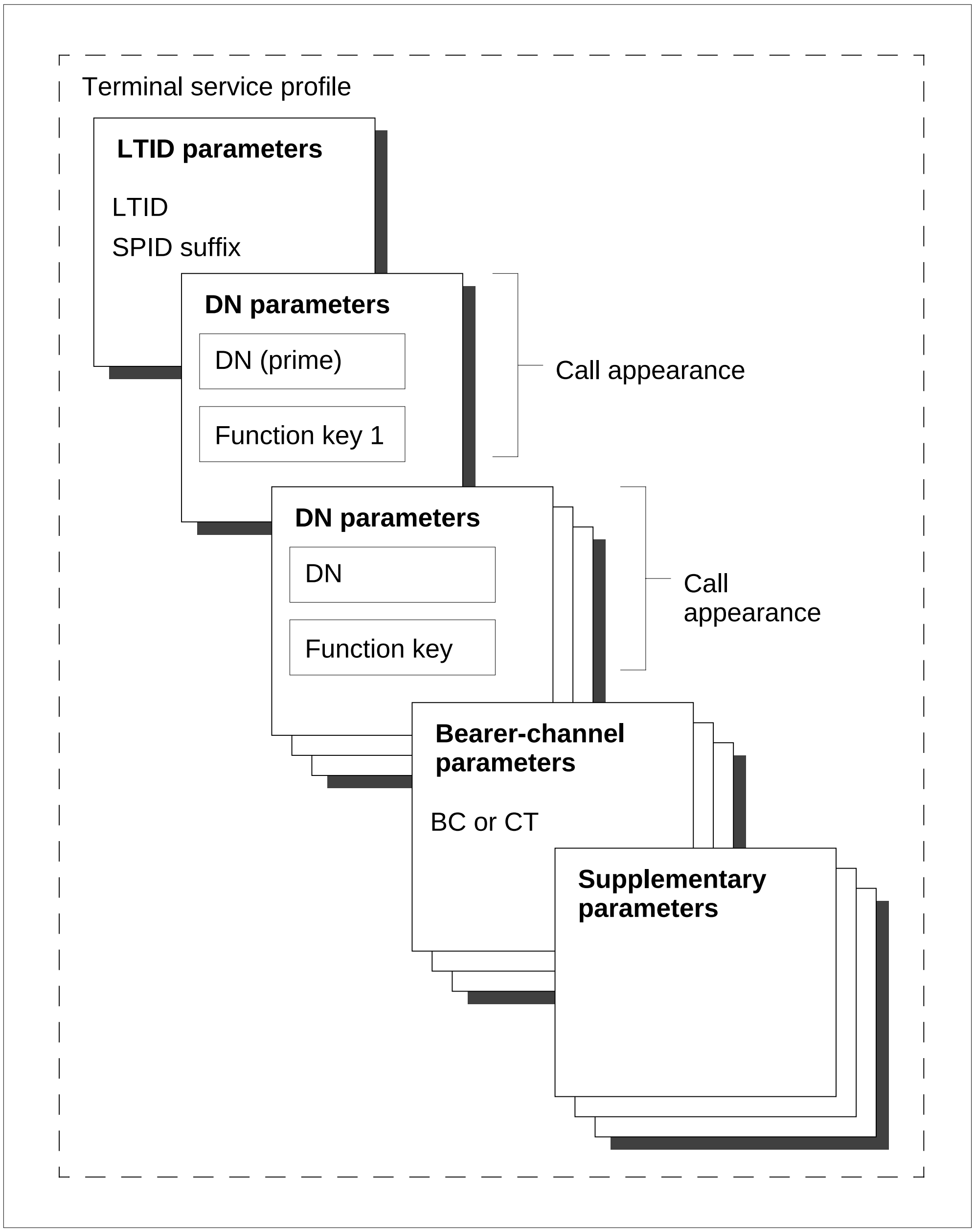
ISDN Basic Access provides basic call processing on a BRI terminal. Datafilling ISDN Basic Access consists of specifying parameters to define service profiles for BRI terminals. Elements of the service profile include the DNs assigned to the terminal, its bearer capability, and features. These parameters are defined in the DMS-100 switch using the table editor and the Service Order system (SERVORD).

The services available to a physical ISDN terminal are determined by the terminal's service profile, which is represented in datafill by a logical terminal. Logical terminal identifiers (LTID) are the keys used to identify these services. The process of defining a service profile involves creating the LTID, assigning its DNs, specifying its bearer capability, and assigning features or supplementary services.

The following figure illustrates the service profile for a logical terminal that provides voice service.

ISDN Basic Access (continued)

Voice terminal service profile



ISDN Basic Access parameters are discussed in three categories:

1. logical terminal identifier (LTID) parameters
2. directory number (DN) parameters
3. bearer-channel parameters

LTID parameters

In non-ISDN applications, only one terminal can be connected on a line to the switch, so the identification of the line card is sufficient to identify the terminal connected to the card. In DMS-100 installations, the line card is identified by the line equipment number (LEN). A BRI line, however, can support up to eight terminals, so each terminal can be identified separately from the line card.

LTIDs can uniquely identify the service profile of each ISDN terminal in the exchange termination. LTIDs allow service profiles to be defined without a terminal being associated with a physical interface (line card). LTID parameters identify the terminal, its associated features, and the type of service it provides. These are the first parameters to be defined for the ISDN Basic Access capability.

An LTID consists of

- a logical terminal group name of up to eight characters
- a logical terminal number within a group

A BRI terminal can provide voice service, circuit-switched data service, or packet-switched data service. Of the possible eight terminals on a BRI interface, a maximum of two may be assigned circuit-switched service or B-channel packet-switched service. More than two would cause congestion for the two B-channels on a BRI line.

DN parameters

Once the LTID parameters are specified, the DN parameters can be defined. As shown in the Voice terminal service profile figure, a further layer is added to the terminal's service profile for each DN associated with the terminal. Each occurrence of a DN, on the same or on different logical terminals, is known as a call appearance.

The primary DN is identified first, and is assigned to the terminal's function key 1. The other DNs are defined subsequently. The DN-related information that must be specified for a call appearance includes the customer group to which the DN belongs, the area code, whether or not the terminal should ring, and the name of the primary interexchange carrier (PIC) associated with the DN. Many other parameters, which are known as options, may be assigned to the DN. These parameters, or options, are typically subscription features (such as Call Waiting, Last Number Redial, or Directed Call Pick-up).

Note: PICs are available only in North America.

ISDN Basic Access (continued)

ISDN Basic Access supports 15-Digit International Dialing. 15-Digit International Dialing is a regulatory requirement that expands the maximum number of digits that can be dialed during an international call from 12 to 15.

For more information on 15-Digit International Dialing, refer to “15-Digit International Dialing” (functional group ordering code LOC00004) in the LOC translations section of this document.

Bearer-channel parameters

Bearer-channel parameters are a particular category of DN parameters. To define these, the DN is further subdivided into bearer capabilities (BC) or call types (CT), so that each DN can be distinguished by a specific BC or CT. The resulting entity is known as a DN/BC or DN/CT pair.

Defining a DN by bearer capability means that the transmission service is specified for that bearer-channel. The BC values defined for the DMS-100 switch are:

- speech (digital voice transmission)
- 3.1 kHz audio
- 7 kHz audio
- unrestricted digital information (at 64 kbit/s)
- unrestricted digital information (at 56 kbit/s adapted to 64 kbit/s)

Each DN/BC pair may have a primary interexchange carrier (PIC) associated with it.

In some cases, rather than defining specific bearer capabilities, it is sufficient to divide the DN into two call types: voice band or circuit-mode data. Each of these DN/CT pairs can then be associated with a specific PIC.

A DN/CT pair can also be assigned the ability to transport subaddress and compatibility information elements (IE) in the SETUP message for intranetwork calls. (Refer to “BRI Call Processing and ISUP Interworking” for a description of these IEs.)

Initialization

When an ISDN terminal is plugged in, it must be associated with a logical terminal in order to provide service. Initialization is the process whereby a physical terminal, when connected to a loop, identifies itself to the switch. The way in which a terminal initializes depends on whether it has a static or dynamic terminal endpoint identifier (TEI), and whether it is an initializing or non-initializing terminal. In all cases, a TEI is established between the physical terminal and the exchange termination.

Terminal endpoint identifiers

A TEI is a Q.921 protocol entity that uniquely identifies a terminal on a particular loop. While LTIDs are unique to every device connected to a switch, TEIs are unique only to a single BRI line. The DMS-100 switch permits static (fixed) or dynamic TEI assignment. Static TEIs are assigned values at datafill time, whereas dynamic TEIs are not assigned values until the terminal is plugged in. A dynamic TEI is assigned to the terminal by the network during the processing of each call, and a user-assigned TEI is a dynamic TEI defined by the user. To provide greater flexibility, an interface can be designated as accepting either user-assigned or network-assigned TEIs.

Static TEI values are assigned to the logical terminal when the LTID is mapped to a LEN in table LTMAP. To establish service on a terminal with a static TEI, the user must know the exact TEI value that was datafilled in the switch, and program that value into the terminal. For terminals with static TEIs, the TEI alone is sufficient to identify the terminal to the switch, since the service profile is associated with the TEI at datafill time. Static TEI values are in the range 0 to 63.

Dynamic TEIs are dynamically assigned to the terminal through Q.921 procedures at the terminal's request. Dynamic TEIs can be user assigned or network assigned. If a terminal is datafilled as having a user-assigned dynamic TEI, the terminal selects the TEI value when layer 2 is established. The network will assign it that TEI value, provided that the TEI is valid, and no other terminal on the loop has that TEI value.

If a terminal is datafilled as having a network-assigned dynamic TEI, the TEI value is selected by the network when layer 2 is established. User-assigned dynamic TEIs are in the range of 0 to 63, while network-assigned dynamic TEIs are in the range of 64 to 126.

For terminals with dynamic TEIs, there is no static association between the TEI value and the logical terminal. As a result, the TEI alone may not be sufficient to associate the physical terminal with the appropriate service profile. Initializing terminals with dynamic TEI terminals must identify themselves to the switch using a service profile identifiers (SPID).

Service profile identifiers (for initializing terminals)

To enable the initialization process, terminals with dynamic TEIs are assigned SPIDs. A SPID is a layer 3 identifier which is datafilled in the switch and is programmed into the physical terminal by the user. It associates the physical terminal with the appropriate logical terminal, and thus provides a service

ISDN Basic Access (continued)

profile. The SPID registration process must occur prior to having the capability of offering service to the user.

A SPID is unique to each DMS-100 central office. The SPID consists of the ten-digit primary directory number (DN) assigned to the terminal and an optional eight-character suffix (SPIDSFX). The SPID suffix is mandatory when the DN is shared by more than one terminal, but optional when the DN is unique.

Assigning terminal endpoint identifiers

Each ISDN terminal and telephone set is assigned a TEI number from 0 to 127. TEIs 0 to 126 can be associated with terminal equipment, while TEI 127 is used to broadcast to all terminals. Four types of TEI allocation routines are available: static TEI (STEI), dynamic TEI (DTEI), user-assigned dynamic TEI (UATEI), and user- or network-assigned TEI (UNATEI).

Static terminal endpoint identifiers

STEIs are assigned numbers from 0 to 63 and are manually programmed into the terminals, telephone sets, and tables in the DMS-100 switch.

Nortel Networks recommends assigning STEIs in blocks according to the type of service: voice, circuit-switched data, D-channel packet, or combined voice and D-channel packet. The following table contains the recommended scheme for assigning STEIs according to service type. Use these assignments when datafilling table LTMAP or table LTDEF using SERVORD.

Assigning static TEIs

TEI	Access privilege	Services
1 or 2	B	B-channel voice or B-channel circuit-switched data
21 to 28	D	D-channel packet
not used	PB	provisioned B-channel data service

Dynamic terminal endpoint identifiers

DTEIs are numbered from 64 to 126 and are assigned by the DMS-100 switch during the initialization process for a telephone set for which the DTEI option has been specified.

The use of DTEIs is restricted to circuit-switched devices (SAPI 0 services). Telephone sets or terminals assigned DTEIs must be datafilled with a service profile identifier (SPID) number, which is also entered in the DMS-100 tables.

User-assigned terminal endpoint identifiers

UATEIs are assigned numbers from 0 through 63 by users at their terminal equipment.

User- or network-assigned terminal endpoint identifiers

UNATEI selection allows terminals using DTEIs or requiring UATEIs to be connected to the same interface.

Defining logical terminal groups

Logical terminal group names are defined in table LTGRP. Up to 32 group names can be datafilled on the switch. Consider the following rules and recommendations when defining logical terminal groups according to the four access privileges:

- You must define groups that support D-channel packet data LTIDs (access privileges D and BD) as SAPI 16 groups in table LTGRP.
- You can define only logical terminal groups 0 to 15 as SAPI 16 groups (D-channel packet data).
- You can reserve one or more groups for provisioned B-channel packet data LTIDs (access privilege PB). Start by reserving group 16 for PB LTIDs, and assign subsequent PB groups in ascending order.
- The following guidelines apply when assigning B-channel circuit-switched LTIDs (access privilege B). There are no restrictions for assigning B LTIDs in all 32 groups.
  - — You can assign a B LTID to groups that support packet data, or to groups that do not support packet data.
  - — You can assign B LTIDs to any group number. Start by assigning B LTIDs to group 31, and continue assigning B groups in descending order.
  - — There are no restrictions on how B or D LTIDs are distributed throughout the peripheral modules (PM).
- For customers requiring large-scale services, you can combine all service types within one LTID group, if sufficient spare groups exist.

Nortel Networks recommends the following schemes when assigning logical terminal groups in an ISDN office. One scheme allows easy identification of

ISDN Basic Access (continued)

LTIDs for a large customer, while the other allows for efficient use of limited D-channel LTID groups:

- For customers requiring large-scale services:
  - Divide the 1022 possible LTIDs associated with each group name into blocks, with one block reserved for each customer.
  - Divide the LTIDs in each block into sub-blocks, with each sub-block reserved for one type of service.
- For customers requiring less extensive services, assign each access privilege to a dedicated logical terminal group that contains mixed customers.

The following table contains an example of these schemes for an ISDN office that has two customers. One customer (Company X—large-scale services) is assigned to a dedicated group for easy identification, and the other customer (Company Y—less extensive services) is assigned to common groups by access type for D-channel packet LTID conservation.

Assigning LTIDs by customer and type of service

Customer	Logical terminal group number reserved for customer	Type of service by access privilege	Sub-block of LTIDs reserved for service (LTID number)
Company X (large scale)	3	B or BD	1 to 600
		PB	601 to 700
		D	701 to 1022
Company Y (less extensive)	31	B or BD	1 to 200
	16	PB	1 to 200
	0	D	1 to 200

Note: The scheme shown in this table is an example only. The number of blocks and sub-blocks used depends on the number of customer groups and the types of service assigned.

Operation

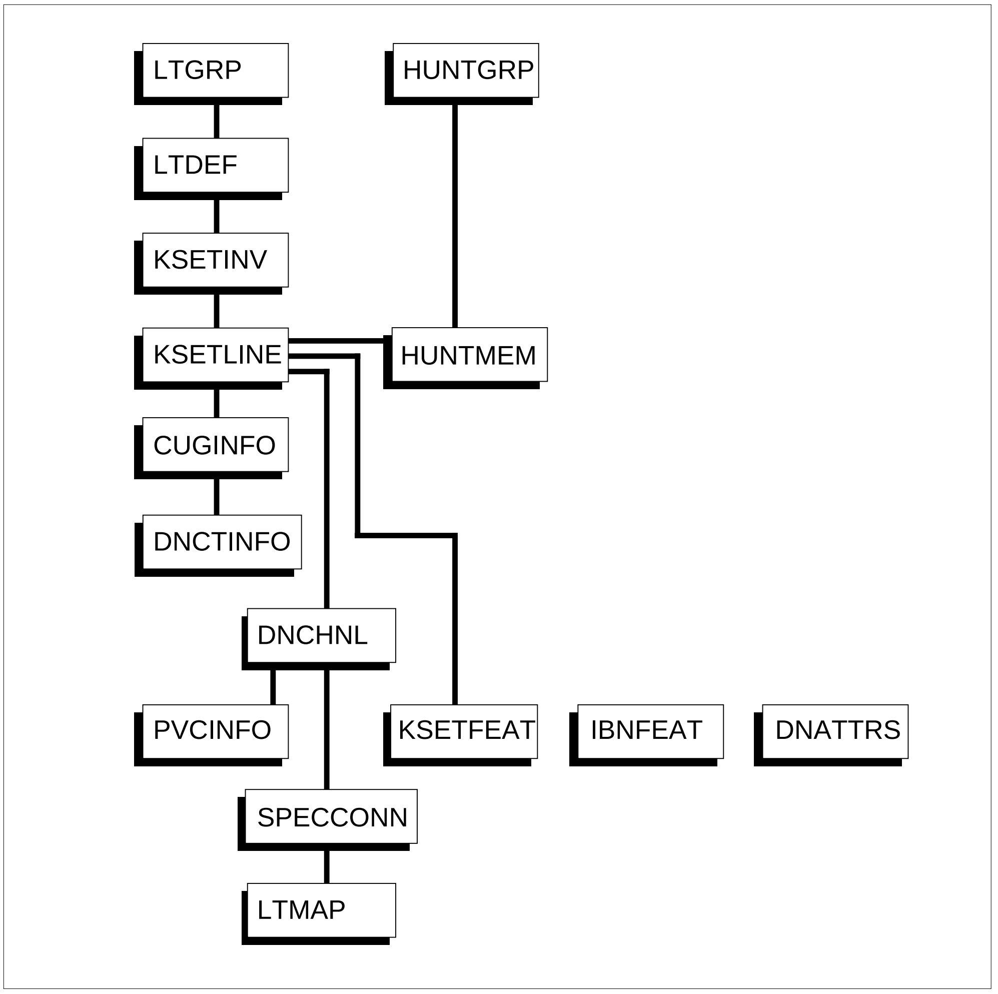
The initial step in providing the ISDN Basic Access capability involves defining logical terminal group names in table LTGRP. Except for this initial step, ISDN Basic Access service is provisioned separately for each logical terminal.

The following figure shows the datafill dependencies for the ISDN Basic Access tables described in this chapter. Using SERVORD to provision basic

ISDN Basic Access (continued)

access ensures that these tables are datafilled in the correct order. Additional line translations tables are included to illustrate the dependencies for datafilling line options.

ISDN Basic Access datafill dependencies



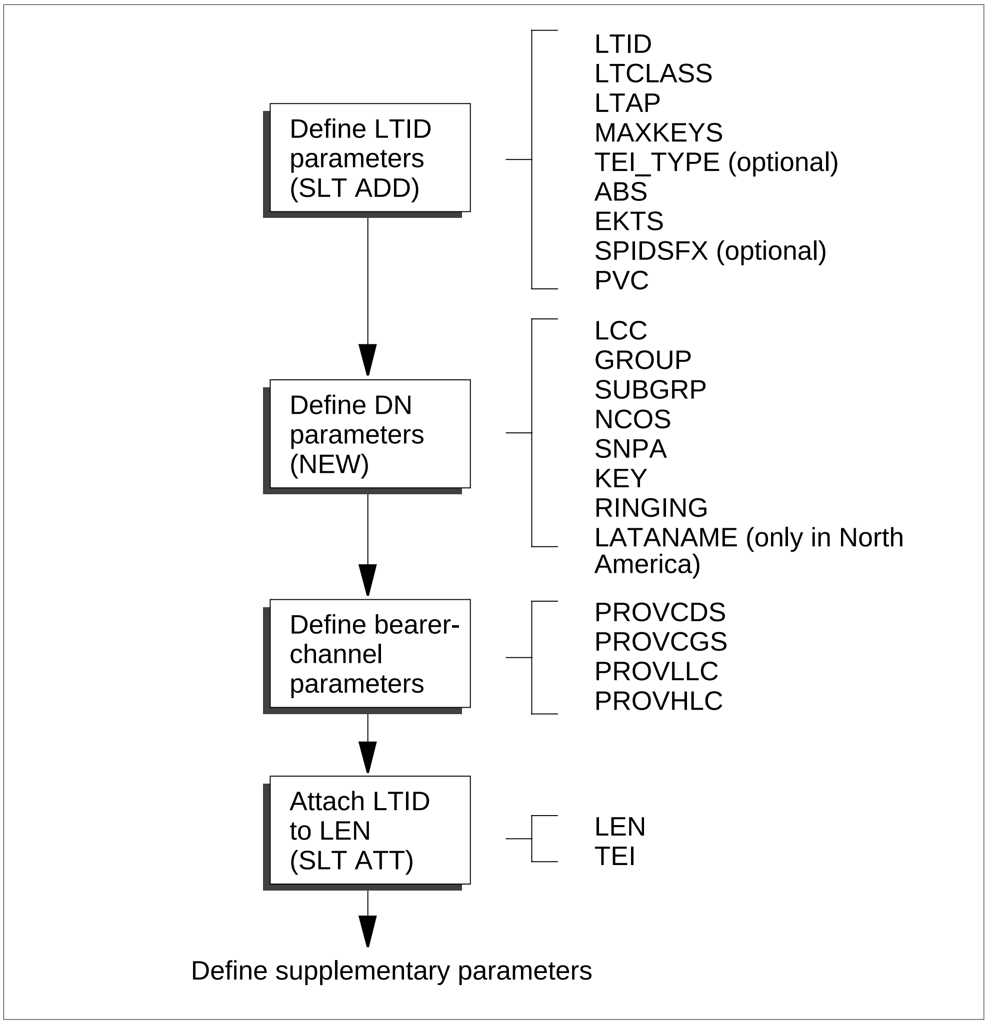
To set up the ISDN Basic Access capability on ISDN terminals, four major steps are required:

1. Define the logical terminal and its service parameters.
2. Create the primary DN, and assign its parameters, including certain bearer-channel parameters.
3. Attach the logical terminal to the appropriate LEN, and provision a B-channel connection if required.
4. Define additional bearer-channel parameters associated with the DN.

ISDN Basic Access (continued)

The following figure shows the parameters associated with each step. The following paragraphs describe the procedure for setting up the ISDN Basic Access capability on ISDN terminals.

ISDN Basic Access parameters



Defining the logical terminal and its service parameters

The logical terminal is defined using the SERVORD command SLT ADD. Depending on the access privilege specified (circuit switched or packet

ISDN Basic Access (continued)

switched) specific tables are automatically datafilled through SERVORD, as shown in the following table.

Tables datafilled using command SLT ADD

Circuit-switched terminals	Packet-switched terminals
LTDEF	LTDEF
KSETINV	

Table LTDEF defines the logical terminal class and access privileges for the LTID. Refer to “SERVORD” for an example of how to datafill table LTDEF using SERVORD commands.

Table KSETINV associates the type of keyset with the corresponding LTID. Refer to “SERVORD” for examples of how to datafill table KSETINV using SERVORD commands.

The parameters defined during this step include

- LTID, which identifies the logical terminal
- logical terminal class (LTCLASS), which specifies the type of physical terminal associated with the LTID
- logical terminal access privileges (CS or PS), which specifies whether the service required is circuit-switched or packet-switched
- maximum keys (MAXKEYS), which states the number of keys on the terminal
- default logical terminal (DEFLTERM), which defines the terminal as non-initializing
- TEI_TYPE, which specifies the TEI as static, dynamic, or user-assigned
- authorized bearer services (ABS), which assigns the default bearer capability for the DNs associated with this LTID
- Electronic Key Telephone Service (EKTS), which specifies whether or not EKTS features can be assigned to the terminal (used in Bellcore ISDN only)
- SPID suffix (SPIDSFX), which defines the SPID suffix for the primary DN on the terminal (used in Bellcore ISDN only)
- protocol version control (PVC), which identifies the protocol version used by the terminal

ISDN Basic Access (continued)

Creating the primary DN and assigning its parameters

The primary DN is created, and its parameters are assigned, using the SERVORD command NEW. (For circuit-switched terminals, certain bearer-channel parameters are also specified in this step.) The tables indicated below are automatically datafilled through SERVORD.

Tables datafilled using SERVORD command NEW

Circuit-switched terminals	Packet-switched terminals
KSETINV	KSETINV
KSETLINE	KSETLINE
IBNFEAT	DNCHNL
DNATTRS	DNCTINFO

Table KSETLINE lists each call appearance on the LTID. For each DN, the following parameters are defined: customer group and subgroup, network class of service (NCOS), service numbering plan area (area code), and whether or not the terminal should ring. Refer to “SERVORD” for an example of how to datafill table KSETLINE using SERVORD commands.

Table DNATTRS specifies whether subaddress and compatibility information elements are transported in the SETUP message for the DN for intranetwork calls.

Table DNCTINFO stores X.25 service parameters associated with packet mode data call types. The parameters are stored by DN and call type. When a DN is created for a packet-switched terminal using the SERVORD command NEW, an entry for that DN is automatically datafilled in table DNCTINFO, using default values defined in table SVCDATA. These default values can be changed for each DN entry using the SERVORD command SETPH. To change the default values, refer to the chapter “Datafilling Packet Service Options”.

Table DNCHNL stores refinements of X.25 service parameters associated with packet mode data call types (as defined in table DNCTINFO). The parameters are stored by DN and channel type. When a DN is created for a packet-switched terminal using the SERVORD command NEW, an entry for that DN is automatically datafilled in table DNCHNL, using default values defined in table SVCDATA. These default values can be changed for each DN entry using the SERVORD command SETPH. To change the default values, refer to the chapter titled “Datafilling Packet Service Options”.

> ***Note:*** Tables DNCHNL and DNCTINFO are automatically datafilled with default values. Table SVCDATA allows operating companies to change the default values for the X.25 service parameters inherited by tables DNCTINFO and DNCHNL. Refer to the section “ISDN BRI office configuration tables” for more information.

Table IBNFEAT contains the name of the primary interexchange carrier associated with the DN. Refer to “SERVORD” for an example of how to datafill table IBNFEAT using SERVORD commands.

The DN parameters defined during this step include

- line class code (LCC), which defines the terminal as an ISDN keyset
- customer group (GROUP), which identifies the customer group of which the DN is a member
- customer subgroup (SUBGRP), which identifies a subgroup of the customer group
- network class of service (NCOS), which is used to further subdivide the customer group (typically for call routing purposes)
- serving numbering plan area (SNPA), which defines the area code
- KEY, which specifies the key assigned to the primary DN (it must be 1 for the primary DN)
- RINGING, which specifies whether or not the terminal should ring for this DN
- LATANAME, which defines the name of the default primary interexchange carrier (PIC) associated with the DN (datafilled through SERVORD in table IBNFEAT)
- OPTKEY and OPTIONS, which are used to specify bearer-channel parameters PROVCDS, PROVCGS, PROVLLC, and PROVHLC for

ISDN Basic Access (continued)

circuit-switched terminals (datafilled through SERVORD in table DNATTRS)

— provide CDS (PROVCDS) specifies, for each call type, whether the called number subaddress (CDS) information element (IE) is transported in the SETUP message

— provide CGS (PROVCGS) specifies, for each call type, whether the calling number subaddress (CGS) IE is transported in the SETUP message

— provide LLC (PROVLLC) specifies, for each call type, whether the low-level compatibility (LLC) IE is transported in the SETUP message

— provide HLC (PROVHLC) specifies, for each call type, whether the high-level compatibility (HLC) IE is transported in the SETUP message

Attaching the logical terminal to the appropriate LEN

The logical terminal is attached to its LEN using the SERVORD command SLT ATT, which associates the logical terminal with the LEN that identifies the line card to which it is connected. For B-channel packet terminals, the SLT ATT command can also be used to provision a B-channel connection to the DMS Packet Handler (PH).

The tables indicated below are automatically datafilled through SERVORD.

Tables datafilled using command SLT ATT

Circuit-switched terminals	Packet-switched terminals
LTMAP	SPECCONN
	LTMAP

Table SPECCONN contains information about special connections in the switch. For ISDN Basic Access with the DMS PH, table SPECCONN is used to provision B-channel connections between ISDN line cards (ISLC) and XSG channels for B-channel packet terminals. Refer to “SERVORD” for an example of how to provision a B-channel connection in table SPECCONN using SERVORD commands.

Table LTMAP associates an LTID with a LEN. Refer to “SERVORD” for an example of how to datafill table LTMAP using SERVORD commands.

Defining additional bearer-channel parameters associated with the DN

For circuit-switched terminals, bearer-channel parameters BC, BCPIC, CT, and CTPIC are datafilled directly in table DNATTRS:

- bearer capability (BC) for the call appearance (this value overrides the default bearer capability specified in the LTID parameter ABS)
- bearer capability PIC (BCPIC), which specifies a PIC per DN/BC
- call type (CT) for the call appearance, which is either voice band or circuit-mode data
- call type PIC (CTPIC), which specifies a PIC per DN/CT

Translations table flow

The ISDN Basic Access translation process is described in the section “ISDN BRI Routing”.

Limitations and restrictions

Not applicable

Interactions

Not applicable

Activation/deactivation by the end user

ISDN Basic Access requires no activation or deactivation by the end user.

Billing

ISDN Basic Access does not affect billing.

Station Message Detail Recording

ISDN Basic Access does not affect Station Message Detail Recording (SMDR).

ISDN Basic Access (continued)

Datafilling office parameters

The following table shows the office parameters used by ISDN Basic Access. For more information about office parameters, refer to the *Office Parameters Reference Manual*.

Office parameters used by ISDN Basic Access

Table name	Parameter name	Explanation and action
OFCENG	BC_CHECKING_SCOPE	This parameter is set to control the bearer capability (BC) screening performed between stations in IBN and ISDN environments. If no BC checking is required, leave the parameter at its default value of NONE. If calls terminating on ISDN terminals are to be screened for BC compatibility, enter ISDN. If calls terminating on ISDN terminals and IBN terminals with bearer capabilities are to be screened, enter IBN.

Datafill sequence

The following table lists the tables that require datafill to implement ISDN Basic Access. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for ISDN Basic Access (Sheet 1 of 2)

Table	Purpose of table
LTGRP	Logical Terminal Groups. This table contains a list of logical terminal groups for the exchange termination.
LTDEF (see note)	Logical Terminal Definition. This table defines the logical terminal class and access privileges for the LTID.
KSETINV (see note)	Keyset Inventory. This table associates the type of keyset with the corresponding LTID.
KSETLINE (see note)	Keyset Lines. This table lists each call appearance on the LTID and specifies DN parameters, such as customer group and ring, for the call appearance.
DNCTINFO (see note)	Directory Number Call Type Information. This table contains packet service parameters that can be changed without taking associated logical terminals out of service.
Note: This table is datafilled through SERVORD; therefore, no datafill procedure or example is provided. Refer to "SERVORD" for an example of using SERVORD to datafill this table.	

ISDN Basic Access (continued)

Datafill tables required for ISDN Basic Access (Sheet 2 of 2)

Table	Purpose of table
DNCHNL (see note)	Directory Number Channel. This table contains packet service parameters that are associated with a D or B channel for each parameter. (These parameters cannot be changed without taking the associated logical terminal out of service.)
IBNFEAT (see note)	IBN Features. This table contains the name of the primary interexchange carrier associated with the DN.
DNATTRS	Directory Number Attributes. This table specifies whether subaddress and compatibility information elements are transported in the SETUP message for the DN for intranetwork calls. For these parameters, this table should be datafilled through SERVORD only. This table also defines a bearer capability or call type for a DN call appearance, and specifies primary inter-LATA carriers for the DN by call type or bearer capability.
SPECCONN (see note)	Special Connections. This table contains information on special connections on the switch. For provisioned B-channel connections, this table is datafilled through SERVORD.
LTMAP (see note)	Logical Terminal Mapping. This table associates the LTID with its corresponding LEN.
Note: This table is datafilled through SERVORD; therefore, no datafill procedure or example is provided. Refer to “SERVORD” for an example of using SERVORD to datafill this table.	

Table Editor for DNCTINFO and DNCHNL

Table control for table DNCHNL permits operating company personnel to change packet channel profile attributes without unmapping and remapping the terminal. This capability applies to established logical terminals. You can make changes using either SERVORD or the Table Editor interface.

The following limitations apply to the Table Editor:

- When you modify link-affecting parameters, either the corresponding line must be in the busy state or the terminal must be unmapped, otherwise the system rejects the tuple update.
- When you modify call-affecting parameters and calls are in progress on the link, the system issues an information message and the changes take effect on the next call.

Table control for table DNCTINFO permits operating company personnel to change packet channel profile attributes without unmapping and remapping the terminal. This capability applies to established logical terminals. Table control displays an information message when you change parameters and

ISDN Basic Access (continued)

calls are in progress on the link. This message indicates that the changes take effect on the next call. You can make changes using either SERVORD or the Table Editor interface.

Datafilling table LTGRP

Table LTGRP lists the logical terminal groups that have been defined for the exchange termination, and defines what type of terminals are allowed in a group. An exchange termination can have up to 32 logical terminal groups.

> ***Note:*** The group ISDN is a predefined entry in table LTGRP, and cannot be deleted.

The following table shows the datafill specific to ISDN Basic Access for table LTGRP. Only those fields that apply directly to ISDN Basic Access are shown. For a description of the other fields, refer to the *Data Schema Reference Manual*.

Datafilling table LTGRP

Field	Subfield	Entry	Explanation and action
GROUP		alphanumeric (1 to 8 characters)	Logical terminal group name. Enter the name for the logical terminal group.
GROUPNO		0 to 31	Logical terminal group number. Enter the group number associated with the group name. ***Note 1:*** SAPI16 groups must be assigned group numbers between 0 and 15. ***Note 2:*** Group ISDN is automatically assigned group number 0.
OPTIONS		SAPI16	Logical terminal options. Enter SAPI16 to allow both circuit- and packet-switched terminals to be datafilled for the group. If SAPI16 is not specified, the group will not support packet-switching terminals. ***Note:*** Group ISDN is automatically assigned SAPI16.

Datafill example for table LTGRP

The following example shows sample datafill for table LTGRP.

MAP display example for table LTGRP

```
GROUP  GROUPNO    OPTIONS
________________________________________________________
ISDN        0  (SAPI16)$
LCMI1      17          $
LCME        3  (SAPI16)$
```

Datafilling table DNATTRS

> **CAUTION**
> **Service may be affected**
> Use SERVORD, not the table editor, to add and delete tuples relating to subaddress and compatibility IE transport to and from table DNATTRS. These parameters include PROVCDS, PROVCGS, PROVLLC, PROVHLC, VBINFO, and CMDATA.
>
> Using the table editor to datafill these parameters can result in incompatible features being assigned to the line. The table datafill shown here is for information only.

Table DNATTRS specifies whether subaddress and compatibility information elements (IE) are transported in the SETUP message for intranetwork calls. Refer to “SERVORD” for an example of how to datafill table DNATTRS with the IE transport parameters using SERVORD commands. The first MAP example shows table DNATTRS datafilled with the IE transport parameters.

Table DNATTRS allows the user to specify multiple bearer capabilities for a DN, and to associate a different primary inter-LATA carrier (PIC) with each BC. Alternatively, if the user wants one PIC for all voice calls and one for all data calls associated with that DN, the PICs can simply be datafilled on the basis of call type (voice or data), rather than BC. These parameters are datafilled directly into table DNATTRS, using fields

- bearer capability (BC), which overrides the default bearer capability specified by the LTID parameter authorized bearer services (ABS)
- bearer capability PIC (BCPIC), which specifies a PIC for each bearer capability (PICs are available only in North America)
- call type (CT), which is either voice band or circuit-mode data
- call type PIC (CTPIC), which specifies a PIC for each call type

ISDN Basic Access (continued)

The following procedure shows the datafill for the BC and CT tuples in table DNATTRS. This procedure contains only those fields that apply to ISDN Basic Access. For a description of the other fields, refer to the *Data Schema Reference Manual*.

Datafilling table DNATTRS (Sheet 1 of 2)

Field	Subfield	Entry	Explanation and action
KEY		see subfields	Directory number key. This field consists of subfields AREACODE, OFCCODE, and STNCODE.
	AREACODE	1 to 8 digits	Serving NPA or STS. Enter the serving NPA or the serving translation scheme (that is, the area code, or the first digits of the DN).
	OFCCODE	1 to 7 digits	Office code. Enter the office code (the next digits of the DN).
	STNCODE	1 to 8 digits	Station number. Enter the station number (the last digits of the DN).
OPTDATA		see subfields	Options data. This field consists of subfields SEL, CTDATA, and BCDATA. The field can contain up to two selector names and their attributes.
	SEL	CT or BC	Selector. To define an option based on call type, enter CT, and datafill subfield CTDATA. To define an option based on bearer capability, enter BC, and datafill subfield BCDATA.
	CTDATA	see subfields	Call type data. This field consists of subfields CALLTYPE and CTOPTS. The field can contain up to two DN/CT option lists (that is, subfields CALLTYPE and CTOPTS can be repeated once).
	CALLTYPE	VBINFO or CMDATA	Call type. To specify voice band, enter VBINFO. To specify circuit-mode data, enter CMDATA.
	CTOPTS	see subfield	Call type options. This field consists of subfield CTOPTID. The field can contain up to six options (that is, subfield CTOPTID can be repeated five times).
	CTOPTID	CTPIC	Call type option identifier. Enter CTPIC to specify a PIC for the DN/CT pair, and datafill field CTPIC.

Datafilling table DNATTRS (Sheet 2 of 2)

Field	Subfield	Entry	Explanation and action
	CTPIC	alphanumeric (1 to 16 characters) or NILC	Call type primary inter-LATA carrier. Enter the name of the PIC (which must be listed in table OCCNAME), or NILC (for no carrier name).
	BCDATA	see subfields	Bearer capability data. This field consists of subfields BCOPTID and BCPIC. This field can contain up to five DN/BC option lists (that is, subfields BCOPTID and BCPIC can be repeated four times).
	BCOPTID	SPEECH, 3_1_KHZ, 7_KHZ, 56KDATA, 64KDATA	Bearer capability option identifier. Enter the BC as one of SPEECH, 3_1_KHZ, 7_KHZ, 56KDATA, or 64KDATA, and datafill field BCPIC.
	BCPIC	alphanumeric (1 to 16 characters) or NILC	Bearer capability primary inter-LATA carrier. Enter the name of the PIC (which must be listed in table OCCNAME), or NILC (for no carrier name).

Datafill examples for table DNATTRS

This section provides three examples of sample datafill for ISDN Basic Access in table DNATTRS.

The following example shows a DN call appearance datafilled to ensure that all of the subaddress and compatibility information elements are transported for voice calls.

MAP display example for table DNATTRS

```
KEY                                                        DATA
                                                        OPTDATA
_______________________________________________________________

613 8381432              CT  VBINFO PROVCDS PROVCGS
                                PROVLLC PROVHLC $ $
```

The following example shows a DN call appearance datafilled with one PIC for voice calls and one for data calls.

ISDN Basic Access (continued)

MAP display example for table DNATTRS

```
KEY                                                    DATA
                                                    OPTDATA
________________________________________________________________

613 8381445                  CT VBINFO CTPIC ITT $
                                  CMDATA CTPIC MCI $ $
```

The following example shows a DN call appearance datafilled with one PIC for voice calls and two PICs for data calls, each of the latter specified by BC.

MAP display example for table DNATTRS

```
KEY                                                    DATA
                                                    OPTDATA
________________________________________________________________

613 8382545                  CT VBINFO CTPIC ITT $
                                    BC 56KDATA  MCI  $
                                     64KDATA  SSP $  $
```

Translation verification tools

ISDN Basic Access does not use translation verification tools.

SERVORD

SERVORD is used to

- define the logical terminal and its service parameters with the SLT ADD command
- create the primary DN, and assign DN and bearer-channel parameters with the NEW command
- attach the logical terminal to the LEN with the SLT ATT command, and provision a B-channel connection for B-channel packet terminals

> ***Note:*** Full explanations of the SERVORD commands and options can be found in the *ISDN SERVORD Reference Manual*, 297-2401-310.

SERVORD limitations and restrictions

ISDN Basic Access has no SERVORD limitations and restrictions.

SERVORD prompts

The following table shows the SERVORD prompts used with the SLT ADD command to define the logical terminal and assign its service parameters.

SERVORD prompts for ISDN Basic Access - SLT ADD command (Sheet 1 of 2)

Prompt	Valid input	Explanation
LTID	logical terminal group name (1 to 8 characters), followed by a space and a terminal number (1 to 1022)	Logical terminal identifier. Enter the LTID that will identify this logical terminal. (The logical terminal group name must be defined in table LTGRP.)
LTCLASS	BRAFS or BRAMFT	Logical terminal class. Enter BRAFS to specify BRI functional set or BRAMFT to specify Meridian feature transparency. ***Note:*** For NI-1 compliance, enter BRAFS.
CS	Y or N	Circuit-switched service. Enter Y to specify circuit-switched service, or N to specify that circuit-switched service is not permitted on this terminal.
PS	B, D, or N	Packet service. Enter B to specify B-channel packet service, D to specify D-channel packet service, or N to specify that packet-switched service is not permitted on this terminal.
MAXKEYS	2 to 64	Maximum keys. If you entered Y for circuit-switched service, enter the maximum number of feature activators on the terminal.
DEFLTERM	Y or N	Specifies whether this LTID is a default logical terminal. Enter Y for ETSI, VN4, or Austel.
TEI_TYPE	DTEI, STEI, UATEI, UNATEI	TEI type. To specify the type of TEI assignment, enter • STEI for static • DTEI for dynamic • UATEI for user-assigned TEI • UNATEI for user- or network-assigned TEI

ISDN Basic Access (continued)

SERVORD prompts for ISDN Basic Access - SLT ADD command (Sheet 2 of 2)

Prompt	Valid input	Explanation
ABS	VOICE, VBD, CMD	Authorized bearer service. To define the authorized bearer service for the terminal, enter • VOICE to specify that analog voice calls can terminate on this LTID • VBD to specify that voice-band data calls can terminate on this LTID • CMD to specify that circuit-mode data calls can terminate on this LTID
EKTS	Y or N	EKTS option. Enter Y to specify that the terminal will be assigned the EKTS option, or N to specify that it will not. Enter N for ETSI, VN4, or Austel.
OPTION	SPIDSFX, PVC, CACH	Option. If you entered DTEI or UATEI for TEI_TYPE, enter SPIDSFX to define a SPID suffix. If you entered BRAFS for LTCLASS, enter PVC for protocol version control. Options SPIDSFX and CACH cannot be used with ETSI, VN4, or Austel.
SPID_SUFFIX	1 to 8 digits	SPID suffix. Enter a SPID suffix that will be combined with the primary DN assigned to the terminal to form a unique identifier for its service profile.
VERSION	FUNCTIONAL, MFT, ETSI, VN4, AUSTEL	Version. To specify the PVC version, enter • FUNCTIONAL for NI-1 compliance • MFT for Meridian Feature Transparency • AUSTEL for TS13 Australian BRI compliance • ETSI for European compliance • VN4 for French VN4 BRI compliance
ISSUE	0, 1, or 2	Issue. Enter 2 for NI-1 compliance. Enter 0 for ETSI, VN4, or Austel.

ISDN Basic Access (continued)

The following table shows the service order prompts used with the NEW command to create the primary DN and assign DN parameters.

SERVORD prompts for ISDN Basic Access - NEW command (Sheet 1 of 2)

Prompt	Valid input	Explanation
DN	1 to 15 digits	Directory number. Enter the primary directory number for the logical terminal.
LCC	ISDNKSET	Line class code. Enter ISDNKSET for the line class code.
GROUP	1 to 16 alphanumeric characters	Customer group. Enter the name of the customer group to which this DN is assigned.
SUBGRP	0 to 7	Customer subgroup. Enter the number of the customer subgroup to which this DN is assigned. (If subgroups are not being used, enter 0.)
NCOS	0 to 511	Network class of service. Enter the number of the network class of service to which this DN is assigned. (If NCOS grouping is not in use, enter 0.)
SNPA	1 to 8 digits	Serving numbering plan area. Enter the serving numbering plan area (area code).
KEY	1 to 69	Key. Enter the key to which the DN is assigned. The primary DN must be assigned to key 1.
RINGING	Y or N	Ringing. Enter Y to specify that the terminal should ring for this DN, or N to specify that it should not ring. Ringing does not apply to ETSI, VN4, or Austel.
LATANAME	alphanumeric carrier name (1 to 16 characters) or NILLATA	Primary carrier name. Enter the name of the primary interexchange carrier to be associated with the DN, or NILLATA to indicate that no carrier is to be associated with the DN. The carrier name must be listed in table OCCNAME.
LEN_OR_LTID	logical terminal group name (1 to 8 characters), followed by a space and a terminal number (1 to 1022)	LEN or LTID. Enter the LTID to which the DN is being assigned.
OPTKEY	1 to 64	Option key. Enter 1 as the option is assigned to the primary DN key.

ISDN Basic Access (continued)

SERVORD prompts for ISDN Basic Access - NEW command (Sheet 2 of 2)

Prompt	Valid input	Explanation
OPTION	PROVCDS, PROVCGS, PROVLLC, PROVHLC	Option. Enter one of the following options when SERVORD first prompts for an option: • PROVCDS to indicate that the called number subaddress (CDS) information element (IE) is to be transported in the SETUP message • PROVCGS to indicate that the calling number subaddress (CGS) IE is to be transported in the SETUP message • PROVLLC to indicate that the low-level compatibility (LLC) IE is to be transported in the SETUP message • PROVHLC to indicate that the high-level compatibility (HLC) IE is to be transported in the SETUP message
CALLTYPE	VBINFO, CMDATA	Call type. Enter VBINFO to indicate that the IE specified for the OPTION prompt is to be transported only for voice band calls. Enter CMDATA to indicate that the IE specified for the OPTION prompt is to be transported only for circuit-mode data calls.

ISDN Basic Access (continued)

The following table shows the service order prompts used with the SLT ATT command to associate the logical terminal and the LEN, and establish a provisioned connection for B-channel packet service.

SERVORD prompts for ISDN Basic Access - SLT ATT command

Prompt	Valid input	Explanation
LTID	a logical terminal group name (1 to 8 characters), followed by a space and a terminal number (1 to 1022)	Logical terminal identifier. Enter the LTID that will identify this logical terminal. The logical terminal group name must be defined in table LTGRP.
LEN	valid LEN	Line equipment number. Enter the LEN of the line card to which the terminal is connected. To be valid, the LEN must be in the format: ff u lsg cc where: • ff = frame number (00 to 99) • u = unit number (0 is lower LCME and 1 is upper LCME in the frame) • lsg = line subgroup (00 to 15) • cc = line circuit number (00 to 31)
OPTION	PHLINK, BCH	Option. Enter PHLINK to specify a nailed-up connection from the line card to an XSG. Enter BCH to specify the specific B-channel to be used (B1 or B2).
XSG	0 to 749	XSG. Enter the specific XSG for the nailed-up connection.
BCH	B1 or B2	B-channel. Enter the specific B-channel to be used.

SERVORD examples for adding ISDN Basic Access

The following SERVORD example shows how a circuit-switched functional logical terminal is defined and how the LTID parameters are specified using the SLT ADD command.

ISDN Basic Access (continued)

Setting up ISDN Basic Access using the SLT ADD command in prompt mode

```
SO:
>SLT
SONUMBER:  NOW 86 07 08 AM
 > (CR)
LTID:
 >ISDN  9
FUNCTION:
> ADD
LTCLASS:
> BRAFS
CS:
> Y
PS:
> N
MAXKEYS:
> 64
DEFLTERM:
>N
TEI_TYPE:
> DTEI
TSPID:
> 1
ABS:
> VOICE CMD VBD
EKTS:
>Y
OPTION:
> CACH
OPTION:
> PVC
VERSION:
> FUNCTIONAL
ISSUE:
> 2
OPTION:
> $
```

Setting up ISDN Basic Access using the SLT ADD command in no-prompt mode

```
SLT  $  ISDN  9  ADD  BRAFS  Y  N N 64  DETI 1
VOICE CMD  VBD Y CACH PVC  FUNCTIONAL  $
```

The following SERVORD example shows how the primary DN is assigned to the terminal using the NEW command. Options PROVCDS, PROVCGS,

ISDN Basic Access (continued)

PROVLLC, and PROVHLC are assigned to the DN. Options PROVCDS and PROVCGS are assigned to call type VBINFO (so that those IEs will be transported only for voice band calls), and options PROVLLC and PROVHLC are assigned to call type CMDATA (so that those IEs will be transported only for circuit-mode data calls).

Setting up ISDN Basic Access using the NEW command in prompt mode

```
SO:
> NEW
SONUMBER: NOW 93 04 11
> (CR)
DN:
> 8383244
LCC:
> ISDNKSET
GROUP:
> CUSTB
SUBGROUP:
> 4
NCOS:
> 10
SNPA:
> 613
KEY:
> 1
RINGING:
> Y
LATANAME:
>NILLATA
LEN_OR_LTID:
>ISDN 309
LEN_OR_LTID:
OPTKEY:
> 1
OPTION:
>PROVCDS
```

Note: This example session is continued on the next page.

ISDN Basic Access (continued)

Setting up ISDN Basic Access using the NEW command in prompt mode (continued)

```
CALLTYPE:
>VBINFO
CALLTYPE:
>$
OPTKEY:
>1
OPTION:
>PROVCGS
CALLTYPE:
>VBINFO
CALLTYPE:
>$
OPTKEY:
>1
OPTION:
>PROVLLC
CALLTYPE:
>CMDATA
CALLTYPE:
>$
OPTKEY:
>1
OPTION:
>PROVHLC
CALLTYPE:
>CMDATA
CALLTYPE:
>$
OPTKEY:
>$
```

The following SERVORD example shows how to associate a logical terminal with a LEN, using the SLT ATT command.

ISDN Basic Access (continued)

Setting up ISDN Basic Access using the SLT ATT command in prompt mode

```
SO:
>SLT
SONUMBER: NOW 93 04 10
> (CR)
LTID:
> ISDN 309
FUNCTION:
> ATT
LEN:
> 0 1 0 5
OPTION:
>$
```

Setting up ISDN Basic Access using the SLT ATT command in no-prompt mode

```
>SLT $ ISDN 309 ATT 0 1 0 5 $
```

The following SERVORD example shows how to associate a B-packet logical terminal with a LEN and provision a B-channel connection using the SLT ATT command.

Setting up a provisioned B-channel connection using the SLT ATT command in prompt mode

```
SO:
>SLT
SONUMBER: NOW 93 04 10
>(CR)
LTID:
>ISDN 309
FUNCTION:
>ATT
LEN:
>HOST 0 1 0 5
OPTION:
>PHLINK
XSG:
>4
OPTION:
>BCH
BCH:
>B1
```

ISDN Basic Access (end)

Setting up a provisioned B-channel connection using the SLT ATT command in no-prompt mode

```
>SLT $ ISDN 309 ATT HOST 0 1 0 5 PHLINK 4 BCH B1
```

6 Datafilling NI0 NI-1 BRI

The following chapter describes the NI0 NI-1 BRI, NI000008, functionality.

Additional Call Offering

Functionality code

Functional group ordering code: NI000008

Release applicability

BCS35 and up

This feature does not apply to ETSI BRI, or VN4 BRI.

Prerequisites

To operate, Additional Call Offering requires the following functional groups:

- NI0 ISDN Base—NI000007
- MDC Minimum—MDC00001

Description

Additional Call Offering (ACO) is a term used to describe the ability of a DN to participate in several calls simultaneously. With ACO, only one call can be actively engaged in voice or data transfer at a particular time; additional calls must be in held, originating, or terminating states. In the DMS-100 switch, up to five calls are allowed simultaneously.

Operation

The basis of the ACO feature is the concept of single functional call (SFC) and additional functional calls (AFC). To achieve the ACO capability, an SFC must be defined first on a logical terminal. This occurs automatically when a directory number (DN) is datafilled on a logical terminal; the switch assigns the SFC capability to the DN. The next step is to assign AFC to the DN, which enables the definition of four additional simultaneous functional calls for the SFC DN (five functional calls altogether, including the SFC).

AFC is assigned to the DN using the SERVORD option AFC, which is automatically datafilled in table KSETLINE. Any feature assigned to the SFC member is then automatically associated with the AFC members.

Once AFC keys are defined for a DN, the Additional Call Offering-Unrestricted (ACOU) option can be added to the DN. Option ACOU ensures that the end user is notified when a call for the DN is present at the switch, even though no channel can be allocated for the call. The Notification Busy Line (NBL) service order prompt must be defined for each ACOU DN to specify the number of additional calls (up to four) for which the end user should be notified. Option ACOU is assigned to the DN with SERVORD, which automatically datafills table KSETFEAT.

Translations table flow

Additional Call Offering does not affect translations table flow.

Limitations and restrictions

With the NA010 and up feature DN Sharing with Circuit-Mode Call Types, ACO is no longer needed to allow both a voiceband (VI) and a circuit-mode data (CMD) call termination simultaneously to the same DN.

Interactions

The following paragraphs describe the interactions between Additional Call Offering and other functionalities.

This feature changes the way ACO operates for terminals that have the access privilege datafilled for two B-channel access. When the terminal has a VI call active and there is one B-channel free, if CMD termination on this terminal takes place to the same DN, the terminating setup contains the channel identifier (CID) set to the free B-channel. When the terminal has a CMD call active, there is one B-channel free, and a VI termination takes place to the same DN, the terminating setup contains the CID set to free B-channel. For national ISDN 1 (NI-1) terminals the CID is set to “no-channel” for these messages.

Once Flexible Calling is active on a 2B fully initializing terminal non-initializing terminal (2B FIT/NIT) conference controller, all subsequent VI terminations are handled using ACO procedures.

Activation/deactivation by the end user

Additional Call Offering requires no activation or deactivation by the end user.

Billing

Additional Call Offering does not affect billing.

Station Message Detail Recording

Additional Call Offering does not affect Station Message Detail Recording.

Datafilling office parameters

Additional Call Offering does not affect office parameters.

Additional Call Offering (continued)

Datafill sequence

The ACO feature does not affect the datafill sequence.

> ***Note:*** Table KSETFEAT is datafilled through the service order system (SERVORD); therefore, no datafill procedure or example is provided. Refer to ``SERVORD” for an example of using SERVORD to datafill this table.

Translation verification tools

Additional Call Offering does not use translation verification tools.

SERVORD

SERVORD is used to

- create AFCs by assigning AFC to the DN
- assign option ACOU to the DN

Option AFC allows the definition of up to four additional simultaneous functional calls for the DN (five functional calls altogether, including the SFC). The AFC keys are always assigned so that they are contiguous with the SFC key. For instance, if the SFC key is the primary DN (key 1), four AFC keys can be defined on keys 2, 3, 4, and 5. In this case, the next SFC key is assigned to key 6. SERVORD option AFC is used to define AFC keys.

Option ACOU ensures that the end user is notified when a call for the DN is present at the switch, even though no channel can be allocated for the call. The Notification Busy Limit (NBL) service order prompt must be defined for each ACOU DN to specify the number of additional calls (up to four) for which the end user should be notified. The NBL value must be equal to or less than the number of AFC calls. Option ACOU is assigned to the DN through SERVORD.

SERVORD limitations and restrictions

Additional Call Offering has no SERVORD limitations and restrictions.

SERVORD prompts

The following table shows the SERVORD prompts used to assign options AFC and ACOU to a DN.

SERVORD prompts for Additional Call Offering

Prompt	Valid input	Explanation
DN_OR_LEN	up to 15 digits	Directory or line equipment number. Enter the directory number.
OPTKEY	1 to 69	Option key. Enter the number of the key associated with the SFC DN.
OPTION	AFC	Option. Enter the AFC option to define the AFC keys for the DN. ***Note:*** The AFC keys are automatically added immediately following the associated SFC key.
OPTION	ACOU	Option. Enter the ACOU option to ensure that the end user is notified when a call for the DN is present at the switch, even though no channel can be allocated for the call.
NUMCALLS	1 to 4	Number of calls. Enter the number of additional calls allowed for the DN.
NBL	0 to 4	Notification busy limit. Enter the maximum number of waiting calls (notification busy limit) allowed for the DN. ***Note:*** This value must be equal to or less than NUMCALLS.

SERVORD example for adding Additional Call Offering

The following SERVORD example shows how the AFC option is added to a DN using the ADO command.

Additional Call Offering (continued)

SERVORD example for Additional Call Offering—AFC option in prompt mode

```
SO
> ADO
SONUMBER: NOW 93 04 31
>
DN_OR_LEN:
> 8323455
OPTKEY:
> 6
OPTION:
> AFC
NUMCALLS:
> 4
OPTKEY:
> $
```

SERVORD example for Additional Call Offering—AFC option in no-prompt mode

```
> ADO  $ 8323455 6 AFC 4  $
```

The following SERVORD example shows how the ACOU option is added to a DN using the ADO command.

SERVORD example for Additional Call Offering—ACOU option in prompt mode

```
SO
> ADO
SONUMBER:  NOW 93 04 31
>
DN_OR_LEN:
> 8389984
OPTKEY:
> 6
OPTION:
> ACOU
NBL
> 3
OPTKEY:
> $
```

Additional Call Offering (end)

SERVORD example for Additional Call Offering—ACOU option in no-prompt mode

```
> ADO  $ 8389984  6 ACOU 3  $
```

Basic Service

Functionality code

Functional group ordering code: NI000008

Functionality ordering code: not applicable

Release applicability

BCS36 and up

Prerequisites

All the datafill information for this functionality is included in this document. However, prerequisite software or hardware may be required for complete implementation.

Description

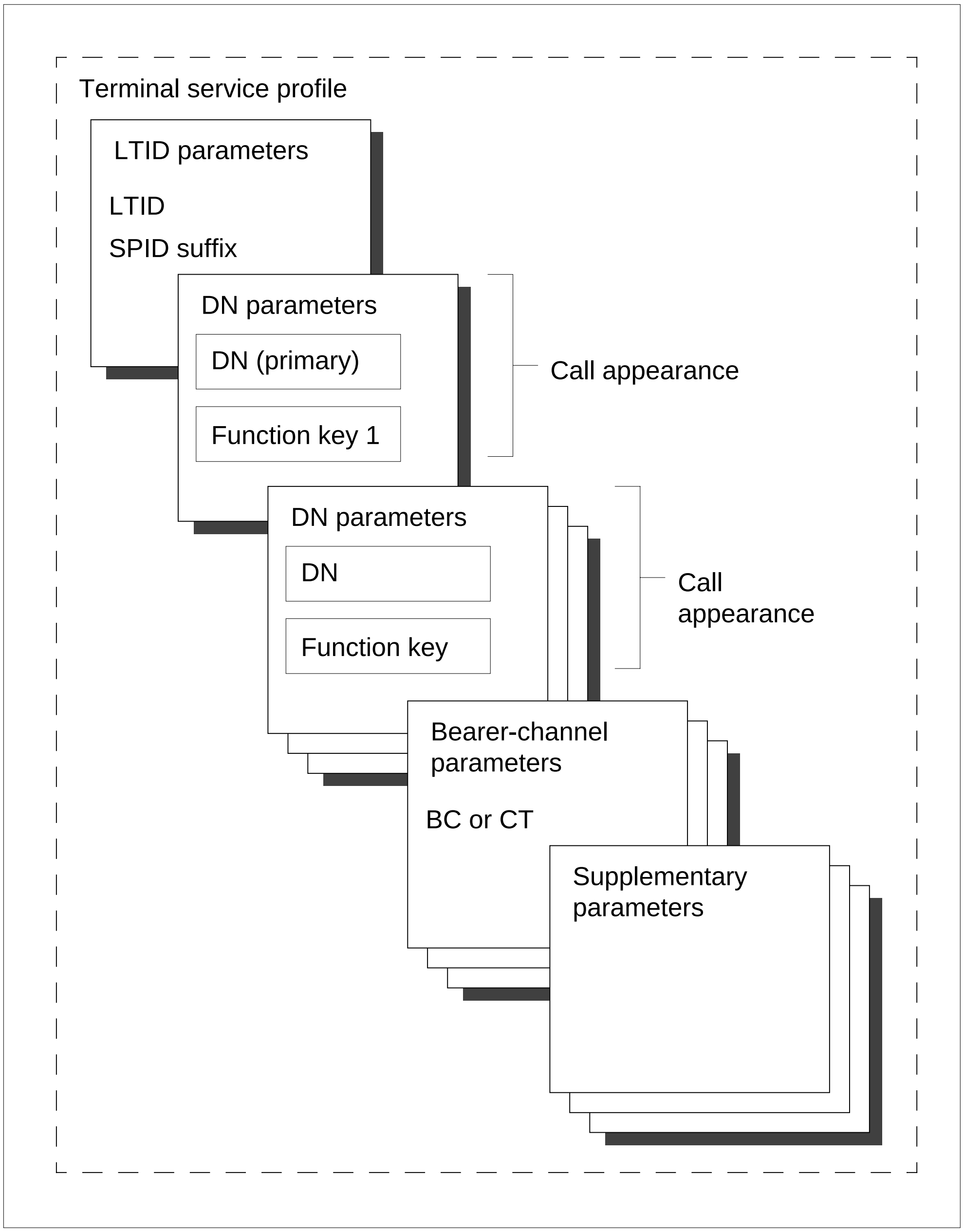
The Basic Service capability provides basic call processing on a BRI terminal.

The services available to a physical ISDN terminal are determined by the terminal's service profile, which is represented in datafill by a logical terminal. Elements of the service profile include the DN(s) assigned to the terminal, the bearer capability, and features.

Logical terminal identifiers (LTID) are the keys used to identify the services associated with a physical terminal, or terminal endpoint. The process of defining a service profile involves creating the LTID, assigning it DNs, specifying its bearer capability, and assigning features or supplementary services.

The figure that follows illustrates the service profile for a logical terminal that provides voice service.

Voice terminal service profile



Datafilling BRI Basic Service consists of specifying the service parameters for BRI terminals. These parameters are defined for the DMS-100 switch through datafill and through the Service Order (SERVORD) system.

Basic Service (continued)

Basic Service parameters are discussed in three categories:

1. Logical terminal identifier (LTID) parameters
2. Directory number (DN) parameters
3. Bearer-channel parameters

LTID parameters

In non-ISDN applications, only one terminal can be connected on a line to the switch, so the identification of the line card is sufficient to identify the terminal connected to the card. In DMS-100 installations, the line card is identified by the line equipment number (LEN). A BRI line, however, can support up to eight terminals, so each terminal can be identified separately from the line card.

LTIDs can uniquely identify individual service profiles, allowing operating companies to manage the service profiles of potentially thousands of BRI users. LTIDs allow service profiles to be defined without a terminal being associated with a physical interface (line card). LTID parameters identify the terminal, its associated features, and the type of service it provides. These are the first parameters to be defined for the Base Service capability.

An LTID consists of

- a logical terminal group name of up to eight characters
- a logical terminal number within a group

A BRI terminal can provide voice service, circuit-switched data service, or packet-switched data service. Of the possible eight terminals on a BRI interface, a maximum of two may be assigned circuit-switched service or B-channel packet-switched service (more than two would cause contention for the two B-channels on a BRI line).

Another identifier, known as a terminal endpoint identifier (TEI), is associated with each logical terminal. Whereas LTIDs are unique to every device connected to a switch, a TEI is unique only to a single BRI line. In some cases, a static TEI value is programmed into the terminal and assigned to a logical terminal during the provisioning process. In other cases, dynamic or user-assigned TEIs can be associated with the terminals. A dynamic TEI is assigned to the terminal by the network during the processing of each call. A user-assigned TEI is a dynamic TEI defined by the user. To enable terminal portability, an interface can be designated as accepting either user-assigned or network-assigned TEIs.

To associate a circuit-switched physical terminal with its service profile, the terminal is assigned a service profile identifier (SPID), which consists of the ten-digit primary directory number (DN) assigned to the terminal, and an optional eight-character suffix (SPIDSFX).

DN parameters

Once the LTID parameters are specified, the DN parameters can be defined. Each occurrence of a DN, on the same or on different logical terminals, is known as a call appearance.

The primary DN is identified first, and assigned to the terminal's function key 1, and the other DNs are defined subsequently. The DN-related information that must be specified for a call appearance includes: the customer group to which the DN belongs, the area code, whether or not the terminal should ring, and the name of the primary interexchange carrier (PIC) associated with the DN. Many other parameters, which are known as options, may be assigned to the DN. These options are typically subscription features such as Last Number Redial or BRI Calling Line Identification.

Note: PICs are used only in North America.

Bearer-channel parameters

Bearer-channel parameters are a particular category of DN parameters. To define these, the DN is further subdivided into bearer capabilities (BC) or call types (CT), so that each DN can be distinguished by a specific BC or CT. The resulting entity is known as a DN/BC or DN/CT pair.

Defining a DN by bearer capability means that the transmission service is specified for that bearer-channel. The BC values defined for the DMS-100 switch are:

- speech (digital voice transmission)
- 3.1 kHz audio
- 7 kHz audio
- unrestricted digital information (at 64 kbit/s)
- unrestricted digital information (at 56 kbit/s adapted to 64 kbit/s)

Each DN/BC pair may have a primary interexchange carrier (PIC) associated with it.

In some cases, rather than defining specific bearer capabilities, it is sufficient to divide the DN into two call types: voice band, or circuit-mode data. Each of these DN/CT pairs can then be associated with a specific PIC.

Basic Service (continued)

A DN/CT pair can also be assigned the ability to transport subaddress and compatibility information elements (IE) in the SETUP message for intranetwork calls. (Refer to the chapter “Datafilling Call Processing and ISUP Interworking” for a description of these IEs.)

Initialization

When a physical terminal is connected to a loop, the way in which the terminal identifies itself to the switch, or initializes, depends on whether the terminal has a static or dynamic terminal endpoint identifier (TEI), and whether the terminal is an initializing or non-initializing terminal. In all cases, a TEI is established between the physical terminal and the exchange termination.

A TEI is a Q.921 protocol entity that uniquely identifies a terminal on a particular loop. The DMS-100 switch permits static TEI assignment or dynamic TEI assignment. While static TEIs are assigned values at datafill time, dynamic TEIs are not assigned values until the terminal is plugged in.

Static TEI values are assigned to the logical terminal when the LTID is mapped to a LEN in table LTMAP. For example, LTID ISDN 12 is assigned TEI 23 in table LTMAP. In order to establish service on a terminal with a static TEI, the user must know the TEI value is 23 and program that value into the terminal. Static TEI values are in the range of 0 to 63. For terminals with static TEIs, the TEI alone is sufficient to identify the terminal to the switch since the service profile is associated with the TEI at datafill time.

Dynamic TEIs are dynamically assigned to the terminal through Q.921 procedures at the terminal’s request. Dynamic TEIs can be user assigned or network assigned. If a terminal is datafilled as having a user-assigned dynamic TEI, the terminal selects the TEI value when layer 2 is established. The network will assign it that TEI value provided that the TEI is valid, and no other terminal on the loop has that TEI value.

If a terminal is datafilled as having a network-assigned dynamic TEI, the TEI value is selected by the network when layer 2 is established. User-assigned dynamic TEIs are in the range of 0 to 63, while network-assigned dynamic TEIs are in the range of 64 to 126.

For terminals with dynamic TEIs, there is no static association between the TEI value and the logical terminal. As a result, the TEI alone is not sufficient to associate the physical terminal with the appropriate service profile. With dynamic TEI terminals, the way in which the physical terminal is associated with its service profile differs depending on whether the terminal is an initializing or non-initializing terminal.

Initializing terminals

Initializing terminals go through a layer 3 initialization process whereby a physical terminal, represented by a TEI value, is associated with a logical terminal, and thus, its service profile. The service profile identifier (SPID) is a layer 3 identifier programmed into the physical terminal by the user. It associates the physical terminal with the appropriate logical terminal to provide a service profile. The SPID registration process must occur prior to having the capability of offering service to the user.

Non-initializing terminals

Non-initializing terminals do not go through the layer 3 SPID registration process. Instead, a default service profile, or default logical terminal (DEFLTERM), is provided for the loop. A terminal which does not go through SPID initialization procedures is assumed to be non-initializing, and is associated with the DEFLTERM for that loop.

A maximum of one default logical terminal can be associated with a loop. In other words, only one LTID defined as a DEFLTERM can be mapped to a LEN in table LTMAP.

Operation

To set up the Base Service capability on ISDN terminals, four major steps are required:

1. Define the logical terminal and its service parameters.
2. Create the primary DN and assign its parameters, including certain bearer-channel parameters.
3. Attach the logical terminal to the appropriate LEN, and provision a B-channel connection if required.
4. Define additional bearer-channel parameters associated with the DN.

The following paragraphs describe the procedure for setting up the Base Service capability on ISDN terminals.

Define the logical terminal and its service parameters

The logical terminal is defined using the SERVORD command SLT ADD. Tables are automatically datafilled in accordance with the access privilege specified (circuit switched or packet switched).

For circuit-switched terminals, the following tables are automatically datafilled through SERVORD:

- LTDEF
- KSETINV

Basic Service (continued)

For packet-switched terminals, the following table is automatically datafilled through SERVORD:

- LTDEF

The parameters defined during this step include

- LTID, which identifies the logical terminal
- logical terminal class (LTCLASS), which specifies the type of physical terminal associated with the LTID
- logical terminal access privileges (CS or PS), which specifies whether the service required is circuit-switched or packet-switched
- maximum keys (MAXKEYS), which states the number of keys on the terminal
- default logical terminal (DEFLTERM), which defines the terminal as non-initializing
- TEI_TYPE, which specifies the TEI as static, dynamic, or user-assigned
- authorized bearer services (ABS), which assigns bearer capability restrictions to the DNs associated with this LTID
- Electronic Key Telephone Service (EKTS), which specifies whether or not EKTS features can be assigned to the terminal
- the following optional parameters
  - — SPID suffix (SPIDSFX), which defines the SPID suffix for the primary DN on the terminal
  - — protocol version control (PVC), which identifies the protocol version used by the terminal

Create the primary DN and assign its parameters

The primary DN is created and its parameters are assigned using the SERVORD command NEW. (For circuit-switched terminals, certain bearer-channel parameters are also specified in this step.)

For circuit-switched terminals, the following tables are automatically datafilled through SERVORD:

- KSETINV
- KSETLINE
- DNATTRS

For packet-switched terminals, the following tables are automatically datafilled through SERVORD:

- KSETINV
- KSETLINE

The DN parameters defined during this step include

- line class code (LCC), which defines the terminal as an ISDN keyset
- customer group (GROUP), which identifies the customer group of which the DN is a member
- customer subgroup (SUBGRP), which identifies a subgroup of the customer group
- network class of service (NCOS), which is used to further subdivide the customer group (typically for call routing purposes)
- serving numbering plan area (SNPA), which defines the area code
- KEY, which specifies the key assigned to the primary DN (it must be key 1 for the primary DN)
- RINGING, which specifies whether or not the terminal should ring for this DN
- line treatment group (LTG), which defines the name of the line treatment group associated with the DN
- the LTID to which the DN is assigned
- OPTKEY and OPTION, which are used to specify bearer-channel parameters PROVCDS, PROVCGS, PROVLLC, and PROVHLC for circuit-switched terminals (datafilled through SERVORD in table DNATTRS)
  - — provide CDS (PROVCDS) specifies, for each call type, whether the called number subaddress (CDS) information element (IE) is transported in the SETUP message
  - — provide CGS (PROVCGS) specifies, for each call type, whether the calling number subaddress (CGS) IE is transported in the SETUP message
  - — provide LLC (PROVLLC) specifies, for each call type, whether the low-layer compatibility (LLC) IE is transported in the SETUP message
  - — provide HLC (PROVHLC) specifies, for each call type, whether the high-layer compatibility (HLC) IE is transported in the SETUP message

Basic Service (continued)

Attach the logical terminal to the appropriate LEN

The logical terminal is attached to its LEN using the SERVORD command SLT ATT, which associates the logical terminal with the LEN that identifies the line card to which it is connected. Table LTMAP is automatically datafilled through SERVORD.

Define additional bearer-channel parameters associated with the DN

For circuit-switched terminals, bearer-channel parameters BC, BCPIC, CT, and CTPIC are datafilled directly in table DNATTRS:

- bearer capability (BC) for the call appearance (this value overrides the default bearer capability specified in the LTID parameter ABS)
- bearer capability PIC (BCPIC), which specifies a PIC per DN/BC
- call type (CT) for the call appearance, which is either voice band or circuit-mode data
- call type PIC (CTPIC), which specifies a PIC per DN/CT

Translations table flow

The Basic Service translations process is described in the chapter “Datafilling Bearer Capability Routing”.

Limitations and restrictions

Basic Service has no limitations or restrictions.

Interactions

Basic Service has no functionality interactions.

Activation/deactivation by the end user

Basic Service requires no activation or deactivation by the end user.

Billing

Basic Service does not affect billing.

Station Message Detail Recording

Basic Service does not affect Station Message Detail Recording.

Datafilling office parameters

The following table shows the office parameters used by Basic Service. For more information about office parameters, refer to the *Office Parameters Reference Manual*.

Office parameters used by Basic Service

Table name	Parameter name	Explanation and action
OFCENG	BC_CHECKING_ SCOPE	This parameter is set to control the bearer capability (BC) screening performed between stations in IBN and ISDN environments. If no BC checking is required, leave the parameter at its default value of NONE. If calls terminating on ISDN terminals are to be screened for BC compatibility, enter ISDN. If calls terminating on ISDN terminals and IBN terminals with bearer capabilities are to be screened, enter IBN.

Datafill sequence

The following table lists the tables that require datafill to implement Basic Service. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Basic Service (Sheet 1 of 2)

Table	Purpose of table
LTDEF	Defines the logical terminal class and access privileges for the LTID. This table should be datafilled using SERVORD only.
KSETINV (see note)	Associates the type of keyset with the corresponding LTID. This table should be datafilled through SERVORD only.
KSETLINE (see note)	Lists each call appearance on the LTID and specifies DN parameters for the call appearance. For each DN, the following parameters are defined: customer group and subgroup, network class of service (NCOS), service numbering plan area (area code), and whether or not the terminal should ring. This table should be datafilled through SERVORD only.

Basic Service (continued)

Datafill tables required for Basic Service (Sheet 2 of 2)

Table	Purpose of table
DNATTRS	Specifies whether subaddress and compatibility information elements are transported in the SETUP message for the DN for intranetwork calls. For parameters that relate to subaddress and compatibility information elements, this table should be datafilled through SERVORD only. Defines a bearer capability or call type for a DN call appearance, and specifies primary inter-LATA carriers for the DN by call type or bearer capability. Datafill table DNATTRS directly to specify information that relates to call type or bearer capability.
LTMAP	Associates the LTID with a LEN. This table should be datafilled through SERVORD only. ***Note:*** This table is datafilled through SERVORD; therefore, no datafill procedure or example is provided. Refer to “SERVORD” for an example of using SERVORD to datafill this table.

Datafilling table DNATTRS

CAUTION
Service may be affected
Use the Service Order system, not the table editor, to add tuples to and delete tuples from table DNATTRS if the tuples affect subaddress and compatibility information element parameters. These parameters include PROVCDS, PROVCGS, PROVLLC, PROVHLC, VBINFO, and CMDATA.

Using the table editor to datafill this information in table can result in unpredictable effects.

Table DNATTRS specifies whether subaddress and compatibility information elements (IE) are transported in the SETUP message for intranetwork calls. Refer to“SERVORD example for implementing Basic Service” for an example of how to datafill table DNATTRS with the IE transport parameters using SERVORD commands.

Table DNATTRS enables the user to specify multiple bearer capabilities for a DN, and to associate a different primary inter-LATA carrier (PIC) with each BC. Alternatively, if the user wants one PIC for all voice calls and one for all data calls associated with that DN, the PICs can simply be datafilled on the basis of call type (voice or data), rather than BC. Datafill the following parameters directly in table DNATTRS:

- bearer capability (BC), which overrides the default bearer capability specified by the LTID parameter authorized bearer services (ABS)
- bearer capability PIC (BCPIC), which specifies a PIC for each bearer capability
- call type (CT), which is either voice band or circuit-mode data
- call type PIC (CTPIC), which specifies a PIC for each call type

Note: PICs are used only in North America.

The following table shows the datafill specific to Basic Service for table DNATTRS. Only those fields that apply directly to Basic Service are shown. For a description of the other fields, refer to the *Data Schema Reference Manual*.

Datafilling table DNATTRS (Sheet 1 of 2)

Field	Subfield	Entry	Explanation and action
KEY		see subfields	Directory number key. This field consists of subfields AREACODE, OFCCODE, and STNCODE.
	AREACODE	numeric (1 to 8 digits)	Serving NPA or STS. Enter the serving NPA or the serving translation scheme (that is, the area code, or the first three digits of the DN).
	OFCCODE	numeric (1 to 7 digits)	Office code. Enter the office code (the next three digits of the DN).
	STNCODE	numeric (1 to 8 digits)	Station number. Enter the station number (the last four digits of the DN).
OPTDATA		see subfields	Options data. This field consists of subfields SEL, CTDATA, and BCDATA. The field can contain up to two selector names and their attributes.
	SEL	CT or BC	Selector. To define an option based on call type, enter CT, and datafill subfield CTDATA. To define an option based on bearer capability, enter BC, and datafill subfield BCDATA.

Basic Service (continued)

Datafilling table DNATTRS (Sheet 2 of 2)

Field	Subfield	Entry	Explanation and action
	CTDATA	see subfields	Call type data. This field consists of subfields CALLTYPE and CTOPTS. The field can contain up to two DN/CT option lists (that is, subfields CALLTYPE and CTOPTS can be repeated once).
	CALLTYPE	VBINFO or CMDATA	Call type. To specify voice band, enter VBINFO. To specify circuit-mode data, enter CMDATA.
	CTOPTS	see subfield	Call type options. This field consists of subfield CTOPTID. The field can contain up to six options (that is, subfield CTOPTID can be repeated five times).
	CTOPTID	CTPIC	Call type option identifier. Enter CTPIC to specify a PIC for the DN/CT pair, and datafill field CTPIC.
	CTPIC	UWATS or NILC	Call type primary inter-LATA carrier. Enter UWATS as the name of the PIC (which must be listed in table OCCNAME), or NILC (for no carrier name).
	BCDATA	see subfields	Bearer capability data. This field consists of subfields BCOPTID and BCPIC. This field can contain up to five DN/BC option lists (that is, subfields BCOPTID and BCPIC can be repeated four times).
	BCOPTID	3_1_KHZ, 7_KHZ, 56KDATA, or 64KDATA	Bearer capability option identifier. Enter the BC as one of SPEECH, 3_1_KHZ, 7_KHZ, 56KDATA, or 64KDATA, and datafill field BCPIC.
	BCPIC	UWATS or NILC	Bearer capability primary interlata carrier. Enter UWATS as the name of the PIC (which must be listed in table OCCNAME), or NILC (for no carrier name).

Datafill example for table DNATTRS

The following examples show sample datafill for Basic Service in table DNATTRS.

The following example shows a DN call appearance datafilled with one PIC for voice calls and one for data calls.

MAP display example for table DNATTRS

```
KEY                                                    DATA
                                                    OPTDATA

613 838 1445  $     CT      VBINFO  CTPIC   UWATS    $
                            CMDATA  CTPIC   UWATS    $ $
```

The following example shows a DN call appearance datafilled with one PIC for voice calls and two PICs for data calls. Each of the PICs for data calls is specified by BC.

MAP display example for table DNATTRS

```
KEY                                                    DATA
                                                    OPTDATA

613 838 2545    $      CT      VBINFO      CTPIC UWATS $
                       BC      56KDATA     NILC  $
                               64KDATA     UWATS $  $
```

Translation verification tools

Basic Service does not use translation verification tools.

SERVORD

SERVORD is used to

- define the logical terminal and its service parameters with the SLT ADD command
- create the primary DN, and assign DN and bearer-channel parameters with the NEW command
- attach the logical terminal to the LEN with the SLT ATT command

> ***Note:*** Full explanations of the SERVORD commands and options can be found in the *SERVORD Reference Manual*.

SERVORD limitations and restrictions

Basic Service has no SERVORD limitations and restrictions.

SERVORD prompts

This section lists the prompts associated with the SLT ADD, NEW, and SLT ATT commands.

Basic Service (continued)

The following table shows the SERVORD prompts for Basic Service in the SLT ADD command to define the logical terminal and to assign its service parameters.

SERVORD prompts for Basic Service - SLT ADD command (Sheet 1 of 2)

Prompt	Valid input	Explanation
LTID	alphanumeric name and numeric value (1 to 1022)	Enter the LTID that will identify this logical terminal. The LTID consists of a logical terminal group name followed by a space and a terminal number. (The logical terminal group name must be defined in table LTGRP.)
LTCLASS	BRAFS or BRAMFT	Enter BRAFS to specify BRI functional set or BRAMFT to specify Meridian feature transparency. ***Note:*** For ETSI applications, enter BRAFS.
CS	Y or N	Enter Y to specify circuit-switched service, or N to specify that circuit-switched service is not permitted on this terminal.
PS	B, D, or N	Enter B to specify B-channel packet service, D to specify D-channel packet service, or N to specify that packet-switched service is not permitted on this terminal.
MAXKEYS	2 to 64	If you entered Y for circuit-switched service, enter the maximum number of feature activators on the terminal.
DEFLTERM	Y or N	Enter Y to define the terminal as a non-initializing terminal. Enter N to indicate that initialization is required. Enter Y for ETSI, VN4, or Austel.
TEI_TYPE	DTEI, STEI, UATEI, UNATEI	To specify the type of TEI assignment, enter one of the following type names: • STEI for static • DTEI for dynamic • UATEI for user-assigned TEI • UNATEI for user- or network-assigned TEI

Basic Service (continued)

SERVORD prompts for Basic Service - SLT ADD command (Sheet 2 of 2)

Prompt	Valid input	Explanation
ABS	VOICE, VBD, CMD	To define the authorized bearer service for the terminal, enter of the following: • VOICE to specify that analog voice calls can terminate on this LTID • VBD to specify that voice-band data calls can terminate on this LTID • CMD to specify that circuit-mode data calls can terminate on this LTID ***Note:*** The ABS prompt recurs until you respond with a dollar sign ($).
EKTS	Y or N	Enter Y to specify that the terminal will be assigned the EKTS option, or N to specify that it will not. Enter N for ETSI, VN4, or Austel.
OPTION	SPIDSFX, PVC	If you entered DTEI or UATEI for TEI_TYPE, enter SPIDSFX to define a SPID suffix. If you entered BRAFS for LTCLASS, enter PVC for protocol version control. ***Note:*** Option SPIDSFX is not valid for ETSI, VN4, or Austel.
SPID_SUFFIX	1 to 8 digits	Enter a SPID suffix that will be combined with the primary DN assigned to the terminal to form a unique identifier for its service profile.
VERSION	ETSI, VN4, AUSTEL	Enter ETSI for European compliance. Enter VN4 for French VN4 BRI compliance. Enter AUSTEL for TS13 Australian BRI compliance.
ISSUE	0	Enter 0 for ETSI, VN4, or Austel.

Basic Service (continued)

NEW command

The following table shows the SERVORD prompts for Basic Service used in the NEW command to create the primary DN and assign DN parameters.

SERVORD prompts for Basic Service - NEW Command (Sheet 1 of 2)

Prompt	Valid input	Explanation
DN	1 to 15 digits	Enter the primary directory number for the logical terminal.
LCC	ISDNKSET	Enter ISDNKSET for the line class code.
GROUP	alphanumeric (1 to 16 characters)	Enter the name of the customer group to which this DN is assigned.
SUBGRP	0 to 7	Enter the number of the customer subgroup to which this DN is assigned. (If subgroups are not being used, simply enter 0.)
NCOS	0 to 256	Enter the number of the network class of service to which this DN is assigned. (If NCOS grouping is not in use, simply enter 0.)
SNPA	1 to 8 digits	Enter the serving numbering plan area (area code).
KEY	1 to 69	Enter the key to which the DN is assigned. The primary DN must be assigned to key 1.
RINGING	Y or N	Enter Y to specify that the terminal should ring for this DN, or N to specify that it should not ring. RINGING does not apply to ETSI, VN4, or Austel.
LTG	0 to 256	Enter the name of the line treatment group. Default is 0.
LEN_OR_LTID	alphanumeric name and numeric value (1 to 1022)	Enter the LTID to which the DN is being assigned. The LTID consists of a logical terminal group name followed by a space and a terminal number.
OPTKEY	1 to 64	Enter 1, as the option is assigned to the primary DN key.

Basic Service (continued)

SERVORD prompts for Basic Service - NEW Command (Sheet 2 of 2)

Prompt	Valid input	Explanation
OPTION	PROVCDS, PROVCGS, PROVLLC, PROVHLC	Enter one of these options when SERVORD first prompts for an option: • PROVCDS to indicate that the called number subaddress (CDS) information element (IE) is to be transported in the SETUP message • PROVCGS to indicate that the calling number subaddress (CGS) IE is to be transported in the SETUP message • PROVLLC to indicate that the low level compatibility (LLC) IE is to be transported in the SETUP message • PROVHLC to indicate that the high level compatibility (HLC) IE is to be transported in the SETUP message
CALLTYPE	VBINFO, CMDATA	Enter VBINFO to indicate that the IE specified for the OPTION prompt is to be transported only for voice band calls. Enter CMDATA to indicate that the IE specified for the OPTION prompt is to be transported only for circuit-mode data calls.

Basic Service (continued)

SLT ATT command

The following table shows the SERVORD prompts for Basic Service used with the SLT ATT command to associate the logical terminal and the LEN.

SERVORD prompts for Basic Service - SLT ATT command

Prompt	Valid input	Explanation
lLTID	alphanumeric name and numeric value (1 to 1022)	Enter the LTID that will identify this logical terminal. The LTID consists of a logical terminal group name, followed by a space and a terminal number. (The logical terminal group name must be defined in table LTGRP.)
LEN	a LEN in the format: ff u lsg cc ff = frame number (00 to 99) u = unit number (0 is lower LCME and 1 is upper LCME in the frame) lsg = line subgroup (00 to 15) cc = line circuit number (00 to 31)	Enter the LEN of the line card to which the terminal is connected.
OPTION	BCH	Enter BCH to specify the specific B-channel to be used (B1 or B2).
BCH	B1 or B2	Enter the specific B-channel to be used (B1 or B2).

SERVORD example for implementing Basic Service

The following SERVORD example shows how a circuit-switched functional logical terminal is defined and how the LTID parameters are specified with the SLT ADD command.

SERVORD example for Basic Service - SLT ADD command in prompt mode

```
SO:
>SLT
SONUMBER: NOW 93 04 09
>(CR)
LTID:
>ISDN 309
FUNCTION:
>ADD
LTCLASS:
>BRAFS
CS:
>Y
PS:
>N
MAXKEYS:
>64
DEFLTERM:
>Y
ABS:
>$
EKTS:
>N
OPTION:
>PVC
VERSION:
>ETSI
ISSUE:
>0
OPTION:
>$
```

SERVORD example for Basic Service - SLT ADD command in no-prompt mode

```
> SLT $ ISDN 309 ADD BRAFS Y N 64 Y $ N PVC ETSI 0 $
```

In the following example, the primary DN is assigned to the terminal, using the SERVORD command NEW. Options PROVCDS, PROVCGS, PROVLLC, and PROVHLC are assigned to the DN. Options PROVCDS and PROVCGS are assigned to call type VBINFO (so that those IEs will be transported only for voice band calls), and options PROVLLC and PROVHLC are assigned to call type CMDATA (so that those IEs will be transported only for circuit-mode data calls).

Basic Service (continued)

SERVORD example for Basic Service - NEW command in prompt mode

```
SO:
>NEW
SONUMBER: NOW 93 04 11
>(CR)
DN:
>8383244
LCC:
>ISDNKSET
GROUP:
>CUSTB
SUBGROUP:
>4
NCOS:
>10
SNPA:
>613
KEY:
>1
RINGING:
>Y
LTG: 0
>4
LEN_OR_LTID:
>ISDN 309
OPTKEY:
>1
OPTION:
>PROVCDS
```

Note: This example session continues on the next page.

SERVORD example for Basic Service - NEW command in prompt mode (continued)

```
CALLTYPE:
>VBINFO
CALLTYPE:
>$
OPTKEY:
>1
OPTION:
>PROVCGS
CALLTYPE:
>VBINFO
CALLTYPE:
>$
OPTKEY:
>1
OPTION:
>PROVLLC
CALLTYPE:
>CMDATA
CALLTYPE:
>$
OPTKEY:
>1
OPTION:
>PROVHLC
CALLTYPE:
>CMDATA
CALLTYPE:
>$
OPTKEY:
>$
```

SERVORD example for Basic Service - New command in no-prompt mode

```
NEW $ 8383244 ISDNKSET CUSTB 4 10 613 1 Y 4 ISDN 309 + (CR)
1 PROVCDS VBINFO $ 1 PROVCGS VBINFO $ 1 PROVLLC
CMDATA $ 1 PROVHLC CMDATA $ $
```

In the following example, the logical terminal is associated with the LEN, using the SERVORD command SLT ATT.

Basic Service (end)

SERVORD example for Basic Service - SLT ATT command in prompt mode

```
SO:
>SLT
SONUMBER: NOW 93 04 10
>(CR)
LTID:
I>SDN 309
FUNCTION:
>ATT
LEN:
>0 1 0 5
OPTION:
>$
```

SERVORD example for Basic Service - SLT ATT command in no-prompt mode

```
> SLT $ ISDN 309 ATT 0 1 0 5 $
```

BRI Call Processing and ANSI ISUP Interworking

Ordering codes

Functional group ordering code: NI000008

Functionality ordering code: does not apply

Release applicability

BCS35 and later versions

Prerequisites

To operate, the BRI Call Processing and ANSI ISUP Interworking functionality requires the following functional groups:

- NI0 ISDN Base, NI000007
- MDC - MDC Minimum, MDC00001

Description

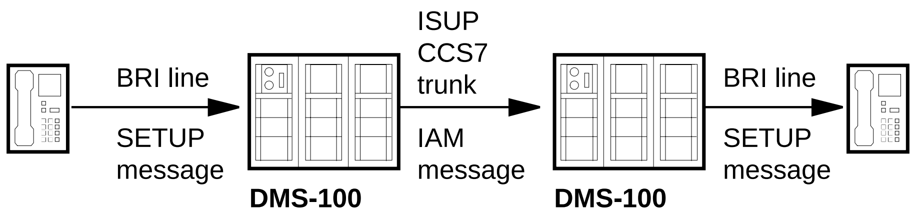
The call processing capability for BRI calls requires the DMS-100 switch to send and receive Q.931 messages over the interface. The ITU defines which Q.931 messages conform to the Q.931 protocol standards. For example, some of the messages are: SETUP, ALERTing, INFOrmation, PROGress, CONNect, DISConnect, and RELease. Specified points in a call order use these messages. Each message normally contains a number of information elements (IE). The IE provide information about the call, like the called number, bearer capability, calling number, progress indicator, and cause for an event.

The ISDN user part (ISUP) protocol used on CCS7 trunks uses a different set of messages, which conform to the CCITT Q.764 standards. The ISUP messages include: initial address (IAM), address complete (ACM), answer (ANM), call progress (CPG), and release (REL). The ISUP messages contain parameters that correspond approximately to the IEs in Q.931 messages. For example, some of the ISUP parameters are: called party number, calling party number, forward call indicator, backward call indicator, and cause.

Interworking between BRI and ISUP trunks appears in the following figure. This event requires the DMS-100 switch to map Q.931 messages into ISUP format, and ISUP protocol messages into Q.931 message format. An example of interworking appears in the following figure. In this example, the DMS-100 switch converts a Q.931 SETUP message. The ISUP IAM message is a message from a BRI line to an ISUP IAM message for transmission on the CCS7 trunk. The DMS-100 switch converts the message back to a SETUP message for the terminating equipment.

BRI Call Processing and ANSI ISUP Interworking (continued)

BRI/ISUP interworking



Operation

This section explains call processing and BRI/ISUP interworking by describing the following:

- the Q.931 messages that the switch uses during call processing
- BRI call processing
- the ISUP messages that the switch uses during BRI interworking
- BRI/ISUP call processing
- treatments for BRI/ISUP interworking

The primary Q.931 messages that the switch uses in BRI communications protocol appear in the following table.

Q.931 messages (Sheet 1 of 2)

Q.931 message	Use of message
ALERTing	The message indicates to the calling party that the start of called party alerting occurred.
CALL PROCeeding	The message indicates to the calling party that the network initiated call establishment. The message indicates to the network that call establishment is in progress at the called party end.
CONNect	The message indicates to the calling party that the called party accepted the call.
CONNect ACKnowledge	The message indicates to the called party that the called party has the call.
DISConnect	A message sent by either party to request the network to clear the connection.

BRI Call Processing and ANSI ISUP Interworking (continued)

Q.931 messages (Sheet 2 of 2)

Q.931 message	Use of message
INFOrmation	The message contains different call-related information. The information can include keypad or display information.
PROGress	The message indicates the progress of a call to the calling party.
RELease	The message indicates that either party or the network plans to release the channel and the call reference after disconnecting the channel.
RELease COMplete	The message indicates that either party or the network released the channel and the call reference.
SETUP	The message indicates the start of call establishment.
SETUP ACKnowledge	The message indicates to the calling party that complete address information does not appear in the SETUP message.

Each Q.931 message contains a variable number of information elements (IE). The IEs normally found in the messages in the previous table appear in the following table.

Q.931 information elements (Sheet 1 of 2)

Information element	Use of IE	Found in message
Bearer capability (BC)	The BC contains the bearer capability that associate with the call.	SETUP
Called party number (CDN)	The CDN contains the address of the called party.	CALL PROC, INFO, SETUP
Called party subaddress (CDS)	The CDS contains a subaddress that associates with the called address.	CALL PROC, SETUP
Calling party number (CGN)	The CGN contains the address of the calling party.	SETUP
Calling party subaddress (CGS)	The CGS contains a subaddress that associates with the originating interface.	SETUP
Cause (CSE)	The CSE contains the reason for an event like a call clearing or rejection.	DISC, INFO, PROG, REL, REL COM

BRI Call Processing and ANSI ISUP Interworking (continued)

Q.931 information elements (Sheet 2 of 2)

Information element	Use of IE	Found in message
Channel identification (CID)	The CID identifies the B-channel that carries the call.	ALERT, CALL PROC, CONN, CONN ACK, REL, SETUP
Feature activation (FA)	The FA initiates feature-key access processing or feature programming.	INFO, SETUP
Feature indicator (FI)	The FI contains the status of the feature-key access processing.	CALL PROC, CONN, DISC, INFO, REL, REL COM, SETUP ACK
High-layer compatibility (HLC)	The HLC indicates the application protocol. The terminal equipment uses the protocol to communicate over the bearer service that the network provides.	SETUP
Information request (IRQ)	IRQ is used in overlap sending methods to indicate that address information is required or has been received.	CALL PROC, DISC, INFO, REL, REL COM, SETUP ACK
Keypad (KP)	The KP can contain the called number or a feature access code, or part of either.	INFO, SETUP
Low-layer compatibility (LLC)	The LLC Indicates lower layer protocols that the terminal equipment uses to communicate over the bearer service that the network provides.	SETUP
Progress indicator (PI)	The PI indicates that an event occurred in a call.	ALERT, CALL PROC, CONNect, INFO, PROG, SETUP, SETUP ACK
Signal (SIG)	The SIG indicates to a terminal which tones or alerting signals to generate.	ALERT, CALL PROC, CONN, CONN ACK, DISC, INFO, PROG, REL, REL COM, SETUP, SETUP ACK

BRI call processing

Call processing within the BRI environment is described in three parts: call processing, dial-access processing, and feature-key access processing.

BRI Call Processing and ANSI ISUP Interworking (continued)

Call processing

The call control procedures used in a BRI network depend on many factors, such as the type of call (voice or data), characteristics of the originating and terminating parties, the method used to report the called number, and the progress of the call itself (a connection is made, the originator clears the call prior to a connection, there is a response, the call is rejected). As the possibilities are quite extensive, this document describes the most common situations and illustrates a few typical scenarios.

There are two basic methods of reporting the dialed digits to the switch, each using a different sending method, or sequence, of Q.931 messages and information elements:

- enbloc sending, in which all the information needed to establish the call is included in the SETUP message
- overlap sending, in which the terminal places no digits or some digits in the SETUP message, and the rest of the digits in one or more subsequent INFO messages

Normal call establishment and clearing

The following figure represents a typical voice call processing scenario. The first message sent from the originating terminal is the SETUP message, which contains the call reference number (CRn), the bearer capability (BC), and the calling number (CGN) IEs. The first message from the network is a SETUP ACKnowledge message, which indicates that address information is required (there is no called number information in the SETUP message, as this sample call is using the overlap sending method).

The SETUP ACK message instructs the originating terminal to turn on the dial tone, using:

- a progress indicator (PI) IE, which specifies indicator 8 (inband information or appropriate pattern now available)
- a signal (SIG) IE, which specifies signal value 0 (dial tone on)

The following table lists the possible PI values, and the next table lists the SIG values.

The SETUP ACK message also contains a channel identifier (CID) IE, which indicates the B-channel selected for the call by the DMS-100 switch.

The second message from the terminal is an INFO message containing a keypad (KP) IE with the called number. (Several INFO messages may be used to transmit the called number.) When the complete number has been received, the network sends a CALL PROCeeding message to the terminal, and an INFO

BRI Call Processing and ANSI ISUP Interworking (continued)

message containing a signal IE specifying value 63 (tones off) to turn off the dial tone.

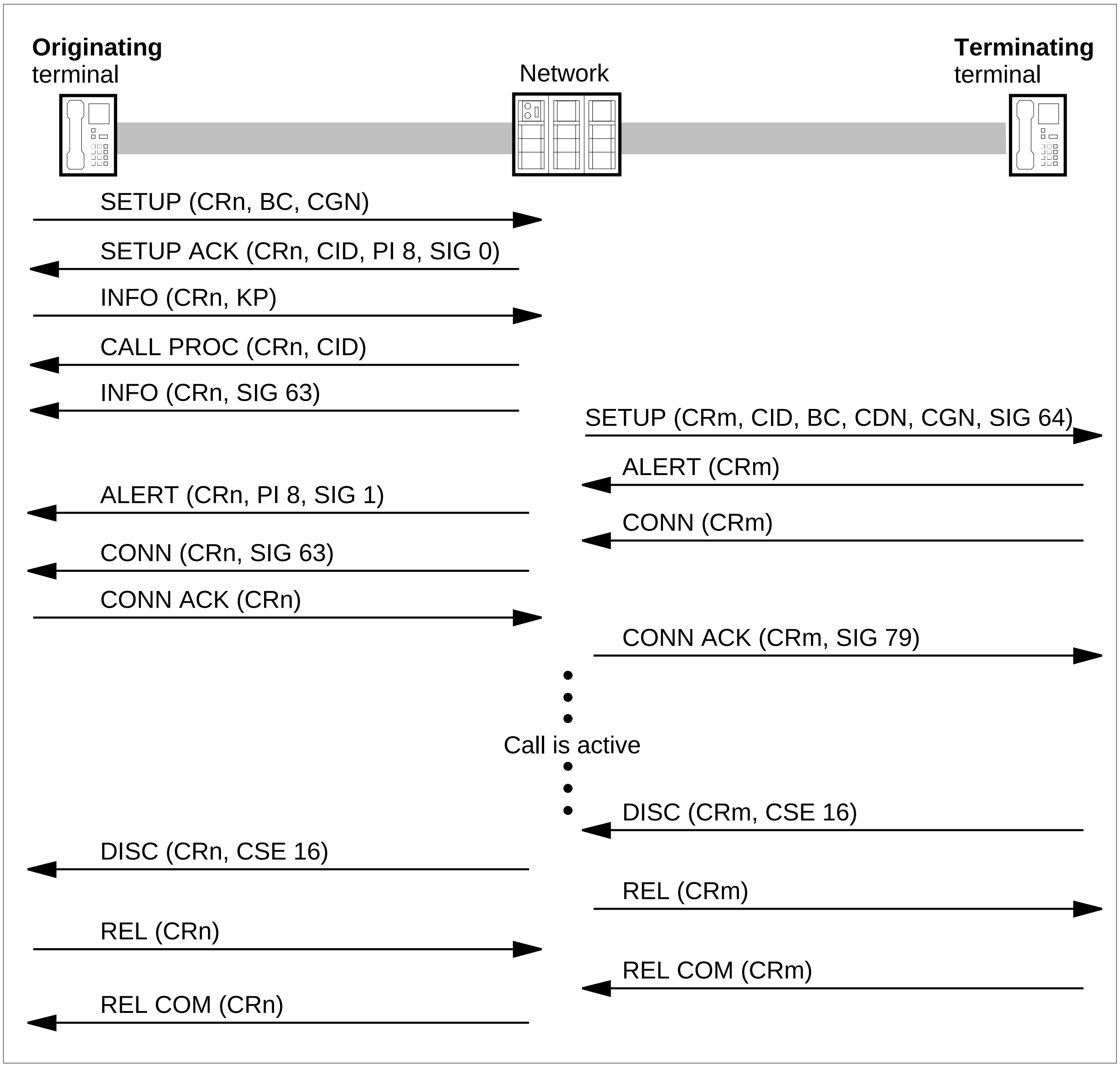
At the same time, the network sends a SETUP message to the terminating equipment, using the enbloc sending method in which the called number is transmitted in the SETUP message. The SETUP message includes a CID IE, which identifies the call's B-channel, and a SIG IE with signal value 64 (alerting on—pattern 0, normal alerting), which turns on alerting for the terminating equipment. The terminating interface sends an ALERTing message to the network, to indicate that audible ringing has begun at the terminating end. In response, the network sends an ALERTing message to the originating terminal. SIG value 1 in the ALERT message specifies ring-back/audible ringing tone on.

When the terminating end accepts the call, it sends a CONNect message to the network, which transmits a CONNect message to the originator, including a signal value 63 (tones off) to turn off the audible ringing. The network sends a CONNect ACKnowledge message to the terminating end to indicate that it has been awarded the call, and to turn off the alerting signal with SIG value 79 (alerting off). At this stage, the call is active.

Normal call clearing is initiated when either party sends a DISConnect or RELease message to the network. In the following figure, the terminating end sends a DISConnect message with a cause IE of cause value 16 (normal call clearing). The network returns a RELease message to the terminating end, and sends a DISConnect message to the call originator with a CSE of 16. The terminating end replies to the network with a RELease COMplete message, and the originating end sends a RELease message, and receives a RELease COMplete.

BRI Call Processing and ANSI ISUP Interworking (continued)

Normal call establishment and clearing



Progress indicator IE values (Sheet 1 of 2)

PI value	Indicator	Normal use
1	call is not end-to-end ISDN, additional call progress information can be available in-band	Used when a call leaves the ISDN network or originates from outside the network.
2	destination address is not ISDN	Used when called equipment is not ISDN.

BRI Call Processing and ANSI ISUP Interworking (continued)

Progress indicator IE values (Sheet 2 of 2)

PI value	Indicator	Normal use
3	origination address is not ISDN	Used when calling equipment is not ISDN.
4	call returned to the ISDN	Used when a call returns to the ISDN network from a not ISDN environment.
8	in-band information or correct pattern now available	Used to indicate that an application of a signal or tone must be applied at the terminal equipment.

Signal IE values

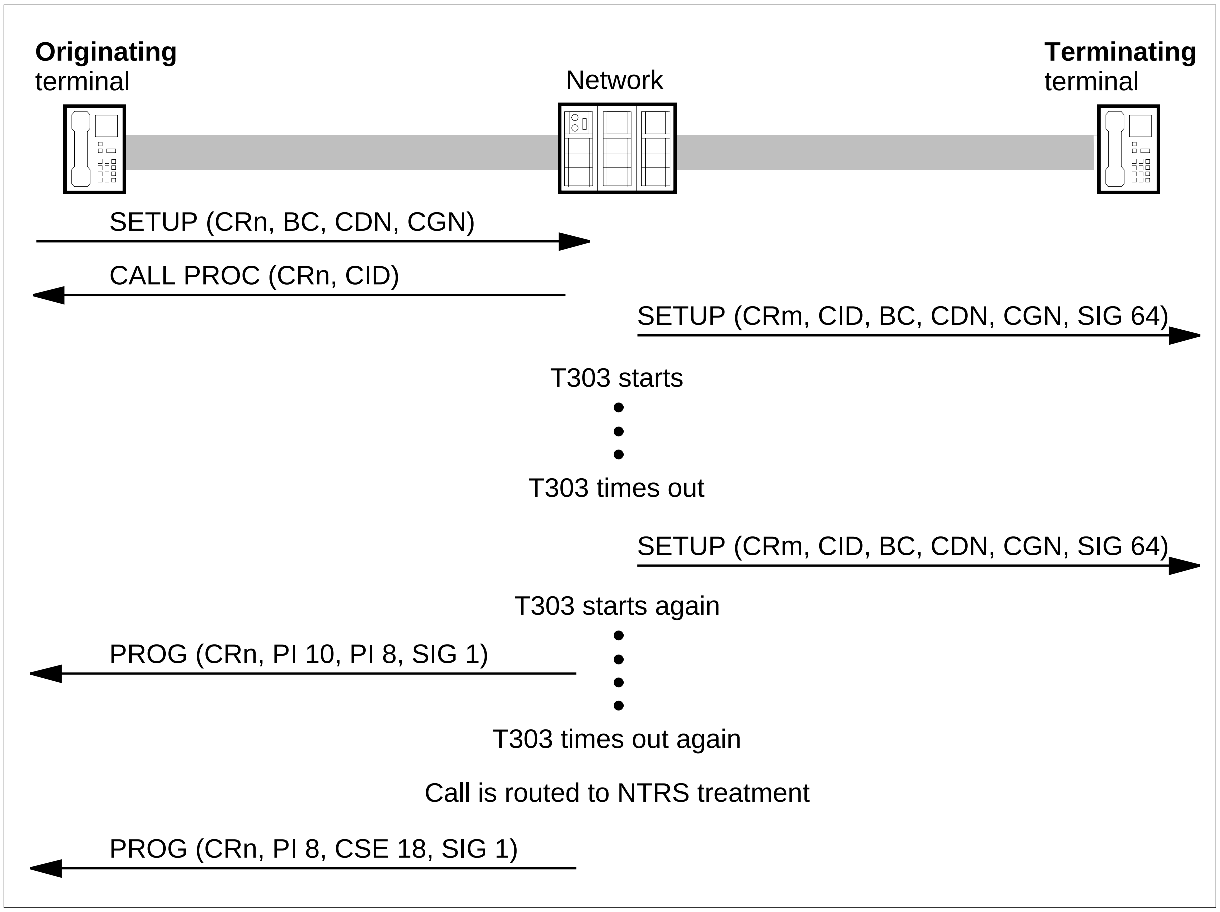
SIG value	Signal	Typical use
0	dial tone on	Used when network receives an origination SETUP message with no address information (no called number).
1	ring-back/audible ringing tone on	Used to inform calling party that called party has been alerted of incoming call.
3	network congestion/ reorder tone on	Used to indicate to the user that a request to the network has been denied.
4	busy tone on	Used to indicate to the calling party that the terminating interface is busy.
63	tones off	Used to indicate that all tones should be turned off.
64	alerting on—pattern 0, normal alerting	Used to inform the terminating user of an incoming call.
79	alerting off	Used to indicate that alerting should be turned off.

No response

When the network sends the SETUP message out on a BRI interface, the network starts timer T303. If terminals on the interface do not respond before T303 times out, the network issues the SETUP message again. The timer starts again. This process and the image of a voice call appear in the following figure. At the same time, the network sends a PROGress message back to the originating terminal with progress indicator 10 (delay in response at called interface). If there is no response to the second SETUP message, the call is routed to no terminal responding (NTRS) treatment, and the originator receives a PROGress message containing progress indicator 8 (inband information is now available), cause value 18 (no user responding), and signal value 1 (ring-back/audible ringing tone on).

BRI Call Processing and ANSI ISUP Interworking (continued)

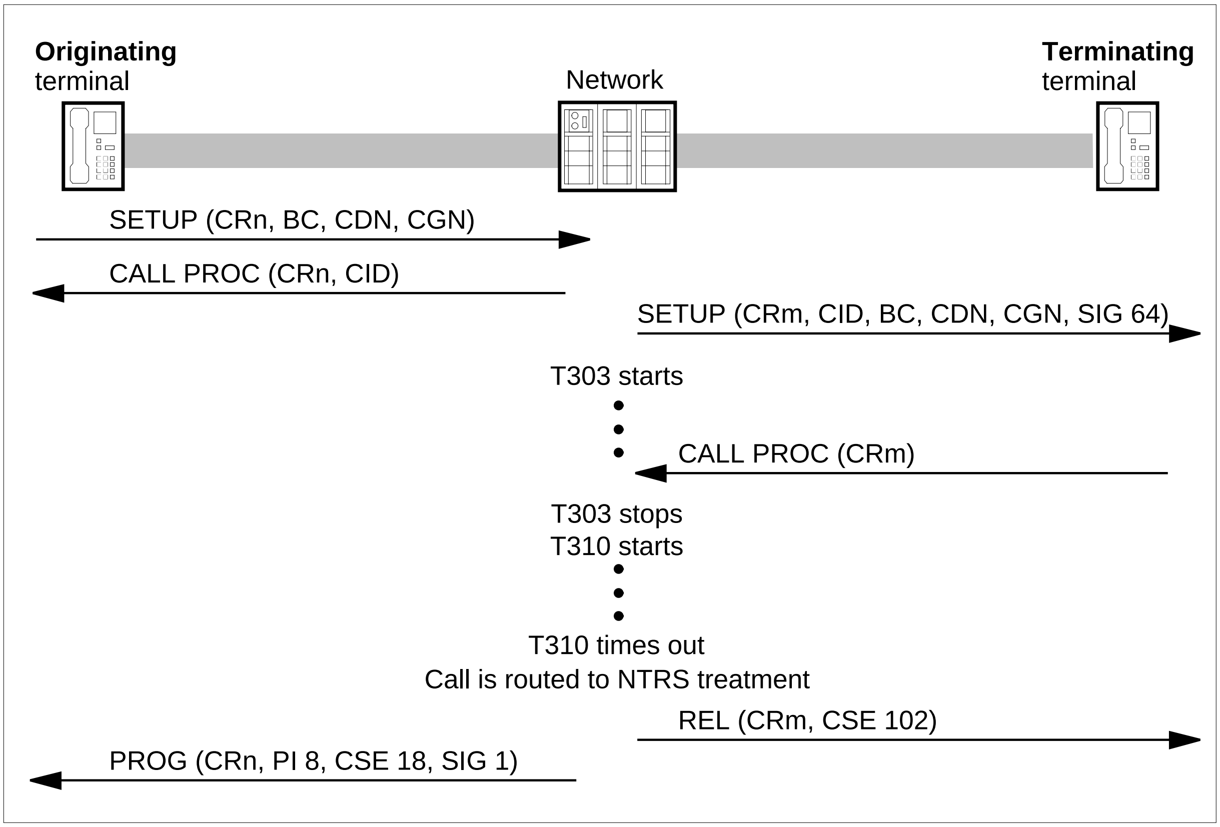
No response (T303)



If a terminal responds to one of the SETUP messages, the network starts timer T310, as the following figure indicates. If timer T310 times out and the network does not receive an ALERTing, CONNect, DISConnect, or RELease message, the call clears. The terminating equipment receives a RELease message with cause 102 (recovery on timer expiration). The originator receives NTRS treatment. The originator receives a DISConnect message with cause value 18 (the same treatment as expiration of timer T303).

BRI Call Processing and ANSI ISUP Interworking (continued)

No response (T310)

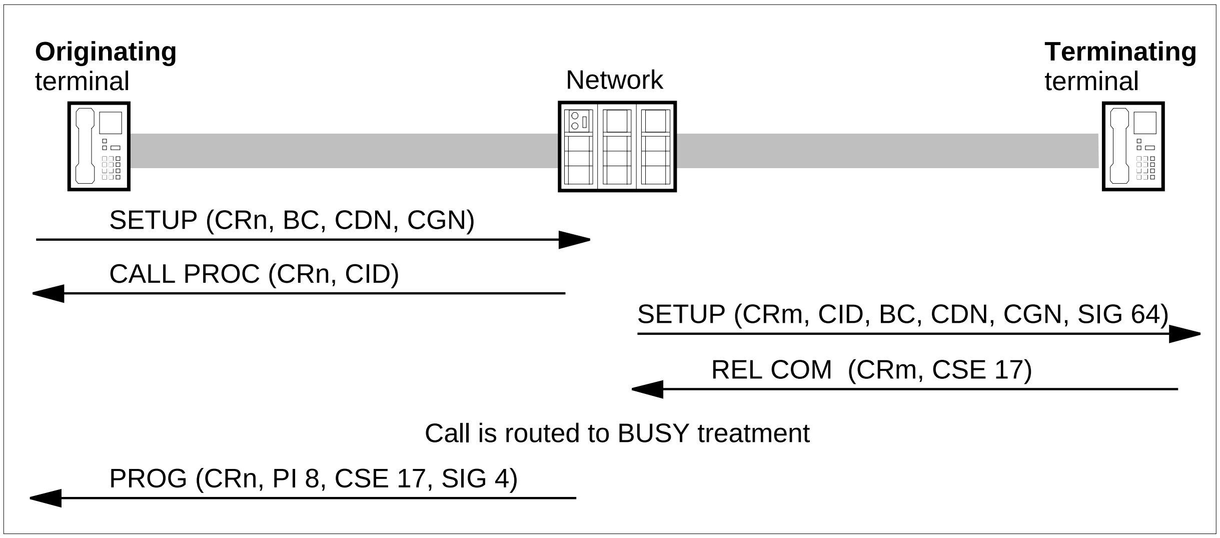


Call rejected

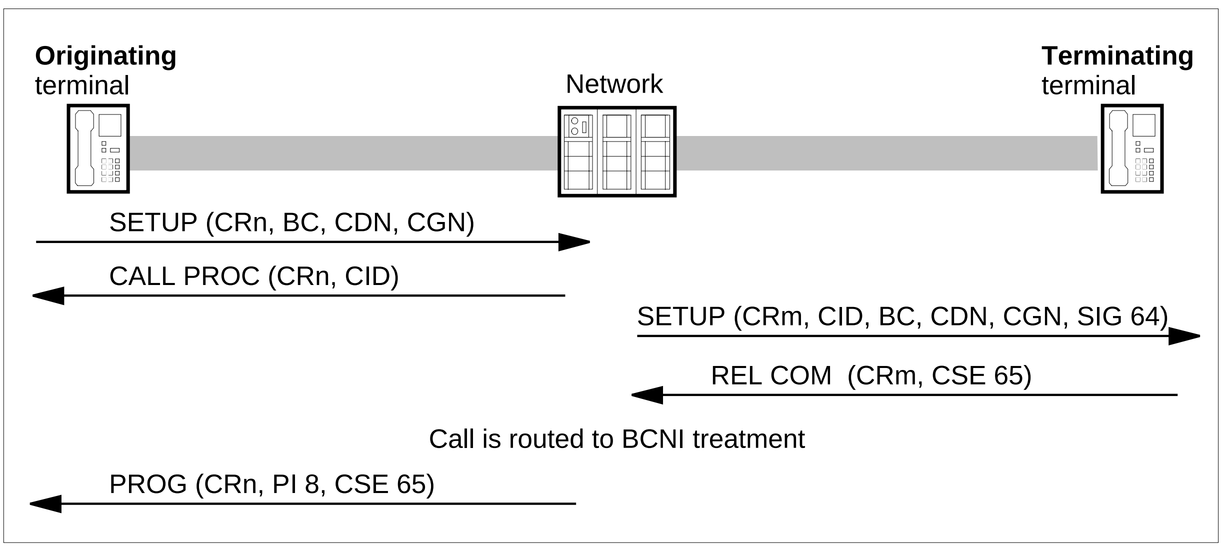
A terminal is able to reject a call before answering it by responding to the SETUP message with a DISConnect, RELease, or RELease COMplete message containing a cause value. In the representation of a voice call in the following figure, the cause value specified is 17 (user busy). The network clears the call at the originating interface with a PROGress message specifying cause value 17 and signal value 4 (busy tone on). In the figure on the following page, the reason shown for the call rejection is cause value 65 (bearer capability not implemented).

BRI Call Processing and ANSI ISUP Interworking (continued)

User Busy



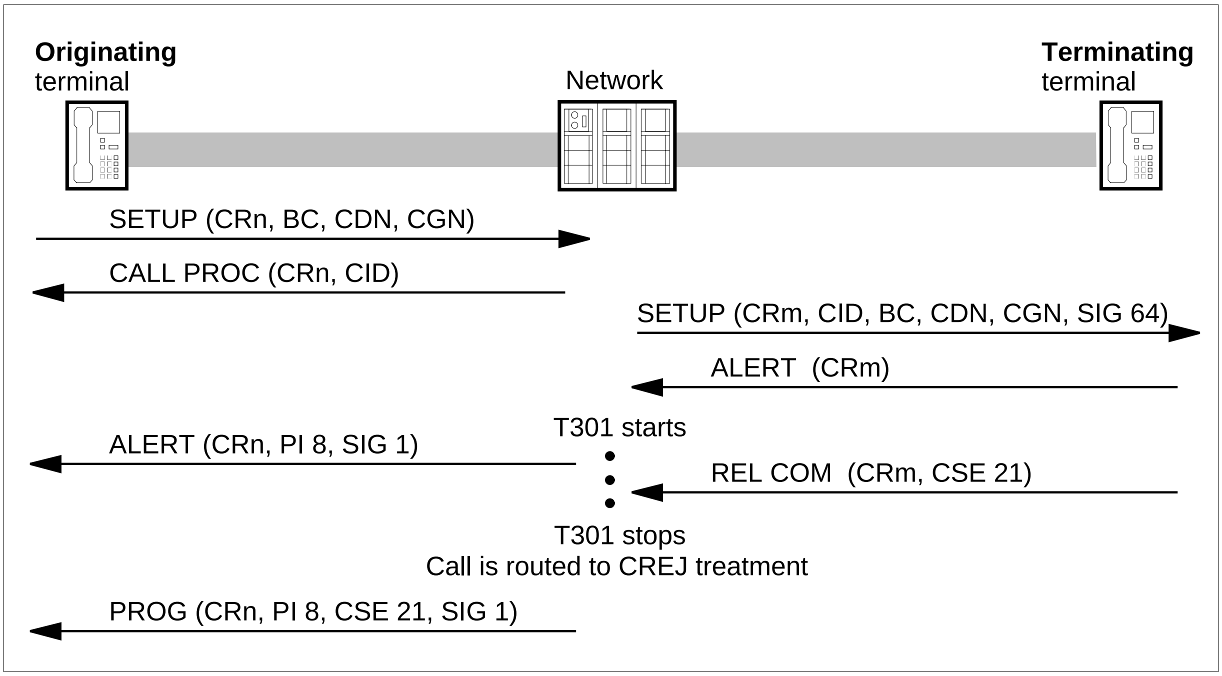
Bearer capability not implemented



When a terminating interface responds to the SETUP message with an ALERTing message, the network starts timer T301. If the terminating equipment rejects the call while T301 runs, the terminating equipment sends a DISConnect, RELease, or RELease COMplete message. The messages appear in the following figure. The call routes to call rejected (CREJ) treatment. The originator receives a PROGress message with cause value 21 (call rejected) and signal value 1 (ring-back/audible ringing tone on).

BRI Call Processing and ANSI ISUP Interworking (continued)

Call rejection (T301)



No response to ALERTing

If the network does not receive a valid CONNect message from the terminating interface before timer T301 expires, the network clears the call. The network can:

- send a RELease message with cause 102 (recovery on timer expiration) and signal 79 (alerting off) to the terminating interface
- send a DISConnect message with cause 19 (user alerting, no answer) and signal 63 (tones off) to the originating interface

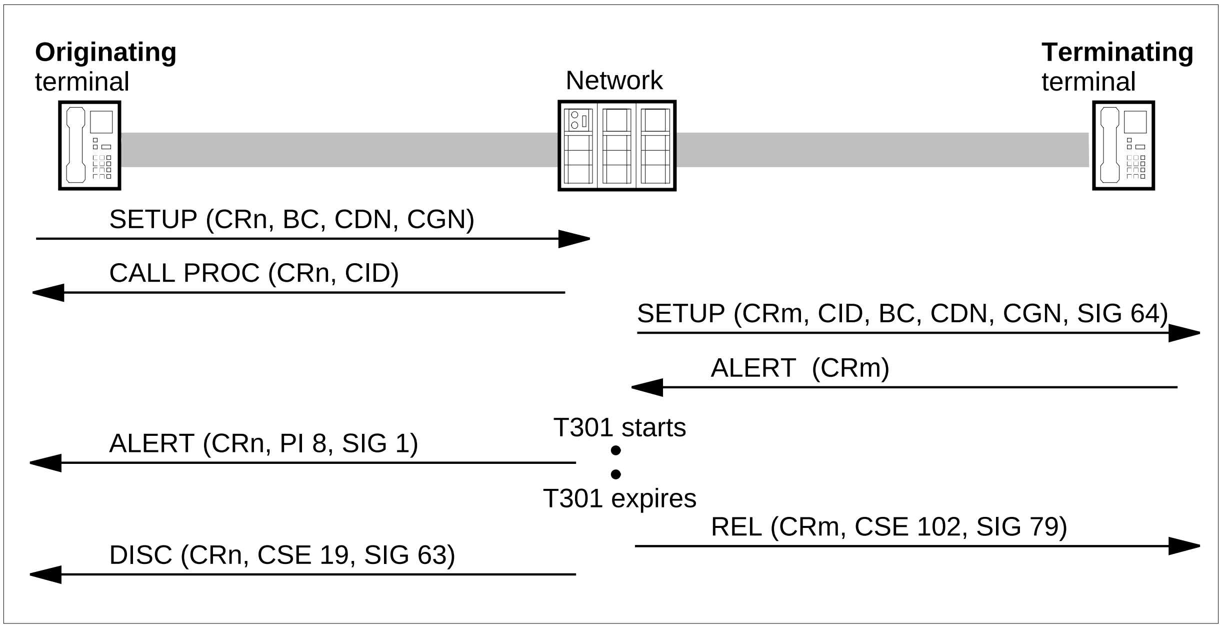
A voice call that illustrates this condition appears in the following figure.

Dial access processing

Dial access processing is the term used to describe the activation, deactivation, or programming of a switch feature (such as Call Forward or Last Number Redial) by dialing a feature access code during call establishment. Dial-access procedures allow the terminal more latitude in reporting digits to the switch than do normal call processing procedures.

BRI Call Processing and ANSI ISUP Interworking (continued)

No response to ALERTing



The following sending methods, or sequences, of Q.931 messages and information elements are permitted:

- enbloc sending, in which all the digits needed to establish the call are included in the SETUP message
- overlap sending, in which the terminal places no digits or some digits in the SETUP message, and the rest of the digits in one or more subsequent INFO messages
- dual overlap sending, in which the terminal reports a feature access code using overlap sending, and places the supplementary address information in several subsequent INFO messages
- overlap enbloc sending, in which the feature access code is sent using overlap sending, and the supplementary address is sent in one subsequent INFO message
- dual enbloc sending, in which the feature access code is sent using enbloc sending, and the supplementary address is sent in one subsequent INFO message
- enbloc overlap sending, in which the feature access code is sent using enbloc sending, and supplementary address information is placed in several subsequent INFO messages

Typically, feature access codes in either the SETUP or the INFO message are contained in the keypad (KP) IE, which can contain up to 32 digits, including

BRI Call Processing and ANSI ISUP Interworking (continued)

the star (*) and octothorpe (#). The KP IE can contain all or part of a feature access code, all or part of an address, or a feature access code followed by all or part of an address. The octothorpe is frequently used as the last digit in the KP IE, to represent end-of-dialing, or as the delimiter between an access code and the address.

Unlike most IEs, the KP IE does not have an implicit end-of-dialing indicator. However, so that the network will recognize end-of-dialing, the DMS-100 switch allows the operating company to define interdigital timing for the KP IE through office parameters. The office parameters allow the user to specify the length of time between dialed digits for both long and short timing modes. Table DIGCOL allows the user to set the long or short interdigital timing mode and define the digit collection algorithm.

Feature access codes may also be contained in the CDN IE if the type of number/numbering plan identifier (TON/NPI) in the CDN is set to unknown number in unknown numbering plan. In this case, the CDN can contain a complete address, a complete non-routing feature access code, or a complete non-routing access code followed by a complete address. The CDN IE contains an implicit end-of-dialing indicator, so any partial address or feature access code results in immediate partial-dial treatment.

The following figure represents an enbloc call processing sequence, in which the KP IE in the SETUP message contains all the information required for feature activation: the feature access code (76), and the address (25040), delimited by an octothorpe. In the following figure, an enbloc overlap sequence is represented, the KP IE in the SETUP message containing just the feature access code. In response, the network issues a SETUP ACKnowledge message containing

- a SIG IE that recalls the dial tone, specifying dial tone on
- an IRQ IE indicator of 1 (prompt for additional information), requesting address information

The following table lists the possible IRQ IE indicator values.

IRQ IE indicator values

IRQ indicator	IRQ value
0	information request completed
1	prompt for additional information

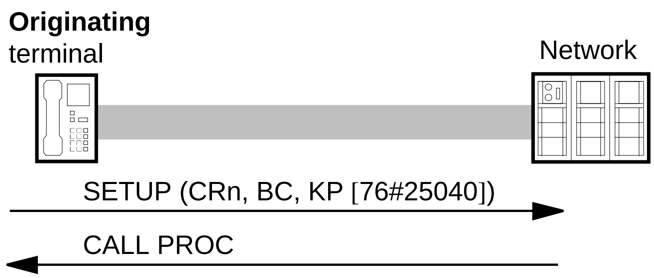
When the terminal then sends an INFO message with the partial address, the network sends back an INFO message turning off the dial tone. Once

BRI Call Processing and ANSI ISUP Interworking (continued)

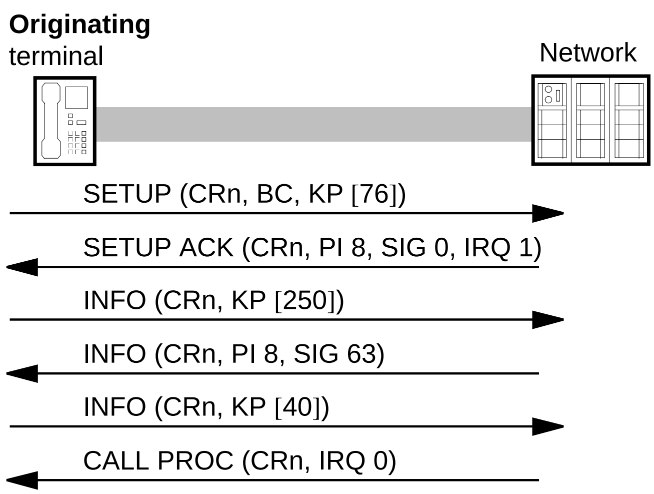
end-of-dialing has occurred, the network sends the CALL PROCeeding message containing an IRQ indicator of 0 (information request completed).

For feature programming, an INFO message containing a null call reference IE and a feature activation (FA) IE may be used.

Enbloc dial access processing



Enbloc overlap dial access processing



Feature key access processing

In feature key access, the subscriber activates a switch feature by pressing a feature-key on the terminal. Feature key access processing is similar to dial access processing, except that the feature access (FA) IE (rather than the KP IE) is used to contain the feature access code. As in dial access processing, enbloc or overlap methods may be used for sending the activation data to the network. The feature access code is sent in the SETUP message, which may

BRI Call Processing and ANSI ISUP Interworking (continued)

be followed by INFO messages containing supplementary address information in KP or CDN IEs.

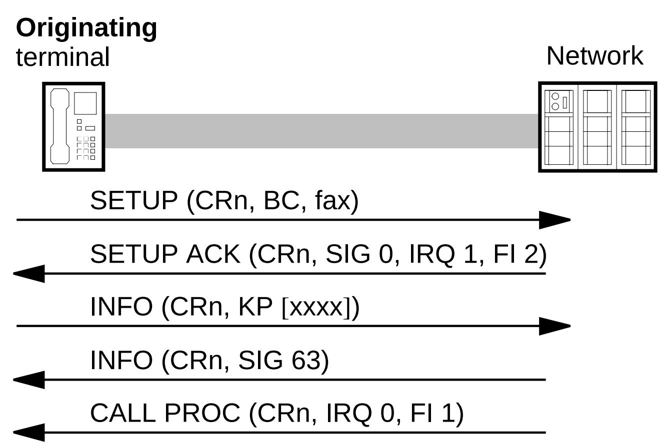
If the feature requires no supplementary information, the network responds to the SETUP message with a CALL PROCeeding message containing a feature indicator (FI) IE with the code of the feature activator and the status of the feature. (The following table lists the possible FI status values.) If the feature requires supplementary information, it can be sent in one or more KP or CDN IEs, either in the original SETUP message or in any number of subsequent INFO messages. The following figure shows a processing sequence in which the SETUP message contains only the FA IE. The network responds with a SETUP ACK, which contains the following:

- a SIG IE that recalls the dial tone with SIG 0 (dial tone on)
- an IRQ IE indicator of 1 (prompt for additional information), requesting address information
- an FI IE with a status value of 2 (prompt), indicating that the feature requires supplementary information

The terminal sends an INFO message with the address in a KP IE, and the network then issues an INFO message turning off the dial tone, and a CALL PROCeeding message with an IRQ indicator of 0 (information request completed) and an FI showing a status of 1 (active).

BRI Call Processing and ANSI ISUP Interworking (continued)

Feature key access processing



FI status indicators

Status indicator	Status value
0	idle
1	active
2	prompt
3	pending

ISUP messages

The ISUP messages that the DMS-100 switch uses during interworking with BRI interfaces appear in the following table.

ISUP messages (Sheet 1 of 2)

ISUP message	Use of message
Address complete (ACM)	The ACM indicates to calling party that all information for routing the call is received.
Answer (ANM)	The ANM indicates that the called party answered the call.
Call progress (CPG)	The CPG indicates the progress of the call.
Initial address (IAM)	The IAM initiates the call setup.

BRI Call Processing and ANSI ISUP Interworking (continued)

ISUP messages (Sheet 2 of 2)

ISUP message	Use of message
Release (REL)	The REL indicates the start of call release.
Release complete (RLC)	The RLC indicates a call release.

Each ISUP message contains a variable number of parameters. The parameters normally found in the messages that the previous table lists appear in the following table.

ISUP parameters (Sheet 1 of 2)

Parameter	Use of parameter	Found in message	Corresponding Q.931 IE
Access transport parameter (ATP)	The ATP carries BRI subaddress and compatibility IEs (CDS, CGS, HLC, LLC) transparently through the CCS7 network.	IAM	Called number subaddress (CDS), calling number subaddress (CGS), high level compatibility (HLC), low level compatibility (LLC)
Backward call indicator (BCI)	The BCI indicates if the call is end-to-end ISDN. The BCI indicates that an event (like a call delay or alerting) occurred in a call.	ACM, ANM, CPG	Progress indicator (PI)
Called party number	The Called party number contains the address of the called party.	IAM	Called party number (CDN)
Calling party number	The Calling party number contains the address of the calling party.	IAM	Calling party number (CGN)

BRI Call Processing and ANSI ISUP Interworking (continued)

ISUP parameters (Sheet 2 of 2)

Parameter	Use of parameter	Found in message	Corresponding Q.931 IE
Cause indicator	The cause indicator contains the reason for an event like call clearing or rejection.	ACM, CPG, REL	Cause (CSE)
Event information indicator (EI)	The EI indicates that a call processing event occurred.	CPG	Progress indicator (PI)
Forward call indicator (FCI)	The FCI indicates if the call is end-to-end ISDN.	IAM	Progress indicator (PI)
Optional backward call indicator (OBCI)	The OBCI indicates if call forwarding or user/network interaction occurred.	ACM, CPG	Progress indicator (PI)
User service information (USI)	The USI contains bearer capability that associates with the call.	IAM	Bearer capability (BC)

BRI/ISUP call processing

This section describes call processing during interworking between BRI and ISUP interfaces. This section uses the same processes used in the BRI call processing description and other specified processes for interworking.

Normal call establishment and clearing

Call establishment and clearing include:

- call setup
- conversion between the SETUP and IAM messages
- call alerting and connection
- call clearing

BRI Call Processing and ANSI ISUP Interworking (continued)

Call setup

The following figure represents a normal voice call processing process. The originating terminal sends a SETUP message. The message converts to an IAM message to be sent over the CCS7 network. At the terminating end, the IAM converts to a SETUP message for the terminating line.

SETUP/IAM information conversion

In the conversion process, the mapping of Q.931 IE to ISUP parameters occurs as follows:

Q.931 IE	maps to	ISUP parameter
BC	--->	USI
CDN	--->	called party number
GCN	--->	calling party number
CDS, CGS, HLC, LLC	--->	ATP

The fields in the BC IE map directly to the same fields in the USI parameter:

(Sheet 1 of 2)

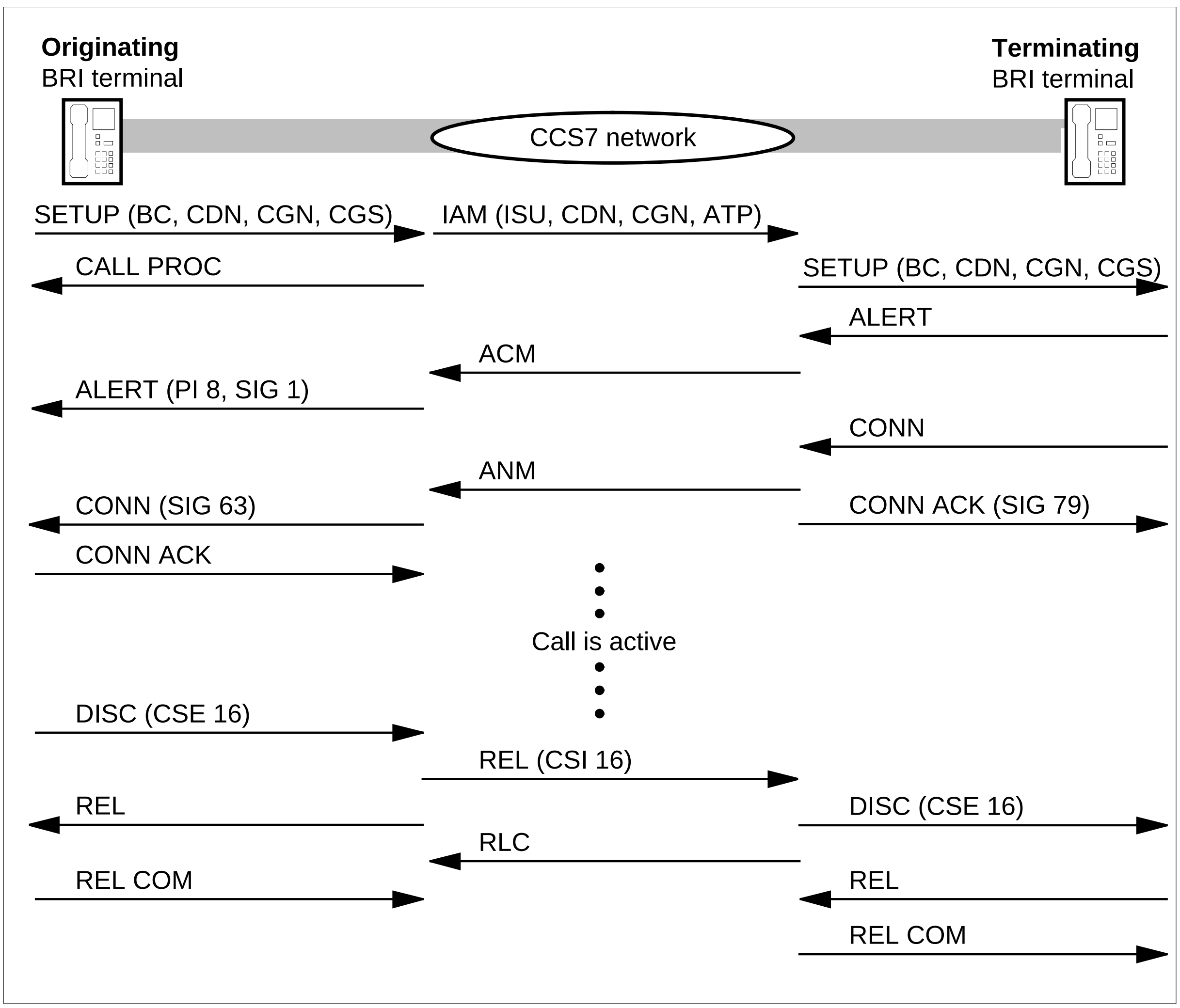
Q.931 BC field	maps to	ISUP USI field
coding standard	--->	coding standard
info transfer capability	--->	info transfer capability
transfer mode	--->	transfer mode
info transfer rate	--->	info transfer rate
layer 1 id	--->	layer 1 id
user info layer 1 protocol	--->	user info layer 1 protocol
sync/async	--->	sync/async
negotiation	--->	negotiation
user rate	--->	user rate
intermediate rate	--->	intermediate rate
NIC on tx	--->	NIC on tx

BRI Call Processing and ANSI ISUP Interworking (continued)

(Sheet 2 of 2)

Q.931 BC field	maps to	ISUP USI field
NIC on rx	--->	NIC on rx
number of stop bits	--->	number of stop bits
number of data bits	--->	number of data bits
parity	--->	parity
duplex mode	--->	duplex mode
modem type	--->	modem type

Normal call establishment and clearing (BRI/ISUP)



BRI Call Processing and ANSI ISUP Interworking (continued)

Between the CDN IE and the called number parameter, the mapping is as follows:

Q.931 CDN field	maps to	ISUP called number field
type of number	--->	type of address
numbering plan	--->	numbering plan
number digits	--->	address signals

The number digits map directly to the address signals field. The DMS-100 switch generates the values of the other two parameter fields from the IE.

Between the CGN IE and the calling number parameter, the mapping appears as follows:

Q.931 CGN field	maps to	ISUP called number field
type of number	--->	type of address
numbering plan	--->	numbering plan
presentation indicator	--->	address presentation restricted
screening indicator	--->	(no corresponding field)
number digits	--->	address signals

When the DMS maps in the Q.931-to-ISUP direction, the type of address field receives the code of national number. The numbering plan field is E.164. The display field in the ISUP parameter receives the code of display allowed or display limited. The codes are based on the SUPPRESS and NONUNIQUE fields in table DNATTRS. The CGN IE screening field does not have a field that corresponds in the ISUP parameter. The CGN IE receives the code network provided. In ISUP-to-Q.931 mapping, the numbering plan identifier and type of number are coded as unknown.

Mapping is not present between the CGS IE and the access transport parameter (ATP). The design of the ATP allows the ATP to carry a subaddress or compatibility IE (CDS, CGS, HLC, and LLC). The ATP carries the IE transparently through the CCS7 network. The ATP can include IE in the SETUP message at the terminating end. This transportation of IE occurs automatically in intranetwork calls. The transportation occurs if table DNATTRS specifies the inclusion of the correct subscription parameter in the SETUP message. For internetwork equal access calls, table OCCINFO is entered to indicate if an interexchange carrier can receive the ATP. The operating company can specify, through tables TRKSGRP and ATPIES, which IE to send to the terminating network and which IE to discard. The IE are found in an ATP parameter received from an interexchange carrier. The originating network receives a STATus message that includes cause value 43 (user info discarded) for a discarded IE.

> ***Note:*** The CDS, CGS, HLC, and LLC IEs are optional. The CGS IE appears in the SETUP message in the previous figure. The figure is an example of one SETUP message format.

Call alerting and connection

When the terminating interface sends an ALERTing message, the network sends an ACM message over the CCS7 trunk. The originating end sends an ALERTing message that contains a PI and SIG IEs on the originating BRI line. Mapping does not occur between the ACM and ALERTing messages. The ALERTing messages contain the same IE data as the ALERTing messages in BRI-to-BRI calls.

The CONNect message from the terminating line results in an ANM message across the CCS7 network. The AMM message causes a CONNect message to the originator. Mapping does not occur between the ANM and CONNect messages. The CONNect messages are the same as CONNect messages in a BRI network. When the CONNect ACK messages are received, the call is active.

Call clearing

Normal call clearing starts when a terminal sends a DISConnect or RELease message to the network. In the figure before, the originating end sends a DISConnect message. The message has a cause IE of cause value 16 (normal call clearing). In response, the DMS-100 switch generates an ISUP REL message that contains a cause indicator (CSI) parameter. The fields in the CSE IE map directly to the same fields in the CSI parameter:

Q.931 CSE field	maps to	ISUP CSI field
coding standard	--->	coding standard
general location	--->	location
cause values	--->	cause values

BRI Call Processing and ANSI ISUP Interworking (continued)

The coding standard field conforms to CCITT standards in both Q.931 and ISUP elements. The cause location values supported are as follows:

- user
- private network
- public network

The cause values are mapped on a one-to-one basis between Q.931 and ISUP messages, as the following figure indicates.

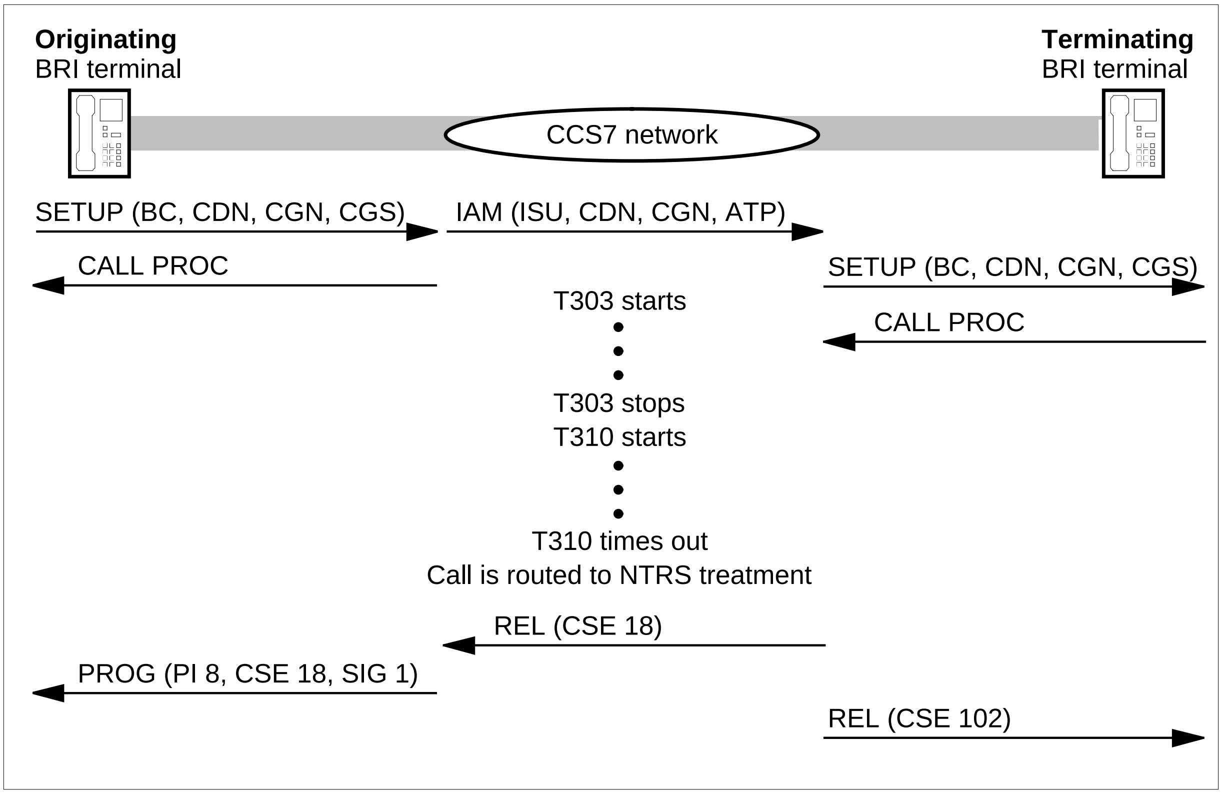
The terminating network sends a DISConnect message with a CSE of 16 to the terminating equipment. The network sends the message to respond to the ISUP REL message. The network generates an ISUP RLC message for the originating network.

No response

When the terminating end responds to a SETUP message, the network starts timer T310, as the voice call in the following figure indicates. If timer T310 times out and the network receives an ALERTing, CONNect, DISConnect, or RELease message, the call clears. The network sends a ISUP CPG message to the originating terminal, which results in a PROGress message with cause value 18. The user does not respond and signal value 1 (ring-back/audible ringing tone on).. The terminating equipment receives a RELease message with cause 102 (recovery on timer expiration).

BRI Call Processing and ANSI ISUP Interworking (continued)

No response (T310) BRI/ISUP

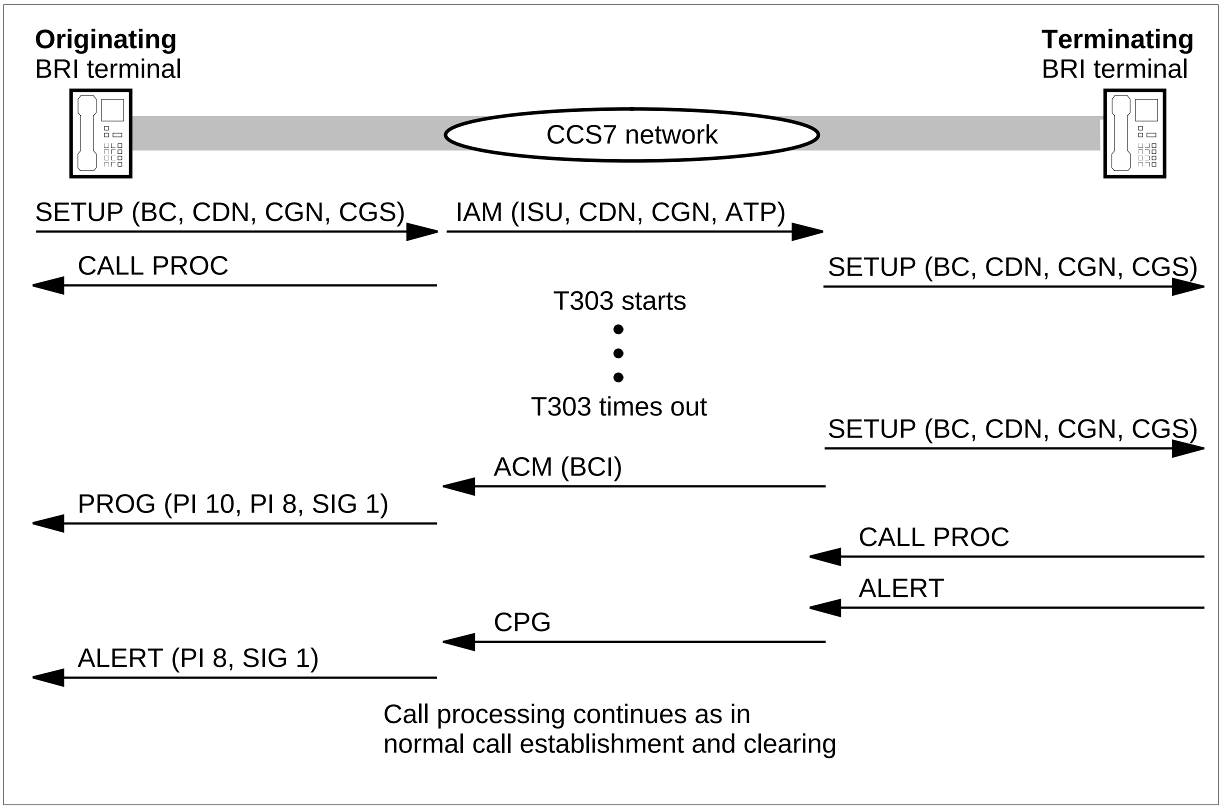


ALERTing after second SETUP

The system generates an ALERTing message from the terminating equipment. This appears in the following figure. The message that generates occurs after a second SETUP message is issued and the network sends the ACM to the originator. Normally, the ALERTing message causes the network to send an ACM message to the originator. In this event the network sends a call progress (CPG) message because the network cannot generate a second ACM. The CPG contains an event indicator parameter which specifies alerting. Mapping does not occur between the CPG and ALERTing messages. When the terminating end receives the CPG, the terminating end generates an ALERTing message. Call processing continues as in normal call establishment and clearing.

BRI Call Processing and ANSI ISUP Interworking (continued)

ALERTing after second SETUP

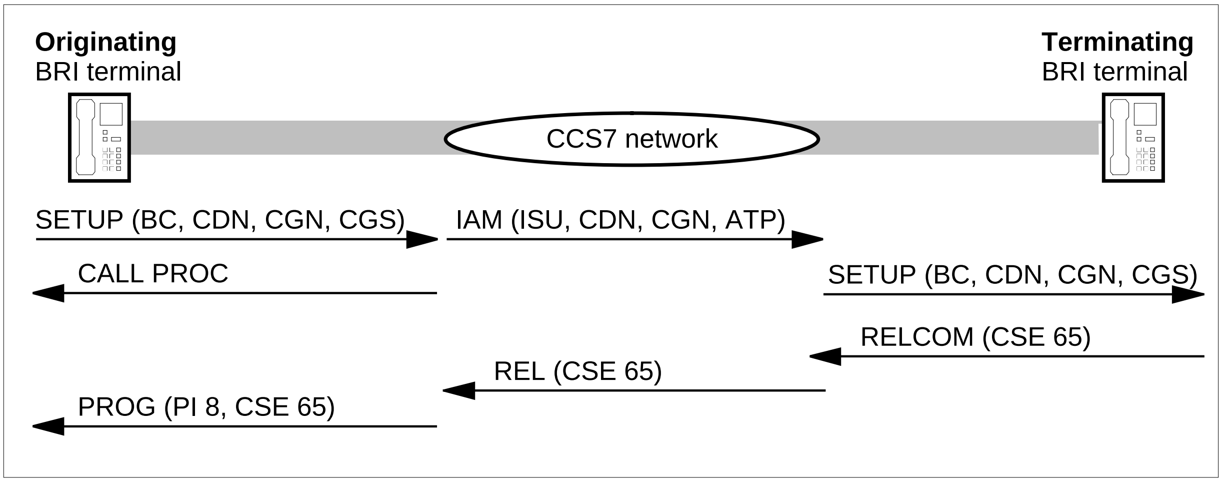


Call rejected

The terminating interface clears the call with a DISConnect, RELease, or RELease COMplete message. The action of the network depends if audible ringing is in progress or not in progress. If the application of audible ringing occurs at the originating equipment, the network responds to the clearing message. The network responds with an ISUP CPG message. This process appears in the previous figure. If the application of audible ringing does not occur, the network clears the circuit and sends an ISUP REL message. The terminating equipment rejects the call with a cause value of 65 (bearer capability not implemented). This process appears in the following figure. The network clears the call at the originating interface with a ISUP REL message. The message converts at the terminating DMS-100 switch to a DISConnect message that specifies cause value 65.

BRI Call Processing and ANSI ISUP Interworking (continued)

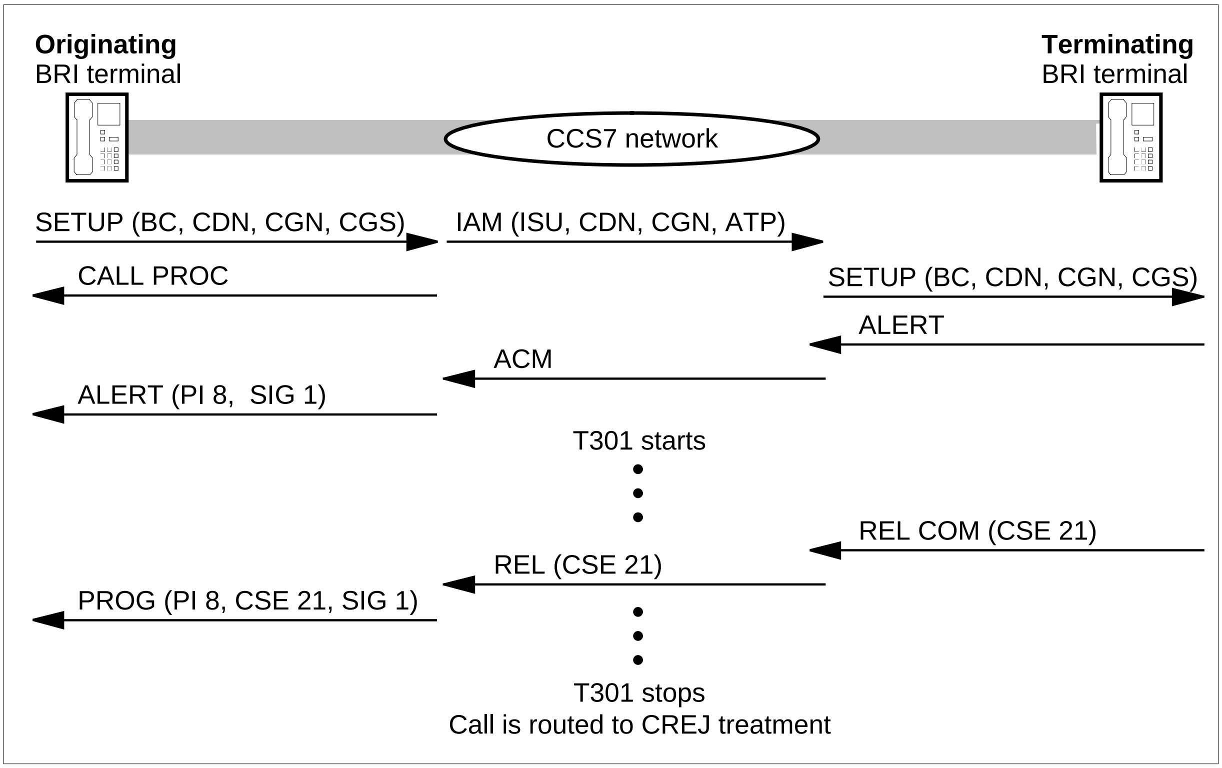
Bearer capability not implemented (BRI/ISUP)



When the terminating equipment responds to the SETUP message with an ALERTing message, the network starts timer T301. If the terminating interface rejects the call while T301 runs, the interface sends a DISConnect, RELease, or RElease COMplete message. This process appears in the following figure. The network responds to the clearing message with an ISUP CPG message that specifies cause 21 (call rejected). The call routes to call rejected (CREJ) treatment. The originator receives a DISConnect message with cause value 21 and signal value 1 (ring-back/audible ringing tone on).

BRI Call Processing and ANSI ISUP Interworking (continued)

Call rejection (BRI/ISUP)

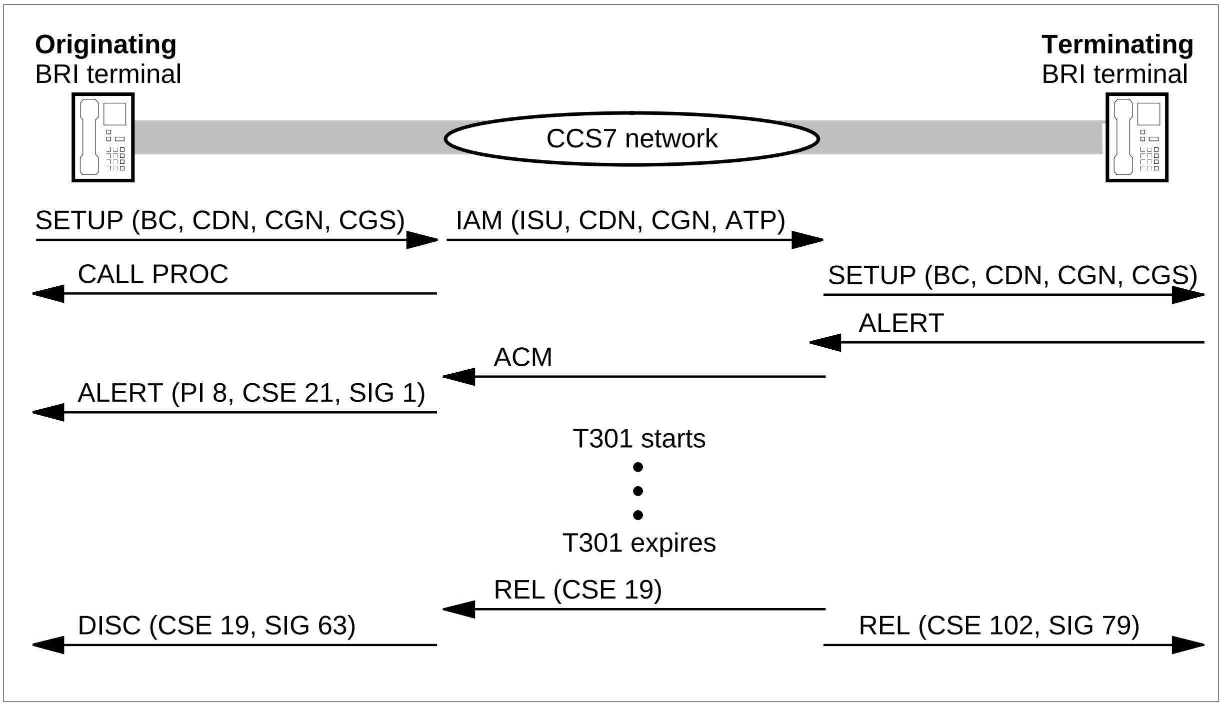


No response to ALERTing

If the network does not receive a correct CONNect message from the terminating interface before timer T301 expires, the network clears the call. To clear the call, the network sends a RELease message with cause 102 (recovery on timer expiration) and signal 79 (alerting off) to the terminating interface. The network generates an ISUP REL message with cause 19 (user alerting, no answer) for the originating end. This process results in a DISConnect message with cause 19 and signal 63 (tones off) for the originating terminal. A voice call condition appears in the following figure.

BRI Call Processing and ANSI ISUP Interworking (continued)

No response to alerting (BRI/ISUP)



Treatments for BRI/ISUP interworking

When the network rejects a call before audible ringing starts, the call routes to treatment. The network determines if to apply treatment locally or to apply local treatment and include a cause parameter in an ISUP ACM message to the originating network. Table TMTMAP determines which action to take. The action depends on the treatment, the bearer capability, and if the call is end-to-end ISDN.

If treatment is applied locally, the route is obtained from table TMTCNTL.TREAT. This table lists the DMS-100 treatments. The correct tone or announcement connects to the incoming circuit. If a clearing message is to be sent to the originator, table TMTMAP provides the treatment-to-cause mapping and the location value for the CSI parameter. The operating company can define treatment procedures in table TMTMA. The company defines procedures based on protocol, treatment, bearer capability or call type, and if the call is end-to-end ISDN. The FCI parameter of the IAM specifies if the call is end-to-end ISDN. The following table lists the cause values the operating company defines for the ISUP protocol.

When the original network receives the clearing message, the network maps the cause back to a treatment. The network performs this according to the hard-coded DMS-100 cause-to-treatment mapping. “The Cause-to-Treatment

BRI Call Processing and ANSI ISUP Interworking (continued)

mapping” table lists the cause-to-treatment mapping that the DMS-100 switch provides.

Cause values (Sheet 1 of 2)

Cause number	Cause	TMTMAP table CAUSE field value
1	unallocated number	UNALLOC
2	no route to specified transit network	NRTOTN
3	no route to destination	NRTODEST
4	send special info tone	SSINFTN
5	misdialed trunk prefix	MISDTRPR
16	normal call clearing	NORMCLR
17	user busy	USERBUSY
18	user does not respond	NOUSRESP
19	no answer from user	NOANSWER
21	call rejected	CALLREJ
22	number changed	NUMCHANG
27	destination out of service	DOOSRVC
28	address not complete	ADDINCOM
29	facility rejected	FACREJ
31	normal, not specified	NORMUNSP
34	circuit not available	NOCIRCAV
38	network out of order	NTWKOOO
41	temporary failure	TEMPFAIL
42	switching equipment congestion	SWEQCONG
43	user information discarded	UINFDISC
44	requested channel not available	CHANUNAV
45	preemption	PREEMPT

BRI Call Processing and ANSI ISUP Interworking (continued)

Cause values (Sheet 2 of 2)

Cause number	Cause	TMTMAP table CAUSE field value
46	no preempt circuit available	NPMPTCKT
47	resource unavailable	RESUNAV
57	bearer capability not authorized	BCNAUTH
58	bearer capability not available	BCNAVAIL
63	service or option not available	SONAVAIL
65	bearer capability not implemented	BCNIMPL
66	channel type not implemented	CHNLNIMP
69	facility not implemented	FACNIMP
70	restricted bearer capability information	RESBCINF
79	service or option not implemented	SONIMPL
81	invalid call reference value	INVCRVAL
88	incompatible destination	INCOMDST
95	invalid message	INVMSG
97	message type not implemented	MSGNIMPL
99	parameter not implemented	PARMNIMP
100	invalid parameter contents	INVPARMC
103	parameter not implemented passed on	PNIPASS
111	protocol error	PROTERR
127	interworking, unspecified	INTWUNSP

BRI Call Processing and ANSI ISUP Interworking (continued)

The following table lists the cause-to-treatment mapping provided by the DMS-100 switch.

Cause-to-treatment mapping (Sheet 1 of 2)

Cause	Cause number	Treatment	Treatment number
Address not complete	28	PDIL	2
Bearer capability not authorized	57	CNAC	113
Bearer capability not implemented	65	BCNI	161
Bearer capability not available	58	CNAC	113
Call rejected	21	CREJ	134
Channel type not implemented	66	CONP	98
Destination out of service	27	TRBL	30
Facility not implemented	69	FCNI	167
Facility rejected	29	RODR	25
Incompatible destination	88	CNAC	113
Interworking unspecified	127	RODR	25
Invalid call reference value	81	RODR	25
Invalid message	95	RODR	25
Invalid parameter contents	100	SSTO	23
Message type not implemented	97	SSTO	23
Misdialed trunk prefix	5	RODR	25
Network out of order	38	SYFL	14
No answer from user	19	RODR	25
No circuit available	34	NCRT	24
No preempt circuit available	46	BLPR	47
Normal call clearing	16	RODR	25
Normal, unspecified	31	RODR	25

BRI Call Processing and ANSI ISUP Interworking (continued)

Cause-to-treatment mapping (Sheet 2 of 2)

Cause	Cause number	Treatment	Treatment number
No route to destination	3	GNCT	58
No route to specified transit network	2	CACE	79
No user responds	18	NTRS	133
Number changed	22	CNAC	113
Parameter not implemented	99	IIEC	180
Parameter not implemented passed on	103	SSTO	23
Preemption	45	PMPT	51
Protocol error	111	SSTO	23
Requested channel unavailable	44	NCRT	24
Resource unavailable	47	NOSR	93
Restricted bearer capability info	70	CNAC	113
Send special info tone	4	RODR	25
Service or option not available	63	NACK	78
Service or option not implemented	79	FNAL	68
Switching equipment congestion	42	NBLH	9
Temporary failure	41	CHNF	160
Unallocated number	1	BLDN	18
User busy	17	BUSY	19
User info discarded	43	RODR	25

Translations table flow

Does not apply.

BRI Call Processing and ANSI ISUP Interworking (continued)

Limits

The following limits apply to BRI Call Processing and ISUP Interworking:

- the capability does not support the Confusion (CFN) message or generic address parameter (GAP)
- the capability does not support the provision of inband tones based on subscription parameters
- the capability does not support transmission path cut-through based on bearer capability. At the originating switch, the transmission path is cut-through on reception of the ACM message. At the terminating switch, transmission path cut-through occurs when the ACM is sent out.
- the capability does not support B-channel contention
- location value mapping for release at intermediate exchange does not comply to TR444
- the capability does not support the suppression of the SETUP message when the continuity test fails. The message is always sent.
- the capability does not support the ability to count and discard an ATP parameter received in an ISUP message on a circuit group basis.

Interactions

BRI Call Processing and ISUP Interworking do not have functionality interactions.

Activation/deactivation by the end user

BRI Call Processing and ISUP Interworking do not require activation or deactivation by the end user.

Billing

BRI Call Processing and ISUP Interworking do not affect billing.

Station Message Detail Recording

BRI Call Processing and ISUP Interworking do not affect Station Message Detail Recording.

Datafilling office parameters

The office parameters that BRI Call Processing and ISUP Interworking use appear in the following table. For more information about office parameters, refer to the *Office Parameters Reference Manual*.

Three office parameters determine interdigital timer periods. Interdigital timing sets a timer when the system receives a digit from the terminal.

BRI Call Processing and ANSI ISUP Interworking (continued)

Interdigital timing stops the timer when the system receives the next digit. If the timer expires before the system receives the next digit, digit collection is normally complete. The network routes the call to partial-dial treatment. Interdigital timing applies to the KP IE, and the other IE imply end-of-dial.

Office parameters used by BRI Call Processing and ISUP Interworking (Sheet 1 of 2)

Table name	Parameter name	Explanation and action
OFCENG	LN_PERM_SIG_TIME	This parameter is set to control the duration of permanent signal timing. The timer starts when the line goes off-hook, and continues the specified length of time. If a digit is not received in that interval, the switch routes the line to permanent signal (PSIG) treatment. Enter a value in the range of 7 to 255, in increments of 160 ms. The default value is 125 (20 s).
Note: Table DIGCOL specifies if long or short timing is in effect.		

BRI Call Processing and ANSI ISUP Interworking (continued)

Office parameters used by BRI Call Processing and ISUP Interworking (Sheet 2 of 2)

Table name	Parameter name	Explanation and action
OFCENG	LN_LONG_PARTIAL_DIAL_TIME	This parameter is set to control long interdigital timing and to detect partial dial. The timer starts for a dialed digit. The timer continues the specified length of time before the timer reports an end-of-dialing condition. This condition occurs if long timing is in effect. When a report for end-of-dialing occurs, digit collection stops. The collected digits receive translation and routing. The condition normally results in partial dial (PDIL) treatment. Enter a value in the range of 7 to 255, in increments of 160 ms. The default value is 63 (10 s). ***Note:*** This parameter must be set at least two units greater than the setting for OFCENG parameter LN_SHORT_PARTIAL_DIAL_TIME.
OFCENG	LN_SHORT_PARTIAL_DIAL_TIME	This parameter is set to control short (critical) interdigital timing, and to detect partial dial. The timer starts for a dialed digit and continues the specified length of time before reporting an end-of-dialing condition. This condition occurs if short timing is in effect. When a report for end-of-dialing occurs, digit collection stops. The collected digits receive translation and routing. The condition normally results in partial dial (PDIL) treatment. Enter a value in the range of 7 to 255, in increments of 160 ms. The default value is 25 (4 s).
Note: Table DIGCOL specifies if long or short timing is in effect.		

BRI Call Processing and ANSI ISUP Interworking (continued)

Datafill sequence

The tables that require datafill to implement BRI Call Processing and ISUP Interworking appear in the following table. The tables appear in the correct entry order.

Datafill requirements for BRI Call Processing and ISUP Interworking

Table	Purpose of table
CLLI	Defines treatment CLLIs, which specify the tones, announcements, or line states for different treatments.
TONES	The table contains a definition of each DMS-100 switch tone.
OFRT	The table contains routes that treatments specify.
TMTCNTL.TREAT	The table contains the DMS-100 switch treatments. The table specifies announcements or tones for each treatment.
TMTMAP	Maps DMS-100 switch treatments to ISUP causes.
DIGCOL	The table contains the digit collection algorithm, and sets interdigital timing.
OCCINFO	The table determines if the outgoing ISUP IAM message must include the ATP parameter.
ATPIES	The table indicates which IE to discard in an ATP parameter in an incoming ISUP.
TRKSGRP	The table determines which ATP parameters to screen in an incoming ISUP message.

Datafilling table CLLI

Table CLLI allows the user to define tones, announcements, and line states in treatments of calls that are not normal. The table is for other abilities to define trunk group identifiers.

The datafill example provided shows the datafill recommended for the BRI/ISUP interworking _RING treatment.

The specified datafill for BRI Call Processing and ISUP Interworking for table CLLI appears in the following table. Only fields that apply directly to BRI

BRI Call Processing and ANSI ISUP Interworking (continued)

Call Processing and ISUP Interworking appear. For a description of the other fields, refer to the *Data Schema Reference Manual*.

Datafilling table CLLI

Field	Subfield	Entry	Explanation and action
CLLI		alphanumeric (1 to 16 characters)	Common language location identifier. Enter a name that identifies the location of the tone, announcement, or line state. The state must adhere to the following limits: • the name can contain only alphabetic and numeric characters and the underscore (_). Other special characters are not valid • the first character of the name must be alphabetic or the underscore (_)
ADNUM		numeric (0 to one less than size of table CLLI)	Administrative trunk group number. To associate an administrative number with the CLLI, enter a number between 0 and the number one. The number must be 0 to one less than the size of table CLLI (appears in table DATASIZE). The value of ADNUM must be different in table CLLI. The ADNUMs between 0 and 51 are reserved for pseudo-CLLI codes used for special trunks like test trunks.
TRKGRSIZ		0	Trunk size group. Enter zero to satisfy the table editor, as the TRKGRSIZ field does not apply to tone and announcement CLLIs.
ADMININF		alphanumeric (1 to 32 characters)	Administrative information. Enter an alphanumeric name of no more than 32 characters to record required information related to administration of the CLLI. For example, to enter the name of the tone or announcement. You can only enter alphabetic and numeric characters, and underscores (_) in this field.

Datafill example for table CLLI

Sample datafill for table CLLI appears in the following example. In this example, recommended datafill for the BRI/ISUP interworking _RING treatment appears.

BRI Call Processing and ANSI ISUP Interworking (continued)

MAP example for table CLLI

```
CLLI     ADNUM   TRKGRSIZE   ADMININF
______________________________________________________
_RING    528     0           RINGING
```

Datafilling table TONES

Table TONES contains a definition of each DMS-100 tone. The datafill recommended for the BRI/ISUP interworking _RING treatment appears in the datafill example.

The specified datafill for BRI Call Processing and ISUP Interworking for table TONES appears in the following table. Only fields that apply directly to BRI Call Processing and ISUP Interworking appear. For a description of the other fields, refer to the *Data Schema Reference Manual*.

Datafilling table TONES (Sheet 1 of 2)

Field	Subfield	Entry	Explanation and action
CLLI		alphanumeric (1 to 16 characters)	CLLI. Enter the identifier assigned to the tone in table CLLI.
TRAFSNO		0 to 127	Traffic separation number. Enter the value of the traffic separation register that must increase when this tone is applied.
SEGTIME		10 to 100	Segment time. Enter the duration of one segment of tone, specified in groups of 10 ms. For example, to define a segment of 250 ms, enter 25.
TONEPATT		16 digit string (with 0 or 1)	Tone pattern. Enter a 16-digit string of zeros and ones. Each digit in the string corresponds to one segment of the tone pattern and represents the binary state of the tone. In the binary state of the tone 0 specifies tone off and 1 specifies tone on.

BRI Call Processing and ANSI ISUP Interworking (continued)

Datafilling table TONES (Sheet 2 of 2)

Field	Subfield	Entry	Explanation and action
TONETYP		HI, AUDRING_TONE, or LO	Tone type. Enter the type of tone generator required as: • HI to specify a general-purpose high frequency tone generator • AUDRING_TONE to specify an audible ringing tone generator • LO to specify a general-purpose low frequency tone generator
MAXDURN		1 to 255	Maximum duration. Enter the maximum time in seconds that the tone is applied.
MAXCONN		127	Maximum connections. Enter 127.

Datafill example for table TONES

Sample datafill for BRI Call Processing and ISUP Interworking capability in table TONES appears in the following example. The recommended datafill for the BRI Call Processing and ISUP Interworking _RING treatment appears in this example.

MAP example for table TONES

```
CLLI  TRAFSNO     SEGTIME         TONEPATT
TONETYP                         MAXDURN        MAXCONN
________________________________________________________
_RING 21        100                001100
AUDRING_TONE           120               127
```

Datafilling table OFRT

Table OFRT is entered to route a call to a tone or announcement CLLI. The route index for the entry in OFRT is specified for the correct treatment in field FSTRTE in table TMTCNTL.TREAT.

The datafill recommended for the BRI/ISUP interworking _RING treatment appears in the datafill example.

The specified datafill for BRI Call Processing and ISUP Interworking for table OFRT appears in the following table. Only fields that apply directly to BRI

BRI Call Processing and ANSI ISUP Interworking (continued)

Call Processing and ISUP Interworking appear. For a description of the other fields, refer to the *Data Schema Reference Manual*.

Datafilling table OFRT

Field	Subfield	Entry	Explanation and action
RTE		1 to 1023	Route reference index. Enter the sequential route index.
RTELIST		refer to subfields	Route list. The RTELIST field contains subfields RTESEL, CONNTYPE, and CLLI. You can repeat RTELIST field for a maximum of seven times for a total of eight possible routes.
	RTESEL	S or SX	Route selector. Enter S.
	CONNTYPE	D	Connection type. Enter D.
	CLLI	alphanumeric (1 to 16 characters)	Enter the code in the CLLI table to which the call must route.

Datafill example for table OFRT

Sample datafill for the BRI Call Processing and ISUP Interworking capability in table OFRT table appears in the following example. The datafill recommended for the BRI/ISUP interworking _RING treatment appears in this example. The first route directs the call to the _RING treatment, and the second route indicates the lockout state. The lockout state must follow BRI/ISUP interworking treatments for lines when the treatments complies with NI-1 standards.

MAP example for table OFRT

```
RTE     RTELIST
________________________________________________________
102     (S D _RING)
        (S D LKOUT) $
```

Datafilling table TMTCNTL.TREAT

Table TMTCNTL.TREAT lists all the DMS treatments, specifying tones, announcements, and line states that must return to the originator when call completion cannot occur normally. Table CLLI defines the tones, announcements, and line states.

BRI Call Processing and ANSI ISUP Interworking (continued)

Subtable TMTCNTL.TREAT has a number of subtables. Treatments involved in BRI/ISUP interworking are placed in table TMTCNTL.TREAT at position OFFTREAT which contains treatments for incoming trunks. Treatments are placed in table TMTCNTL TREAT at position LNT which contains treatments for lines.

The datafill recommended for the BRI/ISUP interworking _RING treatment appears in the datafill example.

The specified datafill for BRI Call Processing and ISUP Interworking for table TMTCNTL.TREAT appears in the following table. Only fields that apply directly to BRI Call Processing and ISUP Interworking appear. For a description of the other fields, refer to the *Data Schema Reference Manual*..

Datafilling subtable TMTCNTL.TREAT (Sheet 1 of 2)

Field	Subfield	Entry	Explanation and action
TREATMT		alphanumeric (4 characters)	Treatment name. Enter the treatment name.
LOG		Y or N	Log. Enter Y to cause message 138 to print each time translation routes to this treatment. If the condition does not apply, enter N.
FSTRTE		See subfields	First route. This field consists of subfields FSTRTSEL, CLLI, ROUTATTR_INDEX, TABID and KEY.
	FSTRTSEL	S, SX or T	First route selector. Enter S to indicate that this treatment routes the call directly to a tone or announcement CLLI, and datafill subfield CLLI. Enter SX to indicate that the treatment routes the call to expanded routing table ROUTATTR, and datafill subfield CLLI and ROUTATTR_INDEX. Enter T to indicate that the treatment routes the call to table OFRT, and datafill subfield TABID and KEY.
	CLLI	alphanumeric (1 to 16 characters)	Common language location identifier. Enter the CLLI of the correct tone, announcement, or line state according to table CLLI.
	ROUTATR_INDEX	alphanumeric (1 to 16 characters)	Route attribute index. Enter the index into table ROUTATTR containing the expanded routing information to be applied to the call.

BRI Call Processing and ANSI ISUP Interworking (continued)

Datafilling subtable TMTCNTL.TREAT (Sheet 2 of 2)

Field	Subfield	Entry	Explanation and action
	TABID	OFRT, OFR2, OFR3, or OFR4	Table name. Enter the office route table name.
	KEY	1 to 1023	Key. Enter the index in the office route table which defines the route list for this treatment.

Datafill examples for subtable TMTCNTL.TREAT

The recommended datafill for the BRI Call Processing and ISUP Interworking capability in subtable TMTCNTL.TREAT appears in the following example. The first example shows recommended datafill for BRI/ISUP interworking in subtable TMTCNTL.TREAT at position OFFTREAT, and the second at position LNT.

MAP example for subtable TMTCNTL.TREAT at position OFFTREAT

```
TREATMT     LOG FSTRTE
_________________________________________________________
BCNI        Y   S T60
CHNF        Y   S T60
CREJ        Y   T OFRT 101
NTRS        Y   T OFRT 101
RING        Y   T OFRT 100
```

MAP example for table TMTCNTL.TREAT at position LNT

```
TREATMT     LOG FSTRTE
_________________________________________________________
BCNI        Y   T OFRT 200
CHNF        Y   S T60
CREJ        Y   T OFRT 202
NTRS        Y   T OFRT 202
```

Datafilling table TMTMAP

Table TMTMAP maps DMS treatments to failure messages that specified CCS7 protocols support. For BRI/ISUP interworking, the table specifies to apply treatment locally or to include a cause parameter in a clearing message to the originating network.

The operating company can define treatment procedures in TMTMAP. The treatment procedures are based on protocol, treatment, bearer capability and

BRI Call Processing and ANSI ISUP Interworking (continued)

call type. The operating company can specify if the call is end-to-end ISDN. This information is specified in the FCI parameter of the IAM. Two main types of procedure are defined:

- local treatment, in which a tone or announcement connects to the incoming trunk according to table TMTCNTL.TREAT
- message treatment, in which the originator receives a CSI parameter in an ACM message, which specifies the cause and location of the problem

The circumstances of the call define the differences and groups of these two types of parameters.

Table “Cause values" in this document provides a list of the cause values defined for the ISUP protocol and the corresponding CAUSE field values for table TMTMAP.

The specified datafill for BRI Call Processing and ISUP Interworking for table TMTMAP appears in the following table. Only fields that apply directly to BRI Call Processing and ISUP Interworking appear. For a description of the other fields, refer to the *Data Schema Reference Manual*..

Datafilling table TMTMAP (Sheet 1 of 4)

Field	Subfield	Entry	Explanation and action
TMTMPKEY		see subfields	TMTMAP key. The key field of the table TMTMAP contains subfields PROTOCOL, TMT, and BC_CT.
	PROTOCOL	Q764	Protocol. Enter Q764 to specify the protocol variant specified for the trunk that carries the call.
	TMT	See table ``Cause values” in this document for valid entry values	Treatment code. Enter the treatment code specified for the call.
Note: If an event occurs and a match does not occur in table TMTMAP, DMS-100 software provides a default. The default is TMTMPVAR: ISUP NOLOCAL NORMUNSP LOCLNET N.			

BRI Call Processing and ANSI ISUP Interworking (continued)

Datafilling table TMTMAP (Sheet 2 of 4)

Field	Subfield	Entry	Explanation and action
	BC _CT	VOICE, SPEECH, 3_1KHZ, 7_KHZ, DATA, 56KDATA, 64KDATA, or ALLBC	Bearer capability or call type. Enter the bearer capability or call type of the call to treat. Enter the call as one of VOICE, SPEECH, 3_1KHZ, 7_KHZ, DATA, 56KDATA, or 64KDATA. Enter ALLBC to specify that the treatment must occur. The bearer capability of the call or call type does not determine if this action occurs.
TMTMPVAR		see subfields	Treatment map. This field contains subfields FORMAT and ISUPPROC.
	FORMAT	ISUP	Protocol format. Enter ISUP to specify the type of trunk that carries the call.
	ISUPPROC	see subfields	ISUP procedure. This subfield contains subfields TMTPROC, CAUSE, LOCATION, and LOG.

Note: If an event occurs and a match does not occur in table TMTMAP, DMS-100 software provides a default. The default is TMTMPVAR: ISUP NOLOCAL NORMUNSP LOCLNET N.

BRI Call Processing and ANSI ISUP Interworking (continued)

Datafilling table TMTMAP (Sheet 3 of 4)

Field	Subfield	Entry	Explanation and action
	TMTPROC	LOCAL, NOLOCAL, ISLOCAL, INTLOCAL, ISDNLCL, or ISDNRTE	Treatment procedure. Enter the treatment procedure to apply to the call as: • LOCAL, to specify that the treatment must apply locally • NOLOCAL, to specify message treatment. The cause and location specified in subfields CAUSE and LOCATION are sent in the CSI parameter of a clearing message to the originator • ISLOCAL, to specify local treatment if the FCI parameter of the IAM indicates that the call is end-to-end ISDN. The ISLOCAL specifies message treatment if the call is not end-to-end ISDN • INTLOCAL, to specify local treatment if the call is not end-to-end ISDN, and message treatment if the call is end-to-end ISDN • ISDNLCL, to specify that treatment applies locally. ISDNLCL specifies that the originator receives an ACM message if the connection is end-to-end ISDN • ISDNRTE, to specify that treatment applies remotely (according to table TMTCNTL.TREAT), and that the originator receives an ACM message if the connection is end-to-end ISDN If you specified that the system generates a clearing message, datafill fields CAUSE, LOCATION, and LOG.
	CAUSE	alphanumeric (valid entry values are listed in table “Cause values”)	ISUP cause. Enter the cause value for the CSI parameter of the clearing message that the originator receives.
Note: If an event occurs and a match does not occur in table TMTMAP, DMS-100 software provides a default. The default is TMTMPVAR: ISUP NOLOCAL NORMUNSP LOCLNET N.			

BRI Call Processing and ANSI ISUP Interworking (continued)

Datafilling table TMTMAP (Sheet 4 of 4)

Field	Subfield	Entry	Explanation and action
	LOCATION	USER, PRIVNET, LOCLNET, or RLOCNET	Location. Enter the location value for the CSI parameter of the clearing message as: • USER, to specify user • PRIVNET, to specify private network serving the local user • LOCLNET, to specify public network serving the local user • RLOCLNET, to specify public network serving the remote user
	LOG	Y or N	Log. Enter Y if a treatment log report must generate at the office where the event occurred. Enter N, if a log report is not required.
Note: If an event occurs and a match does not occur in table TMTMAP, DMS-100 software provides a default. The default is TMTMPVAR: ISUP NOLOCAL NORMUNSP LOCLNET N.			

Datafill example for table TMTMAP

Sample datafill for BRI Call Processing and ISUP Interworking capability in table TMTMAP appears in the following example. The first tuple in the following example of TMTMAP specifies that the originator must receive a clearing message with cause value 1 unallocated number. The tuple specifies that local treatment is not required. The second tuple specifies a clearing message with cause value 1. The second tuple also specifies the entry of a local treatment for the treatment BLDN in table TMTCNTL.TREAT). The third tuple specifies local treatment if the connection is end-to-end ISDN, or message treatment if the connection is not end-to-end.

MAP example for table TMTMAP

```
TMTMPKEY             TMTMPVAR
________________________________________________________
Q764 ANCT DATA       ISUP NOLOCAL NORMUNSP LOCLNET N
Q764 BLDN 3_1KHZ     ISUP ISDNLCL UNALLOC LOCLNET N
Q764 PDIL ALLBC      ISUP ISLOCAL NORMUNSP LOCLNET N
```

The following example shows the default datafill for table TMTMAP, which is present in the DMS-100 switch at load-building time.

BRI Call Processing and ANSI ISUP Interworking (continued)

Default datafill for table TMTMAP

```
TMTMPKEY             TMTMPVAR
_________________________________________________________
Q764 ANCT VOICE      ISUP LOCAL
Q764 ANCT DATA       ISUP NOLOCAL NORMUNSP LOCLNET N
Q764 ANTO ALLBC      ISUP NOLOCAL NOANSWER RLOCLNET
Q764 ATBS ALLBC      ISUP NOLOCAL SWEQCONG LOCLNET N
Q764 BCNI ALLBC      ISUP NOLOCAL BCNIMPL LOCLNET N
Q764 BLDN VOICE      ISUP LOCAL
Q764 BLDN DATA       ISUP ISDNRTE UNALLOC RLOCLNET N
Q764 BLPR ALLBC      ISUP NOLOCAL NPMPTCKT LOCLNET N
Q764 BUSY ALLBC      ISUP NOLOCAL USERBUSY LOCLNET N
Q764 CACE ALLBC      ISUP NOLOCAL MISDTRPR LOCLNET N
Q764 CCNA VOICE      ISUP LOCAL
Q764 CCNA DATA       ISUP NOLOCAL NORMUNSP LOCLNET N
Q764 CCNV VOICE      ISUP LOCAL
Q764 CCNV DATA       ISUP NOLOCAL NORMUNSP LOCLNET N
Q764 CCTO VOICE      ISUP LOCAL
Q764 CCTO DATA       ISUP NOLOCAL NORMUNSP LOCLNET N
Q764 CFWV ALLBC      ISUP NOLOCAL CALLREJ LOCLNET N
Q764 CGRO ALLBC      ISUP NOLOCAL RESUNAV LOCLNET N
Q764 CHAF VOICE      ISUP LOCAL
Q764 CHAF DATA       ISUP NOLOCAL NORMUNSP LOCLNET N
Q764 CHAN VOICE      ISUP ISDNLCL NUMCHANG LOCLNET N
Q764 CHAN DATA       ISUP NOLOCAL NUMCHANG LOCLNET N
Q764 CNAC ALLBC      ISUP NOLOCAL INCOMDST LOCLNET N
Q764 CNDT ALLBC      ISUP NOLOCAL CALLREJ LOCLNET N
Q764 CNOT ALLBC      ISUP NOLOCAL CALLREJ LOCLNET N
Q764 CQOV VOICE      ISUP LOCAL
Q764 CQOV DATA       ISUP NOLOCAL NORMUNSP LOCLNET N
Q764 CREJ ALLBC      ISUP NOLOCAL CALLREJ USER N
Q764 D950 ALLBC      ISUP NOLOCAL MISDTRPR LOCLNET N
Q764 DACD ALLBC      ISUP NOLOCAL MISDTRPR LOCLNET N
Q764 DCFC ALLBC      ISUP NOLOCAL CALLREJ LOCLNET N
Q764 DNTR VOICE      ISUP ISDNLCL DOOSRVC LOCLNET N
Q764 DNTR DATA       ISUP NOLOCAL DOOSRVC LOCLNET N
Q764 EMR1 ALLBC      ISUP NOLOCAL SWEQCONG LOCLNET N
Q764 EMR2 ALLBC      ISUP NOLOCAL SWEQCONG LOCLNET N
Q764 EMR3 ALLBC      ISUP NOLOCAL SWEQCONG LOCLNET N
Q764 EMR4 ALLBC      ISUP NOLOCAL SWEQCONG LOCLNET N
Q764 EMR5 ALLBC      ISUP NOLOCAL SWEQCONG LOCLNET N
```

BRI Call Processing and ANSI ISUP Interworking (continued)

MAP display default for table TMTMAP (continued)

```
TMTMPKEY            TMTMPVAR
_____________________________________________________________
Q764 EMR6 ALLBC     ISUP NOLOCAL SWEQCONG LOCLNET N
Q764 FNAL ALLBC     ISUP NOLOCAL SONAVAIL LOCLNET N
Q764 GNCT ALLBC     ISUP NOLOCAL NOCIRCAV LOCLNET N
Q764 HNPI ALLBC     ISUP NOLOCAL MISDTRPR LOCLNET N
Q764 ILRS ALLBC     ISUP NOLOCAL NORMUNSP LOCLNET N
Q764 MSCA VOICE     ISUP LOCAL
Q764 MSCA DATA      ISUP NOLOCAL NORMUNSP LOCLNET N
Q764 MSLC ALLBC     ISUP NOLOCAL MISDTRPR LOCLNET N
Q764 N950 ALLBC     ISUP NOLOCAL MISDTRPR LOCLNET N
Q764 NACD ALLBC     ISUP NOLOCAL MISDTRPR LOCLNET N
Q764 NACK ALLBC     ISUP NOLOCAL SONIMPL LOCLNET N
Q764 NBLH ALLBC     ISUP NOLOCAL NRTODEST LOCLNET N
Q764 NCRT ALLBC     ISUP NOLOCAL NOCIRCAV LOCLNET N
Q764 NINT VOICE     ISUP LOCAL
Q764 NINT DATA      ISUP NOLOCAL NORMUNSP LOCLNET N
Q764 NOSR ALLBC     ISUP NOLOCAL RESUNAV LOCLNET N
Q764 NTRS ALLBC     ISUP NOLOCAL NOUSRESP RLOCLNET N
Q764 OPRT VOICE     ISUP LOCAL
Q764 OPRT DATA      ISUP NOLOCAL NORMUNSP LOCLNET N
Q764 OSVR VOICE     ISUP LOCAL
Q764 OSVR DATA      ISUP NOLOCAL NORMUNSP LOCLNET N
Q764 PDIL ALLBC     ISUP NOLOCAL ADDINCOM LOCLNET N
Q764 PSIG ALLBC     ISUP NOLOCAL ADDINCOM LOCLNET N
Q764 RING ALLBC     ISUP LOCAL
Q764 RODR ALLBC     ISUP NOLOCAL NORMUNSP LOCLNET N
Q764 SINT VOICE     ISUP LOCAL
Q764 SINT DATA      ISUP NOLOCAL NORMUNSP LOCLNET N
Q764 STOB ALLBC     ISUP NOLOCAL TEMPFAIL LOCLNET N
Q764 STOC ALLBC     ISUP NOLOCAL TEMPFAIL LOCLNET N
Q764 SYFL ALLBC     ISUP NOLOCAL TEMPFAIL LOCLNET N
Q764 TDBR ALLBC     ISUP NOLOCAL SONIMPL LOCLNET N
Q764 TDND ALLBC     ISUP NOLOCAL CALLREJ LOCLNET N
Q764 TESS ALLBC     ISUP NOLOCAL DOOSRVC LOCLNET N
Q764 TOVD ALLBC     ISUP NOLOCAL CALLREJ LOCLNET N
Q764 TRBL VOICE     ISUP LOCAL
Q764 TRBL DATA      ISUP NOLOCAL NORMUNSP LOCLNET N
Q764 UNDN ALLBC     ISUP NOLOCAL UNALLOC LOCLNET N
Q764 UNIN ALLBC     ISUP NOLOCAL MISDTRPR LOCLNET N
Q764 UNOW ALLBC     ISUP NOLOCAL MISDTRPR LOCLNET N
Q764 VACT ALLBC     ISUP NOLOCAL NRTODEST LOCLNET N
```

BRI Call Processing and ANSI ISUP Interworking (continued)

Datafilling table DIGCOL

Table DIGCOL provides the digit collection algorithm for dial-access feature processing. The table also allows the operating company to set the interdigital timer to short timing or long timing. The office parameters LN_LONG_PARTIAL_DIAL_TIME and LN_SHORT_PARTIAL_DIAL_TIME define accurate time intervals.

> ***Note:*** OFCENG parameter LN_LONG_PARTIAL_DIAL_TIME must be set at least two units greater than the setting for OFCENG parameter LN_SHORT_PARTIAL_DIAL_TIME.

The specified datafill for BRI Call Processing and ISUP Interworking for table DIGCOL appears in the following table. Only fields that apply directly to BRI Call Processing and ISUP Interworking appear. For a description of the other fields, refer to the *Data Schema Reference Manual*..

Datafilling table DIGCOL (Sheet 1 of 2)

Field	Subfield	Entry	Explanation and action
DGKEY		Refer to subfields	Digit collection key. This field contains subfields DATANAME and DIGIT.
	DATANAME	alphanumeric (1 to 8 characters)	Name of digit collection table. Enter the name assigned to this digit collection algorithm. The name is in table IBNXLA to refer to this area of table DIGCOL during translations. For example, an entry of POTS normally defines POTS digit translation. An entry of ISDN applies to ISDN digit collection.
	DIGIT	0 to 9, STAR, or OCT	Digit. Enter the digit (in the range 0 to 9), STAR for star or asterisk (*), or OCT for octothorpe (#), that begins digit collection for this algorithm.
DGDATA		Refer to subfields	Digit collection data. This field contains subfields DGCOLSEL and COLDATA.
	DGCOLSEL	COL or RPT	Digit collection selector. Enter COL. ***Note:*** If the customer group is a mixed group of ISDN and IBN lines, and subfield DATANAME is POTS, enter RPT in this field
	COLDATA	Refer to subfields	Collect data. This field contains subfields TMODE and NUMDIGS.

BRI Call Processing and ANSI ISUP Interworking (continued)

Datafilling table DIGCOL (Sheet 2 of 2)

Field	Subfield	Entry	Explanation and action
	TMODE	S or L	Timing mode. Enter S for short timing, or L for long timing. ***Note:*** For NI-1 compatibility, enter L.
	NUMDIGS	1 to 3 (for short timing) 1 to 7 (for long timing)	Number of digits. For short timing, enter the number of digits in the range of 1 to 3, after which require timing. For long timing, enter the number of digits in the range of 1 to 7 ,after which require timing. The NUMDIGS does not include the first digit dialed.

Datafill example for table DIGCOL

The sample datafill for the BRI Call Processing and ISUP Interworking capability in table DIGCOL appears in the following example.

In this example, the operating company defines short timing intervals for two digits that follow the first digit dialed. The first digit dialed is the star (*), normally used for feature access codes.

MAP example for table DIGCOL

```
DGKEY        DGDATA
________________________________________________________
ISDN         STAR  COL    S    2
```

Datafilling table OCCINFO

Table OCCINFO is entered to determine if the ATP parameter must be in the outgoing ISUP IAM message for this carrier. The table determines when to discard the parameter. Field ATPINCL in table OCCINFO has data entries for this purpose.

The specified datafill for BRI Call Processing and ISUP Interworking for table OCCINFO appears in the following example. Only fields that apply directly

BRI Call Processing and ANSI ISUP Interworking (continued)

to BRI Call Processing and ISUP Interworking appear. For a description of the other fields, refer to the *Data Schema Reference Manual*..

Datafilling table OCCINFO

Field	Subfield	Entry	Explanation and action
CARRNAME		alphanumeric (1 to 16 characters)	Carrier name. Enter the carrier name or abbreviation of the name as it appears in table OCCNAME or leave empty if the generic recursive pretranslator associated with the reserved carrier name USE_PREVIOUS is to be used.
CARRNUM		0000 to 9999	Carrier number. Enter the carrier access code (CAC).
ATPINCL		Y or N	Access transport parameter included. Enter Y to indicate that the ATP must be in the IAM. Enter N to indicate when to discard the parameter .

Datafill example for table OCCINFO

The sample datafill for the BRI Call Processing and ISUP Interworking capability in table OCCINFO appears in the following example.

MAP example for table OCCINFO

```
CARRNAME    CARRNUM     ACCESS      INTER   INTNTL...
   INTRAS        TERMREC     OCCSEPNO...
CMCMON  SCRNWATS    CRMCRA      ATPINCL...
________________________________________________________
ATT         0220        EAP         Y       Y...
   Y            LONG        0...
N       N           Y           Y...
```

Datafilling table ATPIES

The design of the ATP parameter allows the parameter to carry IE. The parameter can carry any of the subaddress or compatibility IE (CDS, CGS, HLC, and LLC). The parameter can carry the PI IE transparently through the CCS7 network. This process makes sure that the PI IE can be in the SETUP message at the terminating end. The operating company can specify which of these IEs in an ATP parameter received from an interexchange to deliver to the terminating network. The operating company can specify which IE to discard. Table TRKSGRP provides an index to table ATPIES to indicate if the ATP requires screening. Table ATPIES lists which IE must be in the ATP.

BRI Call Processing and ANSI ISUP Interworking (continued)

The datafill for BRI Call Processing and ISUP Interworking for table ATPIES appears in the following example. Only fields that apply directly to BRI Call Processing and ISUP Interworking appear. For a description of the other fields, refer to the *Data Schema Reference Manual*..

Datafilling table ATPIES

Field	Subfield	Entry	Explanation and action
ATPIEKEY		0 to 15	Access transport parameter information element key. Enter a numeric value to specify the index into table ATPIES.
IEINCL		ALL, PI, CGSA, CDSA, HLC, LLC, or $	Information elements included. Enter one of the following values to specify which IE are required: • enter ALL to specify that all IE are required • enter any group of the IE names PI, CGSA, CDSA, HLC, and LLC to specify that the listed IE are to be included • enter $ to specify that IE are not to be included

Datafill example for table ATPIES

The sample datafill for the BRI Call Processing and ISUP Interworking capability in table ATPIES appears in the following example.

MAP example for table ATPIES

```
ATPIEKEY    IEINCL
_______________________________________________________
0           $
1           (PI) $
2           (ALL) $
3           (CGSA) (CDSA) (LLC) (HLC) $
```

Datafilling table TRKSGRP

The operating company can specify which IE found in an ATP parameter, received from an interexchange, to deliver to the terminating network. The operating company can specify which parameters to discard. The operating company specifies the parameters through tables TRKSGRP and ATPIES. Datafill in table TRKSGRP determines if the ATP parameter in an incoming ISUP message requires screening.

BRI Call Processing and ANSI ISUP Interworking (end)

The specified datafill of BRI Call Processing and ISUP Interworking for table TRKSGRP appears in the following table. Only fields that apply directly to BRI Call Processing and ISUP Interworking appear. For a description of the other fields, refer to the *Data Schema Reference Manual*..

Datafilling table TRKSGRP

Field	Subfield	Entry	Explanation and action
SGRPKEY		Refer to subfields	Subgroup key. The SGRPKEY field contains subfields CLLI and SGRP.
	CLLI	alphanumeric (1 to 16 characters)	Common language location identifier. Enter the code assigned in table CLLI to the trunk to which the subgroup belongs.
	SGRP	0 or 1	Subgroup. Enter 0 or 1 to specify the number assigned to the trunk subgroup.
CARDCODE		valid cardcode value	Card code. Enter a correct card code.
SGRPVAR		C7UP	Signaling data selector. Enter C7UP, and complete subfield DIR.
	DIR	IC, OG, or 2W	Direction. Enter IC for incoming, OG for outgoing, or 2W for two-way.
	OPTION	ATPINDEX	Option. Enter ATPINDEX in the OPTION subfield, and complete subfield ATPIDX.
	ATPIDX	0 to 15	Access transport parameter information elements table index. Enter a numeric value to indicate the index to table ATPIES which is to specify which IEs to retain or discard.

Datafill example for table TRKSGRP

The sample datafill for the BRI Call Processing and ISUP Interworking capability in table TRKSGRP appears in the following example.

MAP example for table TRKSGRP

```
SGRPKEY              OPTIONS
________________________________________________________
BNR332221B 0         ATPIDX 4
```

Calling Line Identification Presentation

Functionality code

Functional group order code: NI000008

Functionality order code: does not apply

Release applicability

BCS36 and later versions

Requirements

This document includes the datafill information for this functionality. Complete installation can require software or hardware.

Description

Calling Line Identification Presentation (CLIP) provides the called user with the capability to receive the identity of the calling party.

The called user receives the calling party number (CGN) and calling party subaddress (CGS) when the following occurs:

- the called user is subscribed to CLIP
- the CGN and CGS are available
- the calling party allows presentation (refer to Calling Line Identification Restriction

The CLIP functionality is a service for the called user. The subscription to this service does not affect the calling party.

> ***Note:*** The CGS is available when the calling user is assigned the PROVCGS (provide CGS IE) option in table DNATTRS. The PROVCGS option is assigned to the originating user. The PROVCGS option does not comply with the Calling Party Subaddress supplementary service. For information on how to assign the PROVCGS option, refer to the *SERVORD Reference Manual*.

Operation

The CLIP supplementary service can be assigned to the following:

- all basic rate access functional set (BRAFS) terminals on the switch
- a customer group
- an individual user (specific DN)

Calling Line Identification Presentation (continued)

Assigning CLIP to all terminals

To make CLIP available on the switch, set office parameter BRI_CLIP_GENERALLY_AVAILABLE to ON in table ISDNVAR. For this condition, all BRAFS terminals that connect to the switch support CLIP. When BRI_CLIP_GENERALLY_AVAILABLE is set to OFF, CLIP is not available. Individual DNs or customer groups must subscribe to CLIP to receive CLIP.

Assigning CLIP to customer groups

To assign CLIP to customer groups, set office parameter KSET_INTER_GRP_DISP in table OFCENG, or enter data in table CUSTNTWK.

When office parameter KSET_INTER_GRP_DISP in table OFCENG is set to Y, the called user is subscribed to CLIP. The CLIP service causes the number from calls outside the customer group to appear. The CLIP service does not display the number when the calling line identification restriction (CLIR) supplementary service is active.

The office parameter KSET_INTER_GRP_DISP in table OFCENG can be set to N. When this condition occurs, you can assign CLIP to the called user customer group in table CUSTNTWK. The datafill requirements for table CUSTNTWK depend on the type of CLIP the customer group requires:

- The customer group can require the calling line identity (CLI) of all incoming calls. When this condition occurs, assign the CLID option to the customer group in table CUSTNTWK. Set the option to OFFNET.
- The customer group can require the CLI of calls that originate in the same network. When this condition occurs, assign the CLID option to the customer group in table CUSTNTWK. Set the option to ONNET.
- The customer group can require the CLI of intragroup calls. When this condition occurs, assign the CLID option to the customer group in table CUSTNTWK. Set the option to INTRAGRP.

A user in the customer group can require the display of ONNET calls and OFFNET calls. When the datafill in table CUSTNTWK causes ONNET calls to display, assign the BRICLID option to the user DN.

Assigning CLIP to DNs

To make CLIP available to specified DNs on separate terminals, assign the BRICLID option. This option makes the CLI available to the subscriber. The above customer group parameters do not affect CLI availability. Use the service order system (SERVORD) to assign the BRICLID option to a DN in table KSETLINE. Refer to "SERVORD" for an example of SERVORD use to assign the BRICLID option.

Calling party number (CGN) screening and editing

The calling party can send the optional calling party number (CGN) information element (IE) in the calling party SETUP message. When this event occurs, the network must screen the CGN to transmit a correct CGN to the network.

When the following conditions are met, the system screens and builds a national number:

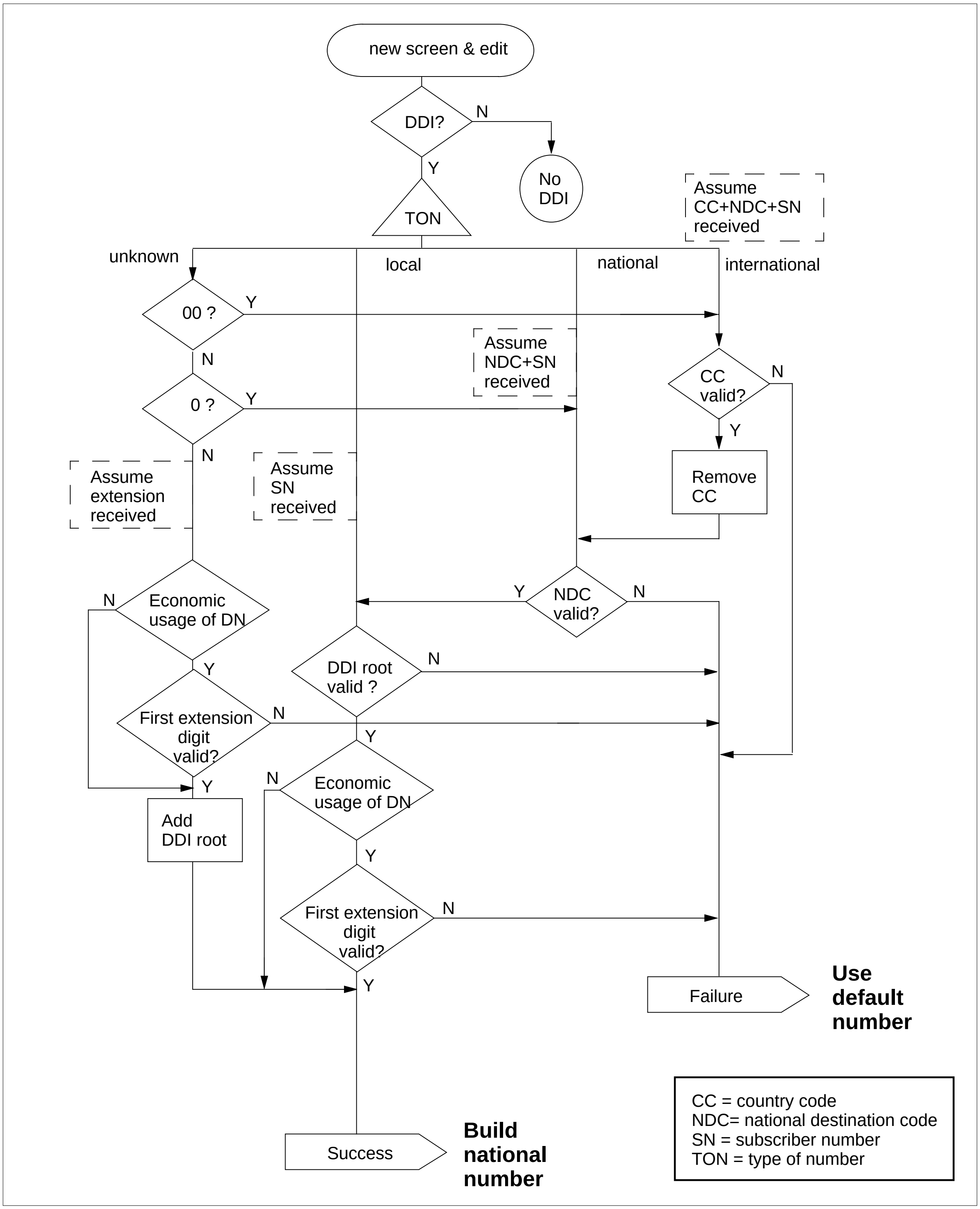
- the calling party sends the optional CGN IE in the calling party SETUP message
- The numbering plan indicator (NPI) is ISDN/telephony numbering plan or unknown. The ISDN/telephony numbering plan is recommendation E.164. The NPI is set to ISDN/telephony numbering plan.

When one of the above conditions is not met, the default number is provided to the network. The user provided CGN is not provided to the network.

The screening process can operate with a different method. The DDI subscription or the lack of DDI subscription determines the operation. The editing and screening process with DDI and without DDI appears in the following figures.

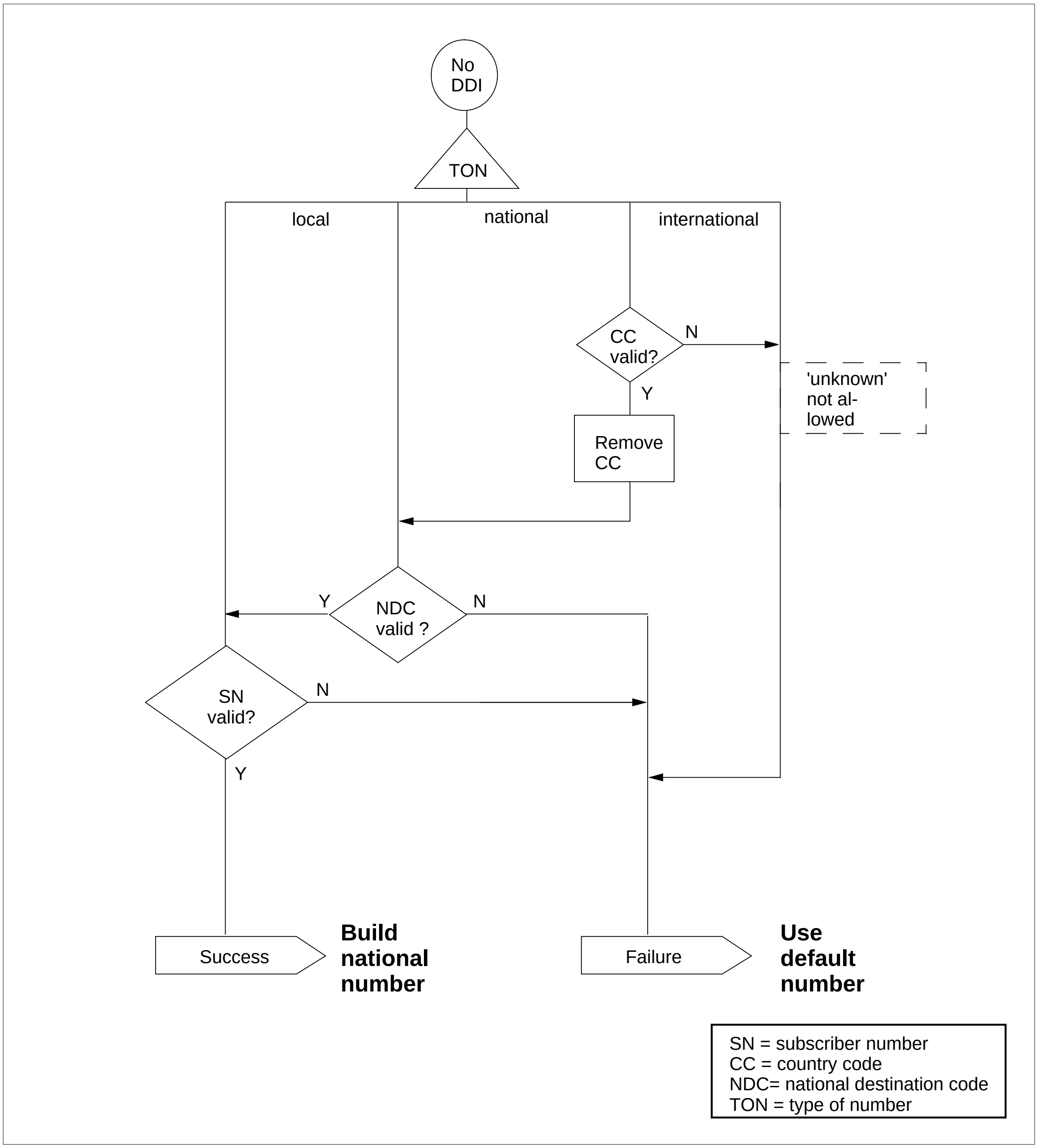
Calling Line Identification Presentation (continued)

Editing and screening with DDI



Calling Line Identification Presentation (continued)

Editing and screening without DDI



Economic use of DN

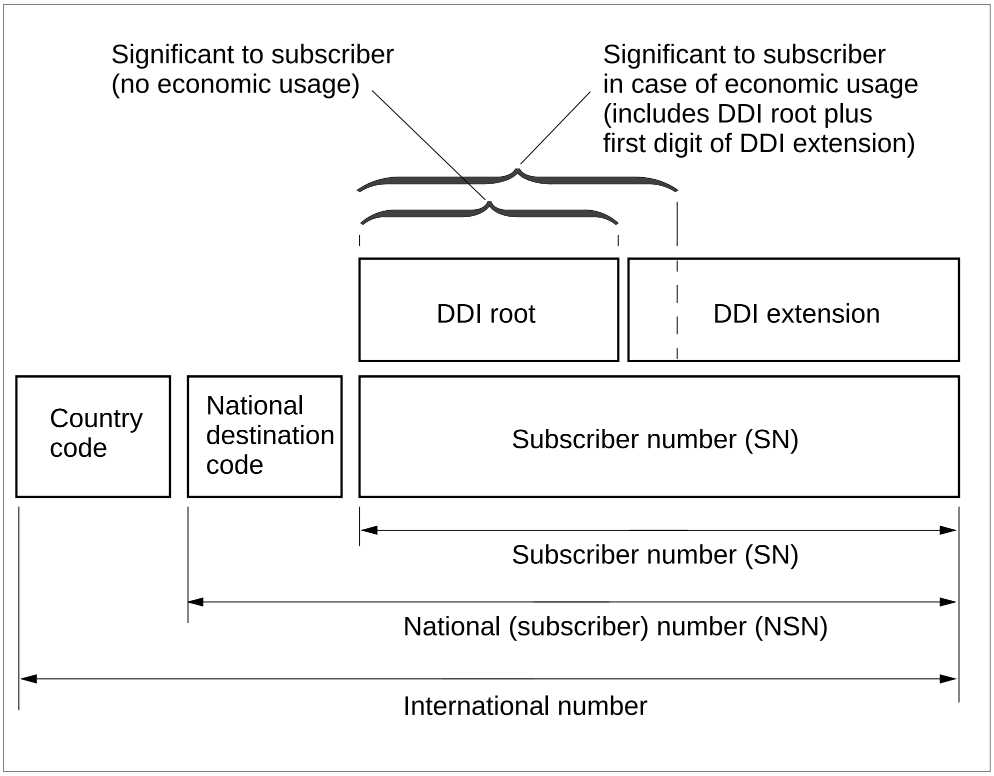
Economic use of directory numbers avoids the waste of DNs. To avoid the waste of DNS, assign a subset of the entire block of numbers to a specified

Calling Line Identification Presentation (continued)

subscriber. You can access this block with the use of the DDI extension. The numbers that remain in this range can be allocated to other subscribers.

For example, numbers 960000 to 964999 can be allocated to Company A's PBX. This allocation can occur while 965000 to 969999 can be allocated to Company B's PBX. This system offers efficient use of directory numbers.

The CGN screening can use a different method to operate. This method depends on if economic use of DN conditions apply. The different parts of the DDI root and extension for CGN screening appear in the following diagram.



Translations table flow

Calling Line Identification Presentation does not affect translations table flow.

Limits

Subscription to CLIP does not guarantee presentation of the CLI. The network that terminates does not send the CGN when the calling party is subscribed to the CLIR Supplementary Service.

Interactions

Calling Line Identification Presentation interacts with feature BT0072, Calling Line Identification.

Activation/deactivation by the end user

Calling Line Identification Presentation activation or deactivation does not require end user input.

Billing

Calling Line Identification Presentation does not affect billing.

Station Message Detail Recording

Calling Line Identification Presentation does not affect Station Message Detail Recording.

Calling Line Identification Presentation (continued)

Datafilling office parameters

The office parameters that the Calling Line Identification Presentation uses appear in the following table. For more information on office parameters, refer to the *Office Parameters Reference Manual*.

Office parameters used by Calling Line Identification Presentation

Table name	Parameter name	Explanation and action
ISDNVAR	BRI_CLIP_ GENERALLY_ AVAILABLE	This parameter allows the CLIP Supplementary Service to be available to all BRAFS terminals datafilled on the switch. Set this parameter to ON to allow the calling line identity (CLI) presentation to all BRAFS terminals on the switch. The CLI is presented if the CLIR supplementary service is not active. When this parameter is set to ON, the table overrides the customer group data and line data. When this parameter is set to OFF, the called party must subscribe to the CLIP supplementary service. This service must occur for each individual or for each customer group. Default = ON
OFCENG	KSET_INTER_GRP_ DISP	When this parameter is set to Y, CLIP displays the identity of incoming calls from outside the customer group. This condition does not occur when the CLIR supplementary service is active. When KSET_INTER_GRP_DISP is set to Y, this parameter overrides the entry for field CLIDOPT in table CUSTNTWK. When this parameter is set to N, the display of CLI of intergroup calls occurs. To allow this display, assign option CLID to the customer group in table CUSTNTWK. Default = N

Datafill sequence

The tables that require datafill to implement Calling Line Identification Presentation appears in the following table. The list of the tables appear in the correct entry order.

Datafill requirements Calling Line Identification Presentation

Table	Purpose of table
CUSTNTWK	Contains customer group level DN attributes. These attributes contain the assignment of the CLID option by customer group.
KSETLINE	Defines the DNs that associate with a keyset. Allows the assignment of the BRICLID option to DNs. Enter this table through SERVORD.

Datafilling table CUSTNTWK

The datafill for Calling Line Identification Presentation for table CUSTNTWK appears in the following table. The fields that apply directly to Calling Line Identification Presentation appear. For a description of the other fields, refer to the data schema section of this document.

Table CUSTNTWK contains customer group level DN attributes. This table allows the operating company to specify CLID in the customer group, in the network, or in and outside the network.

> ***Note:*** Enter table CUSTNTWK one time for each customer group.

Datafilling table CUSTNTWK (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
CUSTNAME		alphanumeric (1 to 16 characters)	Customer group name. Enter the name assigned to the customer group.
NETNAME		alphanumeric (1 to 32 characters)	Network name. Enter the network name assigned to the customer group in table NETNAMES.
NETCGID		numeric (0 to 4096)	Network customer group identifier. Enter the number assigned to the customer group.
DNREVXLA		$	DN reverse translator. Enter $.

Calling Line Identification Presentation (continued)

Datafilling table CUSTNTWK (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
OPTIONS		CLID	Option. Enter CLID to assign the calling line identification option to the customer group, and enter datafill in subfield CLIDOPT.
	CLIDOPT	ONNET, OFFNET, or INTRAGRP	CLID option. Enter ONNET to specify that CLID applies to all calls in the network. Enter OFFNET to specify that CLID applies to all network calls. Enter INTRAGRP to specify that CLID applies to all calls in the customer group.

Datafill example for table CUSTNTWK

Sample datafill for for the Calling Line Identification Presentation supplementary service in table CUSTNTWK appears in the following example. This example shows the CLID option for OFFNET calls assigned to customer group LONS634.

MAP example for table CUSTNTWK

```
CUSTNAME      NETNAME NETCGID
                                             DNREVXLA
                                              OPTIONS
____________________________________________________________
LONS634     AUSIN634       3
                                                    $
                                (   CLID   OFFNET)$
```

Tools for verifying translations

Calling Line Identification Presentation does not use translation verification tools.

SERVORD

Use SERVORD to assign the BRICLID option to DNs that associate with BRAFS terminals. This option allows the terminal to receive the identity of the calling party.

SERVORD limits

This option is valid for ISDN BRAFS terminals. You can assign this option to terminals with an LCC of ISDNKSET.

Calling Line Identification Presentation (end)

SERVORD prompts

The SERVORD prompts to assign Calling Line Identification Presentation option BRICLID to a destination appear in the following table.

SERVORD prompts for Calling Line Identification Presentation

Prompt	Valid input	Explanation
DN_OR_LEN	a valid 7-digit DN	Enter the DN to which the addition of the BRICLID option applies.
OPTKEY	1 to 64	Enter the number of the key that associates with the DN.
OPTION	BRICLID	Enter BRICLID to specify the option that assigns CLIP to the DN.

SERVORD example to implement Calling Line Identification Presentation

A SERVORD example of how to assign Calling Line Identification Presentation option BRICLID to a DN with the ADO command appears in the following example.

SERVORD example for Calling Line Identification Presentation ADO BRICLID in prompt mode

```
>ADO
SONUMBER:  NOW  93 12 11 PM
>(CR)
DN_OR_LEN:
> 7226969
OPTKEY:
> 1
OPTION:
>BRICLID
OPTKEY:
>$
```

SERVORD example for Calling Line Identification Presentation ADO BRICLID in no-prompt mode

```
>ADO  $  7226969  1 BRICLID  $
```

Calling Line Identification Restriction

Functionality code

Functional group ordering code: NI000008

Functionality ordering code: does not apply

Release applicability

BCS36 and later versions

Requirements

This document includes the datafill information for this functionality. Complete installation can require software or hardware.

Description

The Calling Line Identification Restriction (CLIR) Supplementary Service allows the calling user to prevent the appearance of the calling party number (CGN) to the called party.

The system provides CLIR to the calling party only. Subscription to this service does not affect the called party.

Operation

The CLIR is available in a permanent and temporary mode. When the permanent mode is active, the system restricts display of the CGN to the terminating switch. The display restriction does not allow the called party to see the number of the calling user. The temporary mode allows the calling user to determine if the calling user wants to allow the number to become visible. This number becomes visible to the called user for each call.

Permanent mode CLIR

Permanent mode CLIR can be assigned to specified logical networks, to blocks of DNs, or to separate DNs.

The default suppression status that is associated with the DN determines display of the CGN to the terminating end. The main parameter for the CLIR Supplementary Service is SUPPRESS. The SUPPRESS parameter provides a default suppression status of suppressed. The SUPPRESS parameter makes the CGN not available to the terminating end. Assign SUPPRESS at the following levels:

- the network level in table NETNAMES
- the customer group level in table DNGRPS
- to a separate DN in table DNATTRS that uses SERVORD

To restrict display of the calling number for all calls in a specified network, assign the SUPPRESS option in table NETNAMES. The parameters INTRNLDN and EXTRNLDN can specify DN suppression for calls made in or outside the switch.

To restrict display of the calling number for a group of directory numbers (DN), assign the SUPPRESS option in table DNGRPS. The system divides DNs in a DMS-100 switch in groups of 1000 DNs. The DNs normally correspond to customer groups. To assign SUPPRESS in table DNGRPS, CLIR can be made available to specified customer groups.

To restrict display of the calling number for a DN, use the SERVORD command to assign the SUPPRESS option to the DN. The suppression datafill for separate DNs is in table DNATTRS. Refer to section “SERVORD example for adding CLIR" for an example of how to use SERVORD. The example indicates how to assign the SUPPRESS option in table DNATTRS.

Temporary mode CLIR

Calling Number Delivery Blocking Per Call (CNDB) feature allows temporary mode CLIR. Temporary mode is the reverse effect of the datafill in tables DNGRPS and DNATTRS.

The CNDB is a dial-access feature that allows the calling user to toggle the suppression setting for the DN. The suppression settings are contained in tables DNATTRS and DNGRPS. The system assigns the CNDB feature to specified customer groups in table CUSTSTN. The calling user activates the temporary mode CLIR feature for each call.

A CNDB subscriber DN has a default suppression status of suppressed. Activate the CNDB subscriber to unsuppress the DN for separate calls. In this case, the CGN is made available to the called party. The DN of a subscriber with a default suppression status of unsuppressed can activate CNDB to suppress DN for each call. The SUPPRESS option is not assigned in table DNATTRS or DNGRPS. In this occurrence, the CGN is not made available to the called party.

The Calling Number Blocking (CNB) option is automatically available to subscribers with the CNDB feature assigned. Subscribers include customer group members with the CNDB feature assigned in table CUSTSTN. The CNB option allows subscribers to block the display of the DN of the subscriber on the set of the called party. The default suppression value of the DN is not a factor. A dial-access code for each call activates CNB.

Calling Line Identification Restriction (continued)

Datafill the dial access codes for CNDB and CNB in table IBNXLA. Nortel recommends the following access codes:

- CNDB 1167 or *67 for dual tone multifrequency (DTMF) lines
- CNB 1168 or *68 for DTMF lines

You cannot assign CNDB or CNB to a feature key on ISDN terminals.

For additional information about CNDB and CNB, refer to the chapter System features in the Meridian Digital Centrex (MDC) section of this document.

> ***Note:*** The CNDB feature does not toggle the suppression datafill in table NETNAMES. The Calling Name/Number Delivery Blocking Override (CNDBO) feature is the datafill that can override the SUPPRESS option in table NETNAMES. The CNDBO overrides the CGN display restrictions at the terminating end of a call. Police or emergency services normally use the CNDBO feature. Use SERVORD a DN in table KSETLINE to assign the CNDBO option.

Translations table flow

Calling Line Identification Restriction does not affect translations table flow.

Limits

Temporary mode is not available to you when you enter data in the SUPPRESS option in table NETNAMES. The CNDB feature does not toggle the suppression datafill in table NETNAMES. An option is not available to the calling user that overrides this datafill.

Interactions

The CLIR Supplementary Service interacts with the following features.

- AG0923—DN Attributes Service Order Enhancements
- AG1550—Block Calling Name/Number Delivery Blocking Per Call (CNDB)
- AJ1494—CNDBO

Activation/deactivation by the end user

The end user for each call activates temporary CLIR with dial-access codes.

Subscribers must have the system assign the CNDB feature to their customer groups in table CUSTSTN. When you assign CNDB, subscribers can control the suppression status of the DNs of the subscriber from the default status. To control the suppression status, perform the following steps:

1. go off-hook
2. obtain a dial tone
3. dial the CNDB or CNB access code (at which point you receive a special dial tone)
4. dial the called number

Nortel recommends the following access codes:

- CNDB 1167 or *67 for DTMF lines
- CNB 1168 or *68 for DTMF lines

If subscribers dial the CNDB and CNB access codes, the system activates the last access code dialed for that call.

Billing

Calling Line Identification Restriction does not affect billing.

Station Message Detail Recording

Calling Line Identification Restriction does not affect Station Message Detail Recording.

Datafilling office parameters

Calling Line Identification Restriction does not affect office parameters.

Datafill sequence

The following table lists the tables that require datafill to start Calling Line Identification Restriction. The tables appear in the correct entry order.

Datafill requirements for Calling Line Identification Restriction (Sheet 1 of 2)

Table	Purpose of table
NETNAMES	Contains network-level DN attributes. Attributes include network suppression of the CGN.
DNGRPS	Contains customer group level DN attributes. Attributes include customer group CGN suppression.
DNATTRS	Contains DN attributes. Attributes include the DN and name defined for calling line identification. Attributes also include SUPPRESS parameter that specifies DN suppression of the CGN. Enter data in this table through SERVORD only.

Calling Line Identification Restriction (continued)

Datafill requirements for Calling Line Identification Restriction (Sheet 2 of 2)

Table	Purpose of table
CUSTSTN	Contains customer group level DN attributes. Attributes include the number of digits the system displays on display sets. Attributes also include the CNDB parameter used to toggle CGN suppression
IBNXLA	Contains dial-access codes which allow toggling of calling line identification suppression.

Datafilling table NETNAMES

Table NETNAMES contains network-level DN attributes. These attributes allow the operating company to restrict display of the CGN at the network level.

> ***Note:*** Datafill table NETNAMES only one time for the network.

Datafill specific to Calling Line Identification Restriction for table NETNAMES appear in the following table. Only fields that apply to Calling Line Identification Restriction appear. For a description of the other fields, refer to the data schema section of this document.

Datafilling table NETNAMES (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
NETNAME		alphanumeric (1 to 32 characters)	Logical network name. Enter a different network name.
EXTNETID		numeric (0 to 32767)	External network identifier. Enter the different number you use outside the network to identify the logical network.
NETDIGS		1 to 10	Network digits. Enter the number of digits from the DN used in the network.
NETOPTS		refer to subfields	Network options. This field contains subfield OPTION and refinements.
	OPTION	SUPPRESS	Option. Enter SUPPRESS to specify CGN suppression at the network level, and datafill subfields INTRNLDN, EXTRNLDN, INTRNLNM, and EXTRNLNM.

Calling Line Identification Restriction (continued)

Datafilling table NETNAMES (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	INTRNLDN	Y or N	Internal suppression of DN. Enter Y to specify DN suppression for calls within the switch. Enter N to specify that DN suppression does not apply to internal office calls.
	EXTRNLDN	Y or N	External suppression of DN. Enter Y to specify DN suppression for calls that go outside the switch. Enter N to specify that DN suppression does not apply to external office calls.
	INTRNLNM	N	Internal suppression of name. Enter N for ETSI basic rate interface (BRI).
	EXTRNLNM	N	External suppression of name. Enter N for ETSI BRI.

Datafill example for table NETNAMES

Sample datafill for table NETNAMES appear in the following table. Two tuples appear in this example. The first tuple is the default tuple in the table at load time. The second tuple defines a network named CENTRAL, with an external identifier of 6. The second tuple uses ten of the DN digits. The second tuple suppresses internal and external number identification on a network basis.

MAP example for table NETNAMES

```
NETNAME EXTNETID NETDIGS
                                        NETOPTS
_____________________________________________________________
 PUBLIC        0        0
                                              $
CENTRAL        6       10
                           ( SUPPRESS Y Y N N)$
```

Datafilling table DNGRPS

Table DNGRPS contains customer group level DN attributes that define a range of DNs as a customer group. The DN attributes also allow customer group suppression of the CGN.

> ***Note:*** Only datafill table DNGRPS one time for each customer group.

Calling Line Identification Restriction (continued)

Datafill specific to Calling Line Identification Restriction for table DNGRPS appear in the following table. Only fields that apply to Calling Line Identification Restriction appear. For a description of the other fields, refer to the data schema section of this document.

Datafilling table DNGRPS

Field	Subfield or refinement	Entry	Explanation and action
SNPA		numeric (3 digits)	Serving NPA or STS. Enter the serving NPA or the serving translation scheme. This scheme includes the area code, or the first three digits of the DN.
OFC		numeric (3 digits)	Office code. Enter the office code. The office code is the next three digits of the DN.
FROMDIGS		numeric (4 digits)	From digits. Enter the lower limit of the range of the next four digits of the DN in this customer group.
TODIGS		numeric (4 digits)	To digits. Enter the upper limit of the range of the next four digits of the DN in this customer group.
NETOPTS		refer to subfields	Network options. This field contains subfields NETNAME and OPTION. Two network names and associated options can be defined. The field can repeat one time.
	NETNAME	alphanumeric (1 to 32 characters)	Network name. Enter the network name table NETNAMES defines.
	OPTION	SUPPRESS	Option. Enter SUPPRESS, and datafill subfields SUPPDN and SUPPNAME.
	SUPPDN	Y or N	Suppress DN. Enter Y to indicate that CGN suppression applies to DNs. Enter N to indicate that CGN suppression does not apply to DNs.
	SUPPNAME	Y or N	Suppress name. Enter Y to indicate that CGN suppression applies to names. Enter N to indicate that CGN suppression does not apply to names.

Datafill example for table DNGRPS

The following is an example of datafill for table DNGRPS.

In the first tuple, DNs that range from 256-1000 to 256-3000 form the customer group. The SUPPRESS option applies to DNs and names. In the second tuple, DNs that range 256-3001 to 256-5000 form the customer group. The SUPPRESS option applies to names only.

MAP example for table DNGRPS

```
SNPA OFC FROMDIGS TODIGS NETOPTS
_______________________________________________________________
613   256 1000     3000    (PUBLIC (SUPPRESS Y Y) $ )  $
613   256 3001     5000    (PUBLIC (SUPPRESS N Y) $ )  $
```

Datafilling table CUSTSTN

Table CUSTSTN contains DN attributes for customer groups. Table CUSTSTN allows the operating company to specify the following options for customer groups:

- the number of digits to display for calling line identification (CLID) on display sets, with option DISPDIGS
- CGN suppression toggling, with option CNDB

When a customer has a minimum of one group with display sets, option DISPDIGS determines the number of digits to display for CLID.

When the user specifies CNDB, a dial-access code reverses the CGN suppression status of the DN. For example, if the DN is not associated with the SUPPRESS option assigned, the user dials an access code before the called number. The access code has CNDB assigned. The switch suppresses the calling line identification at the terminating end for that one call. Table IBNXLA defines the dial access code.

> ***Note:*** Datafill table CUSTSTN one time for each customer group.

Datafill for Calling Line Identification Restriction for table CUSTSTN appears in the following table. Fields that apply to Calling Line Identification

Calling Line Identification Restriction (continued)

Restriction appear in this table. For a description of the other fields, refer to the data schema section of this document.

Datafilling table CUSTSTN

Field	Subfield or refinement	Entry	Explanation and action
CUSTNAME		alphanumeric (1 to 16 characters)	Customer name. Enter the customer name defined in table CUSTNTWK.
OPTNAME		DISPDIGS or CNDB	Option name. Enter DISPDIGS to specify the number of display digits for CLI on display sets. Enter DISPDIGS to enter data in subfields OPTION and NUMODIGS. Enter CNDB to provide CGN suppression toggling for the customer group, and enter the OPTION subfield (with CNDB).
	OPTION	DISPDIGS or CNDB	Option. If you enter DISPDIGS in field OPTNAME, enter DISPDIGS in this field. Enter the NUMODIGS field. If you enter CNDB in field OPTNAME, enter CNDB in this field.
	NUMODIGS	1 to 12	Number of digits. Enter the number of digits to display.

Datafill example for table CUSTSTN

The following is an example of datafill for table CUSTSTN.

In this example, the first customer group has the CNDB option assigned to provide CLID toggling. The second group has a display digits value of 10.

MAP example for table CUSTSTN

```
CUSTNAME    OPTNAME     OPTION
__________________________________________________________
BNRGRP1     CNDB        CNDB
BNRGRP2     DISPDIGS    DISPDIGS  10
```

Datafilling table IBNXLA

Datafill table IBNXLA to define the dial-access codes for parameters CNDB. Table IBNXLA reverses the default suppression status of a DN and CNB. A reversal of default suppression data suppresses a DN without regard to the DNs default suppression status. Datafill this table one time to define each access code.

Datafill specific to Calling Line Identification Restriction for table IBNXLA appear in the following table. Only fields that apply to Calling Line Identification Restriction appear in this table. For a description of the other fields, refer to the data schema section of this document.

Datafilling table IBNXLA

Field	Subfield or refinement	Entry	Explanation and action
KEY		refer to subfields	Key. This field contains subfields XLANAME and DGLIDX.
	XLANAME	alphanumeric (1 to 8 characters)	Translator name. Enter the name assigned to the translator.
	DGLIDX	vector of a maximum of 18 alphanumeric digits	Digilator index. Enter the access code to represent CNDB or CNB. Nortel recommends the following access codes: • CNDB 1167 or *67 for DTMF lines • CNB 1168 or *68 for DTMF lines
RESULT		refer to subfields	Result. This field contains subfields TRSEL, ACR, SMDR, and FEATURE.
	TRSEL	FEAT	Translation selector. Enter FEAT.
	ACR	Y or N	Account code entry. Enter Y if all calls to the special feature access code require an account code. If the code does not require an account code, enter N.
	SMDR	Y or N	Station Message Detail Recording. Enter Y if the system records all calls from a customer group station. These calls transfer to a station on the block of station numbers. Enter N if the system does not record the calls.
	FEATURE	CNDB	Feature. Enter CNDB for the feature name.

Datafill example for table IBNXLA

The following is an example of datafill for table IBNXLA. In this example, the assigned CNDB option is access code 67.

Calling Line Identification Restriction (continued)

MAP example for table IBNXLA

```
KEY             RESULT
________________________________________________________
XLC 67          FEAT    N   N   N   CNDB  $
```

Tools for verifying translations

Calling Line Identification Restriction does not use translation verification tools.

SERVORD

Use SERVORD to assign the SUPPRESS option to a DN in table DNATTRS.

SERVORD limits

When you use the ADO command to assign the SUPPRESS option, the system ignores input for the SUPPRESS_NAME prompt. The system ignores the input because ETSI BRI does not support name delivery.

SERVORD prompts

The SERVORD prompts the system to assign the SUPPRESS Calling Line Identification Restriction (CLIR) to a DN that appears in the following table.

SERVORD prompts for Calling Line Identification Restriction

Prompt	Valid input	Explanation
DN_OR_LEN	7 digits	Enter the DN.
OPTKEY	1 to 64	Enter the number of the key that associates with the DN.
OPTION	SUPPRESS	Enter SUPPRESS option to restrict display of the CGN for the DN.
NETNAME	alphanumeric (1 to 32 characters)	Enter the name of the network to which the SUPPRESS option applies.
SUPPRESS_DN	Y or N	Enter Y to suppress the DN display. Enter N to allow the DN display.
SUPPRESS_NAME	Y or N	The system ignores input because ETSI BRI does not support name delivery.

SERVORD example for adding Calling Line Identification Restriction

The following SERVORD example shows how the ADO command assigns the SUPPRESS Calling Line Identification Restriction (CLIR) to the DN in table DNATTRS.

SERVORD example for Calling Line Identification Restriction that uses ADO SUPPRESS in prompt mode

```
SO:
> ADO
SONUMBER: NOW 93 04 22
> (CR)
DN_OR_LEN
> 8387789
OPTKEY:
> 1
OPTION:
> SUPPRESS
NETNAME:
> PUBLIC
SUPPRESS_DN:
> Y
SUPPRESS_NAME:
> N
NETNAME:
> $
OPTKEY:
> $
```

SERVORD example for Calling Line Identification Restriction that uses ADO SUPPRESS in no-prompt mode

```
>ADO $ 8387789 1 SUPPRESS PUBLIC Y N $ $
```

Direct Dialing In

Functionality code

Functional group ordering code: NI000008

Functionality ordering code: does not apply

Release applicability

BCS36 and later versions

Requirements

This document includes the datafill information for this functionality. Completet installation can require software or hardware.

Description

The Direct Dialing In (DDI) supplementary service allows a public integrated services digital network (ISDN) user to directly call a private ISDN user. The public ISDN user uses the public ISDN numbering plan. This feature supports two types of DDI:

- DDI for basic rate interface (BRI) point-to-point (non-ETSI)

  For this DDI, the DMS-100 switch operates as a PBX. Extension digits are known to the DMS-100 switch.

- DDI for BRI point-to-point (ETSI)

  For this DDI, the BRI point-to-point access connects the DMS-100 switch to the PBX. Extension digits are not known to the DMS-100 switch.

Operation

BRI point-to-multi-point accesses

The assignment of the PADDING option in table DNGRPS provides the DDI supplementary service (non-ETSI). The PADDING option allows access to private network DNs with the public dialing code. To access private network DNS, specify selected digits as padding digits. Padding digits differ between the DN as entered in table KSETLINE, and the DN the public dialing code uses. Only those digits that are common between the private DN and the public dialing code are not padding digits. Table DNGRPS allows you to enter blocks of DNs to indicate that certain digits are padding digits.

For example, enter DN 001-333-1234 for a private network in table KSETLINE as follows:

```
ISDN 27 1 DN Y 3331234 EUROCUST 0 1 001 (SFC)$
```

Users outside the private network can dial that line with the public dialing code DN of 613-763-1234. An example of users outside the private network are users in the public network. The last five digits of both numbers (31234) are common. The last five digits are not padding digits. Enter data in table DNGRPS as follows:

```
001 333 1000 2000 (EURONET (PADDING PPPPPNNNNN)$)$
```

The DNs in table KSETLINE between 001-333-1000 and 001-333-2000 indicate that the first five digits are padding digits.

Padding option

The PADDING option contains of a table of ten boolean values that you can enter as N or P. The letter N indicates that the digit N represents is not a padding digit. The letter N indicates that the digit N is part of the national number. The letter P indicates that the digit P represents is a padding digit. The letter P indicates that the digit P is not a part of the national number.

Each Boolean represents a digit in the ten-digit number the DMS-100E in table KSETLINE stores. The first three Booleans represent the numbering plan area (NPA) and indicate if the NPA digits are padded. The next three Booleans represent the central office code. The last four Booleans represent the subscriber number.

Table DNGRPS allows you to enter data against two networks. You can assign the PADDING option to only one network.

Provision and removal of DDI (BRI point-to-point)

Table KSETFEAT provides DDI as a set feature with SERVORD. The DDI option parameter allows an entry for a default DN. Use the default DN if one of the following conditions occurs:

- the calling party number (CGN) fails screening
- the CGN information element (IE) is not available

When provisioned, the system stores the data in table KSETFEAT against the access. Obtain the national dialing code (NDC) from table KSETLINE key 1 of the same LTID. The operating company must verify the default number is a valid supernode (SN) for the switch. Table KSETFEAT does not perform this type of validation.

DDI in overlap receiving mode (BRI point-to-point)

Feature number AF6585 - BRI Point-to-Point Support BRI provides agent support for overlap receiving mode. Refer to the appropriate documentation for more details.

Direct Dialing In (continued)

Best use of DN

Best use of directory numbers avoids waste of DNs by assigning only a subset of the entire block of numbers. The DDI extension allows you to access DNs. You can allocate the remaining numbers in this range to other subscribers.

For example, you can allocate numbers 960000 to 964999 to the PBX of Company A. At the same time, you can allocate 965000 to 969999 to the PBX of Company B. This system offers a good use of directory numbers.

Enter the SERVORD command NEW in table KSETLINE to achieve provisioning of the best use for BRI. Assign DN blocks to different keys of the LTID in table KSETLINE. Key 1 of the logical terminal identifier (LTID) must be a DN key and contain the first DN block. The following datafill example of table KSETLINE indicates how DN blocks 0, 2 and 6 were assigned to LTID key ISDN 200:

KSETKEY	FORMAT	DNRESULT
ISDN 200 1	DN Y 960	RUAMDCA 0 0 756
ISDN 200 3	DN Y 962	RUAMDCA 0 0 756
ISDN 200 5	DN Y 966	RUAMDCA 0 0 756

You can assign supplementary services that are non-set features to a whole access under best use of DN conditions. Assign supplementary service to each allocated DN block in the whole access. The following indicates an example of datafill for supplementary service with AFC assigned to all DN blocks in an access:

KSETKEY	FORMAT	DNRESULT
ISDN 200 1	DN Y 960	RUAMDCA 0 0 756 (AFC)
ISDN 200 3	DN Y 962	RUAMDCA 0 0 756 (AFC)
ISDN 200 5	DN Y 966	RUAMDCA 0 0 756 (AFC)

Translations table flow

Direct Dialing In does not affect translations table flow.

Limits

The following limits apply to Direct Dialing In:

- You can add the PADDING option to table DNGRPS after you enter data BRI terminals in table KSETLINE. Assign the PADDING option before the terminals in table LTMAP are entered. Table DNGRPS can change after you map BRI terminals to have a line equipment number (LEN) in table LTMAP. IF table DNGRPS changes, the DMS-100E attempts to update the DN static data for the BRI terminals. In offices with many BRI DNs defined, the static data updating procedure can be a maximum of 60 s. During this time, you cannot access the MAP. Perform this operation during periods of low traffic.

- You can assign the PADDING option to one network in table DNGRPS.
- For BRI point-to-point DDI, the called number (CDN) is delivered to the private ISDN network in the national significant number (NSN) format. For example, the national destinational code (NDC), subscriber number (SN), and type of number (TON) are set to NATIONAL.
- For BRI point-to-point DDI, the padding option of table DNGRPS is ignored.

Interactions

Direct Dialing In acts with the calling line identification presentation (CLIP) feature. The DDI affects operation of the screening function in CLIP.

Activation/deactivation by the end user

Direct Dialing In does not require activation or deactivation by the end user.

Billing

Direct Dialing In does not affect billing.

Station Message Detail Recording

Direct Dialing In does not affect Station Message Detail Recording.

Datafilling office parameters

Direct Dialing In does not affect office parameters.

Datafill sequence

The following tables require datafill to start Direct Dialing In.

- DNGRPS for BRI point-to-multi-point access
- KSETFEAT for BRI point-to-point access

Datafill requirements for Direct Dialing In

Table	Purpose of table
DNGRPS	Contains directory number attributes for blocks of DNs normally assigned to specified customer groups.

Direct Dialing In (continued)

Datafilling table DNGRPS

Table DNGRPS contains customer group level DN attributes that define a range of DNs as a customer group. These attributes allow PADDING assignment by customer group.

Note: Enter data in table DNGRPS only one time for each customer group.

CAUTION
Service can be affected
Nortel recommends that you assign the PADDING option to table DNGRPS before you enter the terminals in table LTMAP. If this is not possible, assign the PADDING option during low traffic conditions.

The datafill for Direct Dialing In for table DNGRPS appears in the following table. Only fields that apply to Direct Dialing In appear in this table. For a description of the other fields, refer to the data schema section of this document.

Datafilling table DNGRPS (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
SNPA		numeric (3 digits)	Serving NPA or serving translation scheme (STS). Enter the serving NPA or the STS (the area code, or the first three digits of the directory number).
OFC		numeric (3 digits)	Office code. Enter the office code. The office code is the next three digits of the directory number(DN).
FROMDIGS		numeric (4 digits)	From digits. Enter the lower limit of the range of the next four digits of the DN in this customer group.
TODIGS		numeric (4 digits)	To digits. Enter the upper limit of the range of the next four digits of the DN in this customer group.

Datafilling table DNGRPS (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
NETOPTS		refer to subfields	Network options. This field contains subfields NETNAME and OPTION. Two network names and their associated options can be repeated one time.
	NETNAME	alphanumeric (1 to 32 characters)	Network name. Enter the network name defined in table NETNAMES.
	OPTION	PADDING	Option. Enter PADDING.
	DN_PADDING_TABLE	alphanumeric 10-character string	The DN padding table. Enter a string of characters (N or P) to represent the 10-digit DN. The N indicates that the digit N represents is not a padding digit. The P indicates that the digit P represents is a padding digit. The digit P represents is not part of the national number.

Datafill example for table DNGRPS

Sample datafill for the Direct Dialing In Supplementary Service in table DNGRPS.

MAP example for table DNGRPS

```
SNPA OFC FROMDIGS TODIGS NETOPTS
________________________________________________________
001  333  1000    3000  (EURONET (PADDING PPPPPNNNNN)$)$
```

Error messages for table DNGRPS

The following error messages apply to table DNGRPS.

Error messages for table DNGRPS

Error message	Explanation and action
ERROR - PADDING OPTION CAN ONLY BE ASSIGNED TO ONE NETWORK	You cannot assign the PADDING option to more than one network. Make sure you assign the option to a single network.

Direct Dialing In (continued)

Datafilling table KSETFEAT

The datafill for Direct Dialing In for table KSETFEAT appears in the following table. Only fields that apply to Direct Dialing In appear in the following table. For descriptions of other fields, refer to the data schema section of this document.

Field information KSETFEAT

Field name	Range
OPTION	DDI

Example tuple

The following is an example of the tuple entry in table KSETFEAT.

```
FEATKEY                 FEATURE          KVAR
ISDN200    1     DDI        DDI          962379
```

Tools for verifying translations

Direct Dialing In does not use translation verification tools.

SERVORD

Direct Dialing In (point-to-point access) uses SERVORD to provide a default DN. The following table indicates how DDI uses SERVORD to provide a DN.

SERVORD datafill for DDI

Prompt text	Range of values	Description
DEFAULT_DN	Numeric 1 to 11 digits	Allows a user to provide a default number for this access.

Example

The following example shows the DDI command in prompt mode.

Direct Dialing In (end)

Example of the DDI command in prompt mode (point-to-point connections)

```
>ADO
SONUMBER:  NOW 96 10 20 AM
>
DN_OR_LEN
>ISDN 100
OPTKEY:
>1
OPTION:
DDI
DEFAULT_DN:
>962376
OPTKEY:
>$
```

Directory Numbers for Customer Groups

Functionality code

Functional group ordering code: NI000008

Functionality ordering code: does not apply

Release applicability

BCS36 and later versions

Requirements

This document includes the datafill information for this functionality. Complete installation can require software or hardware.

Description

The Directory Numbers for Customer Groups capability for BRI allows the operating company to assign variable length DNs. The Directory Numbers for Customer Groups provides the functionality for public and private DNs.

Operation

Table DNGRPS datafill supports variable length DNs. The DNGRPS datafill defines DNs as public or private.

Variable length DNs

Enter the DNs for BRI terminals in table KSETLINE with a 10-digit fixed format number. The DMS-100 supports dial plans that contain variable length DNs. You can enter the PADDING option in table DNGRPS to allow operating companies to specify digits as padding digits. Padding digits pad a variable length DN that is entered as a 10-digit DN. A variable length DN has less than 10-digits. Only digits used in the dial plan are not padding digits. Table DNGRPS allows blocks of DNs to be entered to indicate that specified digits are padding digits.

For example, DN 001-393-9876 is entered in table KSETLINE as follows:

```
ISDN 27 1 DN Y 3939876 EURONET 0 1 001 (SFC)$
```

The dial plan uses 8-digit DNs. The entry for table DNGRPS is as follows:

```
001 393 9000 9999 (EURONET (PADDING PNNNPNNNNN)$)$
```

The above entry indicates the padding digits for the range of DNs in table KSETLINE between 001-393-9000 and 001-393-9999. The first and fifth digits in the DN are padding digits. The real variable length DN is 01339876.

Directory Numbers for Customer Groups (continued)

Padding option

The PADDING option contains a table of ten boolean values. You can enter the values as N or P. The letter N indicates that the digit that N represents is not a padding digit. The N digit is part of the national number. The letter P indicates that the digit that P represents is a padding digit. The P digit is not a part of the national number.

Each boolean represents a digit in a 10-digit number. The DMS stores the 10-digit number in table KSETLINE. The first three booleans represent the numbering plan area (NPA). The first three booleans indicate if the NPA digits are padded. The next three booleans represent the central office code. The last four booleans represent the subscriber number.

Table DNGRPS allows you to enter data against two networks. You can only assign the PADDING option to one network.

Public and private DNs

You can enter table DNGRPS to indicate if the BRI DN entered in table KSETLINE is a public DN or a private DN. The DNTYPE option specifies the type of number (TON) in the CDN IE that is sent in the SETUP message. If the DNTYPE option is set to PUBDN, the TON indicates national number. If the DNTYPE option is set to PRIVDN, the TON indicates network-specific number.

You can datafill the DNTYPE option against one network only. The default setting for option DNTYPE is PUBDN.

Translations table flow

Directory Numbers for Customer Groups does not affect translations table flow.

Limits

The following limits apply to Directory Numbers for Customer Groups:

- You can add the PADDING option to table DNGRPS after you enter BRI terminals in table KSETLINE. You must assign the PADDING option before you enter the terminals in table LTMAP. Table DNGRPS can change after the BRI terminals are mapped to a LEN in table LTMAP. If this condition occurs, the DMS updates the DN static data for the BRI terminals. In offices with many BRI DNs defined, the static data update procedure can take a maximum of 60 s. During this time the MAP is not accessible. This operation must only occur during low traffic conditions.
- You can only assign the PADDING option to one network in table DNGRPS.

Directory Numbers for Customer Groups (continued)

Interactions

Directory Numbers for Customer Groups does not have functionality interactions.

Activation/deactivation by the end user

Directory Numbers for Customer Groups does not require activation or deactivation by the end user.

Billing

Directory Numbers for Customer Groups does not affect billing.

Station Message Detail Recording

Directory Numbers for Customer Groups does not affect Station Message Detail Recording.

Datafilling office parameters

Directory Numbers for Customer Groups does not affect office parameters.

Datafill sequence

The table that requires datafill to implement Directory Numbers for Customer Groups appears in the following table

Datafill requirements for Directory Numbers for Customer Groups

Table	Purpose of table
DNGRPS	Contains DN attributes for blocks of DNs normally assigned to specified customer groups.

Datafilling table DNGRPS

CAUTION
Service can be affected
Northern Telecom recommends that you assign the PADDING option to table DNGRPS before you enter the terminals in table LTMAP. For any other condition, assign the PADDING option during low traffic conditions.

Table DNGRPS assigns customer group-level DN attributes to a range of DNs.

The optional attributes include SUPPRESS. The SUPPRESS attribute specifies CLID suppression for the range of DNs. For more information on

SUPPRESS, refer to the section Calling Line Identification Restriction in the chapter Datafilling Supplementary Services.

The datafill for Directory Numbers for Customer Groups for table DNGRPS appears in the following table. Only the fields that apply directly to Directory Numbers for Customer Groups appear in the table. For a description of the other fields, refer to the data schema section of this document.

Datafilling table DNGRPS (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
SNPA		numeric (3 digits)	Serving NPA or STS. Enter the serving NPA number or the serving translation scheme number (STS). The number is the area code.
OFC		numeric (3 digits)	Office code. Enter the office code. The office code is the next three digits of the directory number.
FROMDIGS		numeric (4 digits)	From digits. Enter the lower limit of the range of the next four digits of the directory number in this customer group.
TODIGS		numeric (4 digits)	To digits. Enter the upper limit of the range of the next four digits of the directory number in this customer group.
NETOPTS		refer to subfields	Network options. This field contains subfields NETNAME and OPTION. You can define two network names and the options associated with the names can be defined. You can repeat this field once.
	NETNAME	alphanumeric (1 to 32 characters)	Network name. Enter the network name that table NETNAMES defines.
	OPTION	PADDING or DNTYPE	Option. Enter PADDING to enable the PADDING option. Enter subfield DN_PADDING_TABLE. Enter DNTYPE to enable the DNTYPE option. Enter subfield TYPE_OF_DN.

Directory Numbers for Customer Groups (continued)

Datafilling table DNGRPS (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	DN_PADDING_TABLE	alphanumeric (10 characters)	The DN padding. Enter a string of 10 characters (N or P) to represent the 10-digit DN. The N indicates that the digit that N represents is not a padding digit. The P indicates that the digit that P represents is a padding digit. The P digit is not part of the national number.
	TYPE_OF_DN	PUBDN or PRIVDN	Type of DN. Enter PUBDN to indicate that the DN is a public number. Enter PRIVDN to indicate that the DN is a private number.

Datafill example for table DNGRPS

Sample datafill for table DNGRPS appears in the following example. In the first tuple, the customer group contains DNs in the range of 256-1001 to 256-2000. The first tuple is assigned the PADDING option. In the second tuple, the customer group contains DNs in the range 256-2001 to 256-3000. The second tuple is assigned the DNTYPE PUBDN.

The MAP example for table DNGRPS

```
SNPA OFC FROMDIGS TODIGS                                    NETOPTS
___________________________________________________________________
613  256 1001    2000    (EURONET (PADDING PPPPPNNNNN)$)$
613  256 2001    3000            (EECNET (DNTYPE PUBDN)$)$
```

Error messages for table DNGRPS

The following error messages apply to table DNGRPS.

Error messages for table DNGRPS

Error message	Explanation and action
ERROR - PADDING OPTION CAN ONLY BE ASSIGNED TO ONE NETWORK	You can only assign the PADDING option to one network.

Tools for verifying translations

Directory Numbers for Customer Groups does not use translation verification tools.

Directory Numbers for Customer Groups (end)

SERVORD

Directory Numbers for Customer Groups does not use SERVORD.

Electronic Key Telephone Service

Functionality code

Functional group ordering code: NI000008

Release applicability

NA010 and up

Prerequisites

To operate, Electronic Key Telephone Service requires the following functional groups:

- NI0 ISDN Base—NI000007
- MDC Minimum—MDC00001

Description

Electronic Key Telephone Service (EKTS) provides enhanced call-handling capabilities that support Multiple-Appearance Directory Number (MADN) groups on groups of functional terminals. The EKTS services allow

- multiple DNs on a terminal
- sharing of DNs by multiple users
- call types VI (voice information) and CMD (circuit mode data) on the same DN of a single NI-2 ISDN terminal
- bridging of multiple users into the same call
- flexible calling
- intercom calling

Operation

The primary group of EKTS services is the set of MADN features. MADN is a shared-DN service, in which call appearances of a single DN can appear on a number of terminals. The set of call appearances is known as an MADN group, and each individual call appearance is known as an MADN group member. A group can have up to 32 members. In each group, a primary member is defined, and the other members are designated secondary members.

MADN Single Call Arrangement

The DMS-100 switch provides several types of MADN arrangements, but in an EKTS environment, MADN Single Call Arrangement (SCA) is used. SCA means that only one call can be active per group. Therefore, in an EKTS MADN group, only one member can originate or answer a call at one time. But, a bridging capability allows other members to join an active call. The resulting call configuration is similar to a conference call, and may be known as an MADN conference call (which may have up to 30 parties). The privacy status of a call can be controlled in various ways to restrict or enable bridging. Privacy can be made active on a call to restrict bridging, or released to enable bridging, in either automatic or manual mode.

To create an MADN group, you can assign option EKTS to all the terminals in the group. Call appearances are created for each MADN DN and assigned to the logical terminal identifiers (LTID), as in normal service setup (refer to “Datafilling Base Service"). You assign option MDN to each DN through the service order system (SERVORD). SERVORD automatically datafills tables KSETLINE, MDNGRP, and MDNMEM. The system adds an entry to table MDNGRP whenever a new MADN group is created, and automatically places an entry in table MDNMEM each time a member is added to the MADN group.

You must define a logical terminal with the option EKTS, and with dynamic TEI, if MDN is to be assigned to any DNs on the terminal.

During the process of assigning MADN, the user must specify whether bridging is allowed, and the initial privacy mode required. You can assign MADN options including privacy control, EKTS hold, and MADN Ring Forward. These options are datafilled in tables KSETFEAT, MDNGRP, and MDNMEM through SERVORD.

Privacy control

With privacy control, which is also known as bridged call exclusion, the user can restrict members from bridging into a call. One of two modes of operation is assigned: automatic or manual.

In automatic privacy control, the system automatically enables privacy for all calls on that DN, and it is maintained until the user releases privacy on the call. When this mode is chosen, the user can also define the method of re-enabling privacy after a release as either automatic or manual. In the former method, privacy is re-enabled automatically after the first successful bridging attempt. In the latter method, privacy remains released until the user reinstates it. The latter method allows multiple bridging attempts into the call.

In the manual privacy control mode, the system automatically releases privacy for all calls, and the user must enable privacy whenever it is required.

SERVORD parameters INIT_STAT and PRL_MODE define privacy control, and are automatically datafilled in table MDNGRP. INIT_STAT defines the initial privacy status of the group as PRIVATE (for automatic privacy control) or NONPRIVATE (for manual privacy control). For groups whose initial

Electronic Key Telephone Service (continued)

status is private, you can specify either automatic or manual privacy re-enabling after a release.

To activate privacy during bridged calls, assign the options PRV or PRL to keys on the keyset by datafilling table KSETFEAT through SERVORD. If the INIT_STAT for the group is PRIVATE, PRL releases privacy; if the INIT_STAT is NONPRIVATE, PRV enforces privacy. (These keys are used as toggles, reversing the privacy or release option each time they are pressed.) Alternatively, access codes PRLA (privacy release activation) and PRLC (privacy release deactivation) for these features can be datafilled in table IBNXLA, and the features activated by dial access.

EKTS Hold

Two types of hold operation modes are available for MADN groups: MADN and EKTS. MADN Hold (which is the default mode) and EKTS Hold differ slightly in their handling of privacy release during the hold and retrieve operations. For compliance with NI-1 standards, EKTS Hold is specified through SERVORD, which automatically datafills table MDNGRP.

MADN Ring Forward

The MADN Ring Forward (MRF) feature allows a call terminating on an MADN group to be applied initially to one set of appearances, and then be forwarded, or transferred, to another set of MADN appearances in the group. The feature can be assigned as automatic or manual, ring forward, controlled through two main parameters:

- MRF, which controls automatic ring forwarding, allows the user to specify delayed or abbreviated ringing (as well as the usual always ring and never ring) to an MADN appearance
- MRFM (MADN Ring Forward Manual), which allows the user to manually activate delayed MRF ringing

Automatic ring forwarding is controlled by a timer (MRFTIMER), which is set for the MADN group. The timer specifies the length of time MADN members designated as abbreviated rings should ring before forwarding the ring to delayed-ring members. In both automatic and manual ring forward operation, an MRFM key can be assigned to the keyset, which allows the user to forward the ring. In the case of the manual MRF user, MRF is activated by operating the MRFM key. In the case of the automatic MRF user, the MRFM key can be used to override the timer.

Visual alerting and calling party ringback are unaffected by MRF, and any appearance of the MADN group can answer the call before or after MRF takes effect; only the ringing is forwarded.

MRF is assigned to the MADN group in table MDNGRP, through SERVORD, and the various ring types are assigned to individual MADN group members in table MDNMEM, through SERVORD. MRFM is assigned to the keyset in table KSETFEAT, also through SERVORD.

Translations table flow

Not applicable

Limitations and restrictions

Not applicable

Interactions

Not applicable

Activation/deactivation by the end user

Not applicable

Billing

Electronic Key Telephone Service does not affect billing.

Station Message Detail Recording

Electronic Key Telephone Service does not affect Station Message Detail Recording (SMDR).

Datafilling office parameters

Electronic Key Telephone Service does not affect office parameters.

Datafill sequence

The following table lists the tables that require datafill to implement Electronic Key Telephone Service. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Electronic Key Telephone Service (Sheet 1 of 2)

Table	Purpose of table
KSETLINE	Keyset Lines. This table defines the DNs associated with a keyset, and includes basic MADN parameters for each MADN DN. (Note)
MDNGRP	Multiple Appearance Directory Number Group. This table defines parameters and options for MADN groups. The table is datafilled through SERVORD; therefore, no datafill procedure or example is provided. Refer to “SERVORD" for an example of using SERVORD to datafill this table.(Note)

Electronic Key Telephone Service (continued)

Datafill tables required for Electronic Key Telephone Service (Sheet 2 of 2)

Table	Purpose of table
MDNMEM	Multiple Appearance Directory Number Members. This table specifies ring types for MADN members with the MRF option. The table is datafilled through SERVORD; therefore, no datafill procedure or example is provided. Refer to "SERVORD" for an example of using SERVORD to datafill this table. (Note)
KSETFEAT	Keyset Features. This table lists the features and options associated with the DN, including the PRL and PRV parameters, which are used to release and enforce privacy during bridged calls. The table is datafilled through SERVORD; therefore, no datafill procedure or example is provided. Refer to "SERVORD" for an example of using SERVORD to datafill this table.(Note)
IBNXLA	Integrated Business Network Translator. This table contains dial-access codes which are used to release and enforce privacy during bridged calls.
	Note: This table is datafilled through SERVORD; therefore, no datafill procedure or example is provided. Refer to "SERVORD" for an example of using SERVORD to datafill this table.

Datafilling table IBNXLA

Table IBNXLA is datafilled to define the dial-access codes for parameters PRLA (privacy release activation) and PRLC (privacy release deactivation), which control privacy release and enforcement for bridged calls in an MADN group. The table is datafilled once to define each code.

The following table shows the datafill specific to Electronic Key Telephone Service for table IBNXLA. Only those fields that apply directly to Electronic Key Telephone Service are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table IBNXLA (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
KEY			Key. This field consists of subfields XLANAME and DGLIDX.
	XLANAME	1 to 8 characters	Translator name. Enter the name assigned to the translator.
	DGLIDX	vector of up to 18 digits	Digilator index. Enter the access code that will represent PRLA or PRLC.

Electronic Key Telephone Service (continued)

Datafilling table IBNXLA (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
RESULT			Result. This field consists of subfields TRSEL, ACR, SMDR, and FEATURE.
	TRSEL	FEAT	Translation selector. Enter FEAT.
	ACR	Y or N	Account code entry. Enter Y if an account code entry is required for all calls to the special feature access code; otherwise enter N.
	SMDR	Y or N	Station Message Detail Recording. Enter Y if all calls from a customer group station to any station on the block of station numbers are recorded. Enter N if recording is not required.
	FEATURE	PRLA or PRLC	Feature. Enter PRLA or PRLC for the feature name.

Datafill example for table IBNXLA

The following example shows sample datafill for table IBNXLA. In this example, the PRLA feature is assigned access code 98.

MAP display example for table IBNXLA

```
KEY        RESULT
________________________________________________________

XLFF 98    FEAT N N N PRLA
```

Translation verification tools

Not applicable

SERVORD

SERVORD is used to

- create an MADN group and assign MADN parameters and options (including EKTS Hold and MRF)
- assign PRL and PRV to the MADN group

Electronic Key Telephone Service (continued)

SERVORD datafills table KSETLINE with a list of the DNs associated with an LTID, and defines various DN parameters. Among these parameters are those relating to EKTS MADN operation, as follows:

- MDN specifies that the DN is an MADN DN
- MDNTYPE defines the MADN type as SCA
- PRIMARY specifies whether or not this is the primary MADN member

SERVORD datafills table MDNGRP to define the parameters and options that apply to MADN groups. The table entry for a MADN group is created automatically when a DN is assigned the MDN option in KSETLINE through SERVORD (if the group does not already exist). Among the parameters assigned in table MDNGRP are

- BRIDGING, which specifies whether or not bridging is allowed
- CONFSIZE, which specifies the number of bridges allowed into a call
- BRGTONE, which indicates whether a tone should be heard by each active call member whenever a successful bridging attempt occurs
- INITSTAT, which is specified as PRIVATE (automatic privacy control) or NONPRIVATE (manual privacy control) to define initial privacy status
- PRLMODE, which is defined in the case of automatic privacy mode (INITSTAT is PRIVATE) to specify the method of re-enabling privacy after a release
- EHLD, which specifies EKTS Hold (rather than the default, MADN Hold)
- MRF, which specifies the MADN Ring Forward option

If the MRF option is chosen, automatic or manual ring forwarding can be specified. If automatic MRF is selected, the MRFTIMER value must also be specified.

SERVORD datafills table MDNMEM to define the parameters and options that apply to MADN group members. The table entry for an MADN group member is created automatically when a member is added to the MADN group in table KSETLINE through SERVORD. Among the parameters assigned in table MDNMEM are

- PRIMARY, which specifies whether or not this member is the primary member of the MADN group
- RING, which specifies whether the MADN group member should
  - — ring ALWAYS
  - — ring NEVER
  - — have an abbreviated (ABBR) ring, which means that it rings from the time the call terminates on the MADN group until MRF takes effect (or the call is answered or abandoned)
  - — have a delayed (DELAY) ring, which means that it rings when MRF takes effect

SERVORD datafills table KSETFEAT with the PRL and PRV parameters. PRL, which can be assigned to a group whose INITSTAT is PRIVATE, is used to release privacy on a bridged call. PRV, which can be assigned to a group whose INITSTAT is NONPRIVATE, is used to activate privacy on a bridged call. The PRL and PRV keys are used as toggles, reversing the privacy or release option each time they are pressed.

Alternatively, these parameters can be assigned on a dial-access basis with parameters PRLA and PRLC in table IBNXLA (refer to table IBNXLA).

SERVORD limitations and restrictions

Either PRL or PRV can be assigned to a single logical terminal in table KSETFEAT; both parameters cannot be assigned to the same terminal.

SERVORD prompts

The following table shows the SERVORD prompts used to create the MADN group, assign MADN parameters and options, and assign MRF to the group and MRF options to group members.

SERVORD prompts for EKTS—MDN option (Sheet 1 of 4)

Prompt	Valid input	Explanation
DN_OR_LEN	7 digits	Directory or line equipment number. Enter the directory number.
OPTKEY	1 to 69	Option key. Enter the number of the key associated with the SFC DN.

Electronic Key Telephone Service (continued)

SERVORD prompts for EKTS—MDN option (Sheet 2 of 4)

Prompt	Valid input	Explanation
OPTION	MDN	Option. Enter the MDN option to specify MADN for the DN.
MDNTYPE	SCA	MADN type. Enter SCA to specify single call arrangement MADN. (SCA is the only type of MADN valid in an EKTS environment.)
PRIMARY	Y or N	Primary. Enter Y to specify that this is the primary MADN member, or N to specify that it is a secondary member.
DIR_NUMBER	7 digits	Directory number. Enter a carriage return to accept the default, the current DN.
DENIAL_TRMT	SILENCE, TONE	Denial treatment. Enter SILENCE. (This prompt does not apply to ISDN terminals.)
BRIDGING	Y or N	Bridging. Enter Y to specify that bridging will be allowed for calls in this MADN group, or N to specify that no bridging will be allowed.
CONFSIZE	3 to 30	Conference size. Enter the number of members allowed to bridge into a call.
BRGTONE	Y or N	Bridge tone. Enter Y to specify that a tone should be heard by all active call members when a successful bridging attempt has occurred.
INIT_STAT	PRIVATE, NONPRIVATE	Initial status. Enter PRIVATE to specify automatic privacy mode (privacy is automatically enabled for all calls on that DN, and maintained until the user released privacy on the call), and respond to the PRL_MODE prompt. Enter NONPRIVATE to specify manual privacy mode (privacy is released for all calls, and the user must enable privacy whenever it is required).

Electronic Key Telephone Service (continued)

SERVORD prompts for EKTS—MDN option (Sheet 3 of 4)

Prompt	Valid input	Explanation
PRL_MODE	AUTO, MANUAL	Privacy mode. Enter AUTO to specify that privacy is re-enabled automatically after the first successful bridging attempt. Enter MANUAL to specify that privacy remains released until the user reinstates it.
OPTION	EHLD	Option. Enter EHLD to specify the EKTS Hold operation (rather than MADN Hold, which is the default). ***Note:*** For NI-1 compliance, EHLD is required.
OPTION	MRF	Option. Enter MRF to specify the MADN Ring Forward feature, and respond to the AUTO and MRF_RING prompts.
AUTO	Y or N	Automatic. Enter Y to indicate that the automatic and manual forms of MRF are required, and respond to the MRF_TIMER prompt. Enter N to indicate that only manual MRF is required.

Electronic Key Telephone Service (continued)

SERVORD prompts for EKTS—MDN option (Sheet 4 of 4)

Prompt	Valid input	Explanation
MRF_TIMER	0 to 60	MRF timer. Enter the time value for the MRF timer to specify the length of time, in seconds, that MADN members designated ABBR should ring before forwarding ringing to members designated DELAY, or enter a carriage return to accept the default.
MRF_RING	ABBR, ALWAYS , DELAY, NEVER	MRF ring type. Enter the type of ring required for this MADN group member as • ABBR, to indicate that the member will ring from the time the call terminates on the MADN group until MRF takes effect (or the call is answered or abandoned) • ALWAYS, to indicate that the member will ring from the time the call terminates on the MADN group until it is answered or abandoned • DELAY, to indicate that the member will begin ringing when MRF takes effect • NEVER, to indicate that the member never rings

The following table shows the SERVORD prompts used to assign the PRL or PRV options to the MADN group.

SERVORD prompts fpr Electronic Key Telephone Service—PRL/PRV options (Sheet 1 of 2)

Prompt	Valid input	Explanation
DN_OR_LEN	7 digits	Directory number or line equipment number. Enter the directory number.

Electronic Key Telephone Service (continued)

SERVORD prompts fpr Electronic Key Telephone Service—PRL/PRV options (Sheet 2 of 2)

Prompt	Valid input	Explanation
OPTKEY	1 to 69	Option key. Enter the number of the key associated with the DN.
OPTION	PRL, PRV	Option. Enter the PRL option (for MADN groups whose INITSTAT is PRIVATE) to assign privacy release during bridged calls to this key. Enter the PRV option (for MADN groups whose INITSTAT is NONPRIVATE) to assign privacy enforcement during bridged calls to this key.

SERVORD example for adding Electronic Key Telephone Service

The following SERVORD example shows how Electronic Key Telephone Service option MADN is added to a directory number using the SERVORD command ADO.

This procedure creates a new MADN group, placing its entry in table MDNGRP, and assigns the primary member, DN 8382455. The group is assigned the automatic MRF option, and this member is automatically assigned an abbreviated ring (ABBR) in table MDNMEM. The group is also assigned the EKTS Hold (EHLD) option.

Electronic Key Telephone Service (continued)

SERVORD example for EKTS—option MDN in prompt mode

```
SO
> ADO
SONUMBER: NOW 93 09 77
> (CR)
DN_OR_LEN:
> 8322455
OPTKEY:
> 1
OPTKEY:
> 1
OPTION:
> MDN
MDNTYPE:
> SCA
PRIMARY:
> Y
DIR_NUMBER:  8322455
> (CR)
DENIAL_TRMT:
> SILENCE
BRIDGING:
> Y
CONF_SIZE:
> 30
BRIDGE_TONE:
>Y
INIT_STAT:
> PRIVATE
PRL_MODE:
> MANUAL
OPTKEY:
>2
OPTION:
>EHLD
OPTKEY:
>3
OPTION:
>MRF
AUTO:
>Y
MRFTIMER:  18
>30
MRF_RING:
>ABBR
OPTKEY:
> $
```

Electronic Key Telephone Service (end)

SERVORD example for Electronic Key Telephone Service—option MDN in no-prompt mode

```
> ADO $ 8322455 1 MDN SCA Y $ SILENCE Y 30 Y PRIVATE
MANUAL 2 EHLD 3 MRF Y 30 ABBR $
```

In the following example, option PRV is assigned to the MADN group on key 6 of the keyset using the SERVORD command ADO.

SERVORD example for Electronic Key Telephone Service—option PRV in prompt mode

```
SO
> ADO
SONUMBER: NOW 93 05 35
> (CR)
DN_OR_LEN:
> 8389984
OPTKEY:
> 6
OPTION:
> PRV
OPTKEY
> $
```

SERVORD example for Electronic Key Telephone Service—option PRV in no-prompt mode

```
> ADO $ 8389984 6 PRV $
```

Flexible Calling (pre-NI-2)

Functionality code

Functional group ordering code: NI000008

Release applicability

BCS35 and up

Prerequisites

To operate, Flexible Calling (pre-NI-2) requires the following functional groups:

- NI0 ISDN Base—NI000007
- MDC Minimum—MDC00001

Description

Flexible Calling (FC) for pre-NI-2 (National ISDN) terminals is a set of capabilities that allows the user to establish two or more concurrent calls and join them into a conference of up to 30 members. Flexible Calling allows the user to

- designate an established call as a conference call
- hold and retrieve a conference call
- bridge either an incoming or outgoing basic call into a conference call
- release, or drop, the last member to join the conference call
- transfer a conference call

Flexible Calling works with the shared DN services provided by the EKTS MADN capability, so that bridged MADN calls can be included in an FC conference.

Operation

The FC capability is assigned to the logical terminal in table KSETFEAT, through SERVORD. The following parameters are used to specify FC:

- FC, which assigns flexible calling to a terminal key
- conference size (CONFSIZE), which determines the number of members allowed for conference calls initiated at the terminal

The following additional parameters are also associated with FC, and are typically assigned with FC:

- transfer (XFER), which specifies that the conference can be transferred, and defines the conditions under which it can be transferred
- DROP, which enables the conference controller (that is, the initiator of the conference) to drop the last user from the conference

Conference size

When a conference request occurs, one of two types of facilities is seized for the call: either a three-port circuit or a six-port circuit. The three-port facility is selected when a conference size of three is datafilled for the terminal. The six-port facility is designated when a conference size larger than three is specified. Unless the terminal is used frequently for conferences, users typically find that a conference size of three is sufficient. Conference size is datafilled in table KSETFEAT, through SERVORD.

Three-port conferences can be chained together, in effect providing larger conference sizes. Any non-controlling member in a three-port conference can place a conference on hold and establish a conference to another terminal (which may be an ISDN, POTS, MBS, or CLASS set), then retrieve the first conference and connect all parties. This action can be repeated to build a more extensive FC chain, each link in the conference chain using another three-port circuit, until the maximum number of circuits (defined with office parameter MAX_NO_OF_3_PORTS_IN_CHAIN) is reached. (A second office parameter, NO_OF_MEDIUM_FTR_DATA_BLKS, is used to ensure that sufficient software resources are available for conference calls.)

For six-port conference facilities, the operating company can specify the maximum number of six-port circuits that can be in use simultaneously by a specific customer group. This parameter is specified in table CUSTENG.

Transfer

With the XFER parameter, the conference controller can request the network to disconnect the originating terminal (that is, the controller) from the conference and maintain the connection between the remaining conferees. (In a three-member conference, the transfer results in release of the conference facilities and the call continuing as a normal two-way connection.)

Assigning an XFER key can also result in a transfer occurring automatically when the conference controller is disconnected from the call.

The operating company can set up conditions that control whether a transfer request is granted. For conference calls of more than three members, the customer can specify that transfer is always allowed, or that it can occur only

Flexible Calling (pre-NI-2) (continued)

when one of the remaining conferees is in the same customer group as the controller. For three-member conference calls, the customer can also specify that transfer is allowed when the call is incoming or outgoing, or only when the call is incoming. Alternatively, the operating company can define customized transfer conditions, which combine various of these conditions, for three-member conference.

The XFER parameters are assigned to a key on the terminal in table KSETFEAT, through SERVORD.

> ***Note:*** The XFER and TRANSFER parameters are mutually exclusive and dependent on the terminal type used by the subscriber. XFER is provisioned on pre-NI-2 terminals; TRANSFER is provisioned on NI-2 terminals.

Drop

With the DROP parameter, the user can request the network to clear the last call that was bridged into the conference. (In a conference of only two remaining members, the network interprets this request as a request to release the conference facilities and clear the call.)

The DROP parameter is assigned to a key on the terminal in table KSETFEAT, through SERVORD.

Translations table flow

Not applicable

Limitations and restrictions

Party A with FC and Line Music on Hold (LMOH) activates a FC feature to place Party B on hold. The audio source for Party A is AUDIO1. Party B receives audio source AUDIO1. If party A did not have the assignment of LMOH, Party B would receive the audio source for Party A's customer group.

> ***Note:*** The assignment of option KSMOH (Keyset Music on Hold) is a requirement for an ISDN set to have an audio source. Party B hears silence while the call is on hold if the assignment of option KSMOH is not on party A.

Interactions

Not applicable

Activation/deactivation by the end user

Not applicable

Billing

Flexible calling (pre-NI-2) does not affect billing.

Station Message Detail Recording

Flixible calling (pre-NI-2) does not affect Station Message Detail Recording.

Datafilling office parameters

The following table shows the office parameters used by Flexible Calling (pre-NI-2). For more information about office parameters, refer to *Office Parameters Reference Manual.*

Office parameters used by Flexible Calling (pre-NI-2)

Table name	Parameter name	Explanation and action
OFCENG	MAX_NO_OF_ 3_PORTS_IN_ CHAIN	This parameter is set to control the maximum number of 3-port circuits allowed in a flexible calling chain. The maximum number of conferees in the FC chain is equal to this parameter + 2. Enter a value between 2 and 20 (the default is 3).
	NO_OF_MEDIUM _FTR_DATA_ BLKS	This parameter is used to ensure that sufficient software resources are available to conference calls. It is typically set to 500 (the range is 0 to 32767, and the default is 50). The number of medium feature data blocks required for flexible call chaining is a value three times the number of 3-port conference circuits allowed (as defined in office parameter MAX_NO_OF_3_PORTS_IN_CHAIN). Add this value to the existing value of NO_OF_MEDIUM_FTR_DATA_BLKS, and enter the total value. (For example, if the current value of parameter NO_OF_MEDIUM_FTR_DATA_BLKS is 500, and the value of parameter MAX_NO_OF_3_PORTS_IN_CHAIN is 3, the new value of this parameter is 509.)

Flexible Calling (pre-NI-2) (continued)

Datafill sequence

The following table lists the tables that require datafill to implement Flexible Calling (pre-NI-2). The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Flexible Calling (pre-NI-2)

Table	Purpose of table
KSETFEAT	Keyset Features. Table KSETFEAT lists the features and options associated with the keyset, including the FC, XFER, and DROP parameters. This table is datafilled through SERVORD; therefore, no datafill procedure or example is provided. Refer to “SERVORD" for an example of using SERVORD to datafill this table.
CUSTENG	Customer Engineering. This table contains engineering parameters related to customer groups, including the maximum number of 6-port conference circuits that can be in use simultaneously by a customer group (specified by option CONF6C).

Datafilling table CUSTENG

The following table shows the datafill specific to Flexible Calling (pre-NI-2) for table CUSTENG. Only those fields that apply directly to Flexible Calling (pre-NI-2) are shown. For a description of the other fields, refer to the data schema section of this document.

> ***Note:*** Table CUSTENG needs to be datafilled only once for each customer group.

Datafilling table CUSTENG (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
CUSTNAME		alphanumeric 1 to 16 characters	Customer group name. Enter the name assigned to the customer group.

Datafilling table CUSTENG (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
OPTIONS		CONF6C	Option. Enter CONF6C, and datafill refinement MAX_NO_CNF6C.
	MAX_NO_CNF6C	0 to 2046	Maximum 6-port conference circuits. Enter the maximum number of 6-port conference circuits that can be allocated to the customer group at any one time. ***Note:*** To achieve the most efficient use of conference ports, the recommended values for MAX_NO_CNF6C are: 6, 10, 14, 18, 22, 28, and 30.

Datafill example for table CUSTENG

The following example shows sample datafill for Flexible Calling capability in table CUSTENG. In this example, 22 six-port conference circuits have been allocated to customer group BNRGRP12.

MAP display example for table CUSTENG

```
CUSTNAME NONCOS NOIBNTMT CONSOLES DOMAIN GROUPID OPTIONS
________________________________________________________
BNRGRP12 10     1        N        PRIVATE 0 (CONF6C 22) $
```

Translation verification tools

Flexible Calling (pre-NI-2) does not use translation verification tools.

SERVORD

SERVORD is used to assign the FC, XFER, and DROP parameters to a terminal. SERVORD datafills table KSETFEAT, which lists the features and options associated with the keyset, including the FC, CONFSIZE, XFER, and DROP parameters.

Flexible Calling (pre-NI-2) (continued)

Parameter FC assigns the flexible calling capability to a key on the terminal.

Parameter CONFSIZE (conference size) determines the number of members allowed for conference calls initiated at the terminal:

- a conference size of three results in the use of a three-port circuit whenever a conference call is initiated from the terminal; three-port conferences can be chained together up to the limit of office parameter MAX_NO_OF_3_PORTS_IN_CHAIN
- a conference size greater than three results in the use of a six-port circuit; further six-port circuits are added to the existing conference bridge as conference members are added

Parameter XFER (transfer) specifies that the conference can be transferred from the controller to the remaining conferees, and defines the conditions under which it can be transferred as

- CTALL, which allows any type of call to be transferred
- CTINC, which allows incoming calls to be transferred (when the original conference call is inter-customer group and the remaining conference call is intra-group)
- CTOUT, which allows incoming and outgoing calls to be transferred (when the original conference call is inter-customer group and the remaining conference call is intra-group)
- CTINTRA, which allows incoming and outgoing calls to be transferred when one of the remaining conferees is a member of the controller's customer group (that is, when both the original conference call and the remaining conference call are intra-customer group)
- CUSTOM, which allows the operating company to customize transfer conditions

> ***Note:*** For conference sizes greater than three, only the CTALL and CTINTRA transfer types are valid.

To customize transfer conditions, four subparameters are defined to specify the characteristics of the original conference call (referred to as the first leg of the call) and the call that remains after the transfer (referred to as the second leg). The four subparameters define the four possible types of first leg as

- ORGINTER, which states that the controller is the originator of the call and the first leg is inter-group
- ORGINTRA, which states that the controller is the originator of the call and the first leg is intra-group

- TRMINTER, which states that the controller is the terminator of the call and the first leg is inter-group
- TRMINTRA, which states that the controller is the terminator of the call and the first leg is intra-group

For each condition, one of the following five values is selected to define the second leg of the call:

- AC, which indicates that transfer is allowed when the second leg of the call is to the attendant
- INTER, which indicates that transfer is allowed when the second leg is inter-group
- INTRA, which indicates that transfer is allowed when the second leg is intra-group
- TRATER, which indicates that transfer is allowed when the second leg is either inter-group or intra-group
- NOCXFER, which indicates that no transfer is allowed for the conditions defined for the first leg

DROP allows the conference controller to drop the last user from the conference.

SERVORD limitations and restrictions

Flexible calling (pre-NI-2) has no SERVORD limitations and restrictions.

SERVORD prompts

The following table shows the SERVORD prompts used to assign the FC option to an LTID.

SERVORD prompts for Flexible Calling (pre-NI-2) with FC option (Sheet 1 of 2)

Prompt	Valid input	Explanation
DN_OR_LEN	a logical terminal group name (1 to 8 alphanumeric characters), followed by a space and a terminal number (1 to 1022)	Directory or line equipment number. Enter the LTID that will identify the logical terminal to which the FC option is being added.
OPTKEY	1 to 64	Option key. Enter the number of the key to be assigned to FC.

Flexible Calling (pre-NI-2) (continued)

SERVORD prompts for Flexible Calling (pre-NI-2) with FC option (Sheet 2 of 2)

Prompt	Valid input	Explanation
OPTION	FC	Option. Enter the FC option to enable the user to initiate a conference call on the terminal.
CONFSIZE	3 to 30	Conference size. Enter the number of members permitted in a conference call initiated on this terminal.

The following table shows the SERVORD prompts used to assign the XFER option to an LTID.

SERVORD prompts for Flexible Calling (pre-NI-2) with XFER option (Sheet 1 of 4)

Prompt	Valid input	Explanation
DN_OR_LEN	a logical terminal group name (1 to 8 alphanumeric characters), followed by a space and a terminal number (1 to 1022)	Directory or line equipment number. Enter the LTID that will identify the logical terminal to which the FC option is being added.
OPTKEY	1 to 64	Option key. Enter the number of the key to be assigned to XFER.
OPTION	XFER	Option. Enter the XFER option to enable transfer of a conference call and define the conditions under which transfer from the controller to the remaining conferees is allowed. ***Note:*** The FC option must be assigned to this LTID before XFER can be assigned.

SERVORD prompts for Flexible Calling (pre-NI-2) with XFER option (Sheet 2 of 4)

Prompt	Valid input	Explanation
CXFERTYP	CTALL, CTINC, CTOUT, CTINTRA, CUSTOM	Call transfer type. Enter CTALL to specify that all calls can be transferred. Enter CTINC to specify that incoming calls can be transferred (when the original conference call is inter-customer group and the remaining call is intra-group). Enter CTOUT to specify that incoming and outgoing calls can be transferred (when the original conference call is inter-customer group and the remaining call is intra-group). Enter CTINTRA to specify that incoming and outgoing calls can be transferred when one of the remaining conferees is a member of the controller's customer group (that is, when the original conference call is intra-customer group and the remaining call is intra-group). Enter CUSTOM to specify customized transfer conditions, and respond to the ORGINTER, ORGINTRA, TRMINTER, and TRMINTRA prompts. ***Note:*** For terminals with an FC CONFSIZE greater than 3, only CTALL and CTINTRA are valid.
ORGINTER	AC, INTRA, INTER, TRATER, NOCXFER	Originated inter-group transfer. Enter AC to indicate that an inter-group call originated by the controller can be transferred when the second leg is to the attendant. Enter INTRA to indicate that an inter-group call originated by the controller can be transferred when the second leg is intra-group. Enter INTER to indicate that an inter-group call originated by the controller can be transferred when the second leg is inter-group. Enter TRATER to indicate that an inter-group call originated by the controller can be transferred when the second leg is either intra-group or inter-group. Enter NOCXFER to indicate that an inter-group call originated by the controller can not be transferred.

Flexible Calling (pre-NI-2) (continued)

SERVORD prompts for Flexible Calling (pre-NI-2) with XFER option (Sheet 3 of 4)

Prompt	Valid input	Explanation
ORGINTRA	AC, INTRA, INTER, TRATER, NOCXFER	Originated intra-group transfer. Enter AC to indicate that an intra-group call originated by the controller can be transferred when the second leg is to the attendant. Enter INTRA to indicate that an intra-group call originated by the controller can be transferred when the second leg is intra-group. Enter INTER to indicate that an intra-group call originated by the controller can be transferred when the second leg is inter-group. Enter TRATER to indicate that an intra-group call originated by the controller can be transferred when the second leg is either intra-group or inter-group. Enter NOCXFER to indicate that an intra-group call originated by the controller can not be transferred.

Flexible Calling (pre-NI-2) (continued)

SERVORD prompts for Flexible Calling (pre-NI-2) with XFER option (Sheet 4 of 4)

Prompt	Valid input	Explanation
TRMINTER	AC, INTRA, INTER, TRATER, NOCXFER	Terminated inter-group transfer. Enter AC to indicate that an inter-group call terminated by the controller can be transferred when the second leg is to the attendant. Enter INTRA to indicate that an inter-group call terminated by the controller can be transferred when the second leg is intra-group. Enter INTER to indicate that an inter-group call terminated by the controller can be transferred when the second leg is inter-group. Enter TRATER to indicate that an inter-group call terminated by the controller can be transferred when the second leg is either intra-group or inter-group. Enter NOCXFER to indicate that an inter-group call terminated by the controller can not be transferred.
TRMINTRA	AC, INTRA, INTER, TRATER, NOCXFER	Terminated intra-group transfer. Enter AC to indicate that an intra-group call terminated by the controller can be transferred when the second leg is to the attendant. Enter INTRA to indicate that an intra-group call terminated by the controller can be transferred when the second leg is intra-group. Enter INTER to indicate that an intra-group call terminated by the controller can be transferred when the second leg is inter-group. Enter TRATER to indicate that an intra-group call terminated by the controller can be transferred when the second leg is either intra-group or inter-group. Enter NOCXFER to indicate that an intra-group call terminated by the controller can not be transferred.

Flexible Calling (pre-NI-2) (continued)

The following table shows the SERVORD prompts used to assign the DROP option to an LTID.

SERVORD prompts for Flexible Calling (pre-NI-2) with DROP option

Prompt	Valid input	Explanation
DN_OR_LEN	a logical terminal group name (1 to 8 alphanumeric characters), followed by a space and a terminal number (1 to 1022)	Directory or line equipment number. Enter the LTID that identifies the logical terminal to which the DROP option is being added.
OPTKEY	1 to 64	Option key. Enter the number of the key to be assigned to DROP. ***Note:*** The key assigned to DROP must be numerically higher than the key assigned to FC (for instance, if the FC key is 6, the DROP key must be 7 or higher).
OPTION	DROP	Option. Enter the DROP option to enable the controller to release the last-joining conferee from the conference. ***Note:*** The FC option must be assigned to this LTID before DROP can be assigned.

SERVORD example for adding Flexible Calling (pre-NI-2)

The following SERVORD example shows how Flexible Calling (pre-NI-2) is added to LTID ISDN 303 using the ADO command. In this example, options FC, XFER (customized to allow transfer only for calls within the customer group), and DROP are assigned to the LTID.

Flexible Calling (pre-NI-2) (end)

SERVORD example for Flexible Calling (pre-NI-2) in prompt mode

```
SO:
> ADO
SONUMBER: NOW 93 04 31
> (CR)
DN_OR_LEN:
>ISDN 303
OPTKEY:
> 4
OPTION:
> FC
CONFSIZE:
> 3
OPTKEY:
> 5
OPTION:
> XFER
CXFERTYP:
> CUSTOM
ORGINTER:
> NOCXFER
ORGINTRA:
> INTRA
TRMINTER:
> NOCXFER
TRMINTRA:
> INTRA
OPTKEY:
> 6
OPTION:OPTION:
> DROP
OPTKEY:
> $
```

SERVORD example for Flexible Calling (pre-NI-2) in no-prompt mode

```
> ADO $  ISDN 303 4 FC 3 5 XFER CUSTOM NOCXFER INTRA
NOCXFER INTRA 6 DROP $
```

Flexible Calling Interworking with E911

Ordering codes

Functional group ordering code: NI000008

Functionality ordering code: not applicable

Release applicability

DMS100C03 and up

Prerequisites

To operate, Flexible Calling Interworking with E911 requires the following functional groups:

- NI0 ISDN Base, NI000007
- Base ISUP, ISP70001

Description

The Flexible Calling Interworking with E911 feature allows Flex Call (FC) controllers to bridge a Basic 911 (B911) or Enhanced 911 (E911) call to an FC conference. The 911 call must be routed over one of the following facilities:

- Emergency Service (ES) lines
- Emergency Service (ES) trunks
- Operator (OP) trunks assigned option Termhold

> ***Note:*** A 911 call routed over another type of facility (for example, a SuperCAMA trunk) can be bridged to an FC conference but the connection is not subject to the Flexible Calling Interworking with E911 capabilities.

Operation

Flexible Calling Interworking with E911 allows the following capabilities to FC conferences involving 911 calls routed over ES lines and trunks:

- blocks HOLD and RETrieve until the 911 call is cleared unless the controller has been in pseudo-disconnect. If the controller has been in pseudo-disconnect, HOLD and RETrieve can continue to be blocked after the 911 call is cleared.
- blocks incoming and outgoing calls on the Integrated Services Digital Network (ISDN) set until the 911 call is cleared
- allows Ringback of the controller if the conference is active
- enforces any call clearing feature assigned to the 911 agent

Flexible Calling Interworking with E911 (continued)

Flexible Calling Interworking with E911 allows the following capabilities to FC conferences involving 911 calls routed over OP trunks:

- enforces any call clearing feature assigned to the 911 agent
- allows the controller to hold a 911 conference and either answer incoming calls or originate a new call. No other functionalities are allowed during a conference.

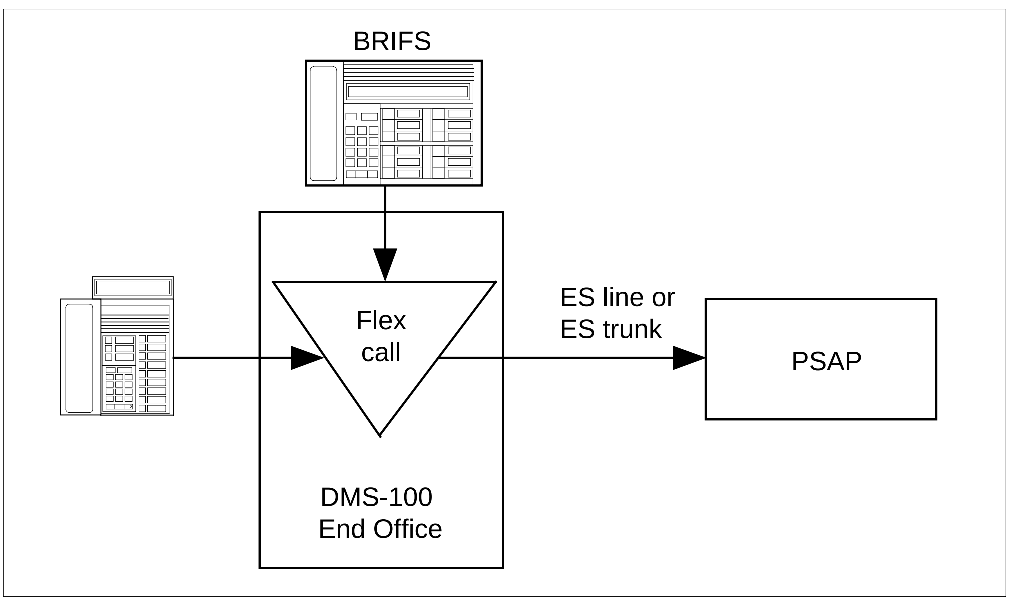
Basic 911/Enhanced 911 configurations supported

Flexible Calling Interworking with E911 supports the following 911 configurations.

Flexible Calling Interworking with E911 supports 911 in DMS-100 end offices where the Digital Multiplexing System (DMS) switch routes 911 calls over ES lines and trunks. 911 calls routed over ES lines terminate to 2500 sets or plain old telephone service (POTS) lines assigned the Emergency Service Line (ESL) option. 911 calls routed over ES trunks terminate directly to end user premise equipment in a Public Safety Answering Point (PSAP).

Flexible Calling Interworking with E911 must allow the FC controller (for example, a Basic Rate Interface Functional Set [BRIFS]) to bridge either of these 911 call types to an FC conference. The following figure shows the FC interworking with B911 in the end office.

Flex Call interworking with B911 in end office

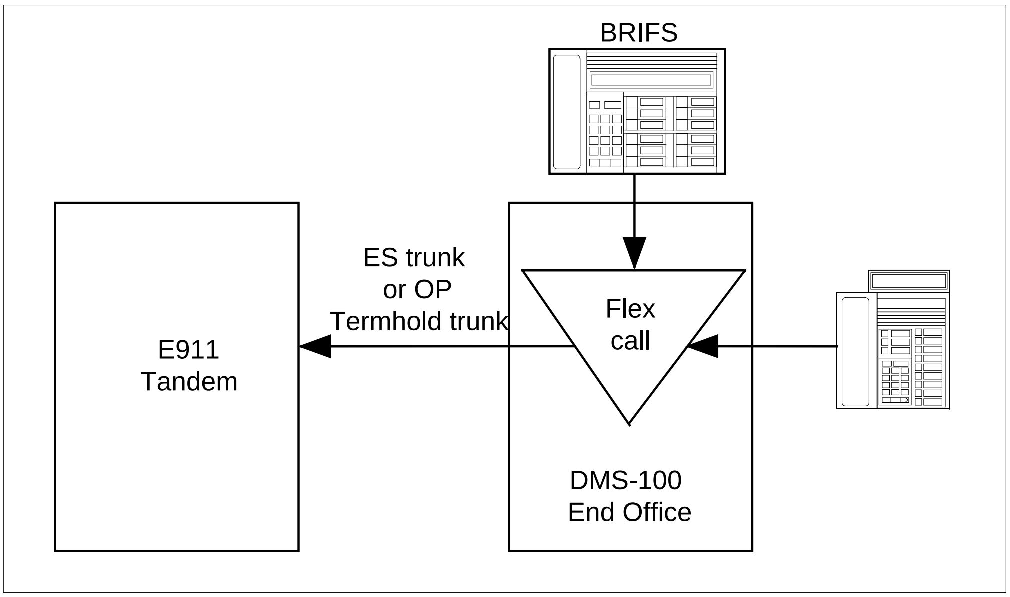


Flexible Calling Interworking with E911 (continued)

Enhanced 911 concentrates all 911 calls from a number of end offices to a centralized DMS-100 switch, known as E911 Tandem. When the calls arrive at the E911 Tandem, they are routed to an appropriate PSAP.

Flexible Calling Interworking with E911 must support bridging of 911 calls that are routed out of the FC controller's end office using an ES or OP trunk. The following figure shows the FC interworking with E911 in the end office.

Flex Call interworking with E911 in end office

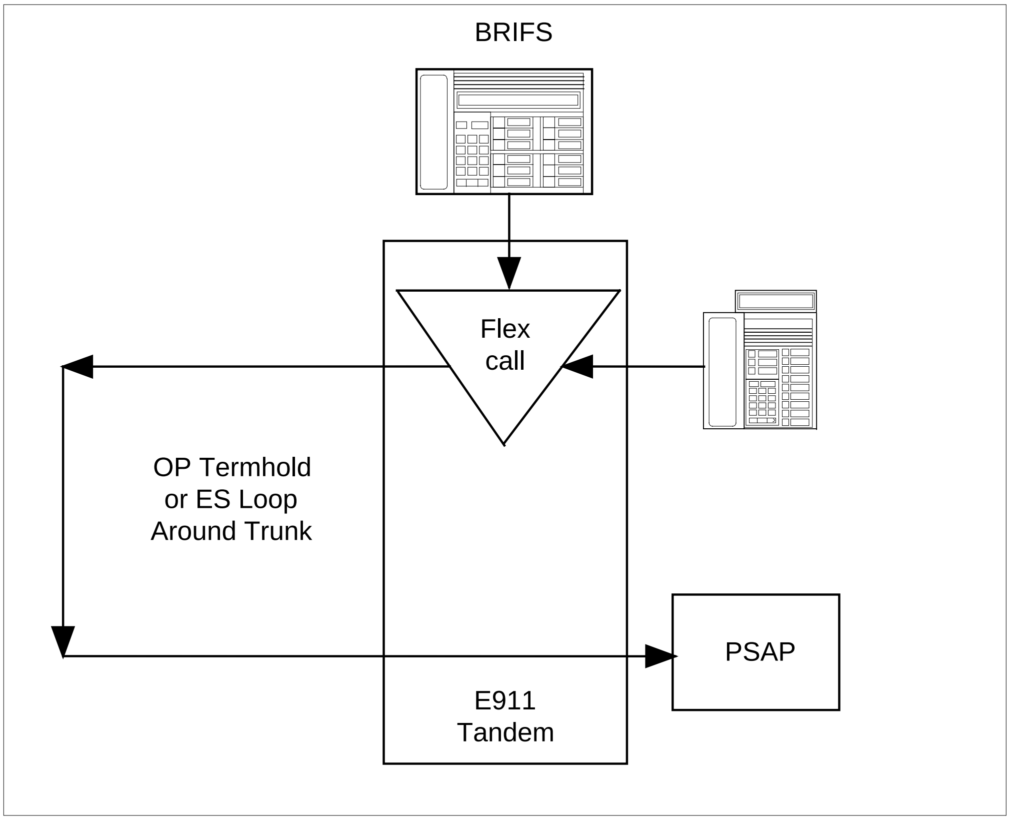


The E911 Tandem must support incoming trunks with 911 traffic, as well as local lines and any 911 traffic these lines generate. When a line on an E911 Tandem calls 911, the call is routed to a PSAP using an OP or ES loop around trunk because the E911 Tandem does not support direct, line-to-PSAP connections.

Flexible Calling Interworking with E911 must allow the FC controller on an E911 Tandem to bridge a loop around trunk call to a conference. The following figure shows the FC interworking with E911 in an E911 Tandem.

Flexible Calling Interworking with E911 (continued)

Flex Call interworking with E911 in an E911 Tandem



Functional breakdown

This section describes the activation of Flexible Calling Interworking with E911.

Activating the Flexible Calling Interworking with E911

Flexible Calling Interworking with E911 is activated when the controller bridges one of the following types of 911 calls to an existing conference of two or more parties:

- a 911 call routed over an ES line
- a 911 call routed over an ES trunk
- a 911 call routed over an OP trunk assigned option Termhold

The valid 911 call must always be bridged to an existing conference. The request is denied if an FC controller attempts to invoke FC on a valid 911 call.

Flexible Calling Interworking with E911 (continued)

The valid 911 call must pass certain checks before bridging. These checks are

- 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.
- An ES line cannot be bridged to an FC conference until it returns an ANSWER message or it forwards to another non-ES party.

  Note: If an ES line forwards to a non-ES party, Flexible Calling Interworking with E911 is not activated when the call is bridged.

- An ES or OP trunk that requires ANI spill cannot be bridged until the trunk returns either an ANSWER message when the 911 agent connects or an ANSWER message to request ANI spill.

If any of these checks fails, the DMS switch denies the bridge request.

When a valid 911 call is bridged to FC, Flexible Calling Interworking with E911 is activated against the controller of the 911 conference. While Flexible Calling Interworking with E911 is active, the following restrictions apply to the controller:

- The controller cannot add more parties to the conference.
- The controller cannot drop conferees (a non-controlling leg of the FC conference) or transfer the conference.

  Note: Transfer and drop are disabled while Flexible Calling Interworking with E911 is active.

- The controller cannot hold the 911 conference unless the 911 call is routed over an OP trunk with Termhold. If the call is routed over an OP trunk with Termhold, the controller can hold and retrieve the 911 conference using normal hold and retrieve procedures.

Pseudo-disconnect of ESL using ES and OP trunks An exiting controller using an ES line or trunk is put into a pseudo-disconnect state. The DMS switch reserves the controller's B-channel and monitors all DN keys on set the set, including Additional Functional Call (AFC) and Additional Call Offering Unrestricted (ACOU) keys. Any attempt by the controller to originate a new call causes the controller to be reconnected to the 911 conference. All call origination and termination functions are blocked for the pseudo-disconnected controller.

An exiting controller using an OP trunk also puts the controller in pseudo-disconnect, but call origination and termination functions are handled differently. An exit from the controller results in the DMS switch releasing the controller's B-channel and reserving a single DN appearance to handle the conference that is now on HOLD. The controller can originate and receive calls on other DN, AFC, or ACOU keys while the conference is being held and can RETrieve the conference by going off-hook on the reserved DN appearance.

Handling conference states when the 911 agent exits When a 911 agent exits an FC conference, the DMS switch releases the 911 party using normal call clearing procedures. The remaining conference is handled based on the controller's hook state and whether the controller has ever been in pseudo-disconnect.

If the controller is off-hook and has never been in pseudo-disconnect, the DMS switch deactivates Flexible Calling Interworking with E911 and reverts the remaining conference to a normal FC conference with the controller regaining all FC capabilities.

If the controller is off-hook and has been in a pseudo-disconnect state, Flexible Calling Interworking with E911 is not deactivated and the remaining conference is subject to all restrictions. A subsequent exit by the controller will clear the call and take down the conference.

If the controller is on-hook and the 911 agent exits, the whole conference is cleared using normal call clearing procedures.

If a three-way conference reverts to a two-party connection between the controller and the 911 agent, the following functionalities are applicable:

- If the controller exits an active conference and the ORIGHOLD/TERMHOLD datafill gives the PSAP call clearing control, the conference connection is maintained, the controller is put into pseudo-disconnect, and Flexible Calling Interworking with E911 remains in effect until the 911 agent goes on-hook.

  Note: If neither ORIGHOLD nor TERMHOLD is applicable to the 911 leg of the conference, the conference call is cleared when the controller exits. Flexible Calling Interworking with E911 is deactivated.

- If all conferees on a 911 conference exit and the controller is pseudo-disconnected, the network automatically rings the controller.

  If a controller is off-hook on an active conference between the 911 agent and the controller only, the 911 agent can use PSAP-originated Ringback, which applies a Receiver Off Hook (ROH) tone across the B-channel of the controller.

Flexible Calling Interworking with E911 (continued)

If a controller goes on-hook during an active conference (for example, pseudo-disconnect), the 911 agent can use the PSAP-originated Ringback option to ring the controller's set.

- The controller cannot use the Pre-bridge Transfer functionality to transfer the 911 call to another call.

Translations table flow

Flexible Calling Interworking with E911 does not affect translations table flow.

Limitations and restrictions

The following limitations and restrictions apply to Flexible Calling Interworking with E911:

- 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.
- Flexible Calling Interworking with E911 does not support XPM Warm and Cold Switch Activities (SWACTs). If a Warm SWACT occurs, the call loses all 911 functionality. If a Cold SWACT occurs, the call connection is cleared.
- Flexible Calling Interworking with E911 is not supported during Emergency Stand Alone (ESA) operation.
- Flex Call cannot be invoked on an outgoing 911 call routed over an OP trunk with Termhold, an ES line, or an ES trunk. A Flex Call can be bridged only to an existing FC conference.
- No calls can be bridged onto an FC conference after the controller adds a 911 call to the conference.
- A 911 PSAP agent cannot invoke Ringback while connected to an FC conference in the bridged state.
- ANI spill may fail if an OP Termhold trunk or an ES trunk is bridged to a 911 conference before ANI outpulsing is complete.
- An OP Termhold trunk or an ES trunk that requires ANI spill cannot be bridged to an FC6-30 conference until it returns an answer message. If the controller makes a bridge request before the trunk returns ANSWER, the DMS switch denies the request. No tone is directed across the controller's B-channel because it may interfere with 911 communication.
- Virtual Facility Group (VFG) calls are blocked.

Interactions

Flexible Calling Interworking with E911 has no functionality interactions.

Activation/deactivation by the end user

Flexible Calling Interworking with E911 does not affect activation/deactivation by the end user.

Billing

Flexible Calling Interworking with E911 does not affect billing.

Station Message Detail Recording

Flexible Calling Interworking with E911 does not affect Station Message Detail Recording.

Datafilling office parameters

The following table shows the office parameters used by Flexible Calling Interworking with E911. For more information about office parameters, refer to *Office Parameters Reference Manual*.

Office parameters used by Flexible Calling Interworking with E911

Table name	Parameter name	Explanation and action
OFCENG	B911_3WC_ALLOWED	Specifies whether a three-way call involving a PSAP operator can be established. If the parameter is set to N (default), only the 3WC line and the PSAP operator can talk. If the parameter is set to Y (Yes), the 3WC line is allowed to flash again and bring in all three parties.

Datafill sequence

Flexible Calling Interworking with E911 does not affect datafill sequence.

Translation verification tools

Flexible Calling Interworking with E911 does not use translation verification tools.

SERVORD

Flexible Calling Interworking with E911 does not use SERVORD.

ISDN BRI Routing

Ordering codes

Functional group ordering codes: NI000008, NI000010, NI000014, NI000061

Functionality ordering code: not applicable

Release applicability

BCS31 and up

Prerequisites

ISDN BRI Routing has no prerequisites.

Description

The ISDN BRI Routing functionality allows operating companies to route ISDN calls based on routing characteristics.

> ***Note:*** For information on standard translations and call routing, refer to “Customer Groups."

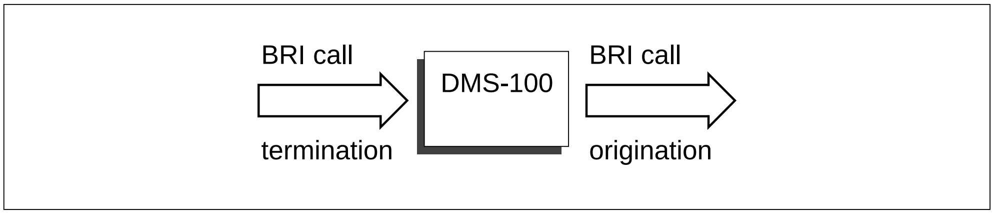
Call routing is described in terms of circuit-switched calls and packet-switched calls, which are the two main divisions of BRI service. Within both of these categories, the calls are designated as either originations or terminations.

> ***Note:*** Although many common tables and parameters apply to both circuit and packet-switched translations, there are some differences in the options that are supported for packet calls. For example, in all the tables described in this feature description in which the digit manipulation index (DMI) occurs as a reference into table DIGMAN (Digit Manipulation), the only valid value for packet calls is zero since digit manipulation is not supported.

CAUTION
Use of table DIGMAN in DMS packet call translation causes packet calls to fail to complete.
The DMS packet handler for ISDN BRI call translation does not support table DIGMAN.

As shown in the following figure, a BRI origination is defined as a call that originates in the DMS-100 switch. A BRI termination is defined as a call that terminates in the DMS-100 switch. A call that begins and ends on BRI terminals in the DMS-100 switch is both a call origination and a call termination.

BRI originations and terminations



Operation

For circuit-switched calls terminating at the DMS-100 switch, routing characteristics are defined in the Q.931 SETUP message. (For incoming calls on a non-PRI, or per-trunk signaling (PTS) trunk, a bearer capability can be obtained from the value datafilled in table TRKGRP.) For call originations, the DMS-100 creates a SETUP message that specifies the routing characteristics of the call.

Like circuit-switched service, packet service is described in terms of call originations and terminations. However, for packet service, the equivalent of the SETUP message is the call request packet, which is generated by the calling terminal.

The following list contains the call types whose operation and translations are described in this section:

- circuit-switched call terminations
- packet-switched call terminations
- circuit-switched call originations
- packet-switched call originations

Translations table flow for circuit-switched call terminations

When a BRI call is received, the DMS-100 routes the call based on the call's SETUP message and the switch datafill. The process of routing a call requires the following main steps:

- analyzing the SETUP message
- determining the call type
- determining the routing characteristics
- routing the call

ISDN BRI Routing (continued)

For non-PRI trunks, the switch datafill is analyzed, rather than the SETUP message.

Analyzing the SETUP message

The SETUP message provides the information that allows the call routing system to determine the called number, the call type, and the call's routing characteristics. Combined with the switch datafill, these factors determine the translations that are used to route the call.

The SETUP message is composed of information elements (IE), each of which provides a part of the setup data. The primary IEs analyzed by the call routing system include

- the keypad IE
- the called party number (CDN) IE
- the bearer capability (BC) IE

The following table summarizes the content and use of the information elements.

SETUP message information elements

Information element	Purpose
Keypad (KP)	May contain the dialed digits and any feature access codes.
Called party number (CDN)	May contain: • the dialed digits • the TON, which specifies a nationally standardized network or a private number • the NPI, which is one of: an inter-LATA carrier identification code, a user-specific identification code, or unknown Together, the TON and NPI indicate whether the numbering plan used for the called number is private or public. They can specify an international, national, or local number in the ISDN numbering plan (E.164), or a network-specific number in a private numbering plan. When the CDN contains the dialed digits, they are used for the called digits, and the keypad IE digits are ignored.
Bearer capability (BC)	Defines the transmission service used by the call. The BC value is one of: speech (digital voice transmission), unrestricted digital information (at 64 kbit/s), unrestricted digital information (at 56 kbit/s adapted to 64 kbit/s), 3.1 kHz audio, or 7 kHz audio.

Determining the call type

The two primary call types for a BRI call are public (PUB) and private (PVT). The following table provides a brief definition of each call type.

To determine the call type of a BRI call, the DMS-100 examines the CDN IE for the type of number (TON) and network plan identifier (NPI) information. Together, the TON and NPI indicate whether the numbering plan used for the called number is private or public.

The call type determined from the SETUP message is used to access table LTCALLS, which begins call translations.

SETUP information elements

Call type	Definition
private (PVT)	Connects the customer group to its private network (for example, a corporate network).
public (PUB)	Connects the customer to the public switching network. The digits dialed conform to E.164 standards. (E.164 refers to the public network numbering plan, which is in accordance with CCITT recommendation E164; in effect, E164 refers to the North American public numbering plan.)

Determining routing characteristics

The routing characteristic information from the SETUP message is analyzed to derive an ISDN routing characteristic name (RCNAME), which helps to determine the translation path of the call.

Table BCDEF contains all the possible BC names and their associated transmission characteristics. At installation, BCDEF is datafilled with ten default tuples, but the operating company may also add BC names of their own definition to table BCDEF.

The call routing system uses data from the BC IE to access table BCDEF and obtain a BCNAME which represents those transmission characteristics. The BCNAME is used to access table RTECHAR, which contains sets of routing characteristics assigned to RCNAMEs. Comparing the BCNAME to the content of RTECHAR gives the routing system an RCNAME, which is then used to represent the call's routing characteristics throughout the rest of the translation and routing process.

Table RTECHAR also enables routing on the type of number (TON) specified in the CDN IE. The TON specifies whether a number is local, national,

ISDN BRI Routing (continued)

international, a private network number, or an abbreviated number typically used in feature access.

Datafilling bearer capabilities for PTS trunks

To provide flexibility in routing incoming calls, the DMS-100 allows the operating company to assign bearer capabilities to PTS trunk groups. A bearer capability for a trunk group is defined in table TRKGRP to override the office-wide default BC.

Routing the call

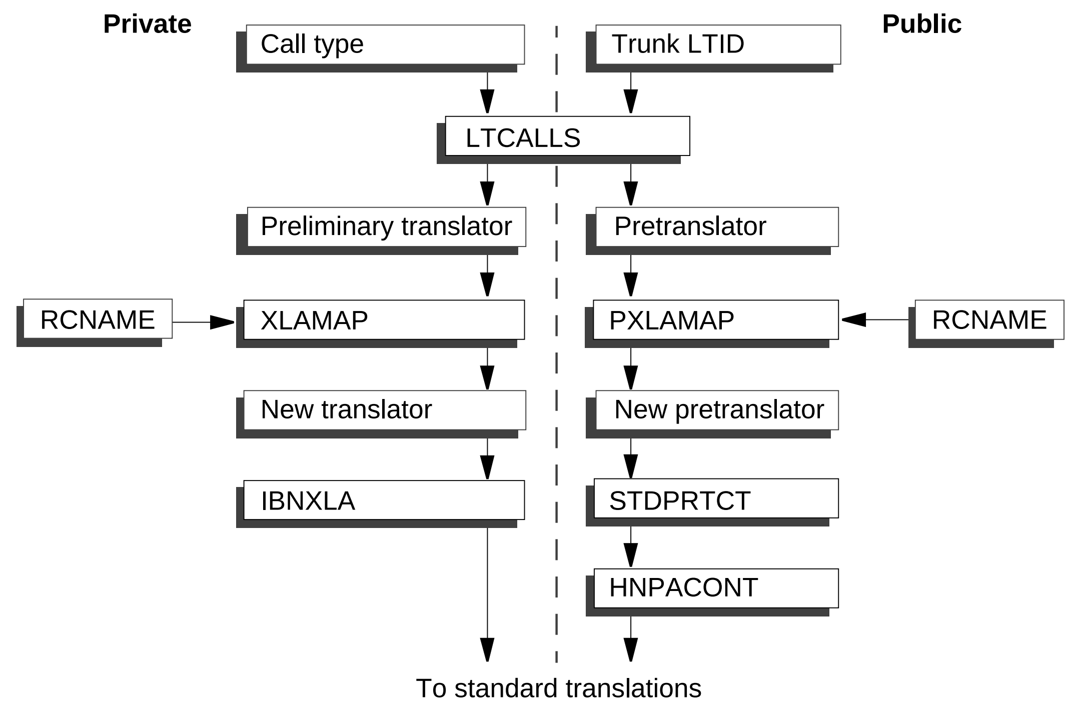
Once the SETUP message has been analyzed and an RCNAME obtained, the translation system tables route the call. The following figure is a flow diagram which shows a simplified translations process for call terminations. The translations process is as follows:

1. Call terminations processing in the DMS-100 switch begins with the trunking tables, which define the attributes of the trunk group. Table TRKGRP contains the trunk group LTID, one of the keys used to access table LTCALLS, which provides the initial information for translating the call. The other key to table LTCALLS is the call type from the SETUP message.
2. Table LTCALLS begins the translations process differently depending on whether the call is private or public. For a private call, the NCOS code or the customer group name from LTCALLS is used to obtain a preliminary translator name from table NCOS or CUSTHEAD. For a public call, the line attribute index from table LTCALLS is used to obtain a pretranslator for the call in table LINEATTR.
3. For a private call, the preliminary translator and the RCNAME derived from table RTECHAR are the keys to table XLAMAP. Table XLAMAP can be datafilled with a new translator to enable alteration of the route based on bearer capability. For a public call, the pretranslator and an RCNAME are used to access table PXLAMAP, which can be datafilled with a new pretranslator.
4. For private calls, the new translator from table XLAMAP (or from table CUSTHEAD, if there is no datafill in table XLAMAP) is used to access table IBNXLA. For public calls, the pretranslator from PXLAMAP (or from table LINEATTR, if there is no datafill in table PXLAMAP) is used to access table STDPRTCT.
5. For private calls, table IBNXLA provides the NPA and office code required to obtain the DN on which to terminate the call. For public calls, table STDPRTCT calls table HNPACONT, which provides the keys to the DN tables.

ISDN BRI Routing (continued)

Note: The standard IBN translations tables mentioned in this chapter are described in the Meridian Digital Centrex (MDC) section of this document.

BRI call terminations



For the incoming circuit-switched call, table CLLI identifies the trunk group, and table TRKMEM determines the physical location of the circuit carrying the call. The trunk identifier (CLLI) is used to access table TRKSGRP, which defines the signaling protocol used by the trunk, and table TRKGRP, which provides the LTID of the trunk group. The LTID of the PRI trunk group and the call type from the SETUP message are used to access table LTCALLS.

For incoming calls on a PTS trunk, a bearer capability can be obtained from the value datafilled in table TRKGRP. The BC value is checked in RTECHAR, and used in subsequent tables as is the bearer capability from the SETUP message.

The circuit-switched call termination translations tables are described in the following list.

- Table LTCALLS provides the customer group field, CUSTGRP, and the network class of service field, NCOS, for a private call. The customer group and NCOS fields are used to access table NCOS for a preliminary

ISDN BRI Routing (continued)

translator name, PRELIMXLA, which is the key for table IBNXLA. If there is no translator in table NCOS, the customer group from table LTCALLS, CUSTGRP, is used to access table CUSTHEAD, which contains a customer group translator, CUSTXLA. CUSTXLA is used to key into table XLAMAP.

For a public call, table LTCALLS provides the line attribute index, LINEATTR, which is used to access table LINEATTR. LINEATTR contains a pretranslator name, PRTNM, which is used to key into table PXLAMAP.

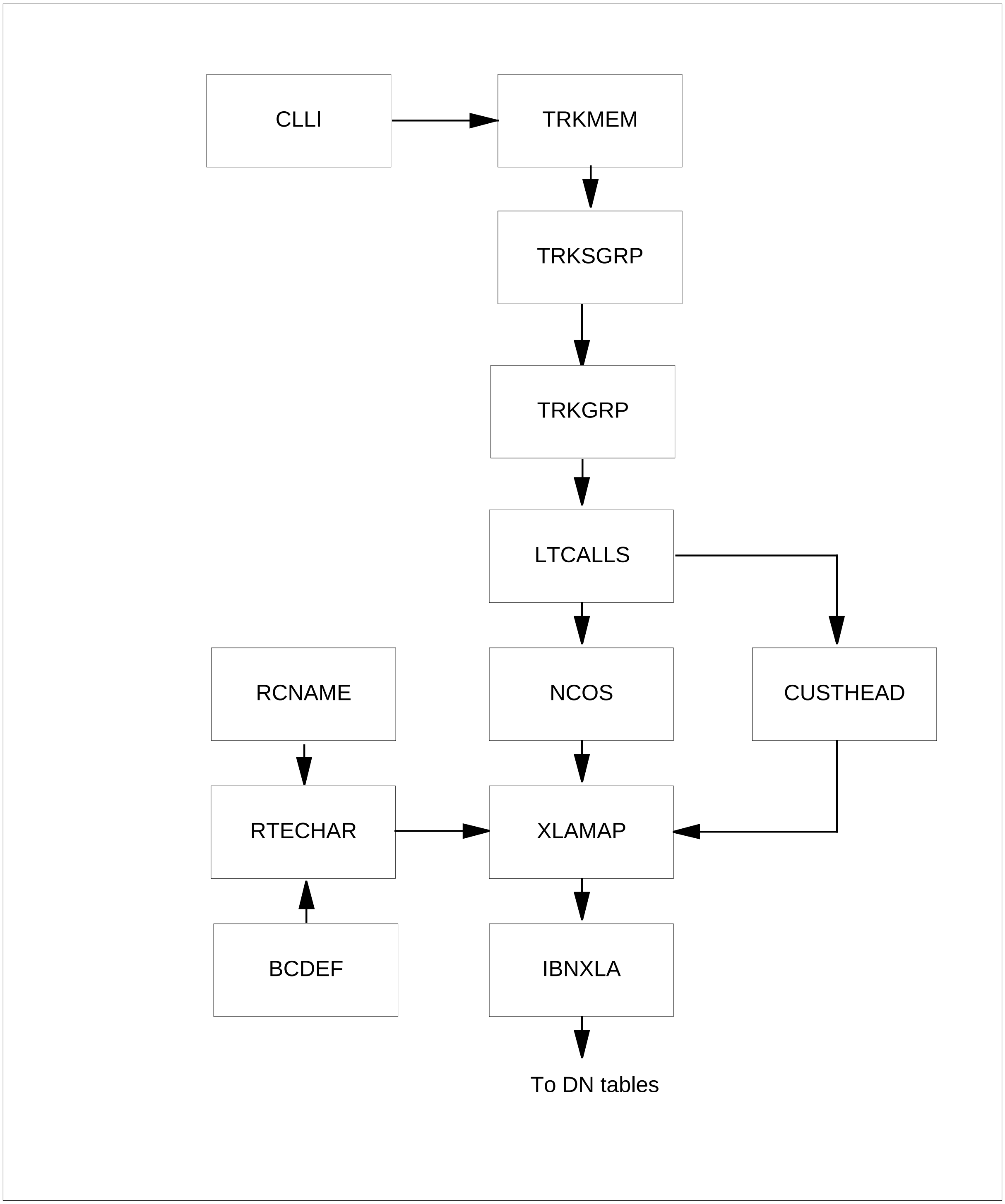
- Table RCNAME contains the valid routing characteristics names.
- Table BCDEF is accessed with the transmission characteristics from the SETUP message or call request packet, and provides the BCNAME which represents these characteristics.
- Table RTECHAR is accessed with the routing characteristics from the SETUP message and the BCNAME from BCDEF, and provides the RCNAME on which further routing is based. For a private call, the RCNAME is used with CUSTXLA from table CUSTHEAD (or PRELIMXLA from table NCOS) to key into table XLAMAP.

  For a public call, the RCNAME is used with PRTNM from table LINEATTR to key into table PXLAMAP. For a packet call, the RCNAME and the PRTNM from table TRKGRP access table PXLAMAP.
- Table XLAMAP may provide a new translator, typically for private calls, based on the original translator and the RCNAME. The new translator is used to access table IBNXLA, which begins standard translations.
- Table PXLAMAP may provide a new translator for public and packet calls, based on the original pretranslator and the RCNAME. The new pretranslator is used to access table STDPRTCT, which begins standard translations.
- Table STDPRTCT is accessed with the new pretranslator, and invokes subtable STDPRT.

The translation process for a circuit-switched, private call termination is shown in the flowchart that follows.

ISDN BRI Routing (continued)

Table flow for circuit-switched call terminations (private call)



ISDN BRI Routing (continued)

The following table lists the datafill content used in the flowchart. In this example, the called number is 55982, the NPI is PVT, and the bearer capability is 56KDATA.

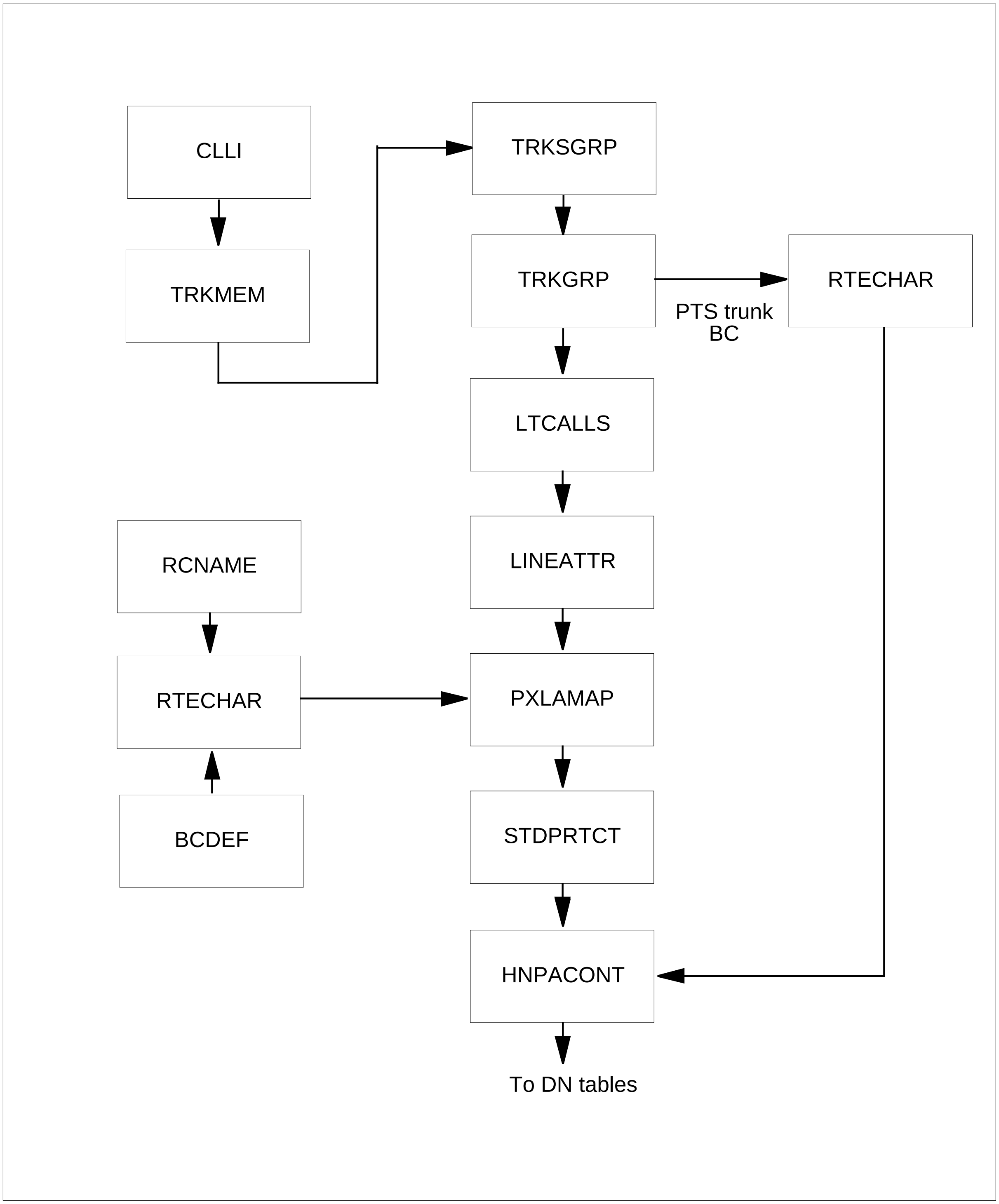
Datafill example for circuit-switched call terminations (private call)

Datafill table	Example data
RCNAME	56KDATA
RTECHAR	56KDATA BC 56KDATA $ $
TRKGRP	BNRPRAIC PRA 0 PRAC NCRT DSEQ N ISDN 501 $ $
LTCALLS	ISDN 501 PVT XLAIBN 0 IBNTST 0 0 $
CUSTHEAD	IBNTST NXLA TECXLA CXLA 0 TST1 $
XLAMAP	56KDATA TECXLA XLA CETXLA $
IBNXLA	CETXLA 5 EXTN Y Y Y 613 621 5 $
TOFCNAME	613 621
DNINV	613 621 5982 ILC WITS 2

The translation process for a circuit-switched, public call termination is shown in the flowchart that follows.

ISDN BRI Routing (continued)

Table flow for circuit-switched call terminations (public call)



ISDN BRI Routing (continued)

The following table lists the datafill content used in the flowchart. In this example, the called number is 4015213, the NPI is E164, and the bearer capability is 56KDATA.

Datafill example for circuit-switched call terminations (public call)

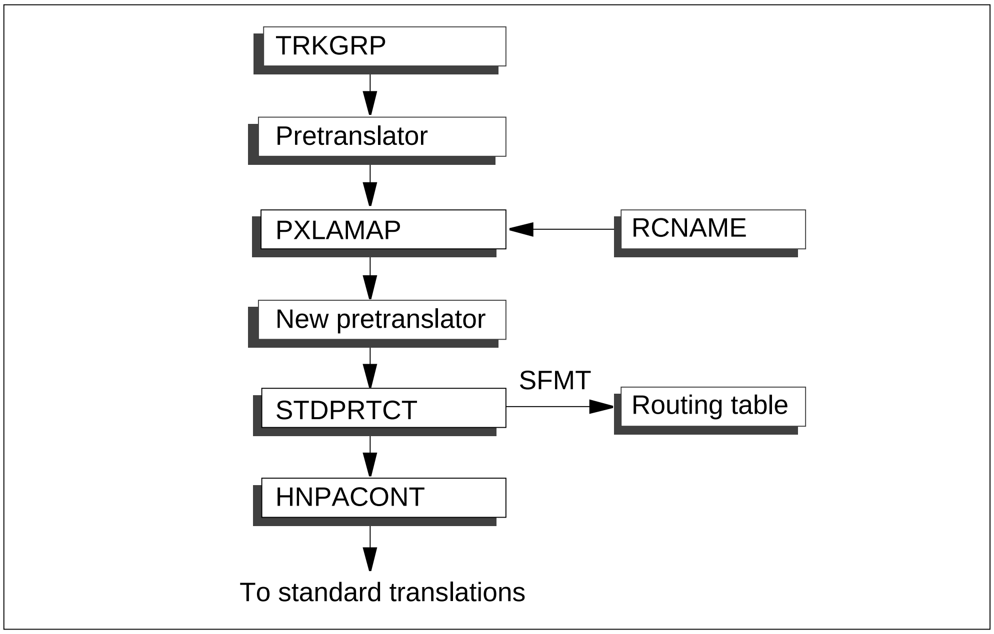
Datafill table	Example data
RCNAME	56KDATA
RTECHAR	56KDATA BC 56KDATA $ $
TRKGRP	BNRPRAIC PRA 0 PRAC NCRT DSEQ N LTID ISDN 501 $ $
LTCALLS	ISDN 501 PUB XLAIBN 0 IBNTST 0 0 $
LINEATTR	0 IFR NONE NT FR01 0 613 P600 L613 TSPS 10 NIL NILSFC LATA1 NIL NIL NIL 00 $
PXLAMAP	56KDATA P600 XLA P621 $
STDPRTCT	P621 1 0 0
STDPRT	40 410 N NP 0 NA
HNPACONT	613 710 2 39 1 0 2 0
HNPACODE	401 401 DN 613 722
TOFCNAME	613 722
DNINV	613 722 5213 ILC ISDN 40

Translations table flow for packet-switched call terminations

As shown in the following figure, the routing process for a packet-switched call terminating in the DMS-100 is very similar to that of a public circuit-switched call (illustrated in figure “BRI call terminations"). (Because the X.75 trunks used in the PPSN are public trunks, packet-switched calls are routed through the public translations tables.)

ISDN BRI Routing (continued)

Packet service terminations



The translations process is as follows:

1. Packet call terminations processing begins with table TRKGRP, which contains the pretranslator for the call. Because the call has an associated BC, table PXLAMAP is accessed with the pretranslator and the RCNAME to determine whether there is a new pretranslator based on bearer capability.
2. Table STDPRTCT is accessed with the pretranslator from table PXLAMAP (or from TRKGRP, if there is no datafill in PXLAMAP). Table STDPRTCT.STDPRT typically contains selector N, which routes the call to table HNPACONT. The tuple in HNPACONT provides the NPA and office code required to terminate the call on the appropriate DN.
3. When the incoming call is an X.121 call indicated by an escape code (usually 0), selector SFMT in table STDPRTCT.STDPRT can be used to switch address formats and redirect the call, either to a routing table (SFMT and selector R) or to another pretranslator (SFMT and selector X). Selector R is typically used to route the call to a trunk, and selector X is typically used to terminate the call on a DN.

   When the DMS-100 switch is being used as a transit switch, the call is typically sent from table STDPRTCT.STDPRT to a routing table, where it is routed to an outgoing trunk. When the incoming call is to terminate on a DN in the switch, the SFMT translator is used to switch to the E.164 address format and route the call to another pretranslator in table

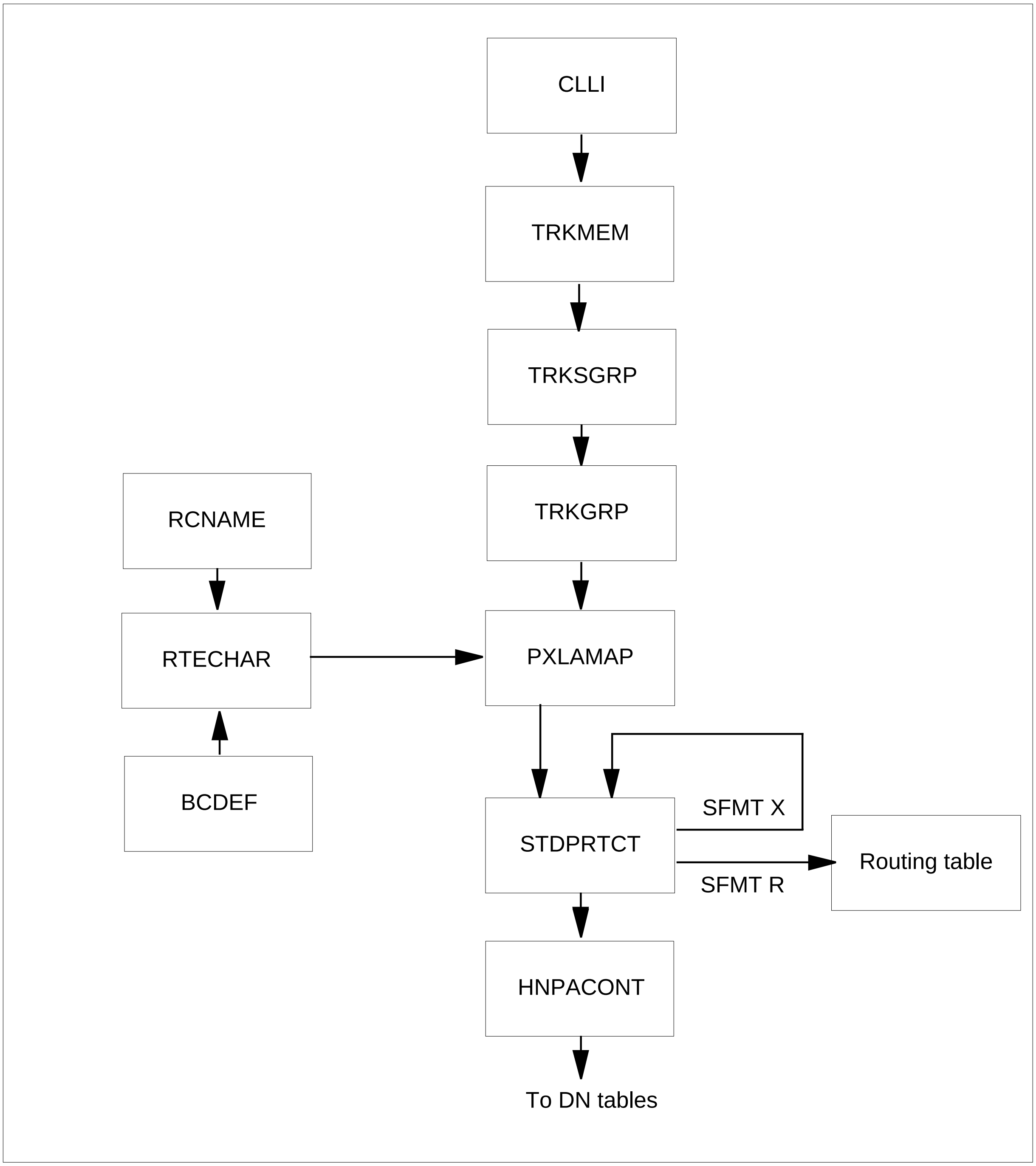
ISDN BRI Routing (continued)

STDPRTCT.STDPRT. From that point, the standard translations process routes the call to the DN.

The translation process for a packet-switched call termination is shown in the flowchart that follows.

ISDN BRI Routing (continued)

Table flow for packet-switched call terminations



ISDN BRI Routing (continued)

The following table lists the datafill content used in the flowchart. In this example, the called number is 019037530250, and the bearer capability is 64KX25.

Datafill example for packet-switched call terminations

Datafill table	Example data
RCNAME	PACKET
RTECHAR	PACKET BC 64KX25 $ $
TRKGRP	IECX12156 X75 0 NPDGP NCRT CWCTH X121 903 312 001 N
STDPRTCT	X121 1 0
STDPRT	0 0 SFMT 0 15 1 X E164 002
STDPRTCT	E164 1 0
STDPRT	1 1 N DD 1 NA
HNPACONT	002 30 1 2 1 0 0
HNPACODE	903 903 HNPA 0
	753 753 DN 903 753
TOFCNAME	903 753
DNINV	903 753 0250 L ISDN 220

Translations table flow for circuit-switched call originations

When a call originates at a BRI terminal in the DMS-100 switch, it is routed to an outgoing trunk based on the switch datafill. The originating terminal sends a SETUP message to the switch, which uses the information elements to begin routing the call. The SETUP message is analyzed in the same manner as is an incoming SETUP message for a call termination. During the translations and routing process, more routing characteristic information is collected, and a second SETUP message containing this information is generated when the call goes out on a PRI trunk to another node.

Routing the call

The following figure is a flow diagram which shows a simplified translations process for call originations. The translations process is as follows:

1. The call begins in the standard translations tables and proceeds towards standard routing tables. However, as the SETUP message identifies the

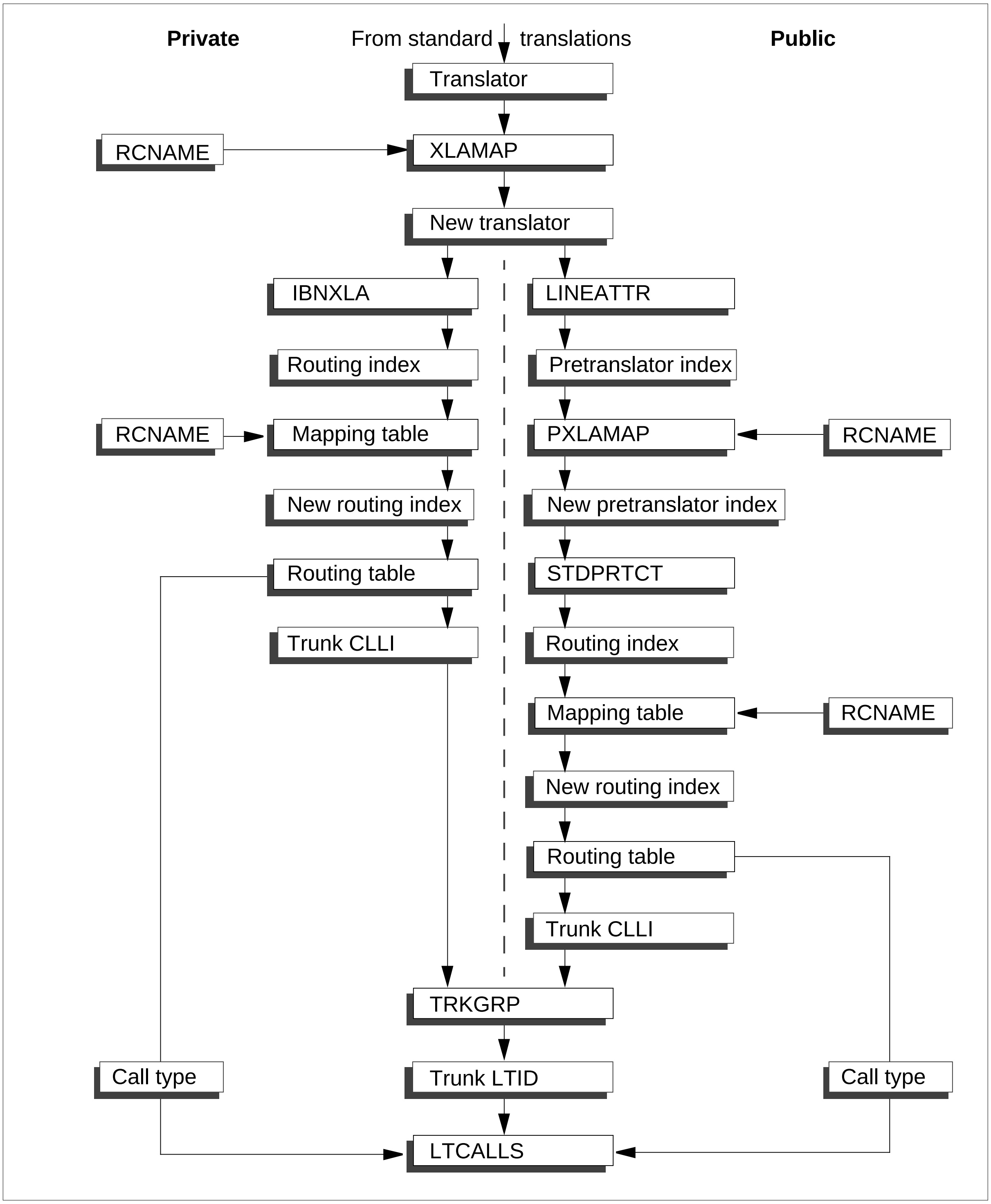
call as having bearer capability, table XLAMAP is accessed before any routing tables.

2. Table XLAMAP is accessed with the original translator name derived from standard translations and the RCNAME obtained from table RTECHAR. It is checked for a new translator to enable alteration of the route based on bearer capability.
3. For a private call, the translator from XLAMAP (or the original translator, if there is no datafill in table XLAMAP) is used to access table IBNXLA, which provides an index to a routing table (IBNRTE or OFRT).
4. Before accessing the routing table for private call processing, a mapping table (IBNMAP or OFRTMAP) is checked for a new route based on bearer capability. The mapping table is accessed with the routing index from table IBNXLA and the RCNAME, and may provide a new index to the routing table.
5. For a public call, table XLAMAP provides a line attribute index to table LINEATTR. Table LINEATTR provides a pretranslator index to table STDPRTCT. Before accessing table STDPRTCT, table PXLAMAP is accessed with the pretranslator index and the RCNAME, and checked for a new pretranslator index based on bearer capability.
6. The pretranslator index is used to access table STDPRTCT, which contains an index to routing table HNPACONT.RTEREF. Before table HNPACONT.RTEREF is accessed, mapping table HNPACONT.RTEMAP is checked for a new routing index based on bearer capability.
7. For both private and public calls, the routing table is accessed with the new index from the mapping table (or the original index, if there is no datafill in the mapping table). The routing table uses the ISA selector to route the call, specifying the trunk CLLI, the call type, the NPI, and a digit manipulation index.
8. Table TRKGRP is accessed with the CLLI from the routing table, and provides the LTID assigned to the trunk. With the LTID and the call type (from the routing table), table LTCALLS is accessed. If a tuple is found in table LTCALLS for the LTID and call type, the call is allowed to go through to a PRI trunk.
9. The call is routed to the trunk specified in table IBNRTE, and a SETUP message is generated.

Note: An RCNAME can also be datafilled in the routing tables (IBNXLA, IBNRTE, OFRT, and HNPACONT.RTEREF) to enable retranslations based on routing characteristics.

ISDN BRI Routing (continued)

BRI call originations



Generating the SETUP message

When the DMS-100 switch generates a SETUP message for an originating BRI call, the CDN and BC data is derived from the original SETUP message from the terminal. (The CDN is altered during the translations and routing process, if necessary.) The NPI information for the message is obtained from the routing table for both private and public calls.

In the case of a private call, another information element, the network specific facilities (NSF) is generated. The NSF contains the call type and an optional service identifier, and is typically used for FX, TIE, and WATS calls. For private calls, an NSF of PRVT (private) is generated, but is typically not used at the terminating node.

Processing of a BRI call origination begins with table KSETLINE, and continues through the standard translations tables. Ordinarily, the process continues to standard routing tables, but when there is a bearer capability associated with the call, table XLAMAP is accessed first.

Circuit-switched call origination translations tables

The circuit-switched call origination translations tables are described in the following list.

- Table XLAMAP is accessed with the original translator and the RCNAME associated with the call. For a private call, table XLAMAP may provide a new translator to access table IBNXLA. The tuple in table IBNXLA specifies an index to a routing table (IBNRTE or OFRT).

  For a public call, table XLAMAP provides a line attribute index, LNATTIDX, to table LINEATTR, which contains a pretranslator index, PRTNM, to table STDPRTCT.
- Table RCNAME contains the valid routing characteristics names.
- Table BCDEF is accessed with the transmission characteristics from the SETUP message, and provides the BCNAME which represents these characteristics.
- Table RTECHAR is accessed with the routing characteristics from the SETUP message and the BCNAME from BCDEF, and provides the RCNAME on which further routing is based.
- Table PXLAMAP may be used in public and packet call translations to alter the route for an ISDN call. It is accessed with the RCNAME associated with the call and the standard pretranslator name from table LINEATTR, and provides a new pretranslator index to table STDPRTCT. Table STDPRTCT contains an index to table HNPACONT, which calls routing subtable RTEREF.

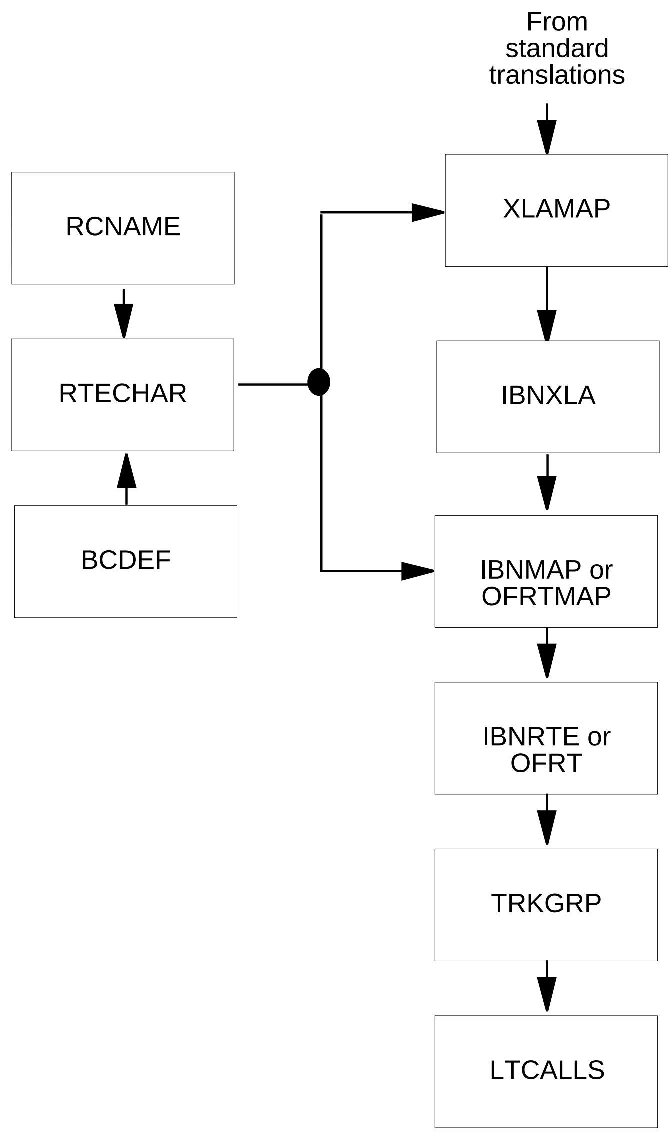
ISDN BRI Routing (continued)

- Table IBNMAP or OFRTMAP is accessed (for private calls) before the routing table to check for a new route based on bearer capability. The key to the mapping table is the routing index from IBNXLA and the RCNAME. The mapping table may provide a new index to the routing table.
- Subtable RTEMAP is accessed (for public and packet calls) through table HNPACONT with the routing index from table STDPRTCT and the RCNAME, and may provide a new index to routing subtable RTEREF based on bearer capability.
- Table IBNRTE, OFRT, or HNPACONT.RTEREF uses the ISA selector to route circuit-switched calls. The routing table defines the CLLI of the trunk to which the call is to be routed, and specifies the call type and the NPI, which is mapped to the SETUP message created for the call.

  For circuit-switched calls, table TRKGRP is accessed with the trunk CLLI from the routing table, and provides the LTID assigned to the PRI trunk. The LTID is used to access table LTCALLS.
- Table LTCALLS is accessed with the trunk group LTID and the call type from the routing table. If a tuple is found for the LTID and call type, the call is allowed to go through. The call is routed to the specified trunk, and a SETUP message is generated containing the number digits, the NPI defined in the routing table, an NSF for private calls, and the bearer capability.

The translation process for a circuit-switched, private call origination is shown in the flowchart that follows.

Table flow for circuit-switched call originations (private call)



ISDN BRI Routing (continued)

The following table lists the datafill content used in the flowchart. In this example, the called number is 15983, the calling number is 6215982, the NPI is PVT, and the bearer capability is 56KDATA.

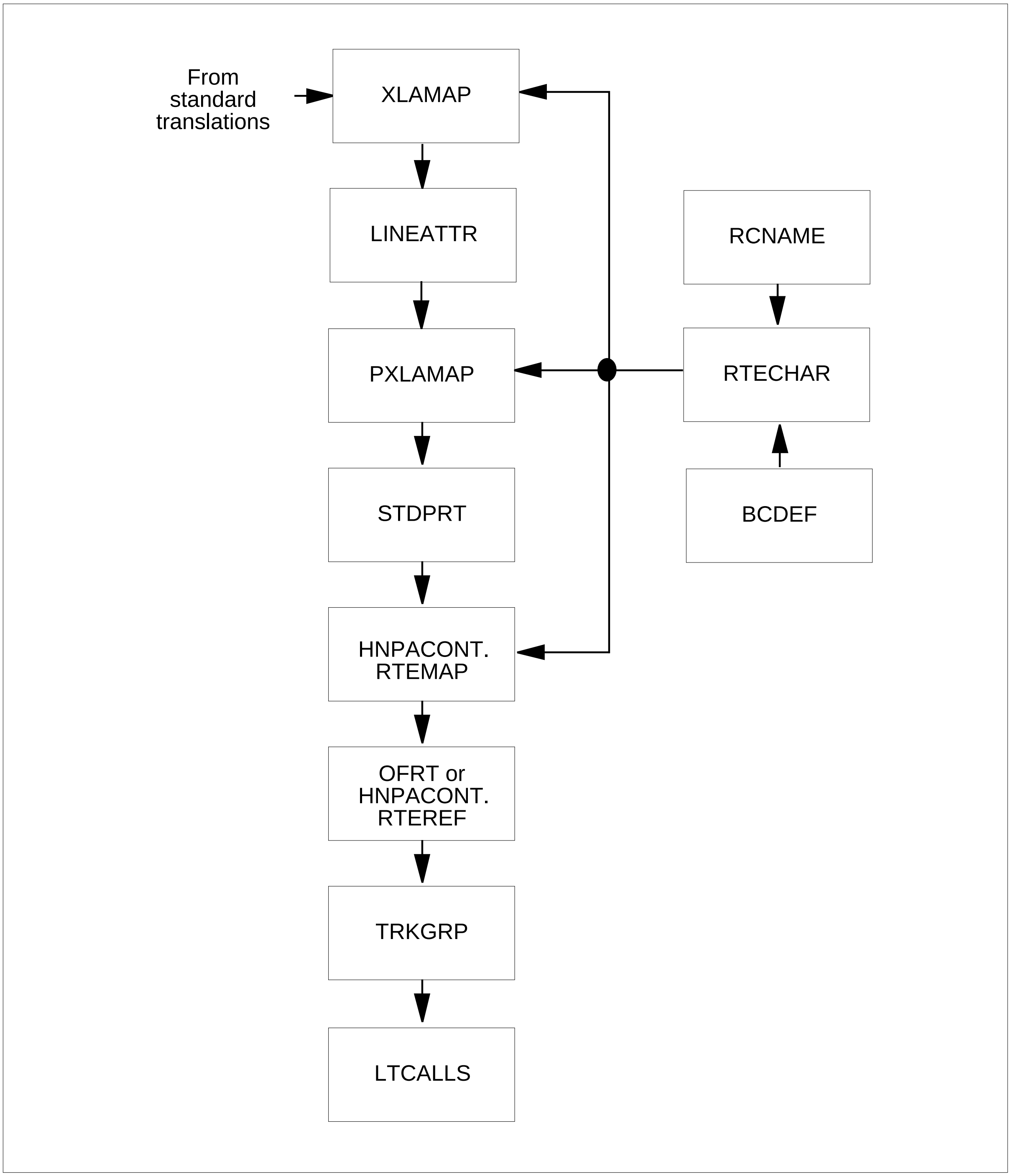
Datafill example for circuit-switched call originations (private call)

Datafill table	Example data
RCNAME	56KDATA
RTECHAR	56KDATA BC 56KDATA $ $
KSETLINE	WITS 2 1 DN Y 6215982 IBNTST 0 0 613 RAG LNR SFC CFX $
NCOS	IBNTST 0 0 0 TST10 XLAS CXT1 RXCFN NDGT OHQ 0 TONE_OHQ CBQ 0 1 Y 2 $
CUSTHEAD	IBNTST NXLA CXT3 RXCFN 0 TST1
XLAMAP	56KDATA CXT3 XLA CXT2 $
IBNXLA	CXT2 1 ROUTE N Y N 1 N 2 18 POTS N T IBNRTE 800
IBNMAP	56KDATA 800 700
IBNRTE	700 ISA N N N BNRPRAOG PVT 0 PVT 15 $
TRKGRP	BNRPRAOG PRA 0 PRAC NCRT ASEQ N ISDN 500 $ $
LTCALLS	ISDN 500 PVT XLAIBN 0 IBNTST 0 0 $

The translation process for a circuit-switched, public call origination is shown in the flowchart that follows.

ISDN BRI Routing (continued)

Table flow for circuit-switched call originations (public call)



ISDN BRI Routing (continued)

The following table lists the datafill content used in the flowchart. In this example, the called number is 99605983, the calling number is 6215982, the NPI is E164, and the bearer capability is 56KDATA.

Datafill example for circuit-switched call originations (public call)

Datafill table	Example data
RCNAME	56KDATA
RTECHAR	56KDATA BC 56KDATA $ $
KSETLINE	WITS 2 1 DN Y 6215982 IBNTST 0 0 613 RAG LNR SFC CFX $
NCOS	IBNTST 0 0 0 TST1 (XLAS CXT1 RXCFN NDGT) (OHQ 0 TONE_OHQ) (CBQ 0 1 Y 2) $
CUSTHEAD	IBNTST NXLA CXT3 RXCFN 0 TST1
DIGCOL	TST1 9 POTS Y
XLAMAP	56KDATA CXT3 LINEATTR 0 $
LINEATTR	0 1FR NONE NT FR01 0 613 P601 L613 TSPS 10 NIL NILSFC LATA1 NIL NIL NIL 00 $
PXLAMAP	56KDATA P601 XLA P621 $
STDPRTCT	P621 1 0 0
STDPRT	66 69 N NP 0 NA
HNPACONT	613 710 2 39 1 0 2 0
HNPACODE	660 660 LRTE 13
RTEMAP	56KDATA 13 710
RTEREF	710 T ISA N N N BNRPRAOG PUB NONE N N 20
TRKGRP	BNRPRAOG PRA 0 PRAC NCRT ASEQ N ISDN 800 $ $
LTCALLS	ISDN 800 PUB XLAIBN 0 IBNTST 0 0 $

Translations table flow for packet-switched call originations

When a call originates at a BRI packet terminal, it is typically routed to an outgoing trunk based on the switch datafill. This process typically requires the following steps:

- analyzing the call request packet
- routing the call
- determining the outgoing trunk

Analyzing the call request packet

The call request packet generated by a BRI packet terminal contains

- the calling party address
- the called party address
- optionally, a code specifying a registered private operating agency (RPOA)

For call addresses, calls in the packet service environment use either the standard public ISDN addressing system, known as E.164, or the addressing system used in the public packet-switched network (PPSN), known as X.121.

E.164 addressing system The E.164 addressing system used in North America has the following format:

CC-NPA-NXX-XXXX

The components of the E.164 addressing system are explained in the following table.

E.164 addressing system (Sheet 1 of 2)

Component	Explanation
CC	Country code is a one- to three-digit code used to identify a country. The world is divided into 9 zones (North America is zone 1, Africa is zone 2, Europe is zones 3 and 4...). The first digit of the country code identifies the zone to which the country is assigned. Any other digits identify the country. For example, the United Kingdom is in Europe (zone 4) and is country 4 in that zone; therefore, its country code is 44. All North America has the same country code: 1.
NPA	Number plan area is a three-digit code that defines the geographical regions within a country. The NPA is commonly called the area code.
Note: The maximum number of digits permitted in an E.164 address is 15.	

ISDN BRI Routing (continued)

E.164 addressing system (Sheet 2 of 2)

Component	Explanation
NXX	A three-digit code that identifies the serving central office.
XXXX	A four-digit code that identifies a line or terminal within the central office.
Note: The maximum number of digits permitted in an E.164 address is 15.	

To address the called party, the digits of the address may be prefixed by digits that specify the type of call request. For example, the digit 1 indicates a direct dial national call, while the digits 011 indicate a direct dial international call. The prefix digit 9 is typically datafilled as the public network access code for E.164 addressing. (Operator assistance, requested for voice calls by the prefix digits 0 or 01, is not applicable to data calls.)

For example, the following E.164 formats are used for different types of calls:

- NXX-XXXX—a seven-digit subscriber number is used for a local call
- 1-NXX-XXXX or 1-NPA-NXX-XXXX
  - — 1 plus a seven-digit number is used for long distance calls within the originating terminal's NPA
  - — 1 plus a ten-digit number is used for long distance calls outside the originating terminal's NPA
- 011-CC-NPA-NXX-XXXX—011 followed by the country code and the national number, which in North America takes the form NPA-NXX-XXXX, is used for an international call

X.121 addressing system The X.121 addressing system has the following format:

DNIC-NTN

ISDN BRI Routing (continued)

The components of the X.121 addressing system are explained in the following table.

X.121 addressing system

Component		Explanation
DNIC		Data network identification code is a 4-digit network identifier. The first three digits represent a country code. The last digit represents a network number. ***Note:*** A country can have more than one country code if the number of networks in the country exceeds nine.
NTN		National terminal number is a 10-digit code with the format DNPA-DCO-XXXX.
	DNPA	Data numbering plan area is 3-digit code equivalent to the area code in the E.164 address system.
	DCO	A 3-digit code that identifies the data network central office.
	XXXX	A 4-digit code that identifies a line or terminal within the central office.
Note: The maximum number of digits permitted in an X.121 address is 14 plus the escape digit 0.		

To address the called party, a subscriber specifies the type of call request by dialing a prefix digit. A subscriber accesses the X.121 PPSN by prefixing the call with the digit 0. An example of a dialed number with the prefix 0 followed by the X.121 address format is:

0-DNIC-NTN

RPOA Selection Table LATAXLA (Local Access and Transport Area Translations) defines the attributes of calls as intra-LATA or inter-LATA, and intrastate or interstate. Calls that originate and terminate in the same local access and transport area (LATA) are intra-LATA calls. Calls that originate from one LATA and terminate in another are inter-LATA calls. If table LATAXLA determines that a call is inter-LATA, the assignment of a registered private operating agency (RPOA) is necessary.

The code of an RPOA is the 4-digit DNIC of an interexchange carrier. To select an interexchange carrier, subscribers can dial the RPOA code before the number. If the subscriber does not dial the RPOA, table DNCTINFO provides the RPOA code. Table DNCTINFO (Directory Number Call Type Information) stores the preselected service data for the subscriber. The Service Order System (SERVORD) provides datafill content in table DNCTINFO. As translations continue, the RPOA code becomes part of the RPOA selection utility of the call request packet.

Routing the call

The routing process for a packet-switched call origination is very similar to that of the circuit-switched call originations (illustrated in figure “BRI call originations"). Like all BRI calls, packet call translations begin with the private (IBN) tables, but because the X.75 trunks used in the PPSN are public trunks, table IBNXLA typically routes packet-switched calls through the public translations tables. The translations process differs according to the type of packet call: E.164 or X.121.

E.164 calls The translations process for E.164 calls is as follows:

1. Translations of a packet call begins in the standard translations tables. The E.164 translations process is identical to the process of a call origination on a circuit-switched network until table IBNXLA.
2. In table IBNXLA, the call routes with selector NET with option GEN to the public translations tables, beginning with table LINEATTR. Selector SFMT used with option R routes the call out of the packet handler to a routing table.
3. From table LINEATTR, the E.164 translations process is identical to the process of a call on a circuit-switched network until the routing table. The mapping table provides the index to the routing table (or the original index, if there is no datafill in the mapping table). The routing table normally contains selector S and identifies the CLLI of the trunk for the outgoing call.

X.121 calls The translations process for X.121 calls is as follows:

1. Translations of a packet call begins in the standard translations tables. The X.121 translations process is identical to the process of a call origination on a circuit-switched network until table IBNXLA.
2. In table IBNXLA, the prefix digit 0 indicates that the call is X.121, and selector SFMT switches the address format. Selector SFMT with option X continues digit analysis by routing the call to table LINEATTR. Selector SFMT with option R routes the call out of the DMS-PH to a PPSN gateway to continue translations.
3. From table LINEATTR, the X.121 translations process is identical to the process of a call on a circuit-switched network until table STDPRTCT. Table STDPRTCT.STDPRT conducts the actual pre-translations of the call. Table STDPRTCT.STDPRT screens for control digits and identifies the next translations stage. If the DNIC is enough to route the call, selector T directs the call to a routing table. The routing table identifies

the CLLI of the trunk for the outgoing call. If the operating company must translate digits beyond the DNIC, selector F can route the call to another pretranslator table. Selector F has recursive functionality within table STDPRTCT.STDPRT to allow continued digit analysis.

Determining the outgoing trunk

With one exception, the process to determine the outgoing trunk is identical for E.164 calls and X.121 calls. E.164 calls are different in that translations access table LCASCRN to determine if the call is local. The serving translation scheme (STS) of the call (which is normally the NPA) accesses table LCASCRN. Local calls route to the trunk CLLI identified in the previous routing table, and the call terminates. If the call is not local, translations index to table LATAXLA. Table LATAXLA determines the local access and transport (LATA) state of a call. During translations, X.121 calls do not access table LCASCRN. X.121 translations continue with table LATAXLA.

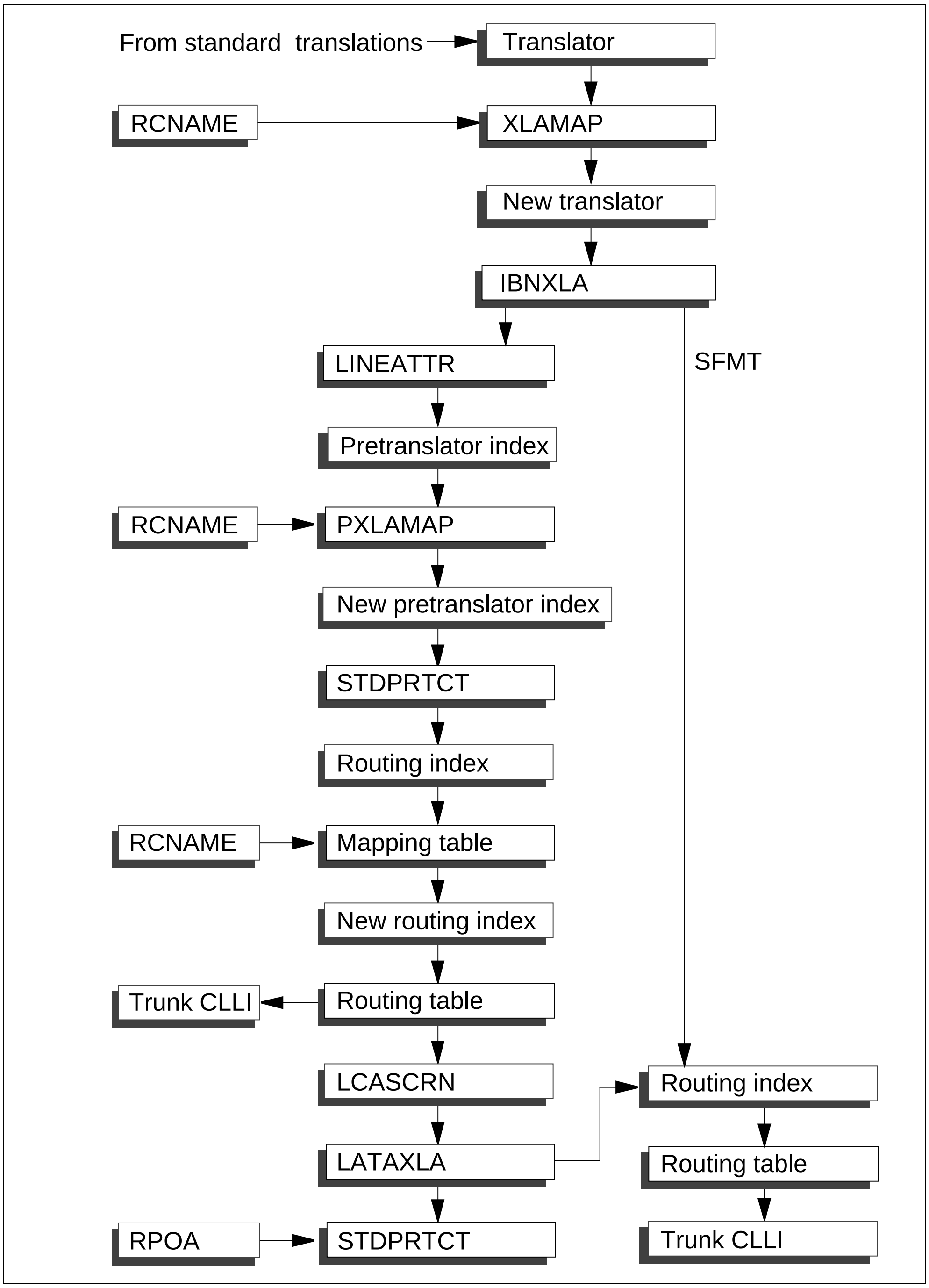
For both E.164 and X.121 calls, the LATA from table LINEATTR and the dialed digits index to table LATAXLA. A comparison of the datafill in the table to the LATA and dialed digits indicates one of the following:

- If the call is intra-LATA, RPOA indexing is not necessary. The call routes to the CLLI of the trunk from the previous routing table, and the call completes.
- If the call is inter-LATA, an RPOA route is necessary, and the call routes to table STDPRTCT. Table STDPRTCT and STDPRTCT.STDPRT map the RPOA to a new route. If the subscriber dialed the RPOA code, the code becomes part of the RPOA selection utility of the call request packet. Translations then continue to an office routing table. If the subscriber does not dial the RPOA code, table DNCTINFO provides the code. (SERVORD provides datafill content for table DNCTINFO.) The RPOA code then becomes part of the RPOA selection utility of the call request packet. After RPOA selection, a routing table provides a new route based on RPOA translations. Before the call completes, translations discards the previous trunk CLLI.

Note: The following figure shows the table flow for general translations of call originations on a packet-switched network. Translations tables specific to E.164 calls and X.121 calls are explained on the following pages.

ISDN BRI Routing (continued)

Packet service originations



E.164 call origination translations tables

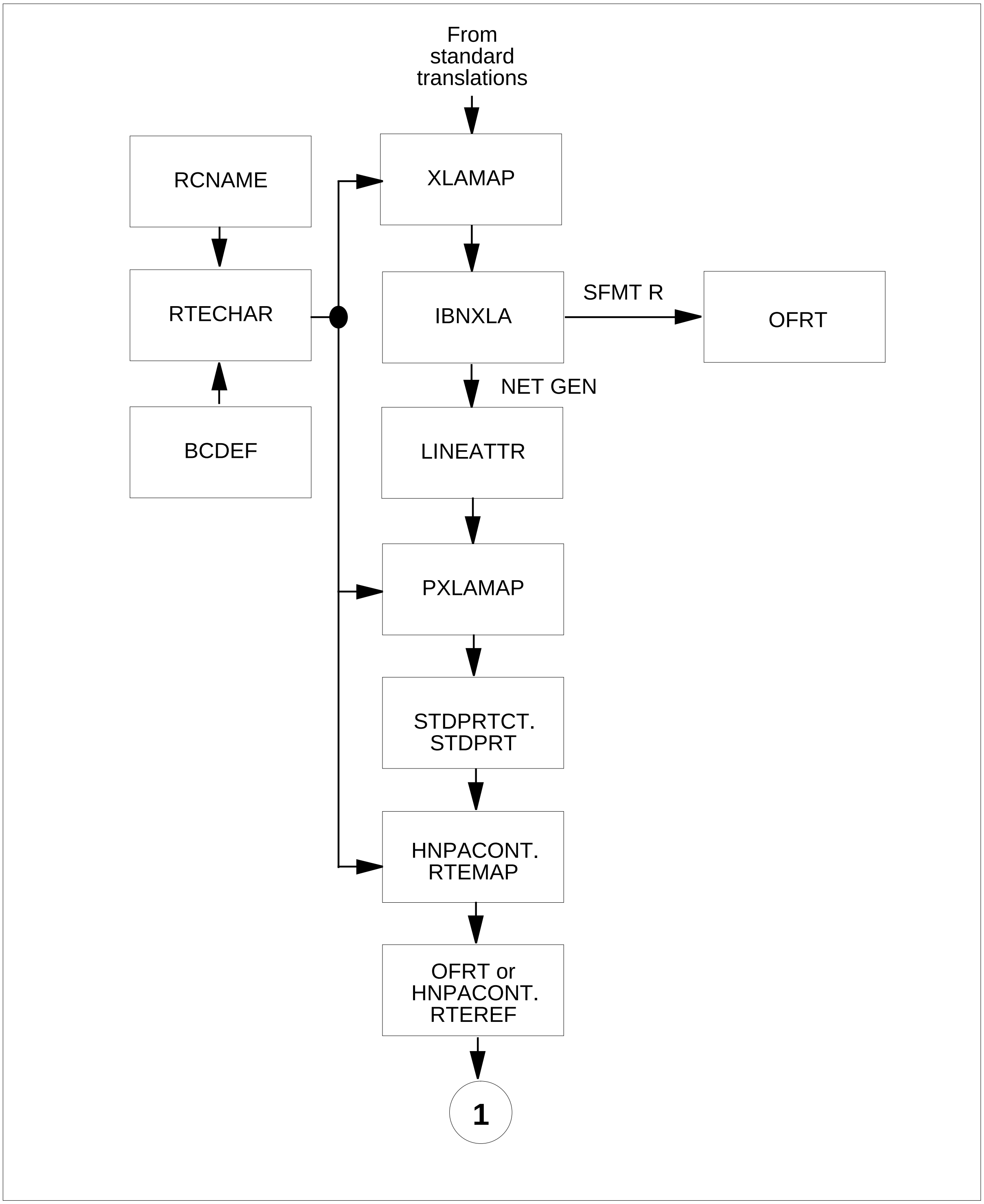
The following list describes the translations table flow for E.164 calls:

- Table XLAMAP provides a new translator to access table IBNXLA. In table IBNXLA, selector NET with option GEN routes the call to table LINEATTR. Selector SFMT used with option R routes the call out of the packet handler to a routing table. Standard translations continue to the routing table.
- Table OFRT or HNPACONT.RTEREF defines the trunk CLLI to which the call routes. Selector S in the routing tables identifies a trunk for the outgoing call.
- Table LCASCRN determines if the call is local. If the call is local, the call routes to the outgoing trunk CLLI identified in the previous routing table. If the call is not local, translations index to table LATAXLA.
- Table LATAXLA determines the LATA state of the call. If the call is intra-LATA, RPOA indexing is not necessary. The call then completes on the outgoing trunk CLLI from the previous routing table. If the call is inter-LATA, an RPOA route is necessary, and the call routes to table STDPRTCT.
- Table STDPRTCT and table STDPRTCT.STDPRT map the RPOA to a new route. If the subscriber does not dial an RPOA code, table DNCTINFO provides the RPOA code.
- Table OFRT provides a new route based on RPOA translations, and the call completes.

The following flowchart shows the translations process for E.164 call originations.

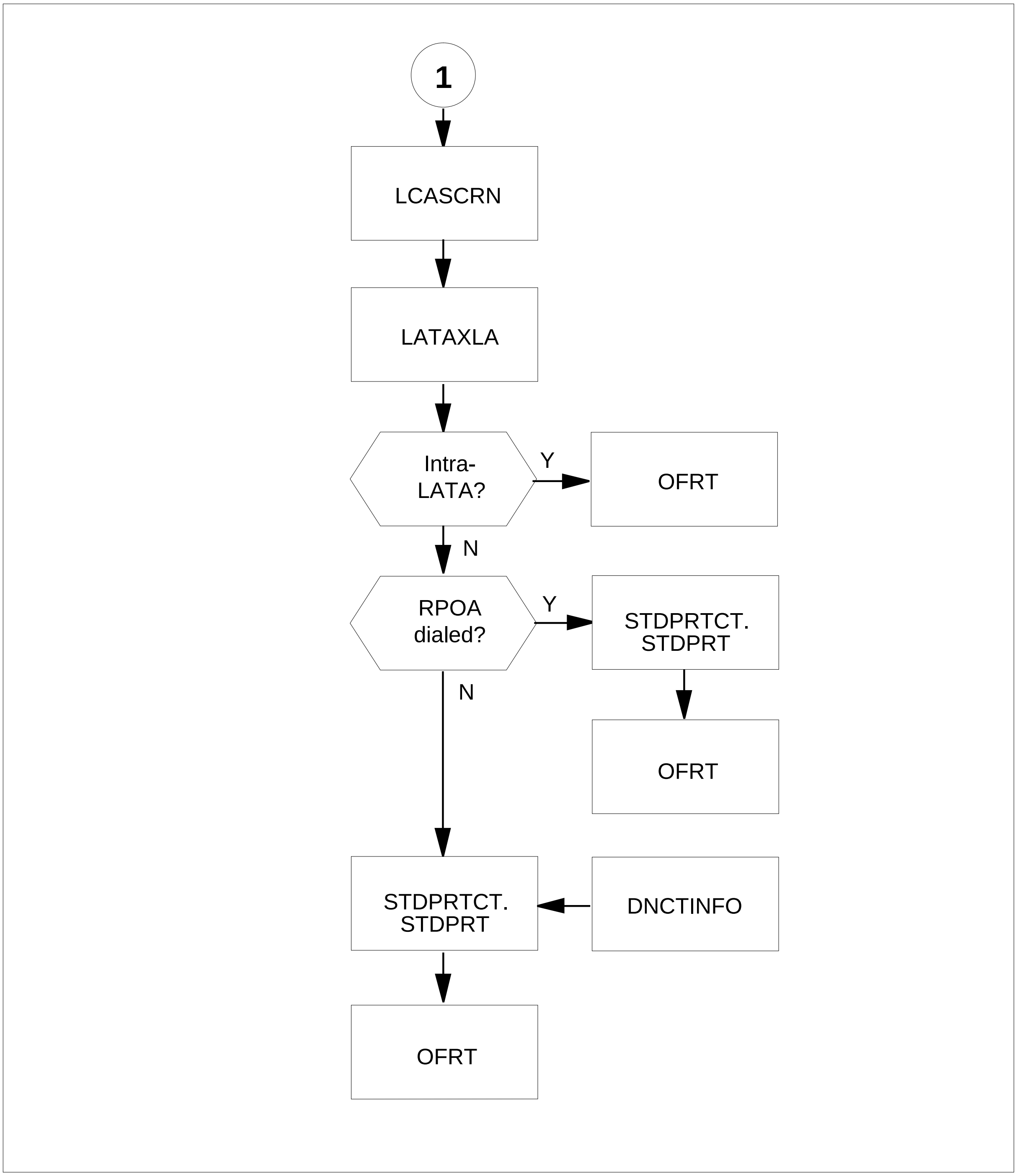
ISDN BRI Routing (continued)

Table flow for E.164 call originations



ISDN BRI Routing (continued)

Table flow for E.164 call originations (continued)



ISDN BRI Routing (continued)

The following table lists the datafill content used in the flowchart. In this example, the called number is 915397772, the calling number is 722-7000, the bearer capability is 64KX25, and the RPOA is 1234.

Datafill example for E.164 call originations

Datafill table	Example data
RCNAME	PACKET
RTECHAR	PACKET BC 64KX25 $ $
KSETLINE	HOST 00 0 03 24 1 DN Y 7227000 COMPEER 0 0 613 $
NCOS	COMPEER 0 0 0 KDK0 (OHQ 0 TONE_OHQ) (CBQ 0 3 N 2)$
CUSTHEAD	COMPEER NXLA CXDK NXLA 0 NDGT
LINEATTR	300 IBN NONE NT FR01 0 888 PKT L613 N NONE N 0 NIL NILSFC LATA10 NIL NIL 23 N
PXLAMAP	PACKET PKT (XLA PKT2) $
IBNXLA	PKT 9 NET N N N 1 N NDGT N N GEN (LATTR 300) $
STDPRTCT	PKT2 1 0
STDPRT	1 1 N DD 1 NA
HNPACONT	888 99 1 2 1 0 0
HNPACODE	539 539 FRTE 10
RTEMAP	PACKET 10 20
RTEREF	20 S N N Y ODGP
LCASCRN	888 L613 1 MNDT N
LATAXLA	LATA1 613539 INTER INTRA STD
STDPRTCT	RPOA 1 0
STDPRT	1234 1234 T DD OFRT 100 4 4 NONE
OFRT	100 S D IEC1234

X.121 call origination translations tables

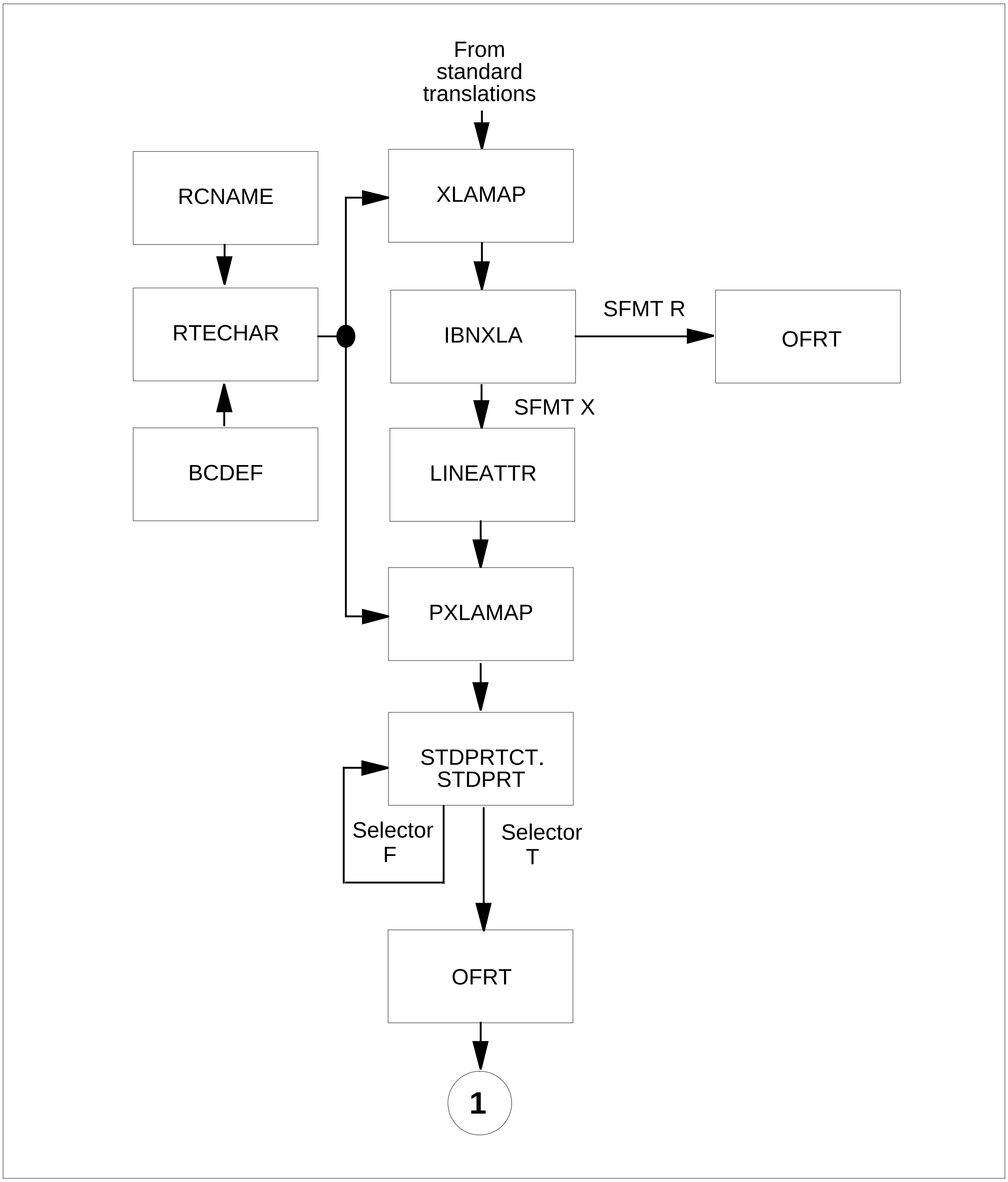
The following list describes the translations table flow for X.121 calls:

- Table IBNXLA translates the call or routes the call out of the packet handler. Selector SFMT switches the address format to X.121. Selector SFMT with option X continues digit analysis by routing the call to table LINEATTR. Selector SFMT with option R routes the call out of the DMS-PH to a routing table.
- Selector T in table STDPRTCT.STDPRT translates only the DNIC of the call. Translations then continue to a routing table. If the operating company must translate digits beyond the DNIC, selector F can route the call to another pretranslator table.
- Table OFRT identifies the CLLI of the trunk to which the call routes.
- Table LATAXLA determines the LATA state of the call. If the call is intra-LATA, RPOA indexing is not necessary. The call then completes on the outgoing trunk CLLI from the previous routing table. If the call is inter-LATA, an RPOA route is necessary, and the call routes to table STDPRTCT.
- Table STDPRTCT and table STDPRTCT.STDPRT map the RPOA to a new route. If the subscriber does not dial an RPOA code, table DNCTINFO provides the RPOA code.
- Table OFRT provides a new route based on RPOA translations, and the call completes.

The following flowchart shows the translations process for X.121 call originations.

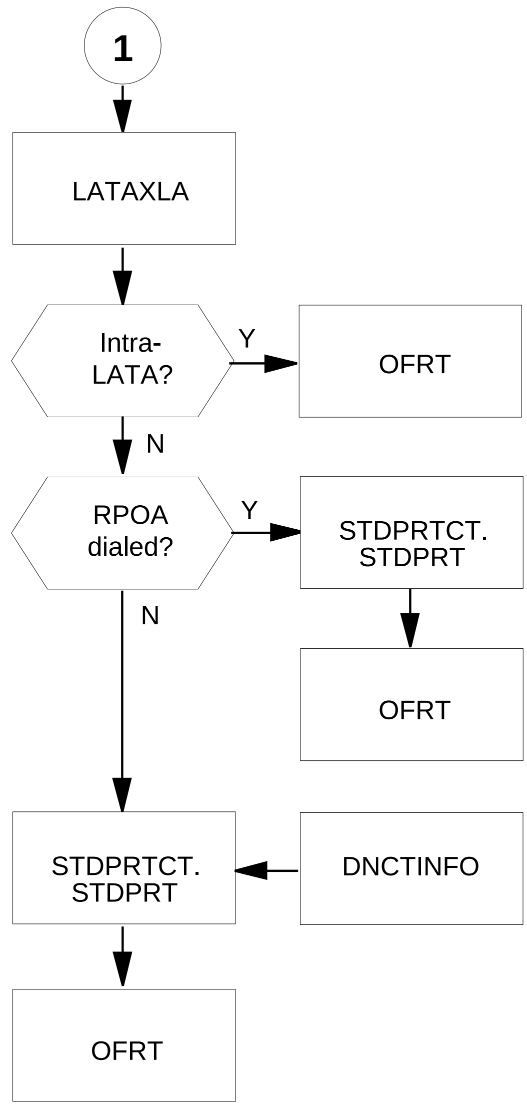
ISDN BRI Routing (continued)

Table flow for X.121 call originations



ISDN BRI Routing (continued)

Table flow for X.121 call originations (continued)



ISDN BRI Routing (continued)

The following table lists the datafill content used in the flowchart. In this example, the called number is 051686137238404, the bearer capability is 64KX25, and the preselected RPOA is 1235.

Datafill example for X.121 call originations

Datafill table	Example data
BCDEF	64KX25
RCNAME	PACKET
KSETLINE	PKT 201 1 DN N 7238201 BNR 0 0 613 $ BRI PMD
NCOS	BNR 0 0 0 UNREST (XLAS BNRXLA FEATXLA BNRDIG)$
CUSTHEAD	BNR NXLA BNRXLA FEATXLA 1 BNRDIG
RTECHAR	PACKET (BC 64KX25 $)$
XLAMAP	PACKET BNRXLA (XLA PKT)$
IBNXLA	PKT 0 SFMT 1 15 1 X 81
LINEATTR	81 IBN NONE NT NSCR 1 613 X121 NLCA NONE 0 NIL NILSFC LATA1 0 NIL NIL 12 N $
STDPRTCT	X121 (1) (0) 2
STDPRT	5168 5168 T DD 0 OFRT 50 2 14 NONE
OFRT	50 N D PKTOUTX121A 3 N N
LATAXLA	LATA1 05168 INTER INTER STD
STDPRTCT	RPOA (1) (65021) 0
STDPRT	1235 1235 T DD 0 OFRT 50 2 14 NONE
OFRT	50 N D PKTOUTX121B 3 N N

Limitations and restrictions

The following limitations and restrictions apply to ISDN BRI Routing:

- The datafilled BC capability is provided only for incoming or two-way trunks. It does not affect outgoing trunks, except that the datafilled BC is listed in the outgoing initial address message (IAM) for ISUP trunks.
- The datafilled BC capability applies only to PTS trunks. (For any non-datafilled trunk group types, the office default BC applies.) Even if a PRI or ISUP trunk is datafilled with a BC, it is ignored. If a trunk group

with both PTS and non-PTS trunk subgroups is datafilled with a BC, it applies only to the PTS subgroup, not to the non-PTS subgroup.

- Packet-switched X.121 call originations do not support full digit analysis and translations for X.75 tandem calls.

Billing

Bearer Capability Routing affects billing as follows: if the BC option is datafilled against the customer group in table CUSTSMDR, an SMDR extension record is generated identifying the type of bearer capability.

ISDN BRI Routing (continued)

Datafilling office parameters

The following table shows the office parameters used by ISDN BRI Routing. For more information about office parameters, refer to *Office Parameters Reference Manual*.

Office parameters used by ISDN BRI Routing

Table name	Parameter name	Explanation and action
OFCENG	NUM_RC_EXT_BLKS	This parameter (number of routing characteristics extension blocks) specifies the number of extension blocks required for translation and routing of calls based on routing characteristics. The default for the parameter is 0 (zero), but it is recommended that the operating company calculate the value as one block for each call, based on the probable number of simultaneous calls using ISDN translations. Note that such calls include calls on any trunk group that does not have the default BC (for instance, a PTS trunk group datafilled with a non-default BC).
	DEFAULT_BEARER_ CAPABILITY	This parameter defines the office-wide default bearer capability, which is the value applied to an incoming trunk if no BC is defined in table TRKGRP. The default for DEFAULT_BEARER_CAPABILITY is SPEECH. ***Note:*** Northern Telecom recommends that the default remain at SPEECH. If the default BC is changed, the new default is applied only to trunk groups datafilled after the change. Any trunk groups datafilled before the change retain the previous default BC value. This situation can cause problems, because these trunks become non-default BC trunk groups and require RC extension blocks. If NUM_RC_EXT_BLKS is set too low to accommodate these extra trunk groups, calls can be dropped. To solve the problem, the non-default BC trunk groups must be datafilled again.

ISDN BRI Routing (continued)

Datafill sequence

The following table lists the tables that require datafill to implement ISDN BRI Routing. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for ISDN BRI Routing (Sheet 1 of 2)

Table	Purpose of table
BCDEF	Bearer Capability Definition contains bearer capability names and their associated transmission characteristics.
TRKGRP	Trunk Group defines a bearer capability for an incoming PTS trunk group.
IBNRTE	Integrated Business Network Route provides a route for the originating call and specifies the SETUP message information. This table also alters the routing index for a call retranslation based on the RCNAME.
OFRT	Office Route provides a route for the originating call and specifies the SETUP message information. This table also alters the routing index for a call retranslation based on the RCNAME.
HNPACONT. RTEREF	Route Reference provides a route for the originating call and specifies the SETUP message information. This table also alters the routing index for a call retranslation based on the RCNAME.
IBNMAP	Integrated Business Network Mapping is a prerouting table used to alter the routing index to IBNRTE for calls with an associated RCNAME.
OFRTMAP	Office Route Mapping is a prerouting table used to alter the routing index to OFRT for calls with an associated RCNAME.
HNPACONT. RTEMAP	Route Mapping is a prerouting table used to alter the routing index to HNPACONT.RTEREF for calls with an associated RCNAME.
XLAMAP	Translator Mapping is a pretranslation table used to alter the translator name for private calls with an associated RCNAME.
PXLAMAP	Pretranslator Mapping is a pretranslation table used to alter the translator name for public calls with an associated RCNAME.
STDPRTCT. STDPRT	Standard Pretranslator provides a pretranslation route for the call.
IBNXLA	Integrated Business Network Translator provides a translator for the call.

ISDN BRI Routing (continued)

Datafill tables required for ISDN BRI Routing (Sheet 2 of 2)

Table	Purpose of table
LTCALLS	Logical Terminal Calls specifies the types of calls that can be routed over the interface and provides initial translations for the call.
RTECHAR	Routing Characteristics associates an RCNAME with a set of routing characteristics.
LATAXLA	LATA Translator determines whether the call is intra-LATA or inter-LATA.
DNCTINFO	Directory Number Call Type Information contains the default RPOA for the originating DN when there is no RPOA specified in the call request package. This table should be datafilled through SERVORD; therefore, no example datafill is provided.

Datafilling table BCDEF

Table BCDEF contains all the valid bearer capability names. Each tuple in the table lists a BCNAME and its associated transmission characteristics, which include the transfer capability, transfer mode, and coding standard. The BCNAME is used in table RTECHAR to represent its associated transmission characteristics.

At installation, BCDEF is datafilled with the ten default tuples described in the following table. The tuples are datafilled in the order shown in the table, and cannot be altered by the operating company. If the operating company needs to define additional BCs, additional tuples can be datafilled in table BCDEF following the existing tuples, in any order.

BCDEF defaults (Sheet 1 of 2)

BC	Uses
SPEECH	Uses are as follows: • used primarily for speech transport • can be used to transport voiceband data if no voice compression techniques will be used on the data
64KDATA	Uses are as follows: • 64 kbit/s clear channel data • this BC can cause problems with North American repeaters when 16 consecutive zeroes are received (techniques such as B8ZS can be used to alleviate the problems)
64KX25	used for X.25 packet data, in which the data is encoded using X.25 protocol

ISDN BRI Routing (continued)

BCDEF defaults (Sheet 2 of 2)

BC	Uses
56KDATA	Uses are as follows: • 56 kbit/s channel data • most commonly used in North America, as the data structure cannot call the all-zero octet problem that occurs with 64 kbit/s data
DATAUNIT	equivalent to 56KDATA, developed for specific data equipment
64KRES	a non-compliant BC developed for a specific application
3_1KHZ	used for speech and voiceband data
7_KHZ	Uses are as follows: • can be used for audio or voiceband data • typically used for high quality audio applications, such as music
VOICE_DATA	used for specific DMS-250 applications
64K_RATE_ AD_DATA	used for applications in which ;the data rate is less than 64 kbit/s (for example, 2400 bit/s, 9600 bit/s, 48 kbit/s); the remaining bandwidth is stuffed according to CCITT protocols for rate adaption

The following table shows the datafill specific to ISDN BRI Routing for table BCDEF. Only those fields that apply directly to ISDN BRI Routing are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table BCDEF (Sheet 1 of 2)

Field	Subfield	Entry	Explanation and action
BCNAME		alphanumeric 1 to 16 characters	Bearer capability name. Enter a name to represent the transmission characteristics to be defined in the following BCDATA field.
BCDATA		see subfields	Bearer capability data. This field consists of subfields XFERCAP, XFERMODE, and CODINGST.

ISDN BRI Routing (continued)

Datafilling table BCDEF (Sheet 2 of 2)

Field	Subfield	Entry	Explanation and action
	XFERCAP	SPEECH, RESDIG, UNRESDIG, AU3_1KHZ, or AU7KHZ	Transfer capability. Enter the trunk's transfer capability as one of: • SPEECH for standard voice calls • RESDIG for 56 kbit/s transparent data transfer • UNRESDIG for unrestricted digital information at 64 kbit/s • AU3_1KHZ for audio data at 3.1 kHz • AU7KHZ for audio data at 7 kHz
	XFERMODE	CIRCUIT or PACKET	Transfer mode. Enter CIRCUIT for a circuit-switched service, or PACKET for a packet data service.
	CODINGST	CCITT or NETWORK	Coding standard. Enter CCITT to indicate that the CCITT coding standards are being used. Enter NETWORK to indicate that network-specific standards are being used, and refer to the section “ISDN Basic Access" for further BCDEF datafill in this situation.

Datafill example for table BCDEF

The following example shows sample datafill for table BCDEF.

MAP display example for table BCDEF

```
              KEY                                      BCDATA
________________________________________________________________
           SPEECH                  SPEECH CIRCUIT   CCITT
          64KDATA                UNRESDIG CIRCUIT   CCITT
           64KX25   RESDIG CIRCUIT NETWORK DTU X25 Y  AUTO
         56KDATA UNRESDIG CIRCUIT NETWORK DTU NONE Y 56KBS
       DATAUNIT UNRESDIG CIRCUIT NETWORK DTU TLINK Y 56KBS
           64KRES                  RESDIG CIRCUIT   CCITT
           3_1KHZ                AU3_1KHZ CIRCUIT   CCITT
            7_KHZ                  AU7KHZ CIRCUIT   CCITT
       VOICE_DATA                AU3_1KHZ CIRCUIT   CCITT
 64K_RATE_AD_DATA                 UNRESDIG CIRCUIT   CCITT
```

Datafilling table TRKGRP

The BCNAME subfield of the OPTION field in table TRKGRP is used to assign a BC to a PTS trunk group.

The following table shows the datafill specific to ISDN BRI Routing for table TRKGRP. Only those fields that apply directly to ISDN BRI Routing are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TRKGRP

Field	Subfield	Entry	Explanation and action
OPTIONS			Options. This field consists of subfield BCNAME.
	BCNAME	alphanumeric 1 to 16 characters	Bearer capability name. Enter any valid BC name defined in table BCDEF.

Note 1: If no BC is datafilled for a trunk group, the office default applies.

Note 2: If the datafilled BC for a trunk group is the same as the office default, it will not appear in the listed tuple when the TRKGRP tuple for the trunk group is listed.

Note 3: If the datafilled BC is not supported on the outgoing protocol, the call is routed to treatment.

Datafill example for table TRKGRP

The following example shows sample datafill for table TRKGRP.

MAP display example for table TRKGRP

```
         GRPKEY
                                                               GRPINFO
____________________________________________________________________
K2KPRA64CLLP1
                  IBNTI  0  ELO NCRT   (BCNAME 64KDATA) $
```

Datafilling table RCNAME

Table RCNAME contains all the valid routing characteristic names. Each tuple in the table lists an RCNAME (field name NAMEKEY), which is associated with a group of routing characteristics defined in table RTECHAR. The RCNAME is used in tables throughout the translations and routing process to represent its associated routing characteristics.

The following table shows the datafill specific to ISDN BRI Routing for table RCNAME. Only those fields that apply directly to ISDN BRI Routing are

ISDN BRI Routing (continued)

shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table RCNAME

Field	Subfield	Entry	Explanation and action
NAMEKEY		alphanumeric 1 to 8 characters	Routing characteristics name. Enter a name to represent a set of routing characteristics to be defined in table RTECHAR.

Datafill example for table RCNAME

The following example shows sample datafill for table RCNAME.

MAP display example for table RCNAME

```
 NAMEKEY
--------
 56KNAME
 64KNAME
   VOICE
 3_1NAME
   7NAME
  ISDNRC
  PACKET
```

Datafilling table IBNRTE

There are four IBN routing tables, named IBNRTE, IBNRT2, IBNRT3, and IBNRT4, all of which operate identically. In this document, the term IBNRTE is used to refer to all IBN routing tables.

The following table shows the datafill required to route an originating BRI call and ensure that the call type and NPI are available for the creation of the SETUP message. The ISA routing selector is datafilled for this purpose. Only those fields that apply directly to ISDN BRI Routing are shown. For a

ISDN BRI Routing (continued)

description of the other fields, refer to the data schema section of this document.

Datafilling table IBNRTE for BRI call originations

Field	Subfield	Entry	Explanation and action
RTE		alphanumeric	Route reference index. Enter the sequential route index for the table.
RTELIST		see subfields	Route list. The RTELIST field consists of subfields IBNRTSEL, OHQ, CBQ, and EXP.
	IBNRTSEL	ISA	IBN route selector. Enter ISA.
	OHQ	Y or N	Off-hook queuing. Enter Y if off-hook queuing is required, or N if it is not.
	CBQ	Y or N	Call-back queuing. Enter Y if call-back queuing is required, or N if it is not.
	EXP	Y or N	Expensive. Enter Y if this is an expensive route and the expensive route warning tone is required.
CLLI		alphanumeric	Common language location identifier. Enter the CLLI of the trunk group associated with the route.
CALLTYPE		PVT	Call type. Enter the call type as PVT for private routing, and datafill the fields FACNUM, NPI, and DMI below.
FACNUM		0	Facility number. Enter 0 (zero).
NPI		PVT	Network plan identifier. Enter PVT.
OATYPE		NONE	Operator access type. Enter NONE.
TNS		N	Transit network. Enter N.
NPOS		Y or N	Number identification. Enter Y if no calling number identification is required, or N if calling number identification is required.
DMI		1 to 32 767, 0	Digit manipulation index. Enter the index into the DIGMAN table that contains the modification for the called number. Enter 0 (zero) if Digit Manipulation is not required.

The following table shows the datafill that allows the operating company to alter the routing characteristics of a call for retranslation based on the

ISDN BRI Routing (continued)

RCNAME. The RC option in the RX retranslation selector is datafilled for this purpose. Only those fields that apply directly to ISDN BRI Routing are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table IBNRTE for retranslation

Field	Subfield	Entry	Explanation and action
RTE		alphanumeric	Route reference index. Enter the sequential route index for the table.
RTELIST		see subfields	Route list. The RTELIST field consists of subfields IBNRTSEL, CUSTNAME, SUBGRP, NCOS, and DMI.
	IBNRTSEL	RX	IBN route selector. Enter RX.
	CUSTNAME	alphanumeric	Customer group name. Enter the code assigned to the customer group datafilled in table CUSTHEAD.
	SUBGRP	numeric	Subgroup. Enter the customer group subgroup number.
	NCOS	numeric	Network class of service number. Enter the network class of service number to be used for the retranslation environment.
	DMI	1 to 32 767, 0	Digit manipulation index. Enter the index into the DIGMAN table that contains the modification for the called number. Enter 0 (zero) if Digit Manipulation is not required.
OPTION		RC	Options. Enter RC to indicate that retranslation is to be based on an RCNAME.
RCNAME		alphanumeric	Routing characteristics name. Enter the RCNAME on which retranslation is to be based. ***Note:*** The RCNAME must be defined in table RCNAME.

Datafill example for table IBNRTE

The following example shows sample datafill for table IBNRTE. In this example, the ISA selector is used in a private call route.

MAP display example for table IBNRTE

```
 RTE                                                  RTELIST
-------------------------------------------------------------
 111       (  ISA N N Y    BRACENEODP  PVT   0  PVT   0)$
```

The following example shows sample datafill for table IBNRTE. In this example, the RX selector is used.

MAP display example for table IBNRTE selector RX

```
 RTE                                                  RTELIST
-------------------------------------------------------------
   2          (   RX     COMKODAK 0   0 24112         $)$
```

Datafilling table OFRT or HNPACONT.RTEREF

The following two tables show the datafill for table OFRT or table HNPACONT.RTEREF. These two tables are identical, so they are described only once.

There are four office routing tables, OFRT, OFRT2, OFRT3, and OFRT4, all of which operate identically. In this section, the term OFRT refers to all OFRT tables.

The following table shows the datafill required to route an originating BRI call and ensure that the call type and NPI are available for the creation of the SETUP message. The ISA routing selector is datafilled for this purpose. Only those fields that apply directly to ISDN BRI Routing are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table OFRT or HNPACONT.RTEREF (Sheet 1 of 2)

Field	Subfield	Entry	Explanation and action
RTE		alphanumeric	Route reference index. Enter the sequential route index for the table.
RTELIST		see subfields	Route list. The RTELIST field consists of subfields RTSEL, OHQ, CBQ, and EXP.
	RTESEL	ISA	IBN route selector. Enter ISA.
	OHQ	Y or N	Off-hook queuing. Enter Y if off-hook queuing is required, or N if it is not.

ISDN BRI Routing (continued)

Datafilling table OFRT or HNPACONT.RTEREF (Sheet 2 of 2)

Field	Subfield	Entry	Explanation and action
	CBQ	Y or N	Call-back queuing. Enter Y if call-back queuing is required, or N if it is not.
	EXP	Y or N	Expensive. Enter Y if this is an expensive route and the expensive route warning tone is required.
CLLI		alphanumeric	Common language location identifier. Enter the CLLI of the trunk group associated with the route.
CALLTYPE		PVT or PUB	Call type. Enter the call type as PVT for private routing, and datafill the fields FACNUM, NPI, and DMI. Enter the call type as PUB for public routing, and datafill the fields OATYPE, TNS, NPOS, and DMI.
FACNUM		0	Facility number. Enter 0 (zero).
NPI		PVT	Network plan identifier. Enter PVT.
OATYPE		NONE	Operator access type. Enter NONE.
TNS		N	Transit network. Enter N.
NPOS		Y or N	Number identification. Enter Y if no calling number identification is required, or N if calling number identification is required.
DMI		1 to 32 767, 0	Digit manipulation index. Enter the index into the DIGMAN table that contains the modification for the called number. Enter 0 (zero) if Digit Manipulation is not required.

Datafilling table OFRT or HNPACONT.RTEREF for retranslation (Sheet 1 of 2)

Field	Subfield	Entry	Explanation and action
RTE		alphanumeric	Route reference index. Enter the sequential route index for the table.
RTELIST		see subfields	Route list. The RTELIST field consists of subfields RTESEL, STS, TYPCALL, DMI, and BILLDMI.
	RTESEL	RX	Route selector. Enter RX.

Datafilling table OFRT or HNPACONT.RTEREF for retranslation (Sheet 2 of 2)

Field	Subfield	Entry	Explanation and action
	STS	three-digit string	Serving translation scheme. Enter the NPA of the home NPA code table that will be accessed with the retranslation RCNAME.
	TYPCALL	DD, NP, or OA	Type of call. Enter the type of call as one of • DD for direct dial • NP for no prefix • OA for operator-assisted
	DMI	1 to 32 767, 0	Digit manipulation index. Enter the index into the DIGMAN table that contains the modification for the called number. Enter 0 (zero) if Digit Manipulation is not required.
	BILLDMI	0 to 32 767	DMI billing number. Enter the DMI used to alter the billing number.
OPTION		RC	Options. Enter RC to indicate that retranslation is to be based on an RCNAME.
RCNAME		alphanumeric	Routing characteristics name. Enter the RCNAME on which retranslation is to be based. ***Note:*** The RCNAME must be defined in table RCNAME.

Datafill example for table OFRT or HNPACONT.RTEREF

The following example shows sample datafill for table OFRT or HNPACONT.RTEREF.

MAP display example for table OFRT or HNPACONT.RTEREF

```
RTE   RTESEL   OHQ   CBQ      EXP      CLLI    CALLTYPE
  FACNUM   NPI    DMI
________________________________________________________
21     (   ISA N       N    Y      NTRAC  PVT
     0     PVT 15 ) $
```

The following example shows sample datafill using the RX selector for the Bearer Capability Routing in table OFRT or HNPACONT.RTEREF.

ISDN BRI Routing (continued)

MAP display example for table OFRT or HNPACONT.RTEREF with selector RX

```
RTE   RTESEL          STS   TYPCALL      DMI      BILLDMI
   OPTION     RCNAME
________________________________________________________
10           ( RX        514   DD      230     230
       (RC             64KDATA) $ ) $
```

Datafilling table IBNMAP, OFRTMAP, or HNPACONT.RTEMAP

The mapping tables IBNMAP, OFRTMAP, and HNPACONT.RTEMAP contain a routing index for ISDN calls with an associated RCNAME. The tables are accessed with the RCNAME associated with the call and the original routing index, and provide a new index to their corresponding routing table:

- table IBNMAP contains the mapping for routing table IBNRTE
- table OFRTMAP contains the mapping for routing table OFRT
- table HNPACONT.RTEMAP contains the mapping for routing table HNPACONT.RTEREF

The following table shows the datafill specific to ISDN BRI Routing for table IBNMAP, OFRTMAP, or HNPACONT.RTEMAP. These three mapping tables are identical, so they are described only once. Only those fields that apply directly to ISDN BRI Routing are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table IBNMAP, OFRTMAP, or HNPACONT.RTEMAP

Field	Subfield	Entry	Explanation and action
KEY		see subfields	Key field. The key to the mapping table is composed of subfields RCNAME and INDEX.
	RCNAME	alphanumeric	Routing characteristics name. Enter the RCNAME associated with the call. ***Note:*** The RCNAME must be defined in table RCNAME.
	INDEX	numeric	Index. Enter the original route reference index.
NEWINDEX		numeric	New index. Enter the route reference index to the ISDN routing list in the routing table.

Datafill example for table IBNMAP, OFRTMAP, or HNPACONT.RTEMAP

The following example shows sample datafill for table IBNMAP, OFRTMAP, or HNPACONT.RTEMAP.

MAP display example for table IBNMAP, OFRTMAP, or HNPACONT.RTEMAP

RCNAME	INDEX	NEWINDEX
64KNAME	1	100

Datafilling table XLAMAP

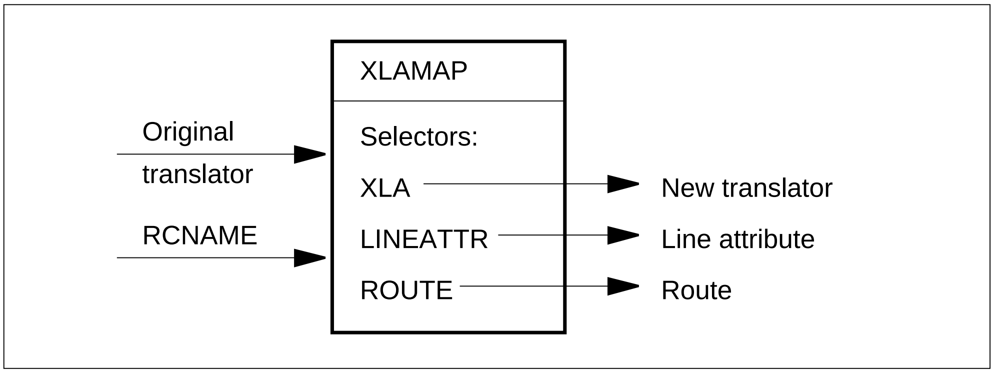
Table XLAMAP is a pretranslation table which associates the original MDC translator name from table NCOS or CUSTHEAD and the call's RCNAME with a new translator name, a line attribute, or a routing index. This enables the call to translate differently based upon ISDN routing characteristics. Two sets of new translations data can be associated with each original translator and RCNAME.

As shown in the following figure, three selectors in table XLAMAP's SEL field determine the next stage of translations for the call:

- The XLA selector provides a new translator name to be used in table IBNXLA.
- The LINEATTR selector provides a line attribute index.
- The ROUTE selector operates only when there are no called digits in either the CDN or keypad IE, and is typically used as the second of two sets of translations data. The first set, with selector XLA, provides a translator to be used when there are called digits. The second set, with selector ROUTE, provides a route to follow when there are no digits.

If neither the ROUTE nor the LINEATTR selector is datafilled, and there are no called digits, the call is routed to permanent signal treatment.

XLAMAP selectors



Note: The ROUTE and LINEATTR selectors do not support billing.

ISDN BRI Routing (continued)

The following table shows the datafill specific to ISDN BRI Routing for table XLAMAP. Only those fields that apply directly to ISDN BRI Routing are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table XLAMAP (Sheet 1 of 2)

Field	Subfield	Entry	Explanation and action
XLAKEY		see subfields	Translations key. The key to table XLAMAP consists of subfields RCNAME and XLANAME.
	RCNAME	alphanumeric	Routing characteristics name. Enter the RCNAME associated with the call. ***Note:*** The RCNAME must be defined in table RCNAME.
	XLANAME	alphanumeric	Translator name. Enter the original MDC translator name from table NCOS or CUSTHEAD. ***Note:*** The XLANAME must be defined in table XLANAME.
DATA		see subfields	Data. The DATA field contains the selector (subfield SEL) and the new translator name (subfield NEWXLA), line attribute (subfield LINEATTR), or routing index (subfields TABNAME and INDEX). ***Note:*** The DATA field can be repeated once.
	SEL	XLA, LINEATTR, or ROUTE	Selector. Enter XLA to specify the new translations pointer as a translator name, and complete subfield NEWXLA. Enter LINEATTR to specify the new translations pointer as a line attribute, and complete subfield LINEATTR. Enter ROUTE to specify the new translations pointer as a route index, and complete subfields TABNAME and INDEX.
	NEWXLA	alphanumeric	New translator. Enter the new translator to be used in table IBNXLA. ***Note:*** The XLANAME must be defined in table XLANAME.

Datafilling table XLAMAP (Sheet 2 of 2)

Field	Subfield	Entry	Explanation and action
	LINEATTR	numeric	Line attribute. Enter a line attribute index. ***Note:*** The line attribute index must be defined in table LINEATTR.
	TABNAME	OFRT or IBNRTE	Table name. Enter the name of the routing table, which may be either OFRT or IBNRTE.
	INDEX	numeric	Index. Enter the routing index in OFRT or IBNRTE.

Datafill example for table XLAMAP

The following example shows sample datafill for table XLAMAP.

MAP display example for table XLAMAP

```
RCNAME       XLANAME   SEL      NEWXLA   TABNAME     INDEX
__________________________________________________________
64KPRIP    CXDK    (XLA   64KCXDK)
                    (ROUTE       OFRT    25) $
```

Datafilling table PXLAMAP

Table PXLAMAP is a pretranslation table used for public calls, which associates the original pretranslator name and the call's RCNAME with a new pretranslator name, an operator position, or a routing index. Two sets of new translations data can be associated with each original pretranslator and RCNAME.

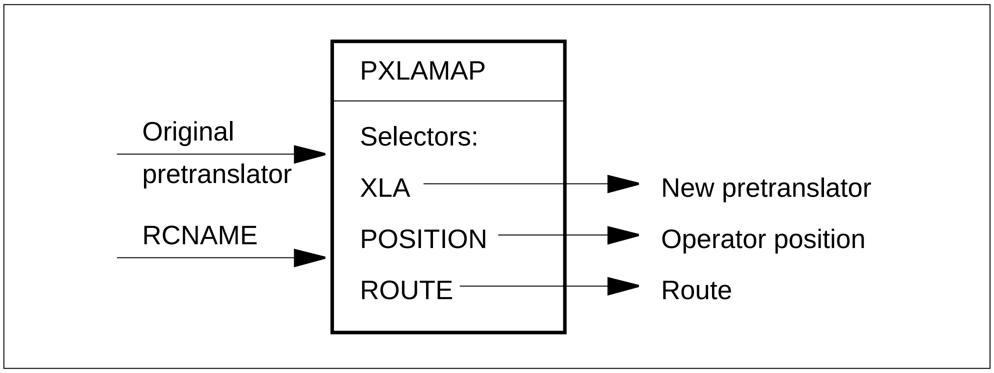
As shown in the following figure, three selectors in table PXLAMAP's SEL field determine the next stage of translations for the call:

- The XLA selector provides a new pretranslator name to be used in table STDPRTCT.
- The POSITION selector provides an operator position.
- The ROUTE selector operates only when there are no called digits in either the CDN or keypad IE, and is typically used as the second of two sets of translations data. The first set, with selector XLA, provides a translator to be used when there are called digits. The second set, with selector ROUTE, provides a route to follow when there are no digits.

ISDN BRI Routing (continued)

If neither the ROUTE nor the POSITION selector is datafilled, and there are no called digits, the call is routed to permanent signal treatment.

PXLAMAP selectors



Note: The ROUTE selector does not support billing.

The following table shows the datafill specific to ISDN BRI Routing for table PXLAMAP. Only those fields that apply directly to ISDN BRI Routing are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table PXLAMAP (Sheet 1 of 2)

Field	Subfield	Entry	Explanation and action
PXLAKEY		see subfields	Translations key. The key to table PXLAMAP consists of fields RCNAME and XLANAME.
	RCNAME	alphanumeric	Routing characteristics name. Enter the RCNAME associated with the call. ***Note:*** The RCNAME must be defined in table RCNAME.
	XLANAME	alphanumeric	Translator name. Enter the original pretranslator name. ***Note:*** The XLANAME must be defined in table XLANAME.

ISDN BRI Routing (continued)

Datafilling table PXLAMAP (Sheet 2 of 2)

Field	Subfield	Entry	Explanation and action
DATA		see subfields	Data. The DATA field contains the selector (subfield SEL) and the new pretranslator name (subfield NEWXLA), operator position (subfield POS), or routing index (subfields TABNAME and INDEX). ***Note:*** The DATA field can be repeated once.
	SEL	XLA, POSITION, or ROUTE	Selector. Enter XLA to specify the new translations pointer as a pretranslator name, and complete subfield NEWXLA. Enter POSITION to specify the new translations pointer as an operator position, and complete subfield POS. Enter ROUTE to specify the new translations pointer as a route index, and complete subfields TABNAME and INDEX.
	NEWXLA	alphanumeric	New translator. Enter the new pretranslator to be used in table STDPRTCT. ***Note:*** The XLANAME must be defined in table XLANAME.
	POS	TOPS, CTOP, CAMA, TSPS, AMRX, RTE1, RTE2, RTE3, RTE4, AOSS, OCC, or NONE	Position. Enter one of TOPS, CTOP, CAMA, TSPS, AMRX, RTE1, RTE2, RTE3, RTE4, AOSS, or OCC, to define an operator position, or NONE.
	TABNAME	IBNRTE or OFRT	Table name. Enter the name of the routing table, which may be either IBNRTE or OFRT.
	INDEX	numeric	Index. Enter the index in IBNRTE or OFRT.

Datafill example for table PXLAMAP

The following example shows sample datafill for table PXLAMAP.

ISDN BRI Routing (continued)

MAP display example for table PXLAMAP

```
RCNAME   XLANAME   SEL    NEWXLA  TABNAME    INDEX
_______________________________________________________
64KPRIP  CXDK      (XLA     P625)
                  (ROUTE  OFRT        25) $
```

Datafilling table STDPRTCT.STDPRT

For packet-switching applications, table STDPRTCT.STDPRT contains pretranslator selectors SFMT, T, and F.

- Pretranslator selector SFMT is normally used for packet-switched call terminations. Selector SFMT switches address formats between X.121 and E.164 addressing systems. Subfield XLA_OR_ROUTE of selector SFMT controls whether to translate or route the call. The two options for subfield XLA_OR_ROUTE are X to translate or R to route. Normally, selector SFMT with option R is used to route an incoming transit call to an outgoing trunk. Option X routes an incoming X.121 call to another pretranslator in table STDPRTCT.STDPRT. From that point, the call normally routes to a DN in the switch.
- Pretranslator selectors T and F are used for X.121 call originations. Selector T routes translations to an office route table. Selector F indexes another pretranslator table to analyze more digits before routing the call.

The following table shows the datafill specific to ISDN BRI Routing for table STDPRTCT.STDPRT. Only those fields that apply directly to ISDN BRI Routing are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table STDPRTCT.STDPRT (Sheet 1 of 4)

Field	Subfield	Entry	Explanation and action
FROMDIGS		numeric	From digits. Enter the first of the range of digits to be translated. The escape code for an X.121-to-E.164 format switch is typically zero.
TODIGS		numeric	To digits. Enter the last of the range of digits to be translated. The escape code for a X.121-to-E.164 format switch is typically zero.
PRETRTE		see subfields	Pretranslation route. This field contains subfields PRERTSEL, ESC_DIGITS, and XLA_OR_ROUTE.

ISDN BRI Routing (continued)

Datafilling table STDPRTCT.STDPRT (Sheet 2 of 4)

Field	Subfield	Entry	Explanation and action
	PRERTSEL	SFMT, T, or F	Pretranslation route selector. ***Note:*** Use selector SFMT for packet-switched call terminations. Enter SFMT to switch address formats between X.121 and E.164, and datafill subfields MINDIGS, MAXDIGS, ESC_DIGITS, and XLA_OR_RTE. ***Note:*** Use selector T or F for X.121 call originations. Enter T to specify a routing index for the call, and datafill subfields TYPCALL, NOPREDIG, EXTRTEID, MINDIGSR, MAXDIGSR, and POS. Enter F to recycle into another pretranslator table to look at more digits, This field contains subfiedls NUMDIGSIN, DTONETYPE, and PRETRANSYS.
	MINDIGS	1 to 18	Minimum digits received. Enter the minimum number of digits to be collected before routing the call.
	MAXDIGS	1 to 18	Maximum digits received. Enter the maximum number of digits to be collected before routing the call.
	ESC_DIGITS	numeric	Escape digits. Enter the number of digits to be interpreted as escape digits (normally 1).
	XLA_OR_ RTE	X or R	Translate or route. Enter X to specify that further translations are required, and datafill subfields PRTNM and STS. Enter R to route the call. Datafill RTESEL.
	PRTNM	alphanumeric	Pretranslator name. Enter the pretranslator name to be used in further translations.
	STS	numeric	Serving translations scheme. Enter the STS of the terminal.

ISDN BRI Routing (continued)

Datafilling table STDPRTCT.STDPRT (Sheet 3 of 4)

Field	Subfield	Entry	Explanation and action
	RTESEL	S or T	Route selector. Enter S to specify a trunk CLLI, and datafill subfield CLLI. Enter T to specify a routing index for the call, and datfill subfields TABID and KEY.
	CLLI	alphanumeric 1 to 16 characters	Common location language identifier. Enter the CLLI to which the system routes the call. You must enter this entry in table CLLI before you can enter this entry in this field.
	TABID	OFRT, OFR2, OFR3, OFR4, IBNRTE, IBNRT1, IBNRT2, IBNRT3, or IBNRT4	Table identifier. Enter the office route or IBN route table name to which translation proceeds.
	KEY	1 to 1023	Key. Enter the index in the routing table to which translation proceeds.
	TYPCALL	DD	Type of call. Enter DD (direct dial).
	NOPREDIG	0	Number of prefix digits. Enter 0.
	EXTRTEID	alphanumeric	External route identifier. This field contains subfields TABID and KEY.
	TABID	OFRT, OFR2, OFR3, or OFR4	Table name. Enter the table name to which the system routes translation. Enter OFRT, OFR2, OFR3, or OFR4 for an office route.
	KEY	1 to 1023	Index. Enter the index in the specified table to which the system routes translation. Enter the route reference number, 1 to 1023.
	MINDIGSR	0 to 14	Minimum digits received. Enter the minimum number of digits collected before the system routes the call.
	MAXDIGSR	0 to 14	Maximum digits received. Enter the maximum number of digits collected.

ISDN BRI Routing (continued)

Datafilling table STDPRTCT.STDPRT (Sheet 4 of 4)

Field	Subfield	Entry	Explanation and action
	POS	NONE	Position. The value of this field is NONE.
	NUMDIGSIN	0 to 7	Number of digits. Enter the number of digits the system received before sending dial tone.
	DTONETYPE	NONE	Dial tone type. Enter NONE.
	PRETRANSYS	alphanumeric (1 to 4 characters)	Pretranslator. Enter the name of the pretranslator that translation must route for pretranslation of the remaining digits.

Datafill example for table STDPRTCT.STDPRT

The following examples show sample datafill for ISDN BRI Routing in table STDPRTCT.STDPRT.

The following MAP display shows sample datafill in table STDPRTCT.STDPRT using selector SFMT. The first tuple switches the address format from X.121 to E.164 and directs the call to a DN in the switch. In the second tuple, the DMS-100 switch acts as a transit switch, and routes the call to an X.121 trunk.

MAP display example for table STDPRTCT.STDPRT selector SFMT

```
FROMDIGS     TODIGS                       PRETRTE
________________________________________________________
0         0            SFMT 0 15 1 X PK37 613
0         0            SFMT 0 15 1 R S X121OG400
```

The following MAP display shows sample datafill in table STDPRTCT.STDPRT using selector T. Selector T routes the call to table OFRT 50.

MAP display example for table STDPRTCT.STDPRT selector T

```
FROMDIGS     TODIGS                       PRETRTE
________________________________________________________
5168         5168            T DD 0 OFRT 50 2 14
```

The following MAP display shows sample datafill in table STDPRTCT.STDPRT using selector F. Selector F routes the call to another pretranslation table for further digit analysis.

ISDN BRI Routing (continued)

MAP display example for table STDPRTCT.STDPRT selector F

```
FROMDIGS     TODIGS                          PRETRTE
____________________________________________________________
5168         5168                    F   4 NONE NIC1
```

Datafilling table IBNXLA

Both circuit-switched and packet-switched calls use table IBNXLA. Note the following:

- Table IBNXLA provides translator tuples that allow the operating company to datafill a retranslation based on the RCNAME. Translator selector REPL with option RC is datafilled for this purpose.
- For E.164 call originations, table IBNXLA uses translator selector NET with option GEN to continue call translations.
- For X.121 call originations, table IBNXLA uses translator selector SFMT. Selector SFMT switches formats between E.164 and X.121 addressing systems in X.121 call originations only. Subfield XLA_OR_ROUTE of selector SFMT controls whether to translate or route the call. The two options for subfield XLA_OR_ROUTE are X to translate or R to route.

The following table shows the datafill specific to ISDN BRI Routing for table IBNXLA. Only those fields that apply directly to ISDN BRI Routing are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table IBNXLA (Sheet 1 of 4)

Field	Subfield	Entry	Explanation and action
KEY		see subfields	Key field. The key to table IBNXLA is composed of subfields XLANAME and DGLIDX.
	XLANAME	alphanumeric	Translator name. Enter the original translator name.
	DGLIDX	numeric	Digilator index. Enter the digits to be replaced.
RESULT		see subfields	Result. The RESULT field consists of subfield TRSEL.

Datafilling table IBNXLA (Sheet 2 of 4)

Field	Subfield	Entry	Explanation and action
	TRSEL	REPL, NET, or SFMT	Translator selector. Enter selector REPL to specify retranslation based on an RCNAME, and datafill subfields CONTINUE, REPLCODE, and OPTION. ***Note:*** Use selector NET for X.164 call originations. Enter selector NET if the digits dialed are the access code for the general network selector (GEN) option. Datafill subfields ACR, SMDR, NO_ACCODE_DIGITS, SECOND_DIAL_TONE, DGCOLNM, CRL, INTRAGRP, NETTYPE, OPTION, and LINEATTR. ***Note:*** Use selector SFMT for X.121 call originations. Enter selector SFMT to switch address formats between E.164 and X.121, and datafill subfields MINDIGS, MAXDIGS, ESC_DIGITS, and XLA_OR_ROUTE.
	CONTINUE	Y or N	Continue. Enter Y if translations are to continue with the next translator in the normal sequence.
	REPLCODE	numeric	Replacement code. Enter the replacement digits.
	OPTION	RC	Options. Enter RC to indicate that retranslation is to be based on an RCNAME. Datafill subfield RCNAME.
	RCNAME	alphanumeric	Routing characteristics name. Enter the RCNAME on which retranslation is to be based. The RCNAME must be defined in table RCNAME.
	ACR	Y or N	Account code entry. This subfield specifies whether an account code is required.
	SMDR	Y or N	Station message detail recording. This subfield specifies whether SMDR is required.
	NO_ACCODE_DIGITS	0 to 7	Number of access code digits. Enter the number of digits in the general network access code.

ISDN BRI Routing (continued)

Datafilling table IBNXLA (Sheet 3 of 4)

Field	Subfield	Entry	Explanation and action
	SECOND_DIAL_TONE	Y or N	Second dial tone. Enter Y if second dial tone is required. Otherwise, enter N.
	DGCOLNM	alphanumeric (1 to 8 characters)	Digit collection name. Enter the name assigned to the block of data in table DIGCOL for digit collection for IBN lines.
	CRL	Y or N	Code restriction level. Enter Y if code restriction levels apply. Otherwise, enter N.
	INTRAGRP	Y or N	Intragroup. Enter Y if the call is for the same customer group. Otherwise, enter N.
	NETTYPE	GEN	Network type. Enter the network type GEN.
	OPTION	LATTR	Option. This subfield specifies the feature assigned to a line. For the line attribute index, enter LATTR.
	LINEATTR	0 to 2047	Line attribute. Enter the line attribute index to be used.
	MINDIGS	0 to 18	Minimum digits. Enter a number between 0 and 18 to represent the minimum digits.
	MAXDIGS	0 to 18	Maximum digits. Enter a number between 0 and 18 to represent the maximum digits.
	ESC_DIGITS	1	Escape digits. Enter 1 to indicate that one escape digit is interpreted.
	XLA_OR_ROUTE	X or R	Translate or route. Enter X to continue translations, and datafill subfield LINATTR. Enter R to indicate that the call directs to a routing table that contains the CLLI of a trunk. Datafill subfield TAB_OR_CLLI.
	LINATTR	numeric	Line attribute. Enter the line attribute index to table LINEATTR.
	TAB_OR_CLLI	T or S	Table or CLLI. Enter T to indicate a routing index for the call, and datafill subfields TABID and KEY. Enter S to route directly to a CLLI table, and datafill subfield CLLI.

Datafilling table IBNXLA (Sheet 4 of 4)

Field	Subfield	Entry	Explanation and action
	TABID	OFRT, OFRT2, OFRT3, or OFRT4	Table identifier. Enter the name of the routing table.
	KEY	numeric	Key. Enter the index to the routing table.
	CLLI	alphanumeric	CLLI. Enter the CLLI to identify the trunk.

Datafill examples for table IBNXLA

The following examples show sample datafill for ISDN BRI Routing in table IBNXLA.

The following MAP display shows sample datafill in table IBNXLA using translator selector NET.

MAP display example for table IBNXLA selector NET

```
XLANAME      DGLIDX    RESULT
________________________________________________________
PKT  9 NET N N 1 N NDGT N N GEN ( LATTR 300) $
```

The following MAP display shows a retranslation tuple using translator selector REPL.

MAP display example for table IBNXLA selector REPL

```
XLANAME      DGLIDX      RESULT    OPTION    RCNAME
________________________________________________________
CXDK     765      REPL         N 365    RC      64KNAME
```

The following MAP display shows sample datafill in table IBNXLA that defines a format switch between E.164 and X.121 address formats. Translator selector SFMT with option X is used to continue translations within the DMS packet handler.

ISDN BRI Routing (continued)

MAP display example for table IBNXLA selector SFMT

```
XLANAME      DGLIDX    RESULT
________________________________________________________
PKT          0   SFMT  1 15  1 X 81
```

Datafilling table LTCALLS

Table LTCALLS provides initial translations for call terminations on PRI trunks. The table is datafilled with the trunk group's LTID, the call type, and the initial translations route for calls. For private calls, the initial translations route is the customer group and subgroup (fields CUSTGRP and SUBGRP), which provide the key to table CUSTHEAD, or the network class of service (field NCOS) which provides the key to table NCOS. Table CUSTHEAD or NCOS provides the first translator for the call.

For public calls, table LTCALLS is datafilled with the line attribute index to table LINEATTR, which contains the pretranslator name for the call.

The main purpose of table LTCALLS in call originations is to determine whether or not a call type is allowed on a trunk. The table is datafilled with one tuple per LTID for each call type that can be carried on a trunk. If no tuple matches an LTID and call type combination, the call is blocked.

The following table shows the datafill specific to ISDN BRI Routing for table LTCALLS. Only those fields that apply directly to ISDN BRI Routing are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table LTCALLS (Sheet 1 of 2)

Field	Subfield	Entry	Explanation and action
LTID		see subfields	Logical terminal identifier. The key field, LTID consists of subfields LTGRP, LTNUM, and CALLTYPE.
	LTGRP	alphabetic	Logical terminal group. Enter the trunk group's logical terminal group from table LTDEF.
	LTNUM	numeric	Logical terminal number. Enter the trunk group's logical terminal number from table LTDEF.
	CALLTYPE	PVT or PUB	Call type. Enter PVT for private or PUB for public.
XLARTE		XLAIBN	Translation route selector. Enter XLAIBN.

Datafilling table LTCALLS (Sheet 2 of 2)

Field	Subfield	Entry	Explanation and action
LINEATTR		numeric	Line attribute. Enter a line attribute index to table LINEATTR.
CUSTGRP		alphanumeric	Customer group name. Enter the customer group name.
SUBGRP		alphanumeric	Subgroup. Enter the customer group subgroup.
NCOS		numeric	Network class of service. Enter the network class of service to provide the key to the NCOS table.

Datafill example for table LTCALLS

The following example shows sample datafill for ISDN BRI Routing in table LTCALLS.

MAP display example for table LTCALLS

```
LTID     CALLTYPE     XLARTE        LINEATTR
   CUSTGRP      SUBGRP         NCOS
____________________________________________________
ISDN 1008    PVT        XLAIBN              0
   CUST1    0        3  $
```

Datafilling table RTECHAR

Table RTECHAR defines an RCNAME by assigning it a set of routing characteristics. The table associates an RCNAME with the following routing characteristics:

- a bearer capability name (BCNAME) as defined in table BCDEF, which represents the BC IE in the SETUP message
- a type of number (TON) specified in the CDN IE
- both a BCNAME and a TON

For each RCNAME, up to seven sets of routing characteristics can be listed. The table permits call routing based on the transmission service identified by BCNAMEs.

> ***Note:*** Datafill table RTECHAR after tables BCDEF and RCNAME.

The following table shows the datafill specific to ISDN BRI Routing for table RTECHAR. Only those fields that apply directly to ISDN BRI Routing are

ISDN BRI Routing (continued)

shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table RTECHAR (Sheet 1 of 2)

Field	Subfield	Entry	Explanation and action
RCKEY		alphanumeric	Routing characteristics key. Enter the RCNAME for which characteristics are being defined. ***Note:*** The RCNAME must be listed in table RCNAME.
GROUPRC		see subfields	Routing characteristics groupings. This field contains up to four groupings of routing characteristics identified by the FIRSTRC field and up to three OTHERRC fields. GROUPRC can be entered up to seven times in the table.
	FIRSTRC	see subfields	First routing characteristic group. This grouping provides the first set of routing characteristics. The field is composed of the selector (subfield RCSEL) and the BCNAME (subfield BCNAME).
	RCSEL	BC or CDN	Routing characteristic selector. Enter BC to define the bearer capability routing characteristics to be described, and complete subfield BCNAME below. Enter CDN to define the CDN type of number routing characteristics to be described, and complete subfield CDNTON below.
	BCNAME	alphanumeric	BC name. Enter the BCNAME applicable to this set of routing characteristics. ***Note:*** The BCNAME must be listed in table BCDEF.

Datafilling table RTECHAR (Sheet 2 of 2)

Field	Subfield	Entry	Explanation and action
	CDNTON	NIL, L, NA, IN, NET, or ABBR	Called party number type of number. Enter NIL to specify that a CDN IE is not present. Enter L to specify the presence of a CDN containing a 7-digit public number. Enter NA to specify the presence of a CDN containing a 10-digit public number. Enter IN to specify the presence of a CDN containing an international number. Enter NET to specify the presence of a CDN containing a variable private number. Enter ABBR to specify the presence of a CDN containing an abbreviated private number (typically used for feature access).
	OTHERRC	see subfields for FIRSTRC	Other routing characteristic group. This grouping provides another set of routing characteristics, using the same subfields as the FIRSTRC field, shown above. OTHERRC can be repeated two more times to form a GROUPRC with FIRSTRC.

Datafill example for table RTECHAR

The following example shows sample datafill for ISDN BRI Routing in table RTECHAR.

MAP display example for table RTECHAR

```
RCKEY            GROUPRC
________________________________________________________________
64KDATA  (BC 64KDATA $) $
```

Datafilling table LATAXLA

Table LATAXLA determines whether an E.164 or X.121 packet call is intra-LATA or inter-LATA, and intrastate or interstate. If a packet call is inter-LATA, an RPOA must be specified for the call. (The RPOA is dialed by the subscriber or obtained from table DNCTINFO.) The switch assumes that any combinations not datafilled in this table are intra-LATA and intrastate.

The following table shows the datafill specific to ISDN BRI Routing for table LATAXLA. Only those fields that apply directly to ISDN BRI Routing are

ISDN BRI Routing (continued)

shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table LATAXLA

Field	Subfield	Entry	Explanation and action
LATACODE		see subfields	LATA code. This field contains subfields LATANAME and DIGITS.
	LATANAME	alphanumeric	Calling LATA name. Enter the LATA name (defined in table LATANAME).
	DIGITS	numeric	Dialed digits. For E.164 calls, enter a three- or six-digit string in the form • NPA (NPA, or area code) • NPANXX (NPA and office code for inter-LATA/intraNPA codes) For X.121 calls, enter a string up to 15 digits. Include the prefix digit 0 plus the required digits (DNIC, DNPA, DCO, or XXXX) in the order dialed.
LATA		INTER or INTRA	LATA call attribute. Enter INTER to define the digits as inter-LATA. Enter INTRA to define the digits as intra-LATA.
STATE		INTER or INTRA	State call attribute. Enter INTER to define the digits as interstate. Enter INTRA to define the digits as intrastate.
EATYPE		STD	Equal access call type. Enter STD. (This field is ignored for packet service applications.)

Datafill example for table LATAXLA

The following examples show sample datafill for ISDN BRI Routing in table LATAXLA.

This following MAP display shows sample datafill in table LATAXLA for E.164 calls.

MAP display example for table LATAXLA for E.164 calls

```
LATACODE        LATA          STATE     EATYPE
________________________________________________________
   LATA1          644   INTER INTRA STD
   LATA1          823   INTRA INTER STD
   LATA1          715   INTER INTER STD
   LATA2          644   INTRA INTER STD
   LATA2          823   INTER INTER STD
   LATA3       823212   INTRA INTER STD
   LATA3       823356   INTER INTER STD
```

This following MAP display shows sample datafill in table LATAXLA for X.121 calls.

MAP display example for table LATAXLA for X.121 calls

```
LATACODE        LATA          STATE     EATYPE
________________________________________________________
   LATA1        05168   INTER INTER STD
   LATA1  05168454677   INTER INTER STD
```

Translation verification tools

The following examples show the output from TRAVER when it is used to verify ISDN BRI Routing.

The examples show TRAVER outputs for

- a private terminating call
- a public terminating call
- a public call terminating on a PTS trunk
- a private originating call
- a public originating call
- an originating E.164 inter-LATA packet call
- a terminating X.121 packet call
- an originating X.121 inter-LATA packet call

Note: Some messages and table accesses that do not relate directly to the capability have been removed from the TRAVER examples, so that it is easier to follow the progression through the main routing tables.

ISDN BRI Routing (continued)

Private terminating call

The following example shows the output from TRAVER when it is used to verify ISDN BRI Routing for a private call terminating in the DMS-100 switch.

In a simulation, the TRAVER command replaces the SETUP message that the DMS-100 switch would receive in a real situation, and provides all the information normally contained in the SETUP message. In the TRAVER command shown at the top of the output example

- *tr* indicates that a trunk name follows, and *bnrpraic* is the trunk name
- *n* replaces the called digits that would be entered here for a non-ISDN call simulation
- *cdn* indicates that CDN IE information follows, which includes *pvt* and *55982* where pvt (private) is the NPI, and 55982 represents the digits
- *prvt* is the NSF
- *bc* indicates that a BC IE follows, and *56kdata* is the bearer capability
- *b* indicates that the type of trace required is “both," meaning that both a table trace and a digit trace are to be performed.

Note: The line numbers in the following example are shown for reference purposes only. Line numbers do not appear in an actual TRAVER session.

ISDN BRI Routing (continued)

TRAVER output example for ISDN BRI Routing for a private terminating call

```
traver tr bnrpraic n cdn pvt 55982 prvt bc 56kdata b
1  TABLE RTECHAR
2   . 56KDATA ( BC 56KDATA $)$
3  TABLE TRKGRP
4  BNRPRAIC PRA 0 PRAC NCRT DSEQ N (ISDN 501) $ $
5  TABLE LTCALLS
6  ISDN 501 PVT XLAIBN 0 IBNTST 0 0 $
7  TABLE NCOS
8  IBNTST 0 0 0 TST10 ( XLAS CXT1 RXCFN NDGT) ( OHQ 0 TONE_OHQ) ( CBQ
   0 1 Y 2)
9  TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND
   DIGCOL
10 IBNTST NXLA CXT3 RXCFN 0 TST1
11 TABLE XLAMAP
12  . 56KDATA CXT3 ( XLA XLAT) $
13 TABLE IBNXLA: XLANAME XLAT
14 XLAT 5 EXTN Y Y Y 613 621 5 $
15 TABLE TOFCNAME
16 613 621
17 TABLE DNINV
18 613 621 5982 ILC WITS 2
19 TABLE DNATTRS
20 613 621 5982
21      (PUBLIC ( NAME WITS_2) $) $ $
22
23
24 +++ TRAVER: SUCCESSFUL CALL TRACE +++
25
26
27 DIGIT TRANSLATION ROUTES
28
29 1 LINE                  6136215982           ST
30
31 TREATMENT ROUTES.  TREATMENT IS:  GNCT
32 1 T120
33
34 +++ TRAVER: SUCCESSFUL CALL TRACE +++
```

The routing process shown in the preceding TRAVER example is as follows:

1. In lines 1 and 2 of the example, table RTECHAR is accessed with the transmission characteristics from the SETUP message, which are defined by the RCNAME 56KDATA.
2. In lines 3 and 4, table TRKGRP is accessed with the trunk group CLLI, BNRPRAIC, and provides the PRI trunk group LTID, ISDN 501.

ISDN BRI Routing (continued)

3. In lines 5 and 6, the LTID and the call type derived from the SETUP message, PVT, are used to access table LTCALLS, which provides the customer group name, IBNTST, and the NCOS, 0.
4. The customer group name is used to search for a translator name for the customer group. First, in lines 7 and 8, table NCOS is accessed with the customer group name and the NCOS, but it doesn't contain a translator. Table CUSTHEAD (lines 9 and 10), however, does provide a customer group translator, CXT3, which is used to access table XLAMAP.
5. In lines 11 and 12, table XLAMAP is accessed with the RCNAME, 56KDATA, and the translator from table CUSTHEAD, CXT3, and provides a new translator, XLAT.
6. In lines 13 and 14, the new translator and the dialed digits are used to access table IBNXLA. The tuple in IBNXLA contains selector EXTN (extension), which provides the SNPA and central office code used to key into tables TOFCNAME, DNINV, and DNATTRS. The process continues with standard translations.

Public terminating call

The following example shows the output from TRAVER when it is used to verify ISDN BRI Routing for a public call terminating in the DMS-100 switch.

In a simulation, the TRAVER command replaces the SETUP message that the DMS-100 switch would receive in a real situation, and provides all the information normally contained in the SETUP message. In the TRAVER command shown at the top of the output example

- *tr* indicates that a trunk name follows, and *bnrpraic* is the trunk name
- *n* replaces the called digits which would be entered here for a non-ISDN call simulation
- *cdn* indicates that CDN IE information follows, which includes *e164* and *7202734* where e164 (public) is the NPI, and 7202734 represents the digits
- *bc* indicates that a BC IE follows, and *56kdata* is the bearer capability
- *b* indicates that the type of trace required is “both," meaning that both a table trace and a digit trace are to be performed

> ***Note:*** The line numbers in the following example are shown for reference purposes only. Line numbers do not appear in an actual TRAVER session.

ISDN BRI Routing (continued)

TRAVER output example for ISDN BRI Routing for a public terminating call

```
traver tr bnrpraic n cdn e164 7202734 bc 56kdata b
1  TABLE TRKRCSEL
2   . TUPLE NOT FOUND
3   . Default Value is (BC ON) (OSA OFF) (CDN OFF) (TNS OFF) (SR OFF)
      (PI OFF)
4  TABLE TRKGRP
5  BNRPRAIC PRA 0 PRAC NCRT DSEQ N (LTC0 501) $ $
6  TABLE LTCALLS
7  LTC0 501 PUB XLALEC 27 $
8  TABLE CUSTSTN
9  TUPLE NOT FOUND
10 TABLE OFCVAR
11 AIN_OFFICE_TRIGGRP NIL
12 TABLE LINEATTR
13 27 1FR NONE NT NSCR 1 909 PRI NLCA NONE 0 NIL NILSFC NILLATA 0 NIL
   NIL 00 N $
14 LCABILL OFF – BILLING DONE ON BASIS OF CALLTYPE
15 TABLE STDPRTCT
16 PRI ( 1) (65021) 3
17  . SUBTABLE STDPRT
18 WARNING:  CHANGES IN TABLE STDPRT MAY ALTER OFFICE
   BILLING.  CALL TYPE DEFAULT IS NP.  PLEASE REFER TO
   DOCUMENTATION.
19  . KEY NOT FOUND
20  . DEFAULT VALUE IS:  N NP 0 NA
21  . SUBTABLE AMAPRT
22  . KEY NOT FOUND
23  . DEFAULT VALUE IS:  NONE OVRNONE N
24 TABLE HPCPATTN
25 TUPLE NOT FOUND
26 TABLE HNPACONT
27 909 Y 949 8 ( 124) ( 1) ( 0) ( 0) 3 $
28  . SUBTABLE HNPACODE
29  . 720 720 DN 619 720

                             –continued–
```

ISDN BRI Routing (continued)

TRAVER output example for ISDN BRI Routing for a public terminating call (continued)

```
30 TABLE TOFCNAME
31 619 720 $
32 TABLE DNINV
33 619 720 720 2734 L HOST 04 0 00 19
34 TABLE DNFEAT
35 TUPLE NOT FOUND
36 TABLE DNATTRS
37 TUPLE NOT FOUND
38 TABLE DNGRPS
39 619 720 2734 2734
40     (PUBLIC ( NAME DNGRPS_PUBLIC) $)
41     (PRIVATE ( NAME DNGRPS_PRIVATE) $)$
42 LNP Info:  Called DN is resident.
43 LNP Info:  Called DN has native NPANXX.
44 LNP Info:  HNPA results are used.
45 AIN Info Collected TDP: no subscribed trigger.
46 TABLE FNPA7DIG
47 TUPLE NOT FOUND
48 AIN Info Analyzed TDP: no subscribed trigger.
49 AIN Term Attempt TDP: no subscribed trigger.
50
51 +++ TRAVER: SUCCESSFUL CALL TRACE +++
52
53 DIGIT TRANSLATION ROUTES
54
55 1 LINE           6197202734         ST
56
57 TREATMENT ROUTES.  TREATMENT IS:  GNCT
58 1 ATB
59
60 +++ TRAVER: SUCCESSFUL CALL TRACE +++

                                           –end–
```

The routing process shown in the preceding TRAVER example is as follows:

1. In lines 4 and 5, table TRKGRP begins translations and provides the logical group and number (LTC0 501) to index table LTCALLS.
2. In lines 6 to 7, table LTCALLS provides the value (27) to index table LINEATTR.

ISDN BRI Routing (continued)

3. In lines 12 to 29, table LINEATTR provides the value (909) to index table HNPACONT. Subtable HNPACODE provides the NPA (619) and office code.
4. In lines 30 to 60, the NPA and central office values index to tables TOFCNAME, DNINV, and DNGRPS. The process continues with standard translations.

Public terminating call on a PTS trunk

The following example shows the output from TRAVER when it is used to verify ISDN BRI Routing for a public call terminating on a PTS trunk in the DMS-100 switch.

In a simulation, the TRAVER command replaces the SETUP message that the DMS-100 switch would receive in a real situation, and provides all the information normally contained in the SETUP message. In the TRAVER command shown at the top of the output example

- *tr* indicates that a trunk name follows, and *ilamadcm* is the trunk name
- *8175213* represents the digits dialed
- *b* indicates that the type of trace required is “both," meaning that both a table trace and a digit trace are to be performed

Note: The line numbers in the following example are shown for reference purposes only. Line numbers do not appear in an actual TRAVER session.

ISDN BRI Routing (continued)

TRAVER output example for ISDN BRI Routing for a public terminating call, PTS trunk

```
traver  tr  ilamadcm 8175213 b
1  TABLE TRKGRP
2  ILAMADCM IT 63 TLD NCRT IC NIL MIDL 518 NPRT NSCR 518 000 Y N
   (BCNAME 56KDATA) $
3  TABLE RTECHAR
4   . 56KDATA ( BC 56KDATA $)$
5  TABLE HNPACONT
6  518 402 1 ( 18) ( 1) ( 0) ( 1) 0
7   . SUBTABLE HNPACODE
8   . 817 817 LRTE 401
9   . SUBTABLE RTEMAP
10  . . 56KDATA 401 402
11  . SUBTABLE RTEREF
12  .  402 DN 613 722
13  . EXIT TABLE RTEREF
14 EXIT TABLE HNPACONT
15
16 +++ TRAVER: SUCCESSFUL CALL TRACE +++
17
18
19 DIGIT TRANSLATION ROUTES
20
21 1 LINE                   6137225213            ST
22
23 TREATMENT ROUTES.  TREATMENT IS:  GNCT
24 1 T120
25
26 +++ TRAVER: SUCCESSFUL CALL TRACE +++
```

The routing process shown in the preceding TRAVER example is as follows:

1. In lines 1 and 2 of the example, table TRKGRP is accessed with the trunk group CLLI, ILAMADCM, and provides the BC datafilled for the trunk group, 56KDATA.
2. In lines 3 and 4, table RTECHAR is accessed with the BC value, and provides RCNAME 56KDATA.
3. In lines 5 and 6, table HNPACONT is accessed, and standard translations follow until a route reference, 401, is obtained in line 8.
4. In lines 9 and 10, the trunk's BC value and the route reference are used to access mapping table HNPACONT.RTEMAP, which provides a new route index for ISDN calls, 402.
5. In lines 11 and 12, table HNPACONT.RTEREF is accessed with the new index.

ISDN BRI Routing (continued)

Private originating call

The following example shows the output from TRAVER when it is used to verify ISDN BRI Routing for a private call originating in the DMS-100 switch.

In a simulation, the TRAVER command replaces the SETUP message that the DMS-100 switch would receive from the terminal in a real situation, and provides all the information normally contained in the SETUP message. In the TRAVER command shown at the top of the output example

- *l* indicates that the DN of the originating line follows, and *6215982* is the DN
- *n* replaces the called digits which would be entered here for a non-ISDN call simulation
- *cdn* indicates that CDN IE information follows, which includes *pvt* and *15983* where pvt (private) is the call type, and 15983 represents the digits
- *prvt* is the NSF
- *bc* indicates that a BC IE follows, and *56kdata* is the bearer capability
- *b* indicates that the type of trace required is “both," meaning that both a table trace and a digit trace are to be performed

Note: The line numbers in the following example are shown for reference purposes only. Line numbers do not appear in an actual TRAVER session.

ISDN BRI Routing (continued)

TRAVER output example for ISDN BRI Routing for a private originating call

```
traver l 6215982 n cdn pvt 15983 prvt  bc 56kdata b
1  TABLE RTECHAR
2  . 56KDATA ( BC 56KDATA $)$
3  TABLE KSETLINE
4  WITS 2 1 DN Y 6215982 IBNTST 0 0 613 (RAG) (LNR) (SFC) (CFX) $
5  TABLE DNATTRS
6  613 621 5982
      (PUBLIC ( NAME WITS_2) $)$ $
7  TABLE NCOS
8  IBNTST 0 0 0 TST10 ( XLAS CXT1 RXCFN NDGT) ( OHQ 0 TONE_OHQ) ( CBQ
   0 1 Y 2)
9  TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND
   DIGCOL
10 IBNTST NXLA CXT3 RXCFN 0 TST1
11 TABLE DIGCOL
12 TST1 1 COL S 2
13 TABLE XLAMAP
14  . 56KDATA CXT3 ( XLA CXT2) $
15 TABLE IBNXLA: XLANAME CXT2
16 CXT2 1 ROUTE N Y N 1 N 2 18 POTS N T IBNRTE 800
17 TABLE IBNMAP
18  . 56KDATA 800 700
19 TABLE IBNRTE
20 700 ISA N N N BNRPRAOG PVT 0 PVT 15
21  . TABLE TRKGRP
22  . BNRPRAOG PRA 0 PRAC NCRT ASEQ N (ISDN 500) $ $
23  . TABLE LTCALLS
24  . ISDN 500 PVT XLAIBN 0 IBNTST 0 0 $
25  . TABLE DIGMAN
26  . 15 (INC 401)
27  . EXIT TABLE DIGMAN
28 EXIT TABLE IBNRTE
29
                              –continued–
```

ISDN BRI Routing (continued)

TRAVER output example for ISDN BRI Routing for a private originating call (continued)

```
30 +++ TRAVER: SUCCESSFUL CALL TRACE +++
31
32
33 DIGIT TRANSLATION ROUTES
34
35 1 BNRPRAOG              N CDN  PVT  L  4015983 PRVT 0   BC 56KDATA
36
37 TREATMENT ROUTES.  TREATMENT IS:  GNCT
38 1 T120
39
40 +++ TRAVER: SUCCESSFUL CALL TRACE +++

                              –end–
```

The routing process shown in the preceding TRAVER example is as follows:

1. In lines 1 and 2 of the example, table RTECHAR is accessed with the transmission characteristics in the SETUP message from the terminal, which are defined by the RCNAME 56KDATA.
2. In lines 3 and 4, table KSETLINE is accessed to begin the translations of the call. The NPA and calling number from table KSETLINE are used to access table DNATTRS to check for any restrictions or subscription parameters.
3. In lines 7 to 10, tables NCOS and CUSTHEAD are accessed with the customer group name, IBNTST, from table KSETLINE, to find a translator name. The customer group translator from table CUSTHEAD, CXT3, is used to access table XLAMAP. In lines 11 and 12, the digit collection index from table CUSTHEAD is used to access table DIGCOL, which defines the number of digits to collect for this customer group.
4. In lines 13 and 14, table XLAMAP is accessed with the customer group translator from CUSTHEAD, CXT3, and the RCNAME associated with the call, 56KDATA. XLAMAP provides a new translator, CXT2, which is used to access IBNXLA.
5. In lines 15 and 16, table IBNXLA provides a route index to table IBNRTE, 800, but as there is a bearer capability associated with the call, table IBNMAP is accessed first to obtain a new index.
6. In lines 19 and 20, table IBNRTE is accessed with the new routing index from IBNMAP, 700, and provides a trunk group CLLI for the call BNRPRAOG. Because the ISA selector is used in table IBNRTE, the NPI (PVT) and NSF (PRVT) are specified for inclusion in the SETUP message.

ISDN BRI Routing (continued)

7. In lines 21 and 22, table TRKGRP is accessed with the trunk group CLLI, and provides the LTID of the PRI trunk group, ISDN 500, which is used to key into table LTCALLS.
8. The LTID and the call type (PVT) from table IBNRTE are used to find a tuple in table LTCALLS, which allows the call to go through to the trunk.
9. In lines 25 and 26, table DIGMAN is accessed with the digit manipulation index from table IBNRTE, 15, to obtain the prefix 401, which must be outpulsed before the digits.
10. Line 35 shows the information to be included in the outgoing PRI SETUP message generated with the call:
    - CDN specifies that a CDN IE is to be generated
    - PVT is the NPI
    - L indicates that the type of number is local
    - 4015983 is the called number
    - PRVT is the NSF
    - 0 indicates that there is no facility number identified (as there could be for a FX or TIE call)
    - BC 56KDATA indicates that the BC IE will contain the BC value 56KDATA

Public originating call

The following example shows the output from TRAVER when it is used to verify ISDN BRI Routing for a public call originating in the DMS-100 switch.

In a simulation, the TRAVER command replaces the SETUP message that the DMS-100 switch would receive from the terminal in a real situation, and provides all the information normally contained in the SETUP message. In the TRAVER command shown at the top of the output example

- *l* indicates that the DN of the originating line follows, and *6215982* is the DN
- *n* replaces the called digits which would be entered here for a non-ISDN call simulation
- *cdn* indicates that CDN IE information follows, which includes *e164* and *96605983* where e164 is the NPI, and 96605893 represents the digits
- *bc* indicates that a BC IE follows, and *56kdata* is the bearer capability
- *b* indicates that the type of trace required is “both," meaning that both a table trace and a digit trace are to be performed

ISDN BRI Routing (continued)

Note: The line numbers in the following example are shown for reference purposes only. Line numbers do not appear in an actual TRAVER session.

TRAVER output example for ISDN BRI Routing for a public originating call

```
traver l 6215982 n cdn e164 96605983 bc 56kdata b
1  TABLE RTECHAR
2   . 56KDATA ( BC 56KDATA $)$
3  TABLE KSETLINE
4  WITS 2 1 DN Y 6215982 IBNTST 0 0 613 (RAG) (LNR) (SFC) (CFX) $
5  TABLE DNATTRS
6  613 621 5982
      (PUBLIC ( NAME WITS_2) $)$ $
7  TABLE NCOS
8  IBNTST 0 0 0 TST10 ( XLAS CXT1 RXCFN NDGT) ( OHQ 0 TONE_OHQ) ( CBQ 0
   1 Y 2) $
9  TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND
   DIGCOL
10 IBNTST NXLA CXT3 RXCFN 0 TST1
11 TABLE DIGCOL
12 TST1 9 POTS Y
13 TABLE XLAMAP
14  . 56KDATA CXT3 (LINEATTR 22) $
15 TABLE LINEATTR
16 22 1FR NONE NT FR01 0 613 P601 L613 TSPS 10 NIL NILSFC LATA1 NIL NIL
   NIL 00
17 TABLE PXLAMAP
18  . 56KDATA P601 ( XLA P621) $
19 TABLE STDPRTCT
20 P621 ( 1) ( 0) 0
21  . SUBTABLE STDPRT
22  . 66 69 N NP 0 NA

                              –continued–
```

ISDN BRI Routing (continued)

TRAVER output example for ISDN BRI Routing for a public originating call (continued)

```
23 TABLE HNPACONT
24 613 710 2 ( 39) ( 1) ( 0) ( 2) 0
25  . SUBTABLE HNPACODE
26  . 660 660 LRTE 13
27  . SUBTABLE RTEMAP
28  . . 56KDATA 13 710
29  . SUBTABLE RTEREF
30  .  710 ISA N N N BNRPRAOG PUB NONE N N 20
31  . . TABLE TRKGRP
32  . . BNRPRAOG PRA 0 PRAC NCRT ASEQ N ( ISDN 201) $ $
33  . . TABLE LTCALLS
34  . . ISDN 201 PUB XLAIBN 0 IBNTST 0 0 $
35  . . TABLE DIGMAN
36  . .    20 (REM 3) (INC 401)
37  . . EXIT TABLE DIGMAN
38  . EXIT TABLE RTEREF
39 EXIT TABLE HNPACONT
40 +++ TRAVER: SUCCESSFUL CALL TRACE +++
41
42
43 DIGIT TRANSLATION ROUTES
44
45 1 BNRPRAOG             N CDN  E164  L  4015983 NIL_NSF  BC 56KDATA
46
47 TREATMENT ROUTES.  TREATMENT IS:  GNCT
48 1 T120
49
50 +++ TRAVER: SUCCESSFUL CALL TRACE +++

                                  –end–
```

The routing process shown in the preceding TRAVER example is as follows:

1. In lines 1 and 2 of the example, table RTECHAR is accessed with the transmission characteristics in the SETUP message from the terminal, which are defined by the RCNAME 56KDATA.
2. In lines 3 and 4, table KSETLINE is accessed to begin the translations of the call. The NPA and calling number from table KSETLINE are used to access table DNATTRS to check for any restrictions or subscription parameters.
3. In lines 7 to 10, tables NCOS and CUSTHEAD are accessed with the customer group name, IBNTST, from table KSETLINE, to find a translator name. The customer group translator from table CUSTHEAD, CXT3, is used to access table XLAMAP. In lines 11 and 12, the digit

collection index from table CUSTHEAD is used to access table DIGCOL, which indicates that POTS digit collection is required.

4. In lines 13 and 14, table XLAMAP is accessed with the customer group translator from CUSTHEAD, CXT3, and the RCNAME associated with the call, 56KDATA. Table XLAMAP provides a line attribute index, 22, which is used to access table LINEATTR.
5. In lines 15 and 16, table LINEATTR provides a standard pretranslator index to table STDPRTCT, P601, but as there is a bearer capability associated with the call, table PXLAMAP is accessed first, and provides a new pretranslator, P621.
6. In lines 19 to 26, table STDPRTCT is accessed with the new standard pretranslator from PXLAMAP and the first two digits of the called number, and standard translations follow until a routing index to table HNPACONT.RTEREF, 13, is obtained.
7. Because there is a bearer capability associated with the call, table HNPACONT.RTEMAP is accessed before table HNPACONT.RTEREF, with the routing index from HNPACODE, 13, and the RCNAME. Table HNPACONT.RTEMAP provides a new routing index to table HNPACONT.RTEREF, 710, which provides a trunk group CLLI for the call, BNRPRAOG. Because the ISA selector is used in table HNPACONT.RTEREF, the NPI (PUB) is specified for inclusion in the SETUP message.
8. In lines 31 and 32, table TRKGRP is accessed with the trunk group CLLI, and provides the LTID of the PRI trunk group, ISDN 201, which is used to key into table LTCALLS.
9. The LTID and the call type (PUB) from table HNPACONT.RTEREF are used to find a tuple in table LTCALLS, which allows the call to go through to the trunk.
10. In lines 35 and 36, table DIGMAN is accessed with the digit manipulation index from table IBNRTE, 20, which specifies that the first three digits must be removed and replaced with the digits 401 before the number is outpulsed.
    - CDN specifies that a CDN IE is to be generated
    - E164 is the NPI
    - L indicates that the type of number is local
    - 4015983 is the called number
    - NIL_NSF indicates that there is no NSF, as it is a public call
    - BC 56KDATA indicates that the BC IE will contain the BC value 56KDATA.

ISDN BRI Routing (continued)

Originating E.164 inter-LATA packet call

The following example shows the output from TRAVER when it is used to verify ISDN BRI Routing for an E.164 inter-LATA packet call originating in the DMS-100 switch.

In a simulation, the TRAVER command replaces the call request packet that the DMS-100 switch would receive from the terminal in a real situation, and provides all the information normally contained in the call request packet. In the TRAVER command shown at the top of the output example

- *l* indicates that the DN of the originating line follows, and *7227000* is the DN
- *915397772* represents the dialed digits
- *bc* indicates that a BC IE follows, and *64kx25* is the bearer capability
- *rpoas* indicates that an RPOA code follows, and *1234* is the code
- *b* indicates that the type of trace required is “both," meaning that both a table trace and a digit trace are to be performed

Note: The line numbers in the following example are shown for reference purposes only. Line numbers do not appear in an actual TRAVER session.

ISDN BRI Routing (continued)

TRAVER output example for ISDN BRI Routing for an originating E.164 packet call

```
traver l 7227000 915397772 bc 64kx25 rpoas 1234 b
1  TABLE RTECHAR
2   . PACKET ( BC 64KX25 $)$
3  TABLE KSETLINE
4  HOST 00 0 03 24 1 DN Y 7227000 COMPEER 0 0 613 $
5  TABLE NCOS
6  COMPEER 0 0 0 CPR0 ( OHQ 0 TONE_OHQ) ( CBQ 0 1 Y 2) $
7  TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND
8  DIGCOL
9  COMPEER NXLA CXPR RXCFN 0 TST1
10 TABLE DIGCOL
   NDGT specified: digits collected individually
11 TABLE XLAMAP
12  . PACKET CXPR ( XLA PKT) $
13 TABLE IBNXLA: XLANAME PKT
14 PKT 9 NET N NN 1 N NDGT N N GEN ( LATTR 300) $
15 TABLE LINEATTR
16 300 IBN NONE NT FR01 0 888 PKT L613 N NONE N 0 NIL NILSFC LATA1 O NIL
   NIL 23 N
17 TABLE PXLAMAP
18  . Tuple not found. Default to old pretranslator name.
19 TABLE STDPRTCT
20 PKT ( 1) ( 0) 0
21  . SUBTABLE STDPRT
22  . 1 1 N DD 1 NA
23 TABLE HNPACONT
24 888 99 1 ( 2) ( 1) ( 0) ( 0)
25  . SUBTABLE HNPACODE
26  . 539 539 FRTE 10
27  . SUBTABLE RTEMAP
28  . Tuple not found. Default to old pretranslator name.
29  . SUBTABLE RTEREF
30  .  20 S N N Y OGDP
31  . EXIT TABLE RTEREF
32 EXIT TABLE HNPACONT
```

–continued–

ISDN BRI Routing (continued)

TRAVER output example for ISDN BRI Routing for an originating E.164 packet call (continued)

```
33 TABLE LCASCRN
34 888 L613 ( 1) MNDT N
35  . SUBTABLE LCASCR
36  . TUPLE NOT FOUND. DEFAULT IS NON-LOCAL
37 TABLE LATAXLA
38 LATA1 613539 INTER INTRA STD
39 USING RPOA SPECIFIED
40 TABLE STDPRTCT
41 RPOA ( 1) ( 0)
42  . SUBTABLE STDPRT
43  . 1234 1234 T DD 0 OFRT 100 4 4 NONE
44 TABLE OFRTMAP
45  . Tuple not found. Default to old index.
46  . . TABLE OFRT
47  . . 100 D S IEC1234
48  . . EXIT TABLE OFRT
49
50 +++ TRAVER: SUCCESSFUL CALL TRACE +++
51
52
53 DIGIT TRANSLATION ROUTES
54
55 1 IEC1234             16135397772
56
57
58 TREATMENT ROUTES.  TREATMENT IS:  GNCT
59 1 T120
60
61
62 +++ TRAVER: SUCCESSFUL CALL TRACE +++

                                  –end–
```

The routing process shown in the preceding TRAVER example is as follows:

1. In lines 1 and 2 of the example, table RTECHAR is accessed with the transmission characteristics in the call request packet from the terminal, which are defined by the RCNAME PACKET.
2. In lines 3 and 4, table KSETLINE is accessed to begin the translations of the call.
3. In lines 5 to 8, tables NCOS and CUSTHEAD are accessed with the customer group name, COMPEER, from table KSETLINE, to find a translator name. The customer group translator from table CUSTHEAD, CXPR, is used to access table XLAMAP.

4. In lines 11 and 12, table XLAMAP is accessed with the customer group translator from CUSTHEAD, CXPR, and the RCNAME associated with the call, PACKET. Table XLAMAP provides a line attribute index, 300, which is used to access table LINEATTR.
5. In lines 15 and 16, table LINEATTR provides a standard pretranslator index to table STDPRTCT, PKT. As there is a bearer capability associated with the call, table PXLAMAP is accessed before table STDPRTCT, but there is no tuple in PXLAMAP for the call.
6. In lines 19 to 26, table STDPRTCT is accessed with the pretranslator from LINEATTR and the first digit of the called number, and standard translations follow until a routing index to table HNPACONT.RTEREF, 10, is obtained.
7. Because there is a bearer capability associated with the call, table HNPACONT.RTEMAP is accessed before table HNPACONT.RTEREF, but there is no tuple in HNPACONT.RTEMAP for the call.
8. In lines 29 and 30, table HNPACONT.RTEREF provides a trunk CLLI, ODGP, for the call.
9. In lines 33 to 36, table LCASCRN is accessed with the STS from table LINEATTR, 888, and determines that the call is not local. Table LATAXLA is then accessed with the LATA from table LINEATTR, and the tuple indicates that the call is inter-LATA.
10. In lines 40 to 43, table STDPRTCT is accessed with the RPOA code from the call request packet. The tuple in table STDPRTCT.STDPRT provides a route index to table OFRT, which in turn provides a new trunk CLLI, IEC1234. The original trunk CLLI obtained in table HNPACONT.RTEREF is discarded.

Terminating X.121 packet call

The following example shows the output from TRAVER when it is used to verify ISDN BRI Routing for an X.121 packet call terminating in the DMS-100 switch.

In a simulation, the TRAVER command replaces the call request packet that the DMS-100 switch would receive in a real situation, and provides all the information normally contained in the call request packet. In the TRAVER command shown at the top of the output example

- *tr* indicates that a trunk name follows, and *iecx12156* is the trunk name
- *019037530250* represents the dialed digits

ISDN BRI Routing (continued)

- *bc* indicates that a BC IE follows, and *64kx25* is the bearer capability
- *b* indicates that the type of trace required is “both," meaning that both a table trace and a digit trace are to be performed.

Note: The line numbers in the following example are shown for reference purposes only. Line numbers do not appear in an actual TRAVER session.

ISDN BRI Routing (continued)

TRAVER output example for ISDN BRI Routing for a terminating X.121 packet call

```
traver tr iecx12156 019037530250 bc 64kx25 b
TABLE RTECHAR
 . PACKET ( BC 64KX25 $)$
TABLE TRKGRP
IECX12156 X75 0 NPDGP NCRT CWCTH X121 903 312 001 N
TABLE PXLAMAP
. Tuple not found. Default to old pretranslator name.
TABLE STDPRTCT
X121 ( 1) ( 0)
 . SUBTABLE STDPRT
 . 0 0 SFMT 0 15 1 X E164 002
ADDRESS FORMAT CHANGED TO E.164
TABLE PXLAMAP
. Tuple not found. Default to old pretranslator name.
TABLE STDPRTCT
E164 ( 1) ( 0)
 . SUBTABLE STDPRT
 . 1 1 N DD 1 NA
TABLE HNPACONT
002 30 1 ( 2) ( 1) ( 0) ( 0)
 . SUBTABLE HNPACODE
 . 903 903 HNPA 0
 . 753 753 DN 903 753
TABLE TOFCNAME
903 753
TABLE DNINV
903 753 0250 L ISDN 101
+++ TRAVER: SUCCESSFUL CALL TRACE +++
DIGIT TRANSLATION ROUTES
1 LINE                   9037530250           ST
TREATMENT ROUTES.  TREATMENT IS:  GNCT
1 T120

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

ISDN BRI Routing (continued)

The routing process shown in the preceding TRAVER example is as follows:

1. In lines 1 and 2 of the example, table RTECHAR is accessed with the transmission characteristics from the call request packet, which are defined by the RCNAME PACKET.
2. In lines 3 and 4, table TRKGRP is accessed with the trunk group CLLI, IECX12156, and provides pretranslator X121.
3. In lines 5 and 6, pretranslator X121 is used to access table PXLAMAP. However, there is no tuple for the call, so the original pretranslator is used to access table STDPRTCT.
4. In lines 7 to 11, table STDPRTCT.STDPRT is accessed with the escape code, zero. The tuple uses the SFMT/X selector to direct the call to another index location in table STDPRTCT, E164.
5. In lines 14 to 17, table STDPRTCT is accessed with the new pretranslator and the STS from the first STDPRT tuple, and standard translations follow until the NPA and office code of the terminating line are obtained in line 22.
6. In lines 23 to 26, the NPA and central office code are used to key into tables TOFCNAME and DNINV.

Originating X.121 inter-LATA packet call

The following example shows the output from TRAVER when it is used to verify routing for a X.121 in packet call originating in the DMS-100 switch.

In a simulation, the TRAVER command provides all the information normally contained in the call request packet. In the TRAVER command shown at the top of the output example

- *l* indicates that the DN of the originating line follows, and *7238201* is the DN
- *051686137238404* indicates the dialed digits
- *b* indicates that the type of trace required is “both," meaning that both a table trace and a digit trace are to be performed

Note: The line numbers in the following example are shown for reference purposes only. Line numbers do not appear in an actual TRAVER session.

ISDN BRI Routing (continued)

TRAVER output example for ISDN BRI Routing for an originating X.121 inter-LATA call

```
traver l 7238201 051686137238404 b
1  TABLE KSETLINE
2  PKT 201 1 DN N 7238201 BNR 0 0 613 $ BRI PMD
3  TABLE NCOS
4  BNR 0 0 0  UNREST (XLAS BNRXLA FEATXLA BNRDIG)$
5  TABLE CUSTHEAD:CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND
   DIGCOL
6  BNR NXLA BNRXLA FEATXLA 1 BNRDIG
7  TABLE DIGCOL
8  TUPLE NOT FOUND
9  Default is RPT
10 TABLE RTECHAR
11 .PACKET ( BC 64KX25 $)$
12 TABLE XLAMAP
13 .PACKET BNRXLA ( XLA PKT)$
14 TABLE IBNXLA: XLANAME PKT
15 PKT 0 SFMT 1 15 1 X 81
16   ADDRESS FORMAT CHANGED TO X.121
17 TABLE LINEATTR
18 81 IBN NONE NT NSCR 1 613 X121 NLCA NONE 0 NIL NILSFC LATA1 0 NIL
   NIL 12 N $
19 LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
20 TABLE PXLAMAP
21 .Tuple not found. Default to old pretranslator name.
22 TABLE STDPRTCT
23 X121 ( 1) ( 0) 2
24 .SUBTABLE STDPRT
25 WARNING: CHANGES IN TABLE STDPRT MAY ALTER OFFICE
26 BILLING.  CALL TYPE DEFAULT IS NP.  PLEASE REFER TO
27 DOCUMENTATION
28 .5168 5168 T DD 0 OFRT 50 2 14 NONE
29 Originator is not an AIN agent, therefore AIN info is not processed.
30 ..TABLE OFRTMAP
31 ...Tuple not found. Default to old index.
32 ..TABLE OFRT
33 .. 50 N D PKTOUTX121A 3 N N
34 ..EXIT TABLE OFRT

                              –continued–
```

ISDN BRI Routing (continued)

TRAVER output example for ISDN BRI Routing for an originating X.121 packet call (continued)

```
35 TABLE LATAXLA
36 lata1 05168 inter inter std
37 X121 preselected RPOA is 1 2 3 5
38 DN has preselected RPOA found in table DNCTINFO
39 Start RPOA translation
40 TABLE PXLAMAP
41 .Tuple not found. Default to old pretranslator name.
42 TABLE STDPRTCT
43 RPOA ( 1) (65021) 0
44 .SUBTABLE STDPRT
45 WARNING: CHANGES IN TABLE STDPRT MAY ALTER OFFICE
46 BILLING.  CALL TYPE DEFAULT IS NP.  PLEASE REFER TO
47 DOCUMENTATION
48 .1235 1235 T DD 0 OFRT 50 2 14 NONE
49 ..TABLE OFRTMAP
50 ...Tuple not found. Default to old index.
51 ..TABLE OFRT
52 .. 50 N D PKTOUTX121B 3 N N
53 ..EXIT TABLE OFRT
54
55 +++TRAVER: SUCCESSFUL CALL TRACE+++
56
57
58 DIGIT TRANSLATION ROUTES
59 1 PKTOUTX121B     51686137238404  ST
60
61 TREATMENT ROUTES.  TREATMENT IS:  GNCT
62 1 T120
63
64 +++TRAVER: SUCCESSFUL CALL TRACE+++

                                –end–
```

The routing process shown in the preceding TRAVER example is as follows:

1. In lines 1 and 2, table KSETLINE begins translations. Table KSETLINE provides the customer group name (BNR) to index table NCOS.
2. In lines 3 to 6, tables NCOS and CUSTHEAD provide the customer group translator (BNRXLA) to index table XLAMAP.
3. In lines 10 and 11, the RCNAME name of the call (PACKET) and the default routing characteristics (64KX25) provide an index to table RTECHAR.
4. In lines 12 and 13, the customer group translator (BNRXLA) and the RCNAME of the call (PACKET) index to table XLAMAP.

ISDN BRI Routing (end)

5. In lines 14 to 16, table IBNXLA provides a line attribute index (81). Selector SFMT in table IBNXLA uses the X option to allow a line attribute index to datafill in table IBNXLA. The digit 0 indicates a change in address format to X.121.
6. In lines 17 to 19, table LINEATTR provides a pretranslator index (X121) to table STDPRTCT.
7. In lines 22 to 34, standard pretranslations occur. The tuple in table STDPRTCT.STDPRT provides a route index (50) to table OFRT. Table OFRT provides a new route (PKTOUTX121A).
8. In lines 35 to 39, the LATA from table LINEATTR provides an index to table LATAXLA. The tuple indicates that the call is inter-LATA. Table DNCTINFO provides a preselected RPOA code and adds the code to the selection utility of the call request packet. RPOA translations start.
9. In lines 42 to 50, the RPOA from table DNCTINFO provides an index to table STDPRTCT. The tuple in table STDPRTCT.STDPRT provides a route index (50) to table OFRT.
10. In lines 51 to 53, table OFRT provides a new route (PKTOUTX121B). The call completes.

ISDN Translations and Routing

Functionality code

Functional group ordering code: NI000008

Functionality ordering code: does not apply

Release applicability

BCS33 and later versions

Requirements

This document includes the datafill information for this functionality. Complete installation can require software or hardware.

Description

The ISDN Translations and Routing ability provides call routing based on non-digit routing information in the Q.931 SETUP message. The ISDN Translations and Routing ability provides routing characteristics in the Q.931 SETUP message. The SETUP message can contain several information elements (IE) that contain routing characteristics. The SETUP message uses the routing characteristics in the bearer capability (BC) IE and the called party number (CDN) IE.

The BC IE specifies a requested bearer service to the network. Use of the BC IE in compatibility checking makes sure the user and network abilities are matched for a given call. The set up of an ISDN call requires BC IE. If BC IE is not present, a default bearer capability is not assumed.

The CDN IE contains the type of number (TON) field. The TON field specifies if a number is not known, national, international, network-specific, or from a subscriber.

The bearer services that the switch on the BRI interface supports are:

- voice
- voice band data
- circuit mode data

The bearer capabilities that correspond to these services are:

- SPEECH, 3_1KHZ
- 64KDATA
- 64K_RATE_AD_DATA

A user that originates a SETUP message that contains a BC IE must have authorization to use the associated bearer service. For any other condition, the system rejects the call because of incompatibility of the bearer capability and the authorized bearer service. When this condition occurs, the originator receives a RELease COMplete message with cause value 65. Cause value 65 indicates bearer capability is not implemented. In this event, the terminating side does not receive an offer for a call.

The terminating terminal performs compatibility checking. When the system offers an ISDN call to the terminating user, the system sends a SETUP message with the BC IE. The system codes the SETUP message like the BC IE of the originating user. The authorized bearer service of the terminating user can be not compatible. When this condition occurs, the system sends a DISConnect message with cause value 65 to the originating user. Cause value 65 indicates bearer capability is not implemented. The system routes the originating user to the Bearer Capability Not Implemented (BCNI) treatment to cease call setup.

Operation

The Meridian Digital Centrex (MDC) and universal translation systems support the Integrated Services Digital Network translation and routing system. The ISDN translation system uses the analysis of digits, translators, and routing characteristics to route the call. This ability allows call routing based on BC. This ability allows call routing based on the information in the type of number (TON) field of the called party number (CDN) IE.

In the DMS-100, the variable bearer capability name (BCNAME) represents the BC IE. A definition of BCNAME is in Table BCDEF. The system automatically enters data in Table BCDEF with default BCNAMEs that represent the correct bearer capabilities in the BC IEs.

A routing characteristic name, RCNAME, represents the non-digit routing information, like BC and CDN. Use of the RCNAME occurs with the translations and routing. Table RCNAME defines routing characteristic names.

Table RTECHAR establishes the relationship between RCNAME and the non-digit routing characteristics. Table RTECHAR associates an RCNAME to a BCNAME, or to the CDN IE, or to the two codes.

To provide ISDN translations, datafill in table XLAMAP allows selection of a new translator, line attribute, or route. The routing characteristics from table RCNAME determine the selection. The translator from table CUSTHEAD or table NCOS determine the selection. If table XLAMAP does not have datafill

ISDN Translations and Routing (continued)

for the routing characteristics and the translator, the system accesses table IBNXLA. The system accesses table IBNXLA to find a route based on the translator and the dialed digits. In table IBNXLA, you can dial specified routing digits (no ISDN translations) to choose the same destination. You also can use the following procedure to choose the same destination. Do not dial digits. Send a specified value in the CDN IE (ISDN translations) .

Field XLASYS in table LINEATTR determines which translations system processes the call. In this example, the prefix code (PX) system is the translations system that processes the call. The value in field XLANAME from table LINEATTR indexes table PXHEA. When the XLANAME is in table PXHEAD, the system accesses table PXCODE to determine if the dialed digits are in the table.

Control returns to table PXHEAD if the system does not find the dialed digits. Field DFLTSEL is set to DFLT. This condition allows translations to continue in table PXHEAD with subfield XLASEL. Subfield XLASEL, the translations selector field, is set to TRMT. The system routes calls to the treatments table TMTCNTL.

If the system finds the dialed digits, the ISDN routing system analyzes the routing index and can alter this index. Translations and digit analysis produces the routing index. Table IBNMAP alters the routing index. Tables PXRTE and IBNRTE perform routing. In table PXRTE, the final destination entry occurs against the translation name and index. The destination can be an index to table IBNRTE, or the CLLI of the outgoing trunk. The directory number of the terminating subscriber is in the IBNRTE.

Do not enter the CLLI of the destination trunk in table PXRTE. Use an index to table IBNRTE (location of the CLLI of the outgoing trunk). Table IBNMAP can specify a new routing index for table IBNRTE. The routing index in table PXRTE and the RCNAME of the call are used as the key to table IBNMAP. Table IBNMAP specifies the new route.

The ISDN routing system can block bad connections. The translation system can choose a route to a switch that cannot handle the BC IE. When this event occurs, the ISDN routing system can block that call. For example, if the RCNAME is 64KRANA, the call goes to BCNI treatment. The 64KRANA represents the BCNAME 64K_RATE_AD_DATA and CDN National.

Translations table flow

Table KSETLINE begins the processing of a BRI call, and standard translations tables continue the process. Normally, the process continues to standard routing tables. When the call has an associated routing characteristic, the system accesses table XLAMAP first.

The following list describes the ISDN Translations and Routing translations tables:

- *Table RCNAME* This table contains the valid routing characteristics names.
- *Table BCDEF* The transmission characteristics from the SETUP message access this table. Table BCDEF provides the BCNAME that represents these characteristics.
- *Table BCCOMPAT* This table defines the bearer capability (BC) pairs that are compatible. For example, a terminal with 300 baud modem BC can communicate to a terminal with 300 to 1200 baud modem BC. Data entry must occur in table BCDEF before data entry occurs in table BCCOMPAT.
- *Table RTECHAR* The routing characteristics from the SETUP message and the BCNAME from BCDEF access table RTECHAR. Table RTECHAR provides the RCNAME. The RCNAME determines additional routing.
- *Table XLAMAP* The original translator and the RCNAME associated with the call access table XLAMAP. Table XLAMAP provides a new translator to access table IBNXLA, which specifies an index to a routing table. Table XLAMAP provides a line attribute index, LINEATTR, to table LINEATTR.
- *Table IBNXLA* This table contains the data to translate digits for a call that originates on an ISDN line or trunk. A line attribute uses the translations selector NET to route the call to table LINEATTR.
- *Table LINEATTR* This table points to universal translations tables through fields XLASYS and XLANAME. In this document, the PX translations system describes ISDN translations.
- *Table PXHEAD* This table contains the default routes and treatments for table PXCODE. Table PXHEAD performs translations when the dialed digits are not in table PXCODE.
- *Table PXCODE* This table provides translations. In the translations, selection of an entry uses the received digits and the XLANAME from table LINEATTR.
- *Table PXRTE* The outgoing route selections associated with the address digits appear in this table. Table PXCODE identifies the outgoing route selections.
- *Table IBNMAP* This table is accessed before the routing table to check for a new route based on bearer capability. The key to the mapping table is the

ISDN Translations and Routing (continued)

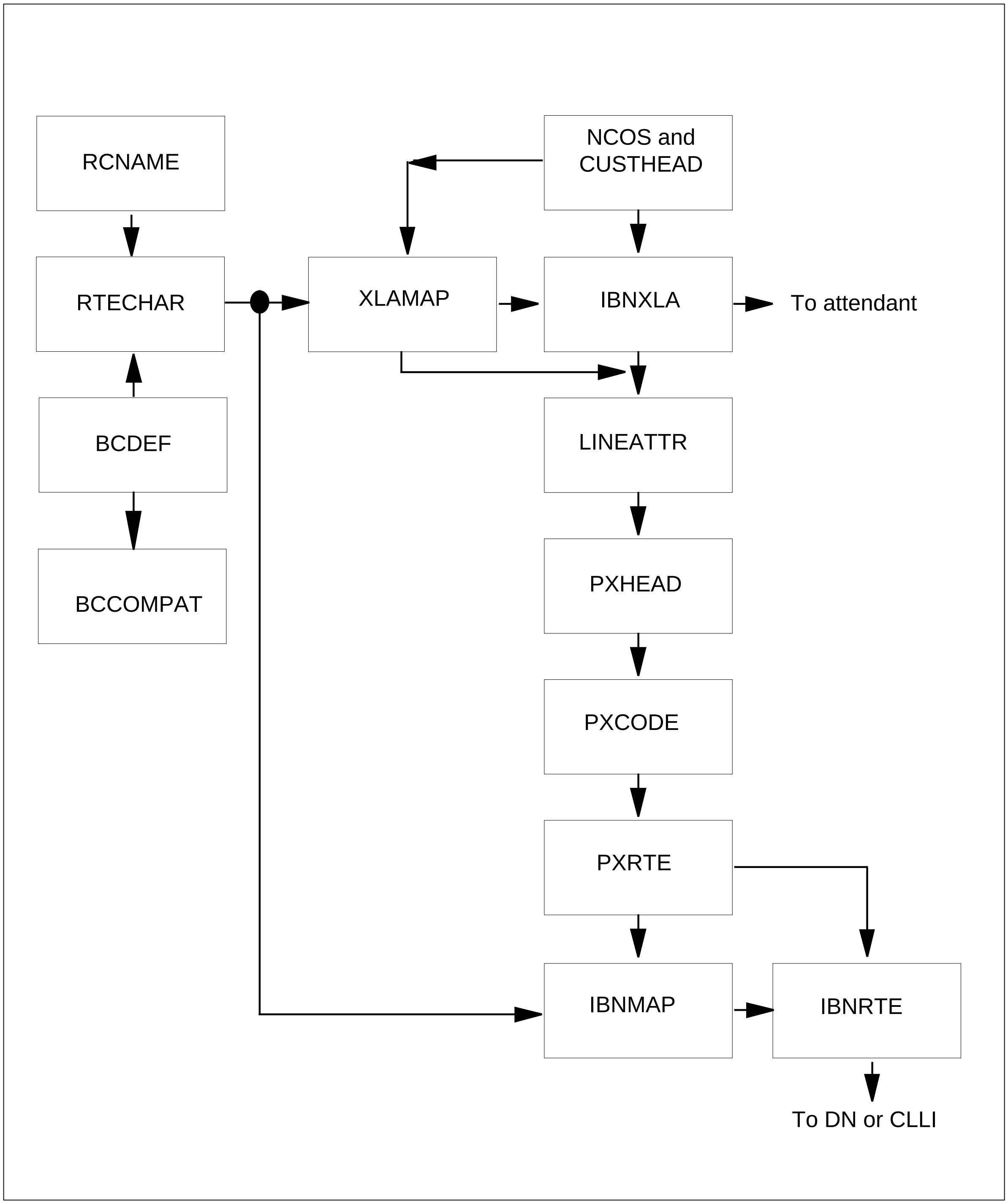
routing index from IBNXLA and the RCNAME. The mapping table can provide a new index to the routing table.

- *Table IBNRTE* This table defines the CLLI of the trunk. The call routes to the trunk. Table IBNRTE specifies a route to a treatment if the the system does not support the routing characteristic.
- *Table TRKGRP* For circuit-switched calls, the CLLI feature of the trunk from the routing table accesses table TRKGRP. The S selector normally specifies a trunk for the outgoing call.

The ISDN Translations and Routing translation process appears in the following flowchart.

ISDN Translations and Routing (continued)

Table flow for ISDN Translations and Routing



ISDN Translations and Routing (continued)

Example datafill content appears in the following tables. The datafill content describes actions between tables that appear in the flowchart.

Datafill example for ISDN Translations and Routing item content

Item	Example data
Called number	440302
BC	64KDATA
CDN	NA

Datafill example for ISDN Translations and Routing table content

Datafill table	Example data
BCDEF	64KDATA
BCCOMPAT	64KDATA
RCNAME	RN64UDTR
RTECHAR	RN64UDTR BC 64KDATA CDN NA $ BC 64KDATA CDN IN $ $
XLAMAP	RN64UDTR LONSXLA XLA ISUPNXLA $
IBNXLA	ISUPNXLA 4 NET N Y N 0 Y NDGT Y N DOD N 713 NONE $
LINEATTR	713 IBN NONE NT NSCR O 103 NPRT NLCA NONE 0 NIL NILSFC NILLATA 0 PX IVPNXLAN NIL 00 N $
PXHEAD	IVPNXLAN DFLT TRMT OFC VACT $ DFOP CLASS LCL $ NOCON F
PXCODE	IVPNXLAN 0 9 RTE MM 2 10 DEST 4 VPN N Y $
PXRTE	IVPNXLAN 4 T IBNRTE 4 $
IBNMAP	RN64UDTR 4 7
IBNRTE	7 S Y Y N ANSIISUPA1

Limits

The ISDN Translations and Routing feature does not have limits.

Interactions

The ISDN Translations and Routing does not have action between functions.

Activation/deactivation by the end user

The ISDN Translations and Routing does not require activation or deactivation by the end user.

Billing

ISDN Translations and Routing does not affect billing.

Station Message Detail Recording

The ISDN Translations and Routing does not affect Station Message Detail Recording.

Datafilling office parameters

The office parameters ISDN Translations and Routing uses appear in the following table. For more information about office parameters, refer to the *Office Parameters Reference Manual*.

Office parameters used by ISDN Translations and Routing

Table name	Parameter name	Explanation and action
OFCENG	NO_OF_HIS_CONTROL_BLKS	A history control block is required to obtain a history data block. The history control block stores bearer capability information. Refer to the *Office Parameters Reference Manual* for provisioning rules.
OFCENG	NO_OF_HIS_DATA_BLKS	The storage of bearer capability information requires a history data block. Refer to the *Office Parameters Reference Manual* for provisioning rules.

Datafill sequence

The tables that require datafill to implement ISDN Translations and Routing appear in the following table. The tables appear in the correct entry order.

Datafill requirements for ISDN Translations and Routing (Sheet 1 of 2)

Table	Purpose of table
BCDEF	Contains bearer capability names and the associated transmission characteristics.
BCCOMPAT	Defines the bearer capability (BC) pairs that are compatible
RCNAME	Contains the valid routing characteristics names (RCNAME).
RTECHAR	Associates an RCNAME with a set of routing characteristics.

ISDN Translations and Routing (continued)

Datafill requirements for ISDN Translations and Routing (Sheet 2 of 2)

Table	Purpose of table
PXHEAD	Contains the default routes and treatments for dialed digits that are not in table PXCODE.
PXCODE	Provides the translations based on the dialed digits and the XLANAME from table LINEATTR.
PXRTE	Specifies the routes for outgoing calls.
LINEATTR	Defines line attributes and specifies a translations system (XLASYS).
IBNRTE	Provides a route for the outgoing call. Alters the routing index for a call retranslation based on the RCNAME, or routes the call to a treatment.
IBNMAP	A prerouting table to alter the routing index to IBNRTE for calls with an RCNAME.
IBNXLA	Provides a translator for the call when translation for the call must occur again according to an XLANAME.
XLAMAP	A pretranslation table to alter the translator name for calls with an RCNAME.

Datafilling table BCDEF

Table BCDEF contains all the valid bearer capability names. Each tuple in the table lists a BCNAME and the transmission characteristics for the BCNAME. The transmission characteristics are the transfer ability, transfer mode, and coding standard. Table RTECHAR uses the BCNAME to represent the transmission characteristics of the BCNAME.

At installation, the BCDEF entry has ten default tuples. Table BCDEF defaults, which follows, describes the ten default tuples. The table describes the correct entry order for the tuples. The operating company cannot alter the tuples. If the operating company must define additional BCs, operating company can enter additional tuples in table BCDEF. Entry of the tuples can occur in any order after the already present tuples.

BCDEF defaults

BC	Uses
SPEECH	normal use is for speech transport can transport voiceband data if use of voice compression techniques does not occur on the data
64KDATA	64 kbit/s clear channel data the BC can cause problems with North American repeaters when the BC receives 16 consecutive zeroes. Techniques like B8ZS can alleviate the problems.
64KX25	used for X.25-packet data. The X.25 protocol encodes the data.
56KDATA	56 kbit/s channel data normally used in North America because the data structure cannot call the all-zero octet problem that occurs with 64 kbit/s data
DATAUNIT	equivalent to 56KDATA, developed for specified data equipment
64KRES	a BC that does not comply, developed for a specified application
3_1KHZ	used for speech and voiceband data
7_KHZ	can use for audio or voiceband data normal use is for high quality audio applications, like music
VOICE_DATA	used for specified DMS-250 applications
64K_RATE_AD_DATA	used for applications in which the data rate is less than 64 kbit/s. An example of this rate is 2400 bit/s, 9600 bit/s, 48 kbit/s. The bandwidth that remains is stuffed according to CCITT protocols for rate adaption.

The datafill for ISDN Translations and Routing for table BCDEF appears in the following table. The fields that appear apply directly to ISDN Translations

ISDN Translations and Routing (continued)

and Routing. For a description of the other fields, refer to the data schema section of this document.

Datafilling table BCDEF

Field	Subfield or refinement	Entry	Explanation and action
KEY		alphanumeric (1 to 16 characters)	Bearer capability name. Enter a name to represent the transmission characteristics to define in the following BCDATA field.
BCDATA		refer to subfields	Bearer capability data. This field contains subfields XFERCAP, XFERMOD, and CODINGST.
	XFERCAP	SPEECH, RESDIG, UNRESDIG, AU3_1KHZ, or AU7KHZ	Transfer capability. Enter the transfer capability of the trunk as • SPEECH for standard voice calls • RESDIG for 56 kbit/s transparent data transfer • UNRESDIG for digital information without limits at 64 kbit/s • AU3_1KHZ for audio data at 3.1 kHz • AU7KHZ for audio data at 7 kHz
	XFERMOD	CIRCUIT or PACKET	Transfer mode. Enter CIRCUIT for a circuit-switched service, or PACKET for a packet data service.
	CODINGST	CCITT or NETWORK	Coding standard. Enter CCITT to indicate the CCITT coding standards are in use. Enter NETWORK to indicate that network-specific standards are in use.

Datafill example for table BCDEF

Sample datafill for table BCDEF appears in the following example. The example describes the default tuples added when load build occurs.

MAP example for table BCDEF

KEY	BCDATA
SPEECH	SPEECH CIRCUIT CCITT
64KDATA	UNRESDIG CIRCUIT CCITT
64KX25	RESDIG CIRCUIT NETWORK DTU X25 Y AUTO
56KDATA	UNRESDIG CIRCUIT NETWORK DTU NONE Y 56KBS
DATAUNIT	UNRESDIG CIRCUIT NETWORK DTU TLINK Y 56KBS
64KRES	RESDIG CIRCUIT CCITT
3_1KHZ	AU3_1KHZ CIRCUIT CCITT
7_KHZ	AU7KHZ CIRCUIT CCITT
VOICE_DATA	AU3_1KHZ CIRCUIT CCITT
64K_RATE_AD_DATA	UNRESDIG CIRCUIT CCITT

Datafilling table BCCOMPAT

Entries for table BCDEF must occur before entries for table BCCOMPAT.

Table BCDEF must define all bearer capability (BC) pairs. For related information and a list of default BCs, refer to table BCDEF.

Default BCs do not need to be compatible with each other. If the bearer capability call screening range is set to Integrated Business Network (IBN), the data unit BC requires special considerations.

Non-ISDN terminals can have associated synonym directory numbers (DN). Non-ISDN terminals cannot have associated DNs if data units and ISDN terminals use synonym numbers. ISDN terminals and data units using synonym numbers impact the dial plan. In an environment that uses many synonym DNs, you must know a larger set of numbers to access services.

The best option is to manipulate the BC compatibilities to prevent loss of the abilities of data units. To manipulate BC compatibilities, make the data unit BC compatible with other BCs. The other BCs can communicate with the data unit. This action allows you to call data units, and for data units to call you.

ISDN Translations and Routing (continued)

Table BCCOMPAT can define a maximum of 3906 (63 × 63 - 63) BC pairs. Table BCCOMPAT is like a 63 × 63 matrix of Booleans that define the compatible BC pairs.

Datafilling table BCCOMPAT (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
KEY		see subfields	*Key* This field contains subfields CALLBC and TERMBC. Separate the two subfields with a space.
	CALLBC	3_1KHZ 7_1KHZ 56KDATA 64KDATA 64KX25 64_RATE_ AD_DATA DATAUNIT SPEECH VOICE_ DATA	*Incoming call bearer capability name* Enter the bearer capability name (BCNAME) of the incoming call. This entry must be in table BCDEF. The BCNAME specifies a name that a user defines. This name describes the bearer capability (BC) and can describe the low layer ability. Enter 3_1KHZ for the default BC for calls from trunks other than: • primary rate access (PRA) • ISDN user part (ISUP) • intermachine trunk (IMT) • dedicated access line (DAL) This BC normally transports speech and voiceband data. Enter 7_1HKZ for voice band high quality audio and voice band data. High quality audio applications like music use this BC. Voiceband data can use this BC. Enter 56KDATA for the basic 56-kbit data adapted for 64-kbit data. The 64-kbit data is the normal data rate in North America. This BC uses seven bits of data sampled at 8000 times for each second for the 56-kbit rate. The eighth bit of every octet is 1 so that an all 0 (zero) octet does not occur. An all zero octet causes problems that can occur with 64KDATA.

ISDN Translations and Routing (continued)

Datafilling table BCCOMPAT (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	CALLBC (continued)		Enter 64KDATA for ISDN circuit switched packet data calls. This BC is 64 kbit/s of clear channel data. This BC uses all of the 64 kbit bandwidth for data and 16 consecutive 0s (zero) can occur. Most operating companies in North America use 56 kbit/s data transport. Problems can occur with the North American repeaters if 16 consecutive 0s (zeros) are received. Techniques like B8ZS can alleviate the problems.
	CALLBC (continued)		
	TERMBC	3_1KHZ 7_1KHZ 56KDATA 64KDATA 64KX25 64_RATE_ AD_DATA DATAUNIT SPEECH VOICE_ DATA	*Terminating bearer capability name.* Enter the BCNAME of the terminator. See field CALLBC for the definition of each BC.

Datafill example for table BCCOMPAT

Sample datafill for table BCCOMPAT appears in the following example. The two tuples that appear are entered by default during the loadbuild process.

ISDN Translations and Routing (continued)

MAP example for table BCCOMPAT

```
                                KEY
---------------------------------------------------------


          SPEECH          3_1KHZ
          3_1KHZ          SPEECH
```

Datafilling table RCNAME

Table RCNAME contains all the correct routing characteristic names. Each tuple in the table contains an RCNAME (field name NAMEKEY). The RCNAME associates with a group of routing characteristics in table RTECHAR. The RCNAME appears in tables in the translations and routing process to represent the associated routing characteristics.

The datafill for ISDN Translations and Routing for table RCNAME appears in the following table. The fields that appear apply directly to ISDN Translations and Routing. For a description of the other fields, refer to the data schema section of this document.

Datafilling table RCNAME

Field	Subfield or refinement	Entry	Explanation and action
NAMEKEY		alphanumeric (one to eight characters)	Routing characteristics name. Enter a name to represent a set of routing characteristics to define in table RTECHAR.

Datafill example for table RCNAME

Sample datafill for table RCNAME appears in the following example.

MAP example for table RCNAME

```
 NAMEKEY
 ________________________________________________________
 56KNAME
 64KNAME
   VOICE
 3_1NAME
   7NAME
  ISDNRC
  PACKET
```

Datafilling table RTECHAR

To define an RCNAME, table RTECHAR assigns a set of routing characteristics to an RCNAME. The table associates an RCNAME with the following routing characteristics:

- a bearer capability name (BCNAME) that table BCDEF defines. This name represents the BC IE in the SETUP message
- a type of number (TON) the CDN IE specifies
- a BCNAME and a TON

A maximum of seven sets of routing characteristics can appear for each RCNAME. The RCNAMEs identify the transmission service that determines the call routing in the table.

The datafill for ISDN Translations and Routing for table RTECHAR appears in the following table. The fields that appear apply directly to ISDN

ISDN Translations and Routing (continued)

Translations and Routing. For a description of the other fields, refer to the data schema section of this document.

Datafilling table RTECHAR (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
RCKEY		alphanumeric (one to eight characters)	Routing characteristics key. Enter the RCNAME for which you define characteristics. ***Note:*** The RCNAME must be in table RCNAME.
GROUPRC		refer to subfields	Routing characteristics groups. This field contains a maximum of four groups of routing characteristics. The subfield FIRSTRC identifies these characteristics. This field contains a maximum of three OTHERRC subfields. Enter the GROUPRC a maximum of seven times in the table.
	FIRSTRC	refer to subfields	First routing characteristic group. This group provides the first set of routing characteristics. The field contains the selector, subfield RCSEL, and the BCNAME, subfield BCNAME.
	RCSEL	BC or CDN	Routing characteristic selector. Enter BC to define the bearer capability routing characteristics. Complete subfield BCNAME that follows. Enter CDN to define the CDN type of number routing characteristics to describe. Complete subfield CDNTON that follows.
	BCNAME	alphanumeric (1 to 16 characters)	BC name. Enter the BCNAME that applies to this set of routing characteristics. ***Note:*** The BCNAME appears in table BCDEF.

ISDN Translations and Routing (continued)

Datafilling table RTECHAR (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	CDNTON	NIL, L, NA, IN, NET, or ABBR	Called party number type of number. Enter NIL to indicate a CDN IE is not present. Enter L to indicate a CDN that contains a 7-digit public number is present. Enter NA to indicate a CDN that contains a 10-digit public number is present. Enter IN to indicate a CDN that contains an international number is present. Enter NET to indicate a CDN that contains a variable private number is present. Enter ABBR to indicate a CDN that contains an abbreviated private number is present (normally used for feature access).
	OTHERRC	refer to subfields	Other routing characteristic group. This group provides another set of routing characteristics. This group uses the same subfields as the FIRSTRC field to provide characteristics that appear before in this table. The OTHERRC can repeat two more times to form a GROUPRC with FIRSTRC.

Datafill example for table RTECHAR

Sample datafill for table RTECHAR appears in the following example. The first tuple defines the RCNAME 64KNAME, which allows routing based on a transmission type of 64 kbit/s data. The BCNAME 64KDATA identifies the transmission type.

ISDN Translations and Routing (continued)

MAP example for table RTECHAR

```
  RCKEY
                                             GROUPRC
________________________________________________________
64KNAME
(BC 64KDATA $) $

56KNAME
(BC 56KDATA $)
(BC 56KDATA (CDN NA) $)$

  VOICE
(CDN NA $) $

3_1NAME
(BC 3_1KHZ (CDN NA) $)
(BC 3_1KHZ (CDN NET) $)$
```

Datafilling table IBNRTE

The datafill for ISDN Translations and Routing for table IBNRTE appears in the following table. The fields that appear apply directly to ISDN Translations and Routing. For a description of the other fields, refer to the data schema section of this document.

Table IBNRTE routes an ISDN call to another route, or to treatment when the specified bearer capability is not present.

Datafilling table IBNRTE (Sheet 1 of 3)

Field	Subfield or refinement	Entry	Explanation and action
RTE		numeric (0 to 1023)	IBN route reference index. Enter the route reference number assigned to the route list.
RTELIST		refer to subfield	Route list. This field contains subfield IBNRTSEL.

ISDN Translations and Routing (continued)

Datafilling table IBNRTE (Sheet 2 of 3)

Field	Subfield or refinement	Entry	Explanation and action
	IBNRTSEL	TRMT, DN, or S	IBN route selector. Enter TRMT to direct the call to treatment during routing. Enter data for subfield RTETRMT. This selector is for ISDN and ISDN user part (ISUP) originators where the cause value is important. Enter DN to indicate the dialed digits converted to a ten-digit DN that terminates on the switching unit. Enter data for subfields SNPA, NXX, EXP, and DMI. Enter S to specify that the dialed digits are the outpulsed digits. Enter data for subfields OHQ, CBQ, EXP, MBG, and CLLI.
	RTETRMT	BCNI	Route treatment. Enter BCNI (bearer capability not implemented) as the treatment the switch selected to route the call. Enter $ to indicate the end of the tuple.
	SNPA	numeric (3 digits)	Serving NPA. Enter the serving NPA of the DN to which the call terminates.
	NXX	numeric (3 digits)	NXX code. Enter the NXX code of the DN to which the call terminates.
	DMI	numeric (1 to 32767)	Digit manipulation index. Enter the index in table DIGMAN. Table DIGMAN stores the last four digits of the terminating DN.
	OHQ	Y or N	Off-hook queuing. Enter Y if the system allows off-hook on this route. For any other condition, enter N.
	CBQ	Y or N	Call back queuing. Enter Y if the system allows call back queuing on this route. For any other condition, enter N.
	EXP	Y or N	Expensive. Enter Y if application of an expensive route and expensive route warning tone occurs. For any other condition, enter N.

ISDN Translations and Routing (continued)

Datafilling table IBNRTE (Sheet 3 of 3)

Field	Subfield or refinement	Entry	Explanation and action
	MBG	Y or N	Multiswitch business group. Enter Y if the trunk group can handle MBG service. For any other condition, enter N. The routing remains the same.
	CLLI	alphanumeric (1 to 16 characters)	Common language location identifier. Enter the code in table CLLI to which the system routes the call.

Datafill example for table IBNRTE

Sample datafill for table IBNRTE appears in the following example.

MAP example for table IBNRTE

```
 RTE                                               RTELIST
________________________________________________________________
   4  ( S Y Y N N  ANSIISUPA1) ( S Y Y N N  ANSIISUPB1)$
 399                                            ( TRMT BCNI)$
```

Datafilling table IBNMAP

Table IBNMAP translates a routing index in table IBNRTE to a new routing index in table IBNRTE for ISDN call routing translation.

During ISDN call translation, entry must occur in table IBNMAP before table IBNRTE. Data entry for table IBNMAP occurs if RCNAME information is present in the call.

If data entry for table IBNMAP occurs and RCNAME information is not in table IBNMAP, the new route index defaults. The new route index defaults to the original or basic route index in table IBNRTE. If the RCNAME information is in table IBNMAP, the basic route translates to a non-basic route. The non-basic route routes the call to a different route, or to an ISDN treatment.

Data entry must occur in the following tables before table IBNMAP:

- RCNAME
- IBNRTE

ISDN Translations and Routing (continued)

The datafill for ISDN Translations and Routing for table IBNMAP appears in the following table. The fields that appear apply directly to ISDN Translations and Routing. For a description of the other fields, refer to the data schema section of this document.

Datafilling table IBNMAP

Field	Subfield or refinement	Entry	Explanation and action
KEY		refer to subfields	Key. This field contains subfields RCNAME and INDEX.
	RCNAME	alphanumeric (one to eight characters)	Routing characteristic name. Enter the ISDN routing characteristic name that table RCNAME defines.
	INDEX	numeric (1 to 1023)	Basic routing index. Enter the route reference index of a basic routing list in table IBNRTE. The system accesses a basic routing list if ISDN routing characteristics are not present. An entry outside this range is invalid.
NEWINDEX		numeric (0 to 1023)	Non-basic routing index. Enter the route reference index of a non-basic routing list in table IBNRTE. Access of a non-basic routing list occurs if ISDN routing characteristics are present. An entry outside this range is invalid.

Datafill example for table IBNMAP

Sample datafill for table IBNMAP appears in the following table.

MAP example for table IBNMAP

```
            KEY NEWINDEX
________________________________________________________
  RN64RA     3         6
  RN64RA     4       399
 RN64RATR    3         6
 RN64RATR    4       399
```

Datafilling table LINEATTR

Table LINEATTR lists other tables to access for digit analysis. This table lists other tables for each line or group of lines. Table IBNXLA accesses this table.

ISDN Translations and Routing (continued)

After the addition of a tuple to table LINEATTR occurs, deletion of this tuple cannot occur.

Note: Enter data in tables NCOS and PXHEAD before table LINEATTR.

The datafill for ISDN Translations and Routing for table LINEATTR appears in the following table. The fields that appear apply directly to ISDN Translations and Routing. For a description of the other fields, refer to the data schema section of this document.

Datafilling table LINEATTR (Sheet 1 of 5)

Field	Subfield or refinement	Entry	Explanation and action
LNATTIDX		numeric (0 to 1023)	Line attribute index. Enter the index into table LINEATTR.
LCC		IBN	Line class code. Enter IBN as the line class code (LCC) assigned to the line attribute index. Changes cannot occur to the LCC of a current tuple.
CHGCLSS		alphanumeric (four characters) or NONE	Charge class. If the switching unit has configuration for Local Automatic Message Accounting (LAMA), enter the charge class assigned to the line attribute index. For any other condition, enter NONE.
COST		HI, LO or NT	Class of service tone. Enter the required class of service tone: HI (high tone), LO (low tone), or NT (no tone).
SCRNCL		alphanumeric (one to four characters) or NSCR	Class of service screening subtable name. If screening by class of service is required, enter the name of the class of service subtable. The line attribute index receives assignment of the name. If the screening by class of service is not required, enter NSCR.

Datafilling table LINEATTR (Sheet 2 of 5)

Field	Subfield or refinement	Entry	Explanation and action
LTG		numeric (0 to 255)	Line treatment group. Enter the line treatment group number assigned to the line attribute index. The line treatment group number discriminates between customer lines. The customer lines are assigned to the same line class code that has different routing or screening patterns. If the assignment of more than one line treatment group number occurs, the following condition applies. Office parameter SO_PROMPT_FOR_LTG in table OFCVAR must be set to Y (yes).
STS		numeric (three digits)	Serving translation scheme. Enter the serving-numbering plan area (NPA) assigned to the line attribute index. Changes cannot occur to the STS of a current tuple.
PRTNM		alphanumeric (one to four characters) or NPRT	Standard pretranslator subtable name. If pretranslation of digits is required, enter the name of the standard pretranslator subtable assigned to the line attribute index. If standard pretranslation is not required, enter NPRT.
LCANAME		alphanumeric (one to five characters) or NLCA	Local calling area screening subtable name. If the screening of local central office codes (NNX) is required, enter the name of the local calling area subtable. The line attribute index receives assignment of the local calling area timetable. If the screening of local NNX codes is not required, enter NLCA.
ZEROMPOS		alphanumeric (1 to 10 characters) or NONE	Zero minus position. A line attribute can have configuration for operator (0-) and special toll (0+) dialing. If this condition occurs, enter the position in the position table to which the system routes operator (0-) calls. For any other condition, enter NONE.

ISDN Translations and Routing (continued)

Datafilling table LINEATTR (Sheet 3 of 5)

Field	Subfield or refinement	Entry	Explanation and action
TRAFSNO		numeric (0 to 127)	Traffic separation number. Enter the source and destination traffic separation number assigned to the line attribute index. This number can be from 1 to 127. If a traffic separation number is not required, enter 0 (zero). Traffic separation enables a count of direct dial (DD), operator assisted (OA), or no prefix (NP) calls. Accumulation of this count occurs between an incoming source and an outgoing source. An incoming source can be an incoming trunk or originating line attribute. An outgoing source can be an outgoing trunk, terminating line attribute, tone, or announcement.
MRSA		alphanumeric (one to eight characters) or NIL	Message rate service area. Enter a message rate service area (MRSA) name if the switching unit can provide multiunit message rate (MUMR) services. The MRSA name is in table MRSANAME field MRSA. Calls to numbers that result in a type of call of NP (no prefix) require MUMR billing records. If MUMR billing records are not required, enter NIL.
SFC		alphanumeric (one to six characters) or NILSFC	International subscriber feature class. Enter an international subscriber feature class if the switching unit has an international load. Enter NILSFC for no subscriber feature class.
LATANM		alphanumeric (one to eight characters) or NILLATA	Local access and transport area name. Enter the name of the local access and transport area (LATA) assigned to the line attribute index. Enter NILLATA for no LATA.
MDI		numeric (0 to 1023)	Metering data index. If the switching unit has an international load, enter the metering data index assigned to the line attribute index.
XNAME		refer to subfield	International translations system start. This field contains subfield XLASYS and refinement XLANAME.

ISDN Translations and Routing (continued)

Datafilling table LINEATTR (Sheet 4 of 5)

Field	Subfield or refinement	Entry	Explanation and action
	XLASYS	PX	International translations system. Enter PX as the head table name (PXHEAD) and datafill refinement XLANAME. The PX directs the call to the translator name refinement. The XLANAME specifies the translator. ***Note:*** Translation selector NET, entry of network type DOD must occur in table IBNXLA.
	XLANAME	alphanumeric (one to eight characters)	International translations name. Enter the index in table PXHEAD.
DGCLMANE		alphanumeric (one to eight characters)	Digit analysis tables entry point. Enter a digit analysis name to serve as the entry point in the common digit analysis tables DGHEAD and DGCODE. ***Note:*** The name entered must appear in table DGHEAD field DGNAME.
FANIDIGS		numeric (00 to 99)	Flexible ANI information digit pairs. If the switching unit has feature BR0713 (Flexible ANI Information Digit Assignment), enter the flexible automatic number identification (FANI) information digit pair. The line attribute index (01 to 99) receives assignment of the pair. For any other condition, enter 00. This digit pair transmits to an inter-LATA carrier (IC) or an operations support system (OSS) as part of the ANI spill. The digit pair transmits if the IC or OSS can receive the FANI information digit pair. Field FANI of table OCCINFO indicates if the IC or OSS can receive the information.

ISDN Translations and Routing (continued)

Datafilling table LINEATTR (Sheet 5 of 5)

Field	Subfield or refinement	Entry	Explanation and action
RESINF		see subfield	Residential enhanced services information. This field contains subfield RESINFO and refinements CUSTGRP, SUBGRP, and NCOS.
	RESINFO	N	Residential information selector. Enter N (no) for ISDN lines. Leave refinements CUSTGRP, SUBGRP, and NCOS blank. ***Note:*** You can change field RESINFO from N to Y. You cannot change this field from Y to N.

Datafill example for table LINEATTR

Sample datafill for table LINEATTR appears in the following example.

MAP example for table LINEATTR

```
LNATTIDX LCC CHGCLSS COST SCRNCL LTG STS PRTNM LCANAME ZEROMPOS TRAFSNO
MRSA    SFC  LATANM  MDI      IXNAME DGCLNAME FANIDIGS
                 RESINF                                 OPTIONS
________________________________________________________________________

    100 IBN    NONE   NT   NSCR   0 103  NPRT    NLCA     NONE       0
 NIL NILSFC NILLATA    0  PX  VPNXLA      NIL       00
                     N                                        $
```

Datafilling table IBNXLA

Table IBNXLA allows call routing to occur based on the translator and the routing digits. Use of the translation selector NET occurs if the digit or digits dialed represent the Direct Outward Dial (DOD) access code. Table IBNXLA associates the access code with a line attribute in table LINEATTR where translation occurs.

Access to table IBNXLA occurs from table CUSTHEAD if table XLAMAP is not entered for the routing characteristics and the translator.

The datafill for ISDN Translations and Routing for table IBNXLA appears in the following table. The fields that appear apply directly to ISDN Translations and Routing. For a description of the other fields, refer to the data schema section of this document.

Datafilling table IBNXLA (Sheet 1 of 6)

Field	Subfield or refinement	Entry	Explanation and action
KEY		refer to subfields	Key field. The key to table IBNXLA contains subfields XLANAME and DGLIDX.
	XLANAME	alphanumeric (one to eight characters)	Translator name. Enter the translator name. ***Note:*** Table XLANAME must define XLANAME.
	DGLIDX	vector of a maximum of 18 alphanumeric digits	Digilator index. Enter the digit or digits assigned as an ambiguous code.
RESULT		refer to subfields	Result. This field contains subfields TRSEL, ACR, SMDR, NO_ACCODE_DIGITS, SECOND_DIAL_TONE, DGCOLNM, CRL, INTRAGRP, NET_TYPE, SMDRB, LINEATTR, TOLL_RESTRICTION, and NETOPTNS.
	TRSEL	NET	Translation selector. Enter the translation selector NET.
	ACR	Y or N	Account code entry. Enter Y (yes) if an account code entry is required. The entry is required if the Direct Outward Dial access code specified in field DGLIDX is dialed. Enter N (no) if the account code entry is not required.

ISDN Translations and Routing (continued)

Datafilling table IBNXLA (Sheet 2 of 6)

Field	Subfield or refinement	Entry	Explanation and action
	SMDR	Y or N	Station message detail recording. Enter Y if the records that follow are present. These records are records of all calls from a customer group station or attendant console to any station in the block of station numbers. Enter N if a record of the numbers is not required. ***Note:*** If field SMDR is set to Y, only the feature that originates a call is SMDR recorded. For features that do not originate a call, this field does not have a result. The system does not produce an SMDR record. For dump and restore purposes, an N entry must occur after subfield SMDR if TRSEL entry occurs with the following codes. These codes are NET, ROUTE, TTTR, EXTN, CUTTD, or FEAT. This N is the datafill for subfield VCDR.
	NO_ACCODE_DIGITS	0 to 7	Number of access code digits. Enter the number of digits in the DOD access code.
	SECOND_DIAL_TONE	Y or N	Second dial tone. Enter Y if a second dial tone is required. For any other condition, enter N.
	DGCOLNM	NDGT, POTS, or RES	Digit collection name. Enter the name assigned to the block of data in the table DIGCOL for digit collection for IBN lines. These lines are NDGT, POTS, or RES lines.
	CRL	Y or N	Code restriction level. Enter Y if code restriction levels apply to DOD calls. For any other condition, enter N.
	INTRAGRP	Y or N	Intragroup. Enter Y if calls are for the same customer group. For any other condition, enter N.

ISDN Translations and Routing (continued)

Datafilling table IBNXLA (Sheet 3 of 6)

Field	Subfield or refinement	Entry	Explanation and action
	NET_TYPE	DOD	Network type. Enter the network type DOD.
	SMDRB	Y or N	Station message detail recording. Enter Y if the system only records calls that can be charged and that dial the DOD access code. For any other condition, enter N. An entry in field SMDR affects the result of an entry of N in this field. The SMDRB is turned on if billable calls require SMDR. The SMDRB must be on and the call must be billable for that leg of the call to generate SMDR. The SMDR is for toll calls. The call does not generate a record if the option is on for the first leg of the call. This condition also applies if the second leg of the call is billable. ***Note:*** If the system routes through virtual facility groups (VFG), SMDRB must be turned on for the leg of the call that requires SMDR. The call must be billable for that leg of the call.
	LINEATTR	numeric (0 to 1023)	Line attribute. Enter the line attribute assigned to the DOD access code.

ISDN Translations and Routing (continued)

Datafilling table IBNXLA (Sheet 4 of 6)

Field	Subfield or refinement	Entry	Explanation and action
	TOLL_RESTRICTION	TDN, TDV, or NONE	Toll restriction. Specify the call restrictions that apply to direct dial (DD) and operator assisted (OA) calls. Enter TDN if calls divert to treatment TDND (toll denied) in the line, office or trunk treatment tables. Enter TDV if calls divert to the key and lamp on the attendant console. The key and lamp are assigned to incoming call identification code number 8 (intercept). This subfield appears as TOLL_RESTRICTION on the switch. Enter NONE if restrictions do not apply.
	NETOPTNS	see subfields	Network options. This field contains subfields NETRTOPT and NARNAME.

ISDN Translations and Routing (continued)

Datafilling table IBNXLA (Sheet 5 of 6)

Field	Subfield or refinement	Entry	Explanation and action
	NETRTOPT	NARS	Network routing option. Enter NARS to enable the network access register (NAR) routing option. The NAR routing option regulates the termination of (throttles) Meridian Digital Centrex (MDC) calls. The system throttles calls when calls exceed the maximum number of simultaneous calls for the assigned NAR group. If you enter NARS, call throttling enables control with the translation NAR group and not the NCOS group or the customer group. Translation controls throttling of outgoing calls. To make sure this throttling continues, the following conditions must be present: • The originating agent customer group must have NARS in field OPTIONS in table CUSTENG and Y in field NARACT in table CUSTENG. • The originating agent NCOS group can have NAR in field OPTIONS in table NCOS. If this condition occurs, Y must be in field NARACT in table NCOS. • A correct NAR name must be in one of the following fields. These fields are field NARNAME in table IBNXLA, field NAROUT in table NCOS, and field NAROUT in table CUSTENG.

ISDN Translations and Routing (continued)

Datafilling table IBNXLA (Sheet 6 of 6)

Field	Subfield or refinement	Entry	Explanation and action
	NARNAME	alphanumeric (1 to 16 characters) or NILNAR	Network access register name. Enter a NAR group name from key field NARNAME in table NARDATA to apply the characteristics of that NAR group. This action applies the NAR group characteristics to call throttling that translation controls. Enter NILNAR to apply the default NAR name in field NAROUT in table NCOS. ***Note:*** The default NAR name in field NAROUT in table CUSTENG can be for throttling. Use of the NAR name for throttling occurs if an NARS option is not assigned in table NCOS. Use of the NAR name for throttling occurs if NILNAR is in field NAROUT in table NCOS. If NILNAR is in field NAROUT in table CUSTENG, call throttling does not occur because a valid NAR is not specified.

Datafill example for table IBNXLA

The following example describes sample datafill for table IBNXLA. The example shows a tuple that uses the selector NET and the translator LONSXLA. The system routes calls that have a first dialed digit of 5 according to line attribute index number 100.

MAP example for table IBNXLA

```
                         KEY
                                                  RESULT
________________________________________________________
LONSXLA                     5
           NET N Y N 0 Y   NDGT Y N DOD N  100 NONE    $
```

Datafilling table XLAMAP

Table XLAMAP is a pretranslation table that associates the original MDC translator name and the RCNAME of the call with:

- a new translator name
- a line attribute
- a routing index

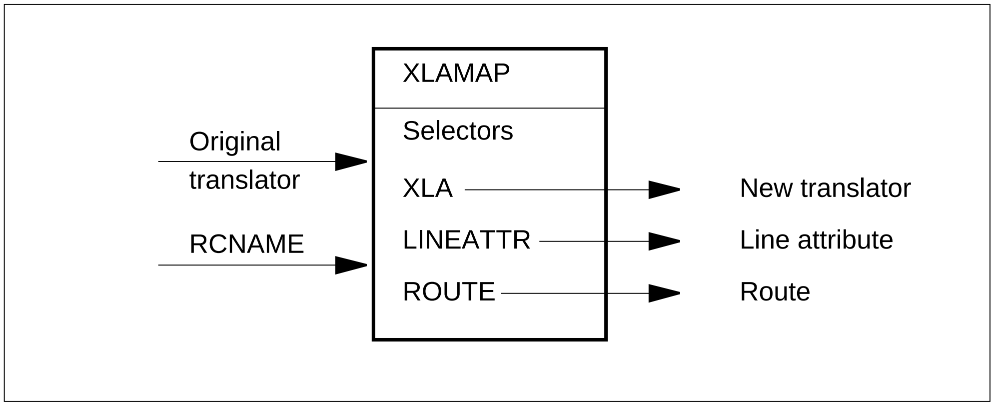
The original MDC translator name is from table NCOS or CUSTHEAD. This association allows the call to translate with a different method that ISDN routing characteristics determine. Two sets of new translations data can associate with each original translator and RCNAME.

Three selectors in the SEL field of table XLAMAP appear in the following XLAMAP selectors figure. The three following selectors determine the next stage of translations for the call:

- The XLA selector provides a new translator name for use in table IBNXLA.
- The LINEATTR selector provides a line attribute index.
- The ROUTE selector only operates when there are no called digits in the CDN or keypad IE. Normal use of the route selector is as the second of two sets of translations data. The first set, with selector XLA, provides a translator for use when there are called digits. The second set, with selector ROUTE, provides a route to follow when there are no digits.

If ROUTE and LINEATTR do not have datafill, and called digits are not present, the following action occurs. The system routes the call to permanent signal treatment.

XLAMAP selectors



ISDN Translations and Routing (continued)

Note 1: The ROUTE and LINEATTR selectors do not support billing.

Note 2: Datafill table XLAMAP after tables RCNAME and LINEATTR.

The datafill for ISDN Translations and Routing for table XLAMAP appears in the following table. Only the fields that apply directly to ISDN Translations and Routing appear in the following table. For a description of the other fields, refer to the data schema section of this document.

Datafilling table XLAMAP (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
XLAKEY		see subfields	Translations key. The key to table XLAMAP consists of subfields RCNAME and XLANAME.
	RCNAME	alphanumeric (one to eight characters)	Routing characteristics name. Enter the RCNAME the translation requires. ***Note:*** Table RCNAME must define the RCNAME.
	XLANAME	alphanumeric (one to eight characters)	Translator name. Enter the original MDC translator name from table NCOS or CUSTHEAD. ***Note:*** Table XLANAME must define the XLANAME.
DATA		see subfields	Data. The DATA field contains the selector and the new translator name, line attribute, or routing index. The new translator name is subfield NEWXLA. The line attribute is subfield LINEATTR. The routing index consists of subfields TABID and KEY. ***Note:*** You can repeat the DATA field one time.
	SEL	XLA, LINEATTR or ROUTE	Selector. Enter XLA to specify the new translations pointer as a translator name. Complete subfield NEWXLA that follows. Enter LINEATTR to specify the new translations pointer as a line attribute index. Complete subfield LINEATTR that follows. Enter ROUTE to specify the new translations pointer as a route index. Complete subfields TABID and KEY that follow.

Datafilling table XLAMAP (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	NEWXLA	alphanumeric (1 to 16 characters)	New translator. Enter the new translator for use in table IBNXLA. ***Note:*** Table XLANAME must define the XLANAME.
	LINEATTR	numeric (0 to 1023)	Line attribute. Enter a line attribute index that table LINEATTR defines. ***Note:*** Use of the LINEATTR selector cannot occur in conjunction with the XLA selector or the ROUTE selector.
	TABID	OFRT or IBNRTE	Table name. Enter the name of the routing table. This name can be OFRT or IBNRTE.
	KEY	numeric (0 to1023)	Index. Enter the routing index in OFRT or IBNRTE.

Datafill example for table XLAMAP

Sample datafill for table XLAMAP appears in the following example. This tuple provides two sets of translations data. One set is a translator name for table IBNXLA. The other set is a route to follow when digits are not present.

MAP example for table XLAMAP

```
          XLAKEY                                    DATA
________________________________________________________________
RN64UDTR LONSXLA                ( XLA ISUPNXLA)$
```

Datafilling table PXHEAD

The translations selector TRMT enables translations to proceed to table OFCRTE with the current XLANAME and specified treatment code OFC. The system routes the call to the treatment control table, table TMTCNTL TREAT.

The digit string presented for translations at each stage of universal translations has the following effect. This digit string determines the digit string presented to the next stage of translations or routing. Manipulations of

ISDN Translations and Routing (continued)

the digits in the preceding stages determines the digit string to present for translations at any stage.

Digit string manipulation options include NOCON (not consume digits). This option applies when translations are to continue to additional digit translation in the next stage. When the option is set to not consume digits, the following action occurs. The digit string that indexes the current stage of translations indexes the next stage.

The datafill for ISDN Translations and Routing for table PXHEAD appears in the following table. Only the fields that apply directly to ISDN Translations and Routing appear. For a description of the other fields, refer to the data schema section of this document.

Datafilling table PXHEAD (Sheet 1 of 4)

Field	Subfield or refinement	Entry	Explanation and action
XLANAME		alphanumeric (one to eight characters)	Translation name. Enter a name to identify the universal translator.
DFLT		see subfield and related refinements	Default translations data. This field contains subfield DFLTSEL and refinements that depend on the entry in subfield DFLTSEL. Translation uses this result if the dialed digits are not entered in the code table associated with table PXHEAD.
	DFLTSEL	DFLT	Default selector. Enter DFLT and enter refinement XLASEL to specify a default treatment for dialed digits not found in the code table.
	XLASEL	TRMT	Translations selector. Specifies a translations selection that determines the route of a call when the dialed digits are not found in the code table. Enter TRMT (treatment) and enter subfield OPT if the system routes a call to treatment. A treatment is a known exception or failure condition. The action taken terminates translation, and returns an indication that a treatment was encountered and decoded in a route.

ISDN Translations and Routing (continued)

Datafilling table PXHEAD (Sheet 2 of 4)

Field	Subfield or refinement	Entry	Explanation and action
	OPT	see subfield and related refinements	Options. This subfield is a vector of a maximum of ten options. Each option contains subfield OSEL, and refinements that depend on the entry in subfield OSEL. For each option, specify the option selector (OSEL), followed by a space, and the refinements. Separate each refinement with a space. A $ concludes the entry. Entries continue with the field DFOP.
	OSEL	OFC	Option selector. For a treatment name, enter OFC, followed by a space, and datafill refinement OFC.
	OFC	alphanumeric (one to four characters)	Office treatment. Enter a treatment name that the office treatment subtable, TMTCNTL TREAT, contains. This subfield specifies the known treatment the call receives. An example is VACT (vacant code treatment).
DFOP		see subfield	Default options. This field contains subfield DFOPSEL.

ISDN Translations and Routing (continued)

Datafilling table PXHEAD (Sheet 3 of 4)

Field	Subfield or refinement	Entry	Explanation and action
	DFOPSEL	DFOP	Default options. Enter DFOP and enter subfield OSEL and the refinements. Access to field DFOP only occurs when field XLASEL is set to RTE or CONT in a code table. Table PXCODE is an example of a code table. When the entry in field DFOP is equal to DFOP, this field is a vector that consists of a number of options. A space separates each option. Each option consists of subfield OSEL and refinements that depend on the entry in subfield OSEL. Subfield OSEL describes the different refinements. For each option, specify the option selector, followed by a space, and the refinements. A space separates each refinement. A $ concludes the entry. Entries continue with the field CON. For dialed digits that resolve to an RTE or CONT selector, the following condition applies. Any options not entered against the digits can default to the value you specify in this field. This facility, and option DFLT, are intended to minimize the amount of datafill required in any given code table. This condition is important if most of the expected codes have the same attributes. If an option applies to most, but not all, tuples in the code table instance, the following condition applies. You can enter the option in the default options. Options entered in the code table tuples override the options in the head table. Entry of the different value can occur in the several code tuples to which the default option does not apply.
	OSEL	CLASS	Option selector. Enter CLASS (custom local area signaling service), followed by a space. Enter refinement CLASS to specify the translations class. Use of the CLASS occurs when the class of the dialed digits can be determined.
	CLASS	LCL	Translation class. If the entry in subfield OSEL is CLASS, enter LCL (local) for this refinement.

Datafilling table PXHEAD (Sheet 4 of 4)

Field	Subfield or refinement	Entry	Explanation and action
CON		NOCON	Consume digits. Enter NOCON to specify that digits must not be consumed. Index of the next table occurs with the same digits as the current table. This condition does not apply to the prefix digits. The default options only apply if a tuple with subfield XLASEL set to CONT or DMOD is chosen in the code tables.
MAXIDX		F	Maximum index. Enter F to specify that the dialed digits are to index translation tables. The dialed digits are in the range 0 to 9, and hex digits B, C, D, E, and F.

Datafill example for table PXHEAD

Sample datafill for table PXHEAD appears in the following example.

MAP example for table PXHEAD

```
 XLANAME
                                                    DFLT
                                                    DFOP
  CON  MAXIDX
________________________________________________________
IVPNXLAL
                               DFLT TRMT (OFC VACT) $
                                   DFOP (CLASS LCL) $
NOCON      F
```

Datafilling table PXCODE

The translations selector RTE enables translations to continue to table PXRTE at the route index that field XLANAME and subfield DEST specifies.

The routing option DEST (destination) specifies the route index for table PXRTE. The assignment of this option enables the specification of the destination of the call without any additional digit screening.

The system checks digit strings at every stage of universal translations. This check makes sure that a minimum and maximum number of digits are received. Because the dialed digits index the translations tables, the system

ISDN Translations and Routing (continued)

checks that the digits are in specified ranges. The options that control these checks are MM (minimum, maximum, or both) and MAXIDX (maximum index).

The digit string presented for translations at each stage of universal translations has the following result. The digit string determines the digit string presented to the next stage of translations or routing. Manipulations of the digits in the preceding stages determine the digit string presented for translations at any stage.

Digit string manipulation options are PF (prefix digits). For the PF option, the system deletes the number of digits identified for the current stage of translation. In addition, the digits do not index any further translation tables. The system does not store the digits in call detail records, and does not outpulse the digits.

The datafill for ISDN Translations and Routing for table PXCODE appears in the following table. Only the fields that apply directly to ISDN Translations and Routing appear. For a description of the other fields, refer to the data schema section of this document.

Datafilling table PXCODE (Sheet 1 of 4)

Field	Subfield or refinement	Entry	Explanation and action
XLANAME		alphanumeric (one to eight characters)	Translation name. Enter a character string to identify the universal translator name that corresponds to table PXHEAD.
FROMD		numeric (1 to 11 digits)	From digits. Enter the digit or digits that represent a single number or the first in a block of consecutive numbers. These numbers have the same result given in field XLADATA.
TOD		numeric (1 to 11 digits)	To digits. If field FROMD represents a single number, enter the number that is equal to the number in field FROMD. If field FROMD represents the first number of a block of consecutive numbers, enter the last number in the block.
XLADATA		see subfield	Universal translations data. This field contains subfield XLASEL.

ISDN Translations and Routing (continued)

Datafilling table PXCODE (Sheet 2 of 4)

Field	Subfield or refinement	Entry	Explanation and action
	XLASEL	RTE	Translation selector. Enter RTE and datafill refinements to specify the route a call takes when the dialed digits are not found.
	OPT	see subfield and related refinements	Options. This field is a vector of a maximum of 10 options. Each option contains subfield OSEL and refinements. For each option, specify OSEL, followed by a space, and the refinements. Separate each refinement with a space. End the options with a $.
	OSEL	DEST, MM, PF, or VPN	Option selector. Enter one of the following options: • Enter DEST, followed by a space, and datafill refinement DEST, the index to the route table of the current XLASYS and XLANAME. • Enter MM, followed by a space, and datafill refinements MIN and MAX. Enter MIN and MAX if the minimum and maximum number of expected digits dialed are known. These values are the digits that index the current tuple and must contain the prefix digits the current tuple specifies. • Enter PF, followed by a space, and datafill refinement PFDIGS, the prefix fence. This number is the number of prefix digits associated with this tuple. If a previous table identifies some prefix digits, the system adds the number here to the current value. The system does not store prefix digits in call detail records. The system does not outpulse digits. The digits do not index any additional translation tables. • Enter VPN, followed by a space, and datafill refinements ONNET and BILLABLE. Enter these codes if the conditions that follow are present. The call routes through a service switching point (SSP). Feature package NTXH49AA or NTXH49AB (Australian VPN—SSP) is in the switching unit.

ISDN Translations and Routing (continued)

Datafilling table PXCODE (Sheet 3 of 4)

Field	Subfield or refinement	Entry	Explanation and action
	OSEL (continued)		***Note:*** For fast timing between digits to function correctly, use of MM only must occur with the RTE selector in the following condition. The value in refinement MIN value must not equal the value refinement MAX value. If MIN = MAX, use of MM can occur with the CONT selector in table PXCODE. If the value in refinement MIN is not equal to the value in refinement MAX, use of MM cannot occur until use of the RTE selector occurs. Use of the RTE normally occurs in table FACODE or OFCCODE. If refinements MIN and MAX are set in table PXCODE when the refinements do not equal each other, partial dial timing occurs after MIN digits. This action determines the end of dialing.
	DEST	numeric (0 to 1023)	Destination route list index. If the entry in subfield OSEL is DEST, enter this refinement. Enter the number in the route list of the same translation system to which the system routes the call.
	MIN	numeric (0 to 18)	Minimum digits. If the entry in subfield OSEL is MM, enter this refinement. Enter the minimum number of digits expected. This value contains the digits that index the current tuple. This value must contain the prefix digits the current tuple specifies.
	MAX	numeric (0 to 18)	Maximum digits. If the entry in subfield OSEL is MM, enter this refinement. Enter the maximum number of digits expected. This value contains the digits that index the current tuple. This value must contain the prefix digits the current tuple specifies.
	PFDIGS	numeric (0 to 18)	Number of prefix digits. If the entry in subfield OSEL is PF, enter this refinement. Enter the number of prefix digits. If a previous table identified prefix digits, the system adds this number to the current value. The system does not store prefix digits in call detail records. The system does not outpulse prefix digits. Prefix digits do not index the next translation table.

ISDN Translations and Routing (continued)

Datafilling table PXCODE (Sheet 4 of 4)

Field	Subfield or refinement	Entry	Explanation and action
	ONNET	Y or N	Call on virtual private network. If the entry in subfield OSEL is VPN, enter this refinement. Enter Y if the call stays in the defined virtual private network. For any other condition, enter N. The system only supports overlapped outpulsing on off-network calls. Calls processed without refinement ONNET set to Y are off-network calls. The system treats Meridian Digital Centrex (MDC) calls as off-network calls. This condition allows the system to support overlapped outpulsing for MDC calls.
	BILLABLE	Y or N	Virtual private network billable call. If the entry in subfield OSEL is VPN, enter this refinement. Enter Y if each VPN call requires an automatic message accounting (AMA) record. For any other condition, enter N. The system does not generate an AMA record if one of the following two events occurs. An address complete message (ACM) of address complete, no charge returns. The call terminates in the SSP on a line with the free number terminating (FNT) option.

Datafill example for table PXCODE

Sample datafill for table PXCODE appears in the following example.

MAP example for table PXCODE

```
 XLANAME       FROMD          TOD
                                               XLADATA
________________________________________________________
IVPNXLAL            0            3
RTE (PF 3) (MM 2 9) (DEST 2) (VPN Y N) $

IVPNXLAL            4            9
RTE (PF 3) (MM 2 9) (DEST 4) (VPN Y N) $

IVPNXLAT            0            9
RTE (MM 2 10) (DEST 2) (VPN N Y) $
```

ISDN Translations and Routing (continued)

Datafilling table PXRTE

The datafill for ISDN Translations and Routing for table PXRTE appears in the following table. Only the fields that apply directly to ISDN Translations and Routing appear. For a description of the other fields, refer to the data schema section of this document.

Datafilling table PXRTE

Field	Subfield or refinement	Entry	Explanation and action
XLANAME		alphanumeric (one to eight characters)	Translation name. Enter a character string to identify the universal translator name that corresponds to table PXHEAD.
RTEFEF		numeric (0 to 1023)	Route reference. Enter the route reference index that corresponds to the destination used in table PXCODE for the given XLANAME. Option DEST provides the destination. This part is the second part of a two-part key to table PXRTE.
RTELIST		see subfield and related refinements	Route list. This field contains subfield RTESEL and refinements that depend on the value in subfield RTESEL. The route list contains a maximum of eight routes. A route has a selector and data.
	RTESEL	T	Route selector. Enter T (table name route) and enter refinements TABNAME and INDEX to route to another translations table. Control passes to the route list specified in the refinements. The system ignores additional routes in the route list. This condition overcomes the limit of eight routes in a route list. This condition allows any number of route lists chaining together. Each route list has a maximum of eight routes.
	TABNAME	IBNRTE	Table name. If the entry in subfield RTESEL is T, enter IBNRTE for the office route table name, and enter refinement INDEX. ***Note:*** The entry IBNRTE is not valid if subfield RTESEL is set to T in all universal translation routing tables.
	INDEX	numeric (0 to 1023)	Route reference index. If the entry in refinement TABNAME is IBNRTE, enter the index of the route table to which the system routes the call.

Datafill example for table PXRTE

Sample datafill for table PXRTE app ears in the following example.

MAP example for table PXRTE

```
XLANAME RTEREF
                                            RTELIST
________________________________________________________
IVPNXLAL      2
                                ( T  IBNRTE  102)$

IVPNXLAL      4
                                ( T  IBNRTE  104)$
```

Tools for verifying translations

Use of the output from TRAVER to verify ISDN Translations and Routing appears in the following example.

A line to trunk call with bearer capability specified as 3_1KHZ appears in the following example.

ISDN Translations and Routing (continued)

TRAVER output example for ISDN Translations and Routing

```
TRAVER L 6320022 510220302 BC 3_1KHZ B
Warning: Routing characteristics are present.
         Originator must be able to send in
         characteristics specified.
TABLE RTECHAR
 . RN31AU ( BC 3_1KHZ $)$
TABLE KSETLINE
FUNC 1 1 DN Y 6320022 LONS632A 0 1 103 (LNR) (SFC) $
TABLE DNATTRS
103 632 0022
    (PUBLIC ( NAME STEVE) $)$ $
TABLE DNGRPS
TUPLE NOT FOUND
TABLE NCOS
LONS632A 1 0 0 $ ( XLAS LONSXLA NXLA NDGT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT,
AND DIGCOL
LONS632A NXLA LONSXLA NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE XLAMAP
. Tuple not found. Default is use original XLANAME.
TABLE IBNXLA: XLANAME LONSXLA
LONSXLA 5 NET N Y N 0 Y NDGT Y N DOD N 100 NONE $
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
100 IBN NONE NT NSCR 0 103 NPRT NLCA NONE 0 NIL NILSFC
NILLATA 0 PX VPNXLA $
TABLE PXHEAD
VPNXLA DFLT TRMT (OFC VACT)$ DFOP ( CLASS LCL)$ NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:          510220302
TABLE PXCODE
VPNXLA 51 51 RTE ( PF 2) ( MM 2 10) ( DEST 2) ( VPN N Y)$
```

ISDN Translations and Routing (continued)

TRAVER output example for ISDN Translations and Routing (continued)

```
TABLE: PXRTE
KEY:   VPNXLA    2
 . T IBNRTE 3
 .  . TABLE IBNRTE
 .  .    3 S Y Y N ANSIISUPA1
 .  .      S Y Y N ANSIISUPB1
.  . EXIT TABLE IBNRTE
EXIT TABLE PXRTE
+++ TRAVER: SUCCESSFUL CALL TRACE +++
DIGIT TRANSLATION ROUTES
1 ANSIISUPA1            0220302            ST
2 ANSIISUPB1            0220302            ST
TREATMENT ROUTES.  TREATMENT IS: GNCT
1 *OFLO
2 LKOUT
+++ TRAVER: SUCCESSFUL CALL TRACE +++
```

A line-to line call with bearer capability specified as 64KDATA appears in the following example. The type of number specified as local (L) appears in the following example.

ISDN Translations and Routing (continued)

TRAVER output example for ISDN Translations and Routing

```
TRAVER L 6320022 'N' CDN L '02320302' BC 64KDATA B
Warning: Routing characteristics are present.
         Originator must be able to send in
         characteristics specified.
TABLE RTECHAR
 . RN64UDLO ( BC 64KDATA (CDN L)$)$
TABLE KSETLINE
FUNC 1 1 DN Y 6320022 LONS632A 0 1 103 (LNR) (SFC) $
TABLE DNATTRS
103 632 0022
    (PUBLIC ( NAME STEVE) $)$ $
TABLE DNGRPS
TUPLE NOT FOUND
TABLE NCOS
LONS632A 1 0 0 $ ( XLAS LONSXLA NXLA NDGT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA,
VACTRMT,AND DIGCOL
LONS632A NXLA LONSXLA NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE XLAMAP
 . RN64UDLO LONSXLA (LINEATTR 678)$
TABLE LINEATTR
678 IBN NONE NT NSCR 0 103 NPRT NLCA N NONE N 0 NIL NILSFC
NILLATA 0 PX IVPNXL
TABLE PXHEAD
IVPNXLAL DFLT TRMT (OFC VACT)$ DFOP ( CLASS LCL)$ NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:       02320302
TABLE PXCODE
IVPNXLAL 0 0 RTE ( PF 3) ( MM 2 9) ( DEST 2) ( VPN Y N)$
TABLE: PXRTE
KEY: IVPNXLAL    2
 . T IBNRTE 102
 .  . TABLE IBNRTE
 .  .  102 DN 103 632 N 0
 .  . EXIT TABLE IBNRTE
EXIT TABLE PXRTE
```

ISDN Translations and Routing (continued)

TRAVER output example for ISDN Translations and Routing (continued)

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

DIGIT TRANSLATION ROUTES
1 LINE                  1036320302         ST

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

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

A line-to trunk call with bearer capability specified as 64K_RATE_AD_DATA appears in the following example. The type of number specified as international (IN) appears in the following example.

ISDN Translations and Routing (continued)

TRAVER output example for ISDN Translations and Routing

TRAVER L 6320022 'N' CDN IN '0220302' BC 64K_RATE_AD_DATA B

```
Warning: Routing characteristics are present.
         Originator must be able to send in
         characteristics specified.
TABLE RTECHAR
 . RN64RATR (BC 64K_RATE_AD_DATA (CDN NA)$) (BC 64K_RATE_AD_DATA
(CDN IN)$)$
TABLE KSETLINE
FUNC 1 1 DN Y 6320022 LONS632A 0 1 103 (LNR) (SFC) $
TABLE DNATTRS
103 632 0022
    (PUBLIC ( NAME STEVE) $)$ $
TABLE DNGRPS
TUPLE NOT FOUND
TABLE NCOS
LONS632A 1 0 0 $ ( XLAS LONSXLA NXLA NDGT)$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT,
AND DIGCOL
LONS632A NXLA LONSXLA NXLA 0 NDGT
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE XLAMAP
 . RN64RATR LONSXLA ( XLA ISUPXLA)$
TABLE IBNXLA: XLANAME ISUPXLA
ISUPXLA 0 NET N Y N 0 Y NDGT Y N DOD N 712 NONE
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE LINEATTR
712 IBN NONE NT NSCR 0 103 NPRT NLCA N NONE N 0 NIL NILSFC
NILLATA 0 PX IVPNXL
TABLE PXHEAD
IVPNXLAI DFLT TRMT (OFC VACT)$ DFOP ( CLASS LCL)$ NOCON F
THE DIGITS USED TO INDEX THE NEXT TABLE ARE:            0220302
TABLE PXCODE
IVPNXLAI 0 0 RTE ( PF 0) ( MM 2 10) ( DEST 3) ( VPN N Y)$
```

ISDN Translations and Routing (end)

TRAVER output example for ISDN Translations and Routing (continued)

```
TABLE: PXRTE
KEY: IVPNXLAI    3
 . T IBNRTE 6
 .  . TABLE IBNRTE
 .  .    6 S Y Y N ANSISUPA1
 .  .      S Y Y N ANSISUPB1
 .  . EXIT TABLE IBNRTE
EXIT TABLE PXRTE
+++ TRAVER: SUCCESSFUL CALL TRACE +++

DIGIT TRANSLATION ROUTES
1 ANSISUPA1               0220302            ST
2 ANSISUPB1               0220302            ST

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

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

SERVORD

The ISDN Translations and Routing feature does not use SERVORD.

Multiple Subscriber Number

Functionality code

Functional group ordering code: NI000008

Functionality ordering code: not applicable

Release applicability

BCS36 and up

This feature applies to ETSI, VN4, and Austel.

Requirements

Not applicable

Description

The Multiple Subscriber Number (MSN) Supplementary Service allows you to assign multiple directory numbers (DN) to a single BRAFS terminal. You can start a call on any DN. Incoming calls can terminate on any DN.

Operation

An ISDN terminal can have a maximum of 64 DNs assigned. The 64 DNs include the primary DN and a maximum of 63 MSNs. The number entered against key 1 on the terminal is the primary DN. Assign the MSN DNs to key 2 and above. Each MSN entered against a key on the terminal is a different DN.

Assign MSNs through SERVORD in table KSETLINE.

Assign MSNs to initializing and non-initializing terminals in the same method.

Screening of MSN numbers

When the calling user originates a call on an MSN DN, the system places the DN in the user-to-network Calling Party Number (CGN) information element (IE). The position of the DN is part of the SETUP message. If the MSN number in the CGN IE fails screening, the system treats the call as if the call originated on the primary DN. The DMS-100 switch assumes that the CGN IE was not received.

For additional information on CGN screening, refer to the chapter *Datafilling Basic Service*.

Translations table flow

Multiple Subscriber Number does not affect translations table flow.

Limits

Multiple Subscriber Number does not have limits.

Interactions

Multiple Subscriber Number does not have functionality interactions.

Activation/deactivation by the end user

The calling user can start a call on any DN entered against the access. Calls can terminate on any DN.

Billing

The system bills a call that originates on an MSN DN to the MSN number the CGN IE receives. If the CGN IE fails screening, the system bills the call to the primary DN.

Station Message Detail Recording

Multiple Subscriber Number does not affect Station Message Detail Recording.

Datafilling office parameters

Multiple Subscriber Number does not affect office parameters.

Datafill sequence

The following table requires datafill to start Multiple Subscriber Number.

Datafill requirements for Multiple Subscriber Number

Table	Purpose of table
KSETLINE	Defines the DNs that associate with a keyset. Table KSETLINE lists the DNs that associate with an LTID and defines different DN parameters. Datafill this table through SERVORD only.

Tools for verifying translations

Multiple Subscriber Number does not use translation verification tools.

SERVORD

Use SERVORD to assign MSNs to ISDN terminals.

SERVORD limits

Multiple Subscriber Number does not have SERVORD limits.

Multiple Subscriber Number (continued)

SERVORD prompts

The SERVORD prompts that assign Multiple Subscriber Number to a terminal appear in the following table.

SERVORD prompts for Multiple Subscriber Number (Sheet 1 of 2)

Prompt	Valid input	Explanation
DN	1 to 15 digits	Enter the DN associated with the service established.
GROUP	1 to 16 alphanumeric characters	Enter the name of an IBN customer group.
KEY	1 to 69	Enter the number that associates with the key set assigned the DN.
LCC	ISDNKSET	Enter the line class code for the service to establish.
LEN_OR_LTID	alphanumeric name (1 to 8 characters) and numeric value (1 to 1022)	Enter the LTID of the DN to establish. The LTID contains of a logical terminal group name. This name is followed by a space and terminal number.
LTG	0 to 255	Enter the line treatment group. Default is 0.
NCOS	0 to 255	Enter the network class of service for IBN lines, trunks, or attendant consoles.
OPTION	alphabetic	Enter the option(s) that associate with a service to establish, modify, or delete. Specify a maximum of 20 options in a single command.
OPTKEY	1 to 69, or $	Enter the key that associates with the option. Enter $ if you do not require an option.
RINGING	Y, N	Enter Y to specify that you require a ring from a telephone speaker in addition to the call waiting tone from the handset. Enter N to deny ringing. Ringing must be set to N for packet terminals.

SERVORD prompts for Multiple Subscriber Number (Sheet 2 of 2)

Prompt	Valid input	Explanation
SNPA	0 to 7 digits	Enter the service numbering plan area (area code).
SUBGRP	0 to 7	Enter the subgroup of a customer group to which a station or DN belongs.

SERVORD example for adding Multiple Subscriber Number

The following example includes how the NEW command defines a new call appearance (CAP) of DN 722-1000 associated with LTID ISDN 10. The line associates with key 2.

Multiple Subscriber Number (end)

SERVORD example for setting up Multiple Subscriber Number with NEW command in prompt mode

```
SO:
> NEW
SONUMBER:  NOW 86 07 08
>
DN:
> 7221000
LCC:
> ISDNKSET
GROUP:
> KODAK
SUBGRP:
> 4
NCOS:
> 10
SNPA:
> 613
KEY:
> 2
RINGING:
> Y
LTG: 0
> 0
LEN_OR_LTID:
> ISDN  10
OPTKEY:
> PVC
VERSION:
> ETSI
ISSUE:
> 0
OPTKEY:
> $
```

SERVORD example for setting up Multiple Subscriber Number with NEW command in no-prompt mode

```
> NEW  $  7221000  ISDNKSET  KODAK  4  10  613  2  Y  0  ISDN  10
PVC  ETSI  0  $
```

PRI Bearer Capability Routing

Ordering codes

Functionality group ordering codes: NI000008, NI000014

Functionality ordering code: not applicable

Release applicability

BCS36 and up

Prerequisites

To operate, PRI Bearer Capability Routing has the following prerequisites:

- NI0 ISDN Base, NI000007
- MDC - MDC Minimum, MDC00001

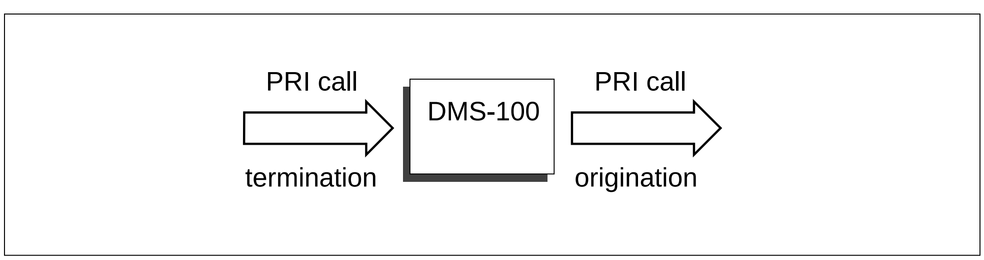
Description

PRI Bearer Capability Routing is the capability which enables the routing of ISDN calls based on routing characteristics.

Call routing is described in terms of PRI originations and PRI terminations. As shown in figure “PRI originations and terminations," a PRI origin is defined as a call that originates in the DMS-100 switch. A PRI termination is defined as a call that terminates in the DMS-100 switch. A call that begins and ends on PRI terminals in the DMS-100 switch is both a call origination and a call termination.

For calls terminating at the DMS-100 switch, routing characteristics are defined in the SETUP message that is transmitted with the call. For call originations, the DMS-100 switch creates a SETUP message that specifies the routing characteristics of the call.

PRI originations and terminations



Operation

Call originations

When a call originates at a PRI terminal in the DMS-100 switch, it is routed to an outgoing trunk based on the switch datafill. The originating terminal sends a SETUP message to the switch, which uses the information elements to begin routing the call. The SETUP message is analyzed in the same manner as is an incoming SETUP message for a call termination. During the translations and routing process, more routing characteristic information is collected, and a second SETUP message containing this information is generated when the call goes out to another node.

Routing the call

Figure “PRI call originations" is a flow diagram which shows a simplified translations process for call originations. The translations process is as follows:

1. The call begins in the standard translations tables and proceeds towards standard routing tables. However, as the SETUP message identifies the call as having bearer capability, table XLAMAP is accessed before any routing tables.
2. Table XLAMAP is accessed with the original translator name derived from standard translations and the routing characteristics name (RCNAME) obtained from table RTECHAR. It is checked for a new translator to enable alteration of the route based on bearer capability. Table TRKRCSEL screens the routing characteristics for individual trunk groups.
3. For a private call, the translator from XLAMAP is used to access table IBNXLA, which provides an index to a routing table (IBNRTE or OFRT).
4. Before accessing the routing table for private call processing, a mapping table (IBNMAP or OFRTMAP) is checked for a new route based on bearer capability. The mapping table is accessed with the routing index from table IBNXLA and the RCNAME, and provides a new index to the routing table.
5. For a public call, table XLAMAP provides a line attribute index to table LINEATTR. Table LINEATTR provides a pretranslator index to table STDPRTCT. Before accessing table STDPRTCT, table PXLAMAP is accessed with the pretranslator index and the RCNAME, and checked for a new pretranslator index based on bearer capability.
6. The new pretranslator index is used to access table STDPRTCT, which contains an index to routing table RTEREF. Before table RTEREF is accessed, mapping table RTEMAP is checked for a new routing index based on bearer capability.

7. For both private and public calls, the routing table is accessed with the new index from the mapping table. The routing table uses the ISA selector to route the call, specifying the trunk CLLI, the call type, the NPI, and a digit manipulation index.
8. Table TRKGRP is accessed with the CLLI from the routing table, and provides the LTID assigned to the trunk. With the LTID and the call type (from the routing table), table LTCALLS is accessed. If a tuple is found in table LTCALLS for the LTID and call type, the call is allowed to go through to the trunk.
9. The call is routed to the trunk specified in table IBNRTE, and a SETUP message is generated.

Generating the SETUP message

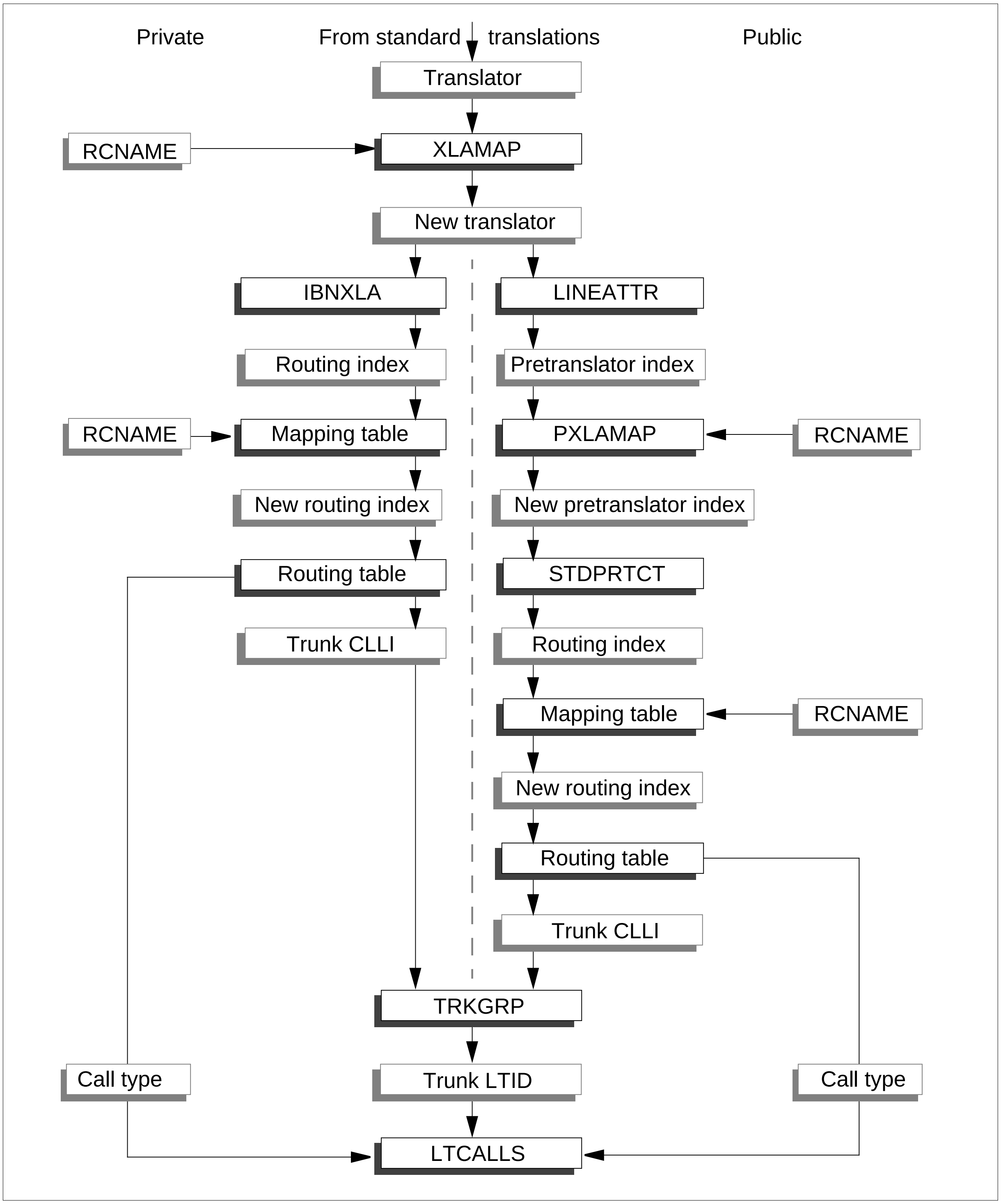
When the DMS-100 generates a SETUP message for an originating PRI call, the CDN and BC data is derived from the original SETUP message from the terminal, and altered during the translations and routing process, if necessary. The NPI information for the message is obtained from the routing table for both private and public calls.

In the case of a private call, another information element, the network specific facilities (NSF) is generated. The NSF contains the call type and an optional service identifier, and is typically used for FX, TIE, and WATS calls. For private calls, an NSF of PRVT (private) is generated, but is typically not used at the terminating node.

Table TRKRCSEL allows the capability of turning on or off routing on different information elements (IE). If this table is not datafilled for a particular trunk, only BC is defaulted to ON. Other IEs, even if they exist in the SETUP message, are not used for determining the routing characteristics.

PRI Bearer Capability Routing (continued)

PRI call originations



Call terminations

When a PRI call is received, the DMS-100 routes the call based on the call's SETUP message and the switch datafill. The process of routing a call requires these main steps:

- analyzing the SETUP message
- determining the call type
- determining the routing characteristics of the call
- routing the call

Analyzing the SETUP message

The SETUP message provides the information which allows the call routing system to determine the called number, the call type, and the call's routing characteristics. Combined with the switch datafill, these factors determine the translations that are used to route the call.

The SETUP message is composed of information elements (IE), each of which provides a part of the setup data. The primary IEs analyzed by the call routing system are:

- the called party number (CDN) IE
- the bearer capability (BC) IE

Table “SETUP information elements" summarizes the content and use of the information elements.

> ***Note:*** There is also a transit network selector (TNS) IE.

Determining the call type

The two primary call types for a PRI call are public (PUB) and private (PVT). Table “PRI call types" provides a brief definition of each call type.

To determine the call type of a PRI call, the DMS-100 examines the CDN IE for the type of number (TON) and numbering plan indicator (NPI) information. Together, the TON and NPI indicate whether the numbering plan used for the called number is private or public.

The call type determined from the SETUP message is used to access table LTCALLS, which begins call translations.

> ***Note:*** There is routing for the other call types (FX, TIE, INWATS, and OUTWATS).

PRI Bearer Capability Routing (continued)

Determining routing characteristics

The routing characteristic information from the SETUP message is analyzed to derive an ISDN routing characteristic name (RCNAME), which helps to determine the translation path of the call.

The call routing system uses data from the BC IE to access table BCDEF and obtain a bearer capability name (BCNAME) which represents those transmission characteristics. The BCNAME is used to access table RTECHAR, which contains sets of routing characteristics assigned to RCNAMEs. Comparing the BCNAME to the content of RTECHAR gives the routing system an RCNAME, which is then used to represent the call's routing characteristics throughout the rest of the translation and routing process.

SETUP information elements (Sheet 1 of 2)

Information element	Purpose
Keypad (KP)	May contain the dialed digits and any feature access codes.

PRI Bearer Capability Routing (continued)

SETUP information elements (Sheet 2 of 2)

Information element	Purpose
Called party number (CDN)	May contain: • the dialed digits • the type of network (TON), which specifies a nationally standardized network or a private network • the network plan identifier (NPI), which is one of: an Interlata carrier identification code, a user-specific identification code, or unknown Together, the TON and NPI indicate whether the numbering plan used for the called number is private or public. They can specify an international, national, or local number in the ISDN numbering plan (E.164), or a network-specific number in a private numbering plan. When the CDN contains the dialed digits, they are used for the called digits, and the keypad IE digits are ignored.
Bearer capability (BC)	Defines the transmission service used by the call. The BC value is one of: speech (digital voice transmission), unrestricted digital information (at 64 kbit/s), or 3.1 kHz audio.

PRI Bearer Capability Routing (continued)

PRI call types

Call type	Definition
private (PVT)	Connects the customer group to its private network (for example, a corporate network).
public (PUB)	Connects the customer to the public switching network. The digits dialed conform to E.164 standards. (E.164 refers to the public network numbering plan, which is in accordance with CCITT recommendation E164; in effect, E164 refers to the North American public numbering plan.)

Routing the call

Once the SETUP message has been analyzed and an RCNAME obtained, the translation system tables route the call. Figure “PRI call types" is a flow diagram which shows a simplified translations process for call terminations. The translations process is as follows:

1. Call terminations processing in the DMS-100 begins with the trunking tables, which define the attributes of the trunk group. Table TRKGRP contains the trunk group LTID, one of the keys used to access table LTCALLS, which provides the initial information for translating the call. The other key to table LTCALLS is the call type from the SETUP message.
2. Table LTCALLS begins the translations process differently depending on whether the call is private or public. For a private call, the NCOS code or the customer group name from LTCALLS is used to obtain a preliminary translator name from table NCOS or CUSTHEAD. For a public call, the line attribute index from table LTCALLS is used to obtain a pretranslator for the call.
3. For a private call, the preliminary translator and the RCNAME derived from table RTECHAR are the keys to table XLAMAP. Table XLAMAP can be datafilled with a new translator to enable alteration of the route based on bearer capability. For a public call, the pretranslator and an RCNAME are used to access table PXLAMAP, which is datafilled with a new pretranslator.
4. The new translator from table XLAMAP or pretranslator from PXLAMAP is used to access table IBNXLA (for private calls) or table STDPRTCT (for public calls), which provides the routing index into standard translations.

5. When the translations route includes one of the routing tables (IBNRTE, OFRT, or HNPACONT.RTEREF), a mapping table (IBNMAP, OFRTMAP, or HNPACONT.RTEMAP) may be datafilled to alter the translations route for an ISDN call. In these cases, the RCNAME associated with the call and the original routing index are used to access the mapping table, which provides a new index to the routing table.
6. An RCNAME can also be datafilled in the routing tables (IBNXLA, IBNRTE, OFRT, and RTEREF) to enable retranslations based on routing characteristics.

Note: The standard IBN translations tables mentioned in this document are described in the *Translations Guide*.

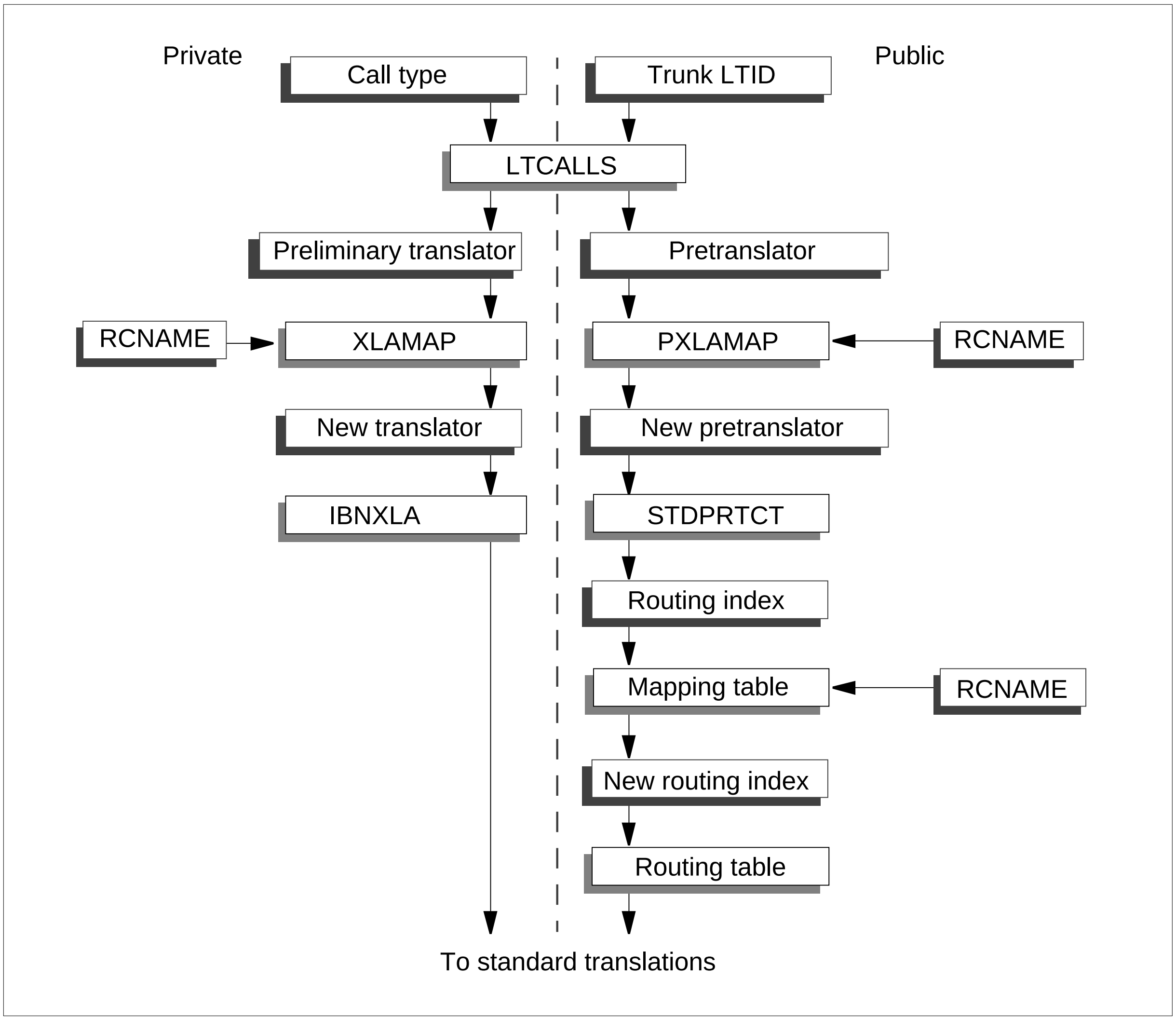
Datafilled bearer capabilities for PTS trunks

To provide flexibility in routing incoming calls, the DMS-100 switch allows the operating company to assign bearer capabilities to PTS trunk groups. A bearer capability for a trunk group is defined in table TRKGRP to override the office-wide default BC.

Table BCDEF contains all the possible BC names and their associated transmission characteristics. At installation, BCDEF is datafilled with ten default tuples which cannot be deleted. The ones of interest are: SPEECH, 3_1KHZ, 56KDATA, and 64KDATA. The operating company may also add BC names of their own definition to table BCDEF.

PRI Bearer Capability Routing (continued)

PRI call terminations



Translations table flow

Call originations

The PRI Bearer Capability Routing translation process for call originations is shown in the two flowcharts that follow. The first flowchart illustrates the process for a private call, and the second for a public call.

Processing of a PRI call origination begins with table KSETLINE, and continues through the standard translations tables. Ordinarily, the process continues to standard routing tables, but when there is a bearer capability associated with the call, table XLAMAP is accessed first.

PRI Bearer Capability Routing (continued)

The PRI Bearer Capability Routing translations tables are described in the following list:

- Table XLAMAP is accessed with the original translator and the RCNAME associated with the call. For a private call, table XLAMAP provides a new translator to access table IBNXLA. The tuple in table IBNXLA specifies an index to a routing table (IBNRTE or OFRT).

  For a public call, table XLAMAP provides a line attribute index, LINEATTR, to table LINEATTR, which contains a pretranslator index, PRTNM, to table STDPRTCT.
- Table RCNAME contains the valid routing characteristics names.
- Table BCDEF is accessed with the transmission characteristics from the SETUP message, and provides the BCNAME which represents these characteristics.
- Table TRKRCSEL controls the routing capabilities that can be turned on or off for individual trunk groups.
- Table RTECHAR is accessed with the routing characteristics from the SETUP message and the BCNAME from BCDEF, and provides the RCNAME on which further routing is based.
- Table PXLAMAP is used in public call translations to alter the route for an ISDN call. It is accessed with the RCNAME associated with the call and the standard pretranslator name from table LINEATTR, and provides a new pretranslator index to table STDPRTCT. Table STDPRTCT contains an index to routing table RTEREF.
- Table IBNMAP or OFRTMAP is accessed (for private calls) before the routing table to check for a new route based on bearer capability. The key to the mapping table is the routing index from IBNXLA and the RCNAME. The mapping table provides a new index to the routing table.
- Table RTEMAP is accessed (for public calls) with the routing index from table STDPRTCT and the RCNAME, and provides a new index to routing table RTEREF based on bearer capability.
- Table IBNRTE, OFRT, or RTEREF uses the ISA selector to route the call. The routing table defines the CLLI of the trunk to which the call is to be routed, and specifies the call type and the NPI, which is mapped to the SETUP message created for the call. The routing table may also indicate a digit manipulation index, which is used to access table DIGMAN.
- Table TRKGRP is accessed with the trunk CLLI from the routing table, and provides the LTID assigned to the trunk. The LTID is used to access table LTCALLS.

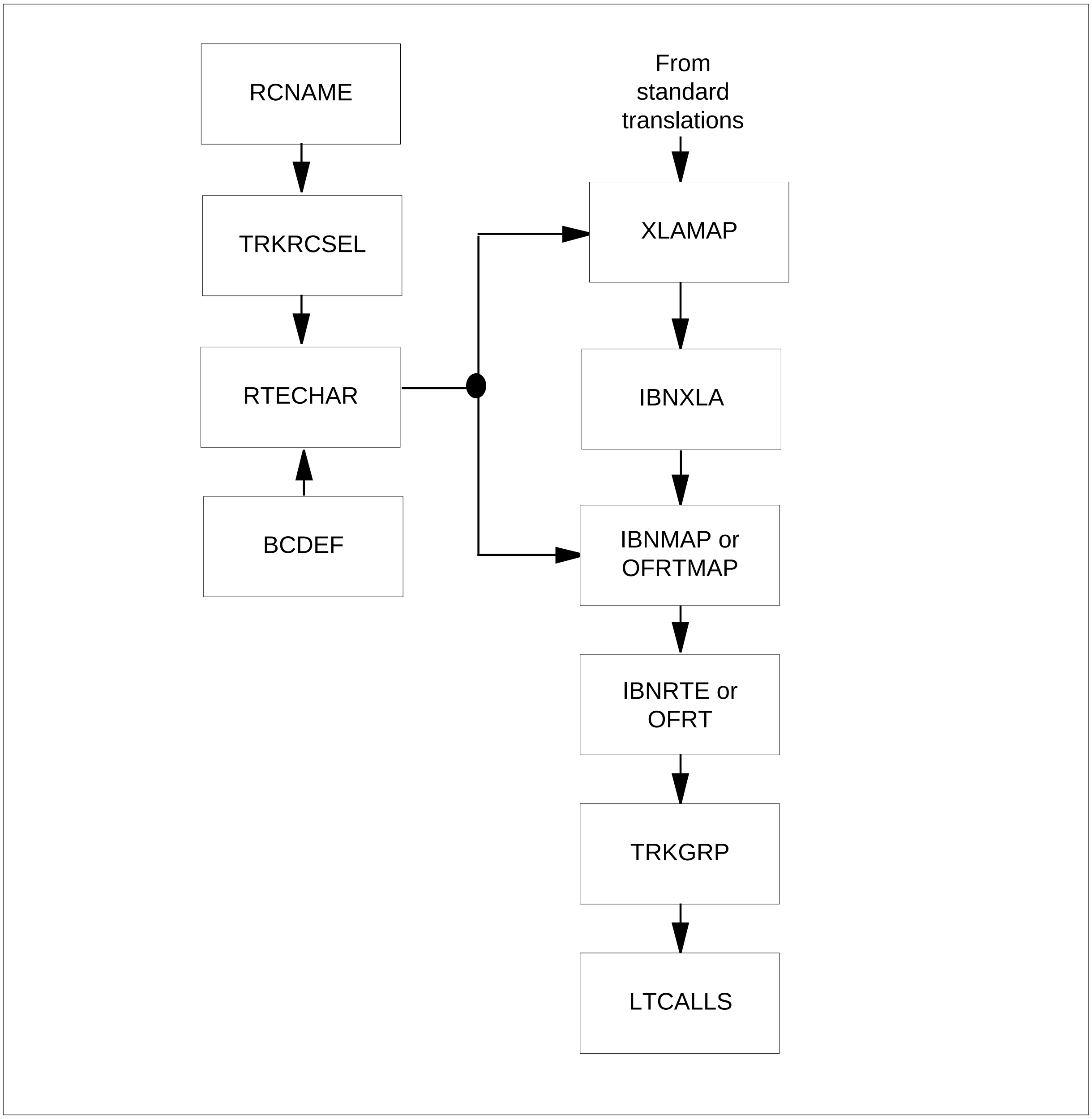
PRI Bearer Capability Routing (continued)

- Table LTCALLS is accessed with the trunk group LTID and the call type from the routing table. If a tuple is found for the LTID and call type, the call is allowed to go through.
- Table DIGMAN may be accessed with the digit manipulation index from the routing table, to allow the called number digits to be modified before outpulsing. (For instance, table DIGMAN might be required to remove a prefix from the dialed digits or add a prefix to them.)

The call is routed to the specified trunk, and a SETUP message is generated containing the called number digits, the NPI defined in the routing table, an NSF for private calls, and the bearer capability.

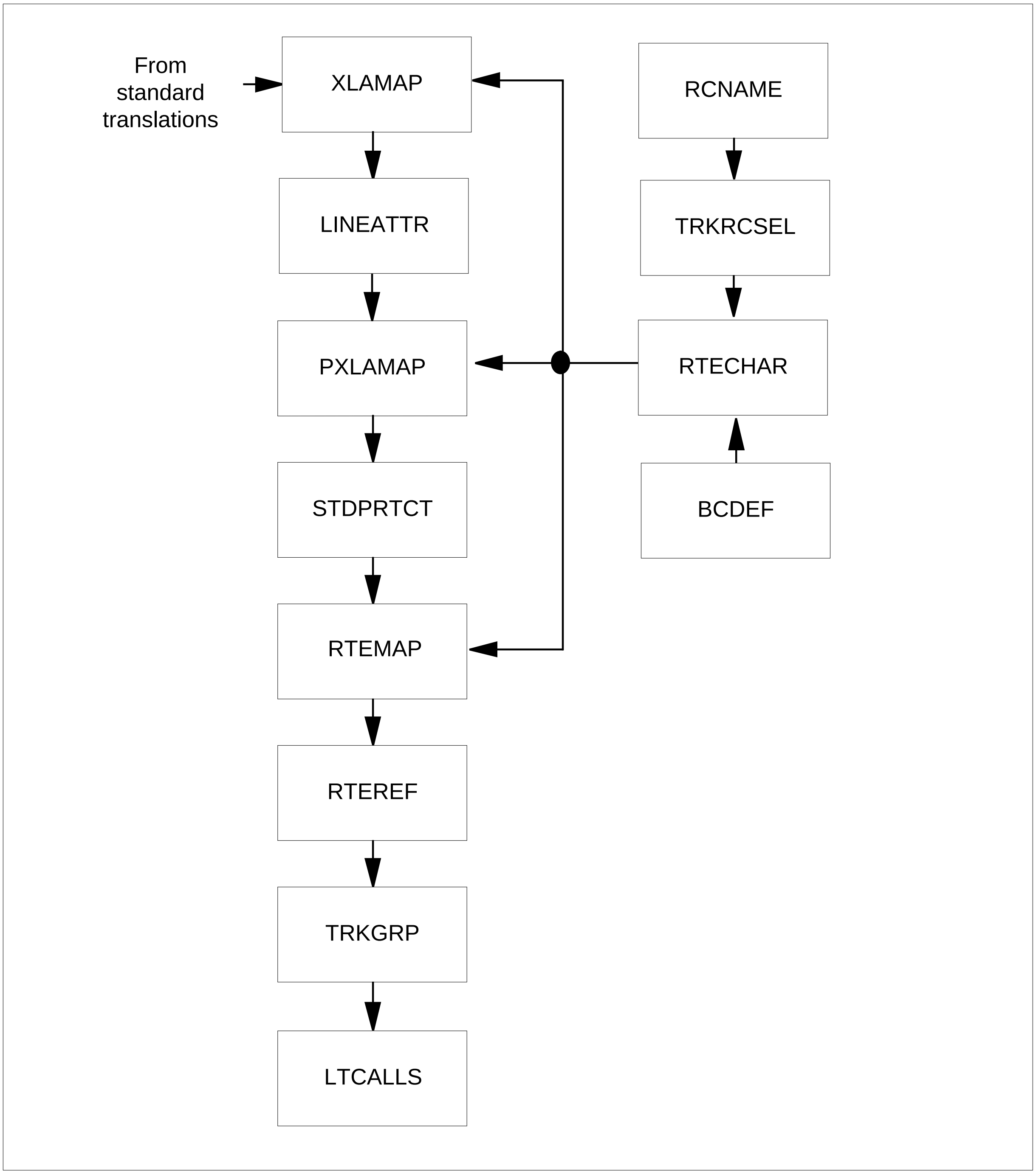
The PRI Bearer Capability Routing translation process is shown in the flowchart that follows.

Table flow for PRI Bearer Capability Routing originations (private call)



PRI Bearer Capability Routing (continued)

Table flow for PRI Bearer Capability Routing originations (public call)



PRI Bearer Capability Routing (continued)

The following table lists the datafill content used in the flowchart “Bearer Capability Routing originations (private call)".

Item	Example data
Called number	15983
Calling number	6215982
NPI	PVT
BC	64KDATA

Datafill table	Example data
RCNAME	56KDATA
TRKRCSEL	BNRPRAOG BC ON
RTECHAR	56KDATA BC 56KDATA $ $
KSETLINE	WITS 2 1 DN Y 6215982 IBNTST 0 0 613 RAG LNR SFC CFX $
DNATTRS	613 621 5982 PUBLIC NAME WITS_2 $ $ $
NCOS	IBNTST 0 0 0 TST10 XLAS CXT1 RXCFN NDGT OHQ 0 TONE_OHQ CBQ 0 1 Y 2 $
CUSTHEAD	IBNTST NXLA CXT3 RXCFN 0 TST1
XLAMAP	56KDATA CXT3 XLA CXT2 $
IBNXLA	CXT2 1 ROUTE N Y N 1 N 2 18 POTS N T IBNRTE 800
IBNMAP	56KDATA 800 700
IBNRTE	700 ISA N N N BNRPRAOG PVT 0 PVT 15 $
TRKGRP	BNRPRAOG PRA 0 PRAC NCRT ASEQ N ISDN 500 $ $
LTCALLS	ISDN 500 PVT XLAIBN 0 IBNTST 0 0 $
DIGMAN	15 INC 401 $

PRI Bearer Capability Routing (continued)

The following table lists the datafill content used in the flowchart “Bearer Capability Routing originations (public call)".

Item	Example data
Called number	99605983
Calling number	6215982
NPI	E164
BC	64KDATA

Datafill table	Example data
RCNAME	56KDATA
TRKRCSEL	BNRPRAOG BC ON
RTECHAR	56KDATA BC 56KDATA $ $
KSETLINE	WITS 2 1 DN Y 6215982 IBNTST 0 0 613 RAG LNR SFC CFX $
XLAMAP	56KDATA CXT3 LINEATTR 0 $
LINEATTR	0 1FR NONE NT FR01 0 613 P621 L613 TSPS 10 NIL NILSFC LATA1 NIL NIL NIL 00 $
PXLAMAP	56KDATA P601 XLA P621 $
STDPRTCT	P621 1 0 0
STDPRT	66 69 N NP 0 NA
HNPACONT	66 69 N NP 0 NA
HNPACODE	660 660 LRTE 13
RTEMAP	56KDATA 13 710
RTEREF	710 T ISA N N N BNRPRAOG PUB NONE N N 20
TRKGRP	BNRPRAOG PRA 0 PRAC NCRT ASEQ N ISDN 800 $ $
LTCALLS	ISDN 800 PUB XLAIBN 0 IBNTST 0 0 $
DIGMAN	20 REM 3 INC 401 $

Call terminations

The PRI Bearer Capability Routing translation process for call terminations is shown in the two flowcharts that follow. The first flowchart illustrates the process for a private call, and the second for a public call.

For the incoming call, table CLLI identifies the trunk group, and table TRKMEM determines the physical location of the circuit carrying the call. The trunk identifier (CLLI) is used to access table TRKSGRP, which defines the signaling protocol used by the trunk, and table TRKGRP, which provides the LTID of the trunk group. The LTID and the call type from the SETUP message are used to access table LTCALLS.

- Table LTCALLS provides the customer group field, CUSTGRP, and the network class of service field, NCOS, for a private call. The customer group and NCOS fields are used to access table NCOS for a preliminary translator name, PRELIMXLA, which is the key for table IBNXLA. If there is no translator in table NCOS, the customer group from table LTCALLS, CUSTGRP, is used to access table CUSTHEAD, which contains a customer group translator, CUSTXLA. CUSTXLA is used to key into table XLAMAP.

  For a public call, table LTCALLS provides the line attribute index, LINEATTR, which is used to access table LINEATTR. LINEATTR contains a pretranslator name, PRTNM, which is used to key into table PXLAMAP.

- Table RCNAME contains the valid routing characteristics names.
- Table BCDEF is accessed with the transmission characteristics from the SETUP message, and provides the BCNAME which represents these characteristics.
- Table RTECHAR is accessed with the routing characteristics from the SETUP message and the BCNAME from BCDEF, and provides the RCNAME on which further routing is based. For a private call, the RCNAME is used with CUSTXLA from table CUSTHEAD (or PRELIMXLA from table NCOS) to key into table XLAMAP. For a public call, the RCNAME is used with PRTNM from table LINEATTR to key into table PXLAMAP.
- Table XLAMAP provides a new translator for private calls, based on the original translator and the RCNAME. The new translator is used to access table IBNXLA, which begins standard translations.
- Table PXLAMAP provides a new translator for public calls, based on the original translator and the RCNAME. The new translator is used to access table STDPRTCT, which begins standard translations.

PRI Bearer Capability Routing (continued)

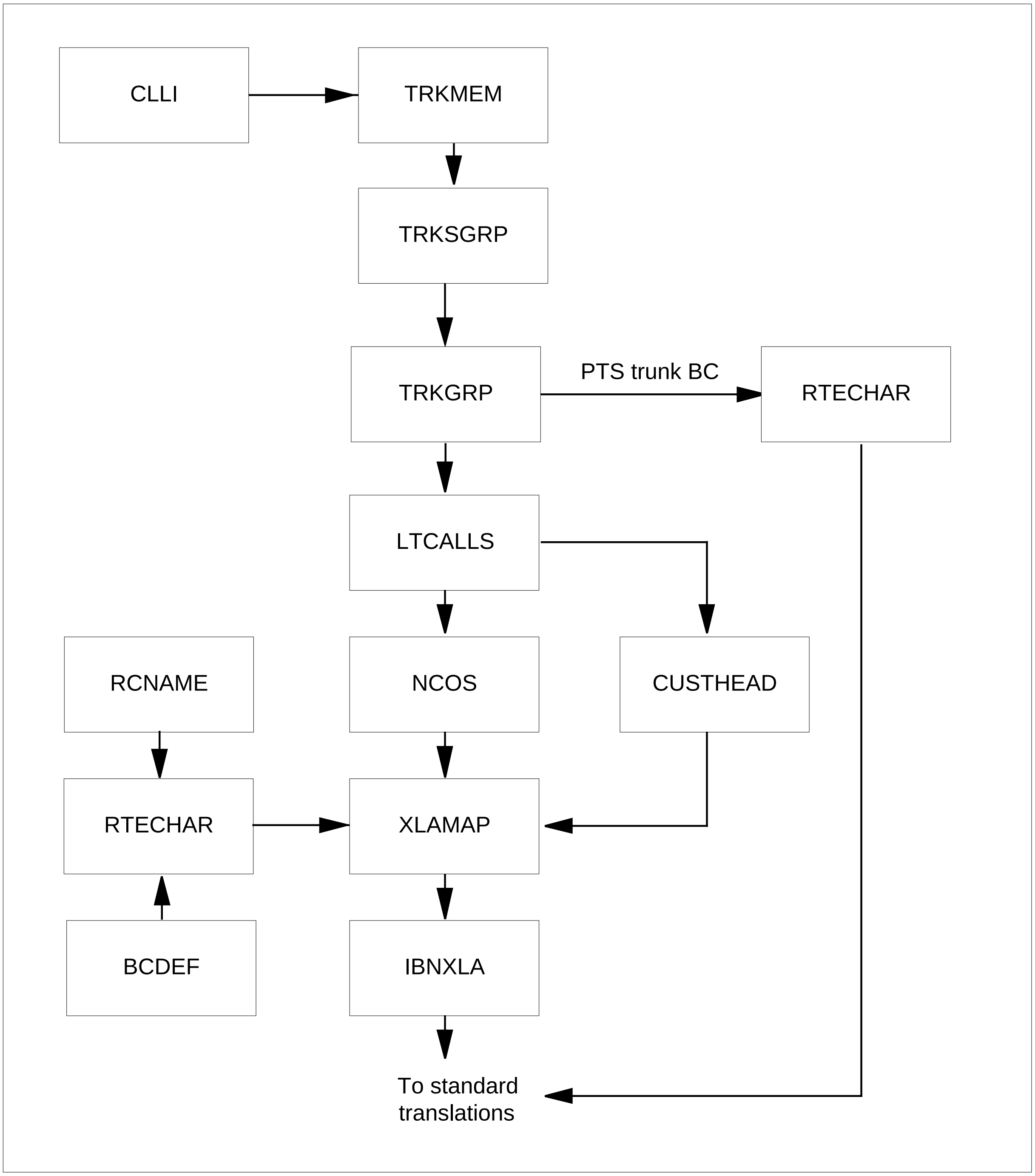
When the translations route includes one of the routing tables (IBNRTE, OFRT, or RTEREF), the corresponding mapping table (IBNMAP, OFRTMAP, or RTEMAP) is accessed before the routing table.

> ***Note:*** Mapping table IBNMAP is accessed when the routing table is IBNRTE, table OFRTMAP is accessed when the routing table is OFRT, and subtable HNPACONT.RTEMAP is accessed when the routing table is subtable HNPACONT.RTEREF.

- Table IBNMAP, OFRTMAP, or RTEMAP provides a new routing index to table IBNRTE, OFRT, or RTEREF, based on the original routing index and the RCNAME.

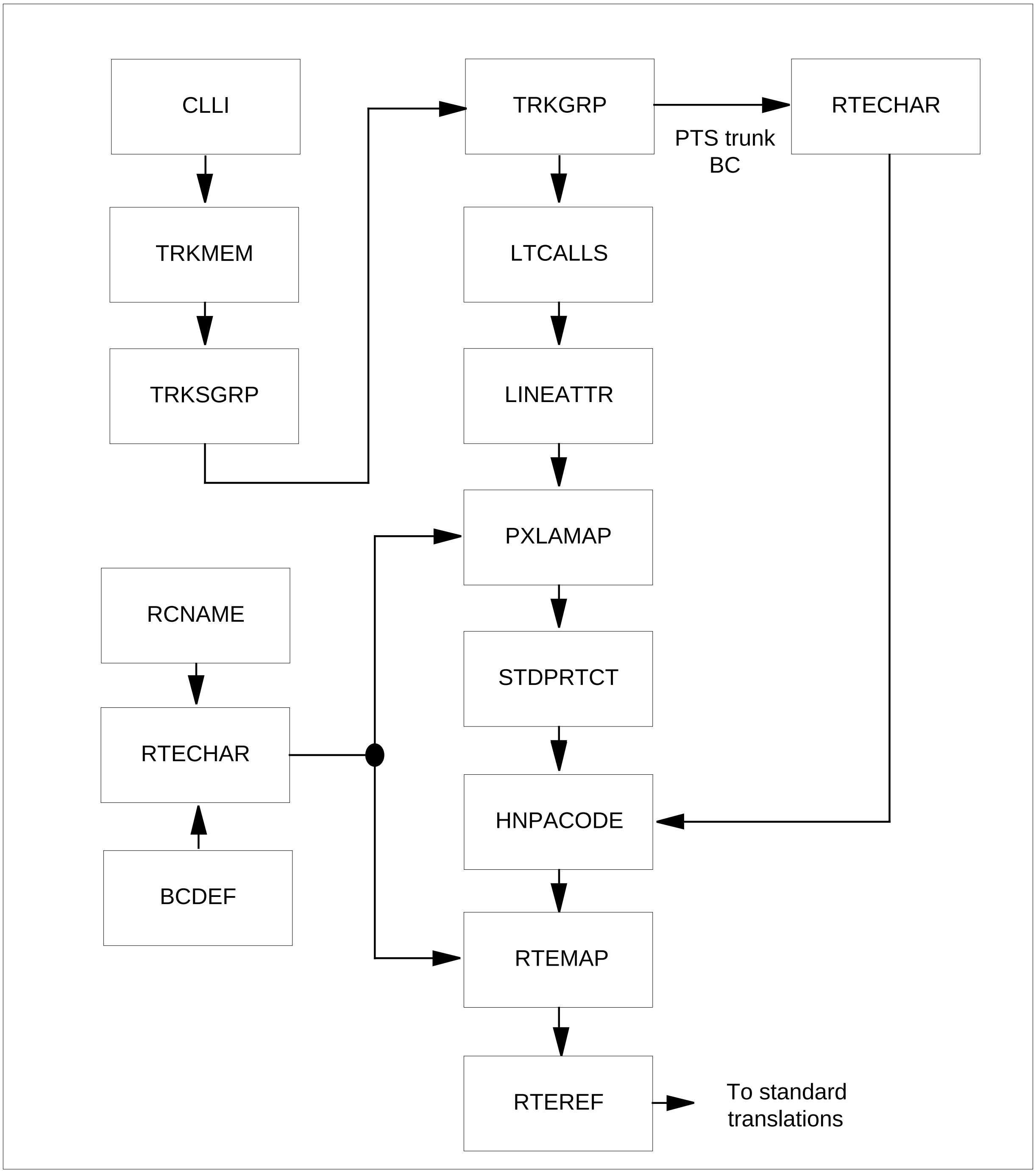
PRI Bearer Capability Routing (continued)

Table flow for PRI Bearer Capability Routing terminations (private call)



PRI Bearer Capability Routing (continued)

Table flow for PRI Bearer Capability Routing terminations (public call)



PRI Bearer Capability Routing (continued)

The following table lists the datafill content of the tables in the flowchart example of “Bearer Capability Routing terminations (private call)".

Item	Example data
Called number	55982
NPI	PVT
BC	56KDATA

Datafill table	Example data
RCNAME	56KDATA
RTECHAR	56KDATA BC 56KDATA $ $
TRKGRP	BNRPRAIC PRA 0 PRAC NCRT DSEQ N LTID ISDN 501 $ $
LTCALLS	ISDN 501 PVT XLAIBN 0 IBNTST 0 0 $
CUSTHEAD	IBNTST NXLA TECXLA CXLA 0 TST1 $
XLAMAP	56KDATA TECXLA XLA CETXLA $
IBNXLA	CETXLA 5 EXTN Y Y Y 613 621 5 $
TOFCNAME	613 621
DNINV	613 621 5982 ILC WITS 2
DNATTRS	613 621 5982 PUBLIC NAME WITS_2 $ $ $

The following table lists the datafill content of the tables in the flowchart example of “Bearer Capability routing terminations (public call)".

Item	Example data
Called number	4015213
NPI	E164
BC	56KDATA

PRI Bearer Capability Routing (continued)

Datafill table	Example data
RCNAME	56KDATA
RTECHAR	56KDATA BC 56KDATA $ $
TRKGRP	BNRPRAIC PRA 0 PRAC NCRT DSEQ N LTID ISDN 501 $ $
LTCALLS	ISDN 501 PUB XLAIBN 0 IBNTST 0 0 $
LINEATTR	0 IFR NONE NT FR01 0 613 P600 L613 TSPS 10 NIL NILSFC LATA1 NIL NIL NIL 00
PXLAMAP	56KDATA P600 XLA P621 $
STDPRTCT	P621 1 0 0
STDPRT	40 410 N NP 0 NA
HNPACONT	613 710 2 39 1 0 2 0
HNPACODE	401 401 LRTE 401
RTEMAP	56KDATA 401 410
RTEREF	410 DN 613 722

Limitations and restrictions

The following limitations and restrictions apply to PRI Bearer Capability Routing:

- The datafilled BC capability is provided only for incoming trunks. It does not affect outgoing trunks, except that the datafilled BC is listed in the outgoing initial address message (IAM).
- The datafill in table TRKRCSEL applies only to PRI calls coming into the switch. The datafill is not applicable to any other type of feature that uses ISDN translations.
- Turning on a particular IE in table TRKRCSEL implies that routing according to the content of that IE is allowed for that specific trunk group. However, corresponding tables for ISDN translations (for example, RCNAME and RTECHAR) must be datafilled before that IE can be used in translations.
- The datafilled BC capability applies to A5, ATC, IBNT2, IBNTI, IT, OC, OP, PX, SC, T2, TI, and TOPS PTS trunks. (For any other incoming PTS trunk group types, the office default BC applies.) Even if a PRI or ISUP

trunk is datafilled with a BC, it is ignored. If a trunk group with both PTS and non-PTS trunk subgroups is datafilled with a BC, it applies only to the PTS subgroup, not to the non-PTS subgroup.

Interactions

PRI Bearer Capability Routing has no functionality interactions.

Activation/deactivation by the end user

PRI Bearer Capability Routing requires no activation or deactivation by the end user.

Billing

PRI Bearer Capability Routing affects billing as follows: if the BC option is datafilled against the customer group in table CUSTSMDR, an SMDR extension record is generated identifying the type of bearer capability.

Station Message Detail Recording

PRI Bearer Capability Routing does not affect Station Message Detail Recording.

PRI Bearer Capability Routing (continued)

Datafilling office parameters

The following table shows the office parameters used by PRI Bearer Capability Routing. For more information about office parameters, refer to *Office Parameters Reference Manual*.

Office parameters used by PRI Bearer Capability Routing

Table name	Parameter name	Explanation and action
OFCENG	NUM_RC_EXT_BLKS	This parameter (number of routing characteristics extension blocks) specifies the number of extension blocks required for translation and routing of calls based on routing characteristics. The default for the parameter is 0 (zero), but it is recommended that the operating company calculate the value as one block for each call, based on the probable number of simultaneous calls using ISDN translations. Note that such calls include calls on any trunk group that does not have the default BC (for instance, a PTS trunk group datafilled with a non-default BC).
OFCENG	DEFAULT_BEARER_CAPABILITY	This parameter defines the office-wide default bearer capability, which is the value applied to an incoming trunk if no BC is defined in table TRKGRP. The default for DEFAULT_BEARER_CAPABILITY is SPEECH. ***Note:*** It is recommended that the default remain at SPEECH. If the default BC is changed, the new default is applied only to trunk groups datafilled after the change. Any trunk groups datafilled before the change retain the previous default BC value. This situation can cause problems, because these trunks become non-default BC trunk groups and require RC extension blocks. If NUM_RC_EXT_BLKS is set too low to accommodate these extra trunk groups, calls can be dropped. To solve the problem, the non-default BC trunk groups must be datafilled again.

Datafill sequence

The following table lists the tables that require datafill to implement PRI Bearer Capability Routing. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for PRI Bearer Capability Routing (Sheet 1 of 2)

Table	Purpose of table
BCDEF	Bearer Capability Definition. This table contains bearer capability names and their associated transmission characteristics.
TRKGRP	Trunk Group. This table defines a bearer capability for an incoming PTS trunk group.
RCNAME	ISDN Routing Characteristic Name. This table contains the valid routing characteristics names (RCNAME).
IBNRTE	IBN Route. This table provides a route for the originating call and specifies the SETUP message information. Alters the routing index for a call retranslation based on the RCNAME.
OFRT	Office Route. This table provides a route for the originating call and specifies the SETUP message information. Alters the routing index for a call retranslation based on the RCNAME.
HNPACONT subtable RTEREF	Home Numbering Plan Area Code Subtable Route Reference Subtable Record. This table provides a route for the originating call and specifies the SETUP message information. Alters the routing index for a call retranslation based on the RCNAME.
IBNMAP	ISDN Routing Map. This table is a prerouting table used to alter the routing index to IBNRTE for calls with an associated RCNAME.
OFRTMAP	ISDN OFRT Route Reference. This table is a prerouting table used to alter the routing index to OFRT for calls with an associated RCNAME.
HNPACONT subtable RTEMAP	ISDN Home NPA Route Reference Subtable Record. This table is a prerouting table used to alter the routing index to RTEREF for calls with an associated RCNAME.
XLAMAP	ISDN Translation Map. This table is a pretranslation table used to alter the translator name for private calls with an associated RCNAME.
PXLAMAP	ISDN Pretranslations Map. This table is a pretranslation table used to alter the translator name for public calls with an associated RCNAME.
IBNXLA	IBN Translation. This table provides a translator for the call when it must be retranslated according to an RCNAME.

PRI Bearer Capability Routing (continued)

Datafill tables required for PRI Bearer Capability Routing (Sheet 2 of 2)

Table	Purpose of table
LTCALLS	Logical Terminal Calls. This table specifies the types of calls that can be routed over the interface and provides initial translations for the call.
TRKRCSEL	Trunk Routing Characteristics Selection. This table allows PRI trunks to optionally turn on and off the routing capability using any particular type of ISDN IE.
RTECHAR	ISDN Routing Characteristics. This table associates an RCNAME with a set of routing characteristics.

Datafilling table BCDEF

Table BCDEF contains all the valid bearer capability names. Each tuple in the table lists a BCNAME and its associated transmission characteristics, which include the trunk's transfer capability, transfer mode, and coding standard. The BCNAME is used in table RTECHAR to represent its associated transmission characteristics.

The following table shows the datafill specific to PRI Bearer Capability Routing for table BCDEF. Only those fields that apply directly to PRI Bearer Capability Routing are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table BCDEF (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
KEY		see subfield	Key. This is made up of subfield BCNAME.
	BCNAME	alphanumeric (up to 16 characters)	Bearer capability name. Enter a name (up to 16 characters) for the BC.
BCDATA		see subfields	Bearer capability data
	XFERCAP	SPEECH, RESDIG, UNRESDIG or AU3_1KHZ	Transfer capability. Enter one of the following values: • SPEECH for standard voice calls • RESDIG for 56-kbit/s transparent data transfer. • UNRESDIG for unrestricted digital information at 64-kbit/s. • AU3_1KHZ for audio data at 3.1 kHz.

PRI Bearer Capability Routing (continued)

Datafilling table BCDEF (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	XFERMOD	PACKET or CIRCUIT	Transfer mode. Enter one of the following values: • PACKET for packet data service. • CIRCUIT for circuit-switched service
	CODINGST	CCITT or NETWORK	Coding standard. Enter one of the following values: • Enter CCITT to indicate that the CCITT coding standards are being used. • Enter NETWORK to indicate that network-specific standards are being used.

Datafill example for table BCDEF

The following example shows sample datafill for table BCDEF.

MAP display example for table BCDEF

```
        KEY                                     BCDATA
 ________________________________________________________

    64KDATA                      UNRESDIG CIRCUIT  CCITT
```

Error messages for table BCDEF

Not applicable

Datafilling table TRKGRP

The following table shows the datafill specific to PRI Bearer Capability Routing for table TRKGRP. Only those fields that apply directly to PRI Bearer

PRI Bearer Capability Routing (continued)

Capability Routing are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TRKGRP

Field	Subfield or refinement	Entry	Explanation and action
GRPINFO		see subfields	Group information
	GRPTYP	A5, ATC, IBNT2, IBNTI, IT, OC, OP, PX, SC, T2, TI, or TOPS	Group type. Enter one of the following values: • A5 for AMR5 two-way trunks • ATC for access to carrier • IBNT2 for MDC two-way • IBNTI for MDC incoming • IT for intertoll incoming • OC for outgoing CAMA • OP for TSPS tandem trunks • PX for PBX direct inward dialing • SC for super CAMA incoming • T2 for two-way end office • TI for incoming end office • TOPS for traffic operating position
	OPTION	BCNAME or $	Option. Enter a $ to end the tuple.
	BCNAME	SPEECH, 64KDATA, 64KX25, 56DATA, DATAUNIT, 64KRES, 3_1KHZ, 7_KHZ, or VOICE_DATA	Bearer capability name. Enter a BC name defined in subfield BCNAME in table BCDEF. Assigns a BC to a PTS or PRI trunk group.
Note: If no BC is datafilled for a trunk group, the office default applies. If the datafilled BC for a trunk group is the same as the office default, it will not appear in the listed tuple when the TRKGRP tuple for the trunk group is listed. If the datafilled BC is not supported on the outgoing protocol, the call is routed to treatment.			

Datafill example for table TRKGRP

The following example shows sample datafill for table TRKGRP.

MAP display example for table TRKGRP

```
   GRPKEY
                                                         GRPINFO
________________________________________________________________________

 SL1NTPRI
                  IBNTI  1  ATT  NCLT  NETMVP  2  0  99
    ANSDISC  1  Y  2  2  Y  Y  Y  Y  N  7  O  N  N  Y
    DLSE  Y  Y  IBN  DEFAULT  (REGION 1)  $  $  NATL
    (BCNAME 64KDATA) $
```

Error messages for table TRKGRP

Not applicable

Datafilling table RCNAME

Table RCNAME contains all the valid routing characteristic names. Each tuple in the table lists an RCNAME, which is associated with a group of routing characteristics in table RTECHAR. The RCNAME is used in tables throughout the translations and routing process to represent its associated routing characteristics.

The following table shows the datafill specific to PRI Bearer Capability Routing for table RCNAME. Only those fields that apply directly to PRI Bearer Capability Routing are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table RCNAME

Field	Subfield or refinement	Entry	Explanation and action
NAMEKEY		alphanumeric (1 to 8 characters)	Routing characteristics name. Enter a name (up to eight characters) to represent a set of routing characteristics defined in table RTECHAR.

Datafill example for table RCNAME

The following example shows sample datafill for table RCNAME.

MAP display example for table RCNAME

```
NAMEKEY
________________________________________________________________________

64KRTE
```

PRI Bearer Capability Routing (continued)

Error messages for table RCNAME

Not applicable

Datafilling table IBNRTE

The following tables show the datafill specific to PRI Bearer Capability Routing for table IBNRTE. Only those fields that apply directly to PRI Bearer Capability Routing are shown. For a description of the other fields, refer to the data schema section of this document.

The first of the following two tables shows the datafill required to route an originating PRI call and ensure that the call type and NPI are available for the creation of the SETUP message. The ISA routing selector is datafilled for this purpose.

The second table shows the datafill that allows the operating company to alter the routing characteristics of a call for retranslation based on the RCNAME. The RC option in the RX retranslation selector is datafilled for this purpose.

> ***Note:*** There are four IBN routing tables, named IBNRTE, IBNRT2, IBNRT3, and IBNRT4, all of which operate identically. In this document, the term IBNRTE is used to refer to all the IBN routing tables.

Datafilling table IBNRTE (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
RTE		0 to 1023	Route reference index. Enter a number from 0 to 1023 for the sequential route index for the table.
RTELIST		see subfield	Route list. There can be up to eight RTELIST entries per tuple.
	IBNRTSEL	ISA or $	IBN route selector. Enter ISA for integrated services access. Enter a $ to end the tuple.
	OHQ	Y or N	Off-hook queuing. Enter Y if off-hook queuing is required. Enter N if off-hook queuing is not required.
	CBQ	Y or N	Call-back queuing. Enter Y if call-back queuing is required. Enter N if call-back queuing is not required.
	EXP	Y or N	Expensive. Enter Y for an expensive route. Enter N for an inexpensive route.

PRI Bearer Capability Routing (continued)

Datafilling table IBNRTE (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	CLLI	alphanumeric	Common language location identifier. From table CLLI, enter the trunk group name.
	CALLTYPE	PUB or PVT	Call type. Enter one of the following values: • PUB for public routing. • PVT for private routing.
	OATYPE	NONE	Operator access type. Enter NONE. Use when subfield CALLTYPE is PUB.
	TNS	N	Transit network. Enter N. ***Note:*** Use when subfield CALLTYPE is PUB.
	NPOS	Y or N	Number identification. Enter Y if no calling number identification is required. Enter N if calling number identification is required. ***Note:*** Use when subfield CALLTYPE is PUB.
	FACNUM	0 (zero)	Facility number. Enter 0 (zero). ***Note:*** Use when subfield CALLTYPE is PVT.
RTELIST (continued)	NPI	PVT	Network plan identifier. Enter PVT for private. ***Note:*** Use when subfield CALLTYPE is PVT.
	DMI	1 to 32 767, 0	Digit manipulation index. Enter a number from 1 to 32 767 for the index into table DIGMAN that contains the modification for the called number. Enter 0 (zero) if Digit Manipulation is not required. ***Note:*** Use when subfield CALLTYPE is PUB or PVT.

PRI Bearer Capability Routing (continued)

Datafilling table IBNRTE for retranslation

Field	Subfield or refinement	Entry	Explanation and action
RTE		0 to 1023	Route reference index. Enter a number from 0 to 1023 for the sequential route index for the table.
RTELIST		see subfields	Route list. There can be up to eight RTELIST entries per tuple.
	IBNRTSEL	RX or $	IBN route selector. Enter RX for retranslation. Enter a $ to end the tuple.
	CUSTNAME	CUSTHEAD	Customer group name. Enter the code assigned to the customer group datafilled in table CUSTHEAD.
	SUBGRP	0 TO 7	Subgroup. Enter a number from 0 to 7.
	NCOS	0 TO 511	Network class of service number. Enter a number from 0 to 511 to be used for the retranslation environment.
	DMI	1 to 32 767, 0	Digit manipulation index. Enter a number from 1 to 32 767 for the index into table DIGMAN that contains the modification for the called number. Enter 0 (zero) if Digit Manipulation is not required.
	OPTION	RC	Option. Enter RC to indicate that retranslation is to be based on an RCNAME.
	RCNAME		Routing characteristics name. Enter the name from table RCNAME on which retranslation is to be based.

Datafill example for table IBNRTE

The following example shows sample datafill using the ISA route selector in a private call route for table IBNRTE.

MAP display example for table IBNRTE

```
RTE                                               RTELIST
_________________________________________________________
 21              ( ISA Y Y Y  SL1NTPRI PVT  0 PVT 15)$
```

The following example shows sample datafill using the RX route selector for table IBNRTE.

MAP display example for table IBNRTE

```
RTE                                               RTELIST
______________________________________________________________

 20                     ( RX BNA 0 0 104 (RC 64KRTE)$)$
```

Error messages for table IBNRTE

Not applicable

Datafilling table OFRT or RTEREF

The following table shows the datafill specific to PRI Bearer Capability Routing for table OFRT or subtable HNPACONT.RTEREF. Only those fields that apply directly to PRI Bearer Capability Routing are shown. For a description of the other fields, refer to the data schema section of this document.

The first of the following two tables shows the datafill required to route an originating PRI call and ensure that the call type and NPI are available for the creation of the SETUP message. The ISA routing selector is datafilled for this purpose.

The second table on page shows the datafill that allows the operating company to alter the routing characteristics of a call for retranslation based on the RCNAME. The RC option in the RX retranslation selector is datafilled for this purpose.

> ***Note:*** There are four office routing tables, named OFRT, OFRT2, OFRT3, and OFRT4, all of which operate identically. In this document, the term OFRT is used to refer to all the office routing tables.

Datafilling table OFRT (Sheet 1 of 3)

Field	Subfield or refinement	Entry	Explanation and action
RTE		0 to 1023	Route reference index. Enter a number from 0 to 1023 for the sequential route index for the table.
RTELIST		see subfields	Route list. There can be up to nine RTELIST entries per tuple.

PRI Bearer Capability Routing (continued)

Datafilling table OFRT (Sheet 2 of 3)

Field	Subfield or refinement	Entry	Explanation and action
	RTESEL	ISA or $	Route selector. Enter ISA for integrated services access. Enter a $ to end the tuple.
	OHQ	Y or N	Off-hook queuing. Enter Y if off-hook queuing is required. Enter N if off-hook queuing is not required.
	CBQ	Y or N	Call-back queuing. Enter Y if call-back queuing is required. Enter N if call-back queuing is not required.
	EXP	Y or N	Expensive. Enter Y for an expensive route. Enter N for an inexpensive route.
	CLLI	alphanumeric	Common language location identifier. From table CLLI, enter the trunk group name.
	CALLTYPE	PUB or PVT	Call type. Enter PUB for public routing. Enter PVT for private routing.
	OATYPE	NONE	Operator access type. Enter NONE. ***Note:*** Use when subfield CALLTYPE is PUB.
	TNS	N	Transit network. Enter N. ***Note:*** Use when subfield CALLTYPE is PUB.
	NPOS	Y or N	Number identification. Enter Y if no calling number identification is required.Enter N if calling number identification is required. ***Note:*** Use when subfield CALLTYPE is PUB.
	FACNUM	0 (zero)	Facility number. Enter 0 (zero).

PRI Bearer Capability Routing (continued)

Datafilling table OFRT (Sheet 3 of 3)

Field	Subfield or refinement	Entry	Explanation and action
	NPI	PVT	Network plan identifier. Enter PVT for private. ***Note:*** Use when subfield CALLTYPE is PVT.
	DMI	1 to 32 767, 0	Digit manipulation index. Enter a number from 1 to 32 767 for the index into table DIGMAN that contains the modification for the called number. Enter 0 (zero) if Digit Manipulation is not required. ***Note:*** Use when subfield CALLTYPE is PUB or PVT.

Datafilling table OFRT (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
RTE		0 to 1023	Route reference index. Enter a number from 0 to 1023 for the sequential route index for the table.
RTELIST		see subfields	Route list. There can be up to nine RTELIST entries per tuple.
	RTESEL	RX or $	IBN route selector. Enter RX for retranslation.Enter a $ to end the tuple.
	STS	numeric	Serving translation scheme. Enter the NPA of the home NPA code table that will be accessed with the retranslation RCNAME.
	TYPECALL	DD, NP or OA	Type of call. Enter DD for direct dial. Enter NP for no prefix. Enter OA for operator assisted.
	DMI	1 to 32 767, 0	Digit manipulation index. Enter a number from 1 to 32 767 for the index into table DIGMAN that contains the modification for the called number.Enter 0 (zero) if Digit Manipulation is not required.
	BILLDMI	0 to 32 767	DMI billing number. Enter a number from 0 to 32 767 for the DMI used to alter the billing number.

PRI Bearer Capability Routing (continued)

Datafilling table OFRT (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	OPTION	RC	Option. Enter RC to indicate that retranslation is to be based on an RCNAME.
	RCNAME	alphanumeric or blank	Routing characteristics name. Enter the name from table RCNAME on which retranslation is to be based.

Datafill example for table OFRT or RTEREF

The following example shows sample datafill using the ISA route selector in a private call route for table OFRT or RTEREF.

MAP display example for table OFRT or RTEREF

```
RTE                                                    RTELIST
______________________________________________________________

 21                ( ISA Y Y Y  SL1NTPRI PVT  0 PVT 15)$
```

The following example shows sample datafill using the RX route selector for the PRI Bearer Capability Routing in table OFRT or RTEREF.

MAP display example for table OFRT or RTEREF

```
RTE                                                    RTELIST
______________________________________________________________
 10          (RX 519 DD    230 230   (RC 64KDATA)$)$
```

Error messages for table OFRT or RTEREF

Not applicable

Datafilling table IBNMAP, OFRTMAP, or RTEMAP

The following table shows the datafill specific to PRI Bearer Capability Routing for tables for IBNMAP or OFRTMAP or subtable HNPACONT.RTEMAP. (These three mapping tables are identical, so they are described once only.). Only those fields that apply directly to PRI Bearer Capability Routing are shown. For a description of the other fields, refer to the data schema section of this document.

The mapping tables contain a routing index for ISDN calls with an associated RCNAME. The tables are accessed with the RCNAME associated with the call and the original routing index, and provide a new index to their corresponding routing table:

- table IBNMAP contains the mapping for routing table IBNRTE
- table ORFTMAP contains the mapping for routing table OFRT
- subtable HNPACONT.RTEMAP contains the mapping for routing subtable HNPACONT.RTEREF

Datafilling table IBNMAP, OFRTMAP, or RTEMAP

Field	Subfield or refinement	Entry	Explanation and action
KEY		see subfields	Key field. Datafill the subfields RCNAME and INDEX as one concatenated entry. Separate the two values with a blank. You are not prompted for the subfields individually.
	RCNAME	alphanumeric	Routing characteristics name. Enter the name from table RCNAME associated with the call.
	INDEX	0 to 1023	Index. Enter a number from 0 to 1023 for the original route reference index.
NEWINDEX		0 to 1023	New index. Enter a number from 0 to 1023 for the route reference index to the ISDN list in the routing table.

Datafill example for table IBNMAP, OFRTMAP, or RTEMAP

The following example shows sample datafill for table IBNMAP, OFRTMAP, or RTEMAP.

MAP display example for table IBNMAP, OFRTMAP, or RTEMAP

```
           KEY  NEWINDEX
________________________________________________________

64KRTE    1       100
```

Error messages for table IBNMAP, OFRTMAP, or RTEMAP

Not applicable

Datafilling table XLAMAP

The following table shows the datafill specific to PRI Bearer Capability Routing for table XLAMAP. Only those fields that apply directly to PRI

PRI Bearer Capability Routing (continued)

Bearer Capability Routing are shown. For a description of the other fields, refer to the data schema section of this document.

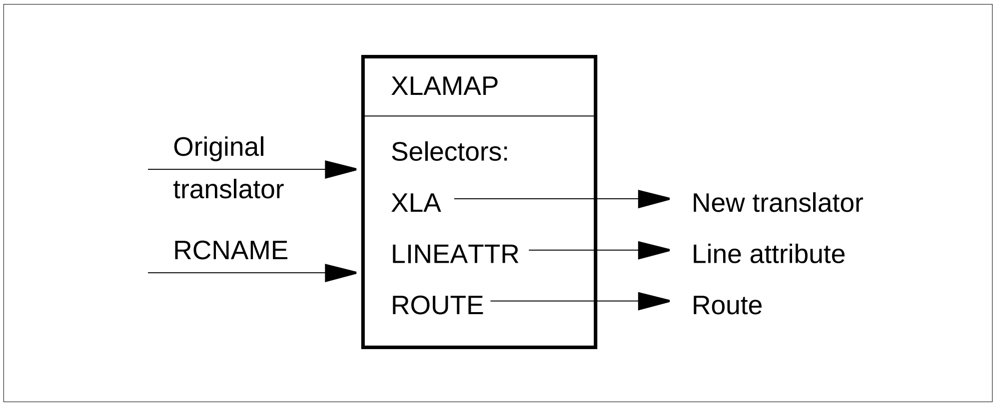
Table XLAMAP is a pretranslation table used for private calls which associates the original MDC translator name from table NCOS or CUSTHEAD and the call's RCNAME with a new translator name, a line attribute, or a routing index. Two sets of new translations data can be associated with each original translator and RCNAME.

As shown in the following figure, the selector values in subfield SEL determines the next stage of translations for the call:

- The XLA selector provides a new translator name to be used in table IBNXLA.
- The LINEATTR selector provides a line attribute index.
- The ROUTE selector operates only when there are no called digits in either the CDN or keypad IE, and is typically used as the second of two sets of translations data. The first set, with selector XLA, provides a translator to be used when there are called digits. The second set, with selector ROUTE, provides a route to follow when there are no digits.

If neither the ROUTE nor the LINEATTR selector is datafilled, and there are no called digits, the call is routed to permanent signal treatment.

XLAMAP selectors



PRI Bearer Capability Routing (continued)

Note: The ROUTE and LINEATTR selectors do not support billing.

Datafilling table XLAMAP (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
XLAKEY		see subfields	Translations key. Datafill the subfields RCNAME and XLANAME as one concatenated entry. Separate the two values with a blank. You are not prompted for the subfields individually.
	RCNAME	alphanumeric (1 to 8 characters)	Routing characteristics name. Enter the name from table RCNAME associated with the call. ***Note:*** The default routing characteristic name cannot be used.
	XLANAME	alphanumeric (1 to 8 characters)	Translator name. Enter the original MDC translator name from table NCOS or CUSTHEAD. ***Note:*** The XLANAME entry must be defined in table XLANAME.
DATA		see subfields	Data. There can be up to two DATA entries per tuple. A tuple ends automatically after a second entry.
	SEL	XLA, LINEATTR, ROUTE or $	Selector. The new translations pointer. Enter one of the following values: • Enter XLA for a translator name. • Enter LINEATTR for a line attribute. • Enter ROUTE for a route index. • Enter a $ to end the tuple. ***Note:*** Only XLA and ROUTE can be combined in one tuple.
	NEWXLA	alphanumeric	New translator. Enter the new translator to be used in table IBNXLA. ***Note:*** Used when subfield SEL is XLA. The NEWXLA entry must be defined in table XLANAME.

PRI Bearer Capability Routing (continued)

Datafilling table XLAMAP (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
DATA (continued)	LINEATTR	0 to 2047	Line attribute. Enter a number from 0 to 2047 for the line attribute index. The line attribute index must be defined in table LINEATTR. ***Note:*** Used when subfield SEL is LINEATTR.
	EXTRTEID		External route identification. Datafill the subfields TABID and KEY as one concatenated entry. Separate the two values with a blank. You are not prompted for the subfields individually. ***Note:*** Used when subfield SEL is ROUTE.
	TABID	OFRT or IBNRTE	Table identifier. Enter OFRT or IBNRTE for the routing table. ***Note:*** Used when subfield SEL is ROUTE.
	KEY	0 to 1023	Key. Enter a number from 0 to 1023 for the routing index in table OFRT or IBNRTE. ***Note:*** Used when subfield SEL is ROUTE.

Datafill example for table XLAMAP

The following example shows sample datafill for table XLAMAP. This tuple provides two sets of translations data: a translator name for table IBNXLA, and a route to follow when there are no digits.

MAP display example for table XLAMAP

```
                XLAKEY                                     DATA
________________________________________________________________
64KRTE          ISAXLA        ( XLA 64KCXDK)( ROUTE OFRT 25)$
```

Error messages for table XLAMAP

The following error messages apply to table XLAMAP.

Error messages for table XLAMAP

Error message	Explanation and action
THE DEFAULT ROUTING CHARACTERISTIC NAME CANNOT BE DATAFILLED.	The default routing characteristic name cannot be entered in subfield RCNAME. Use a different RCNAME when datafilling field XLAKEY.
ONLY ONE ROUTE OR LINEATTR OPTION ALLOWED PER TUPLE.ONLY ONE ROUTE OR LINEATTR OPTION ALLOWED PER TUPLE.	Only one ROUTE or LINEATTR value in subfield SEL can be datafilled in a tuple. Enter each in separate tuples.
ONLY ONE XLA OR LINEATTR OPTION ALLOWED PER TUPLE.	Only one XLA or LINEATTR value in subfield SEL can be datafilled in a tuple. Enter each in separate tuples.

Datafilling table PXLAMAP

The following table shows the datafill specific to PRI Bearer Capability Routing for table PXLAMAP. Only those fields that apply directly to PRI Bearer Capability Routing are shown. For a description of the other fields, refer to the data schema section of this document.

Table PXLAMAP is a pretranslation table used for public calls which associates the original pretranslator name and the call's RCNAME with a new pretranslator name, an operator position, or a routing index. Two sets of new translations data can be associated with each original pretranslator and RCNAME.

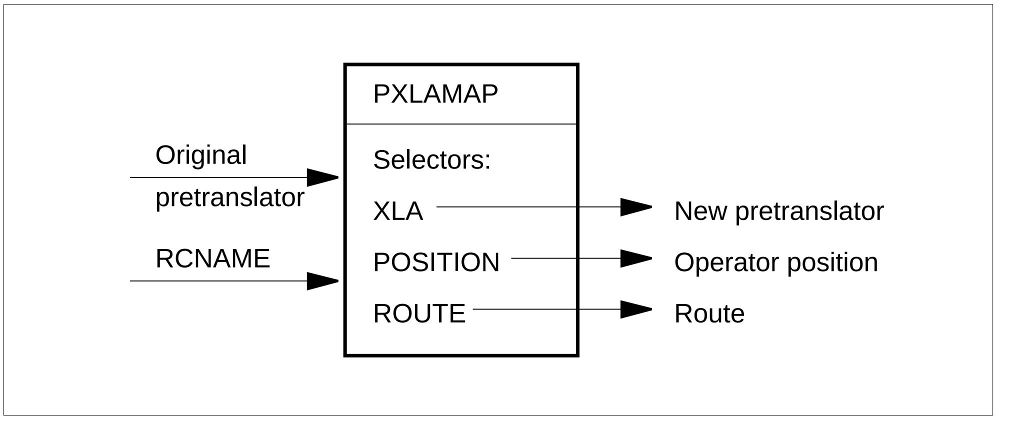
As shown in the following figure “PXLAMAP selectors", three selectors in subfield SEL determine the next stage of translations for the call:

- The XLA selector provides a new pretranslator name to be used in table STDPRTCT.
- The POSITION selector provides an operator position.
- The ROUTE selector operates only when there are no called digits in either the CDN or keypad IE, and is typically used as the second of two sets of translations data. The first set, with selector XLA, provides a translator to be used when there are called digits. The second set, with selector ROUTE, provides a route to follow when there are no digits.

PRI Bearer Capability Routing (continued)

If neither the ROUTE nor the POSITION selector is datafilled, and there are no called digits, the call is routed to permanent signal treatment.

PXLAMAP selectors



> ***Note:*** The ROUTE and LINEATTR selectors do not support billing.

Datafilling table PXLAMAP (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
PXLAKEY		see subfields	Translations key. Datafill the subfields RCNAME and XLANAME as one concatenated entry. Separate the two values with a blank. You are not prompted for the subfields individually.
	RCNAME	alphanumeric (1 to 8 characters)	Routing characteristics name. Enter the name from table RCNAME associated with the call. ***Note:*** The default routing characteristic name cannot be used.
	XLANAME	alphanumeric (1 to 4 characters)	Translator name. Enter the original pretranslator name from table XLANAME.
DATA		see subfields	Data. There can be up to two DATA entries per tuple. A tuple ends automatically after a second entry.

PRI Bearer Capability Routing (continued)

Datafilling table PXLAMAP (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	SEL	XLA, POSITION, ROUTE or $	Selector. A new pretranslations pointer. Enter one of the following values: • Enter XLA for a translator name. • Enter POSITION for an operator position. • Enter ROUTE for a route index. • Enter a $ to end the tuple. ***Note:*** The XLA and ROUTE, or XLA and POSITION can be combined in one tuple.
	NEWXLA	alphanumeric	New translator. Enter the new translator to be used in table IBNXLA. ***Note:*** Used when subfield SEL is XLA. The NEWXLA entry must be defined in table XLANAME.
DATA (continued)	POS	TOPS, CTOP, CAMA, TSPS, AMRX, RTE1, RTE2, RTE3, RTE4, AOSS, OCC, or NONE	Position. Enter one of TOPS, CTOP, CAMA, TSPS, AMRX, RTE1, RTE2, RTE3, RTE4, AOSS, OCC, or NONE to define an operator position.
	TABID	OFTR or IBNRTE	Table identifier. Enter OFRT or IBNRTE for the routing table. ***Note:*** Used when subfield SEL is ROUTE.
	KEY	0 to 1023	Key. Enter a number from 0 to 1023 for the routing index in table OFRT or IBNRTE. ***Note:*** Used when subfield SEL is ROUTE.

Datafill example for table PXLAMAP

The following example shows sample datafill for table PXLAMAP. This tuple provides two sets of translations data: a pretranslator name for table STDPRTCT, and a route to follow when there are no digits.

PRI Bearer Capability Routing (continued)

MAP display example for table PXLAMAP

```
              XLAKEY                                    DATA
______________________________________________________________

64KRTE       ISAXLA       ( XLA 64KCXDK)( ROUTE OFRT 25)$
```

Error messages for table PXLAMAP

The following error messages apply to table PXLAMAP.

Error messages for table PXLAMAP

Error message	Explanation and action
THE DEFAULT ROUTING CHARACTERISTIC NAME CANNOT BE DATAFILLED.	The default routing characteristic name cannot be entered in subfield RCNAME. Use a different RCNAME when datafilling field PXLAKEY.
ONLY ONE ROUTE OR POSITION OPTION ALLOWED PER TUPLE.	Only one ROUTE or POSITION value in subfield SEL can be datafilled in a tuple. Enter each in separate tuples.

Datafilling table IBNXLA

The following table shows the datafill specific to PRI Bearer Capability Routing for table IBNXLA. Only those fields that apply directly to PRI Bearer Capability Routing are shown. For a description of the other fields, refer to the data schema section of this document.

PRI Bearer Capability Routing (continued)

Table IBNXLA provides translator tuples which allow the operating company to datafill a retranslation based on the RCNAME. The RC option in the REPL retranslation selector is datafilled for this purpose.

Datafilling table IBNXLA

Field	Subfield or refinement	Entry	Explanation and action
KEY		see subfields	Key field. Datafill the subfields XLANAME and DGLIDX as one concatenated entry. Separate the two values with a blank. You are not prompted for the subfields individually.
	XLANAME	alphanumeric (1 to 8 characters)	Translator name. Enter the original translator name from table XLANAME.
	DGLIDX	vector of up to 18 digits	Digilator index. Enter up to 18 digits to be replaced.
RESULT		see subfields	Result
	TRSEL	REPL	Translator selector. Enter REPL for replace.
	CONTINUE	Y or N	Continue. Enter Y if translations are to continue with the next translator in the normal sequence. Enter N if translations are to restart from the beginning based on the user's NCOS and customer translator (as if the customer has dialed the replacement digits).
	REPLCODE	numeric (up to 16 digits)	Replacement code Enter up to 16 digits for the replacement digits.
	OPTION	RC	Option. Enter RC to indicate that retranslation is to be based on an RCNAME.
	RCNAME	alphanumeric (1 to 8 characters)	Routing characteristics name. Enter a name from table RCNAME.

Datafill example for table IBNXLA

The following example shows sample datafill for table IBNXLA.

PRI Bearer Capability Routing (continued)

MAP display example for table IBNXLA

```
         KEY                                        RESULT
--------------------------------------------------------------
CXDK     765
                  REPL N       365 (RC 64KRTE) $
```

Error messages for table IBNXLA

Not applicable

Datafilling table LTCALLS

The following table shows the datafill specific to PRI Bearer Capability Routing for table LTCALLS. Only those fields that apply directly to PRI Bearer Capability Routing are shown. For a description of the other fields, refer to the data schema section of this document.

Table LTCALLS provides initial translations for the calls that can be routed over the trunk group. The table is datafilled with the trunk group's LTID, the call type, and the initial translations route for calls.

Datafilling table LTCALLS (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
LTID		see subfields	Logical terminal identifier. Datafill subfields LTGRP, LTNUM, and CALLTYP as one concatenated entry. Separate the three values with blanks. You are not prompted for the subfields individually.
	LTGNUM	see subfields	Logical terminal group number. This is made up of subfields LTGRP and LTNUM.
	LTGRP	alphanumeric (up to 8 characters)	Logical terminal group. Enter the trunk group name from table LTDEF.
LTID (continued)	LTNUM	1 to 1022	Logical terminal number. Enter the trunk group number from table LTDEF.
	CALLTYP	PUB or PVT	Call type. Enter PUB for public. Enter PVT for private.
XLARTSEL		see subfields	Translation route selector

PRI Bearer Capability Routing (continued)

Datafilling table LTCALLS (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	XLARTE	XLAIBN, XLALEC or RTEREF	Translation route. Enter one of the following values: • XLAIBN for integrated business network for PBX or MDC type offices. • XLALEC for local exchange carrier for POTS, PBX, or MDC type offices. • RTEREF to route the call to the appropriate table. ***Note:*** The XLAREC selector cannot be used when field CALLTYPE is PVT.
	LINEATTR	0 to 2047	Line attribute. Enter a number from 0 to 2047 for the index into table LINEATTR. ***Note:*** Only use when field XLARTE is XLAIBN or XLALEC..
	CUSTGRP	alphanumeric	Customer group name. Enter the customer group name. ***Note:*** Only use when field XLARTE is XLAIBN.
	SUBGRP	0 to 7	Subgroup. Enter a number from 0 to 7 for the customer subgroup. ***Note:*** Only use when field XLARTE is XLAIBN.
	NCOS	0 to 511	Network class of service. Enter a number from 0 to 511 for the key to the NCOS table. ***Note:*** Only use when field XLARTE is XLAIBN.
XLARTSEL (continued)	TABNAME	OFTR or IBNRTE	Table name. Enter OFRT or IBNRTE for the routing table. ***Note:*** Only use when field XLARTE is RTEREF.
	INDEX	0 to 1023	Index. Enter a number from 0 to 1023 for the extended route reference index. ***Note:*** Only use when field XLARTE is RTEREF.

PRI Bearer Capability Routing (continued)

Datafill example for table LTCALLS

The following example shows sample datafill for table LTCALLS.

MAP display example for table LTCALLS

```
              LTID                      XLARTSEL
                                                   OPTIONS
________________________________________________________

ISDN  1008   PVT           RTEREF  OFRT  100
                                                         $
```

Error messages for table LTCALLS

Not applicable

Datafilling table TRKRCSEL

The following table shows the datafill specific to PRI Bearer Capability Routing for table TRKRCSEL. Only those fields that apply directly to PRI Bearer Capability Routing are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TRKRCSEL (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
GRPKEY		alphabetic	Group key. Enter the trunk group name defined in table CLLI.
RCFILTER		see subfields	Routing characteristics filter. This field consists of subfields RCSELR and RCSEL. The maximum number of multiples available for this field is the same as the number of different routing characteristics available in the switch.
Note: BC is defaulted on. All others are defaulted off. The default value is applicable to those routing characteristics that are not specified.			

PRI Bearer Capability Routing (continued)

Datafilling table TRKRCSEL (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	RCSELR	BC, OSA, CDB, TNS, SR, PI	Routing characteristic selector. Enter the particular routing characteristic the end user wants to turn on or off.
	RCSEL (see note)	ON, OFF	Routing characteristic selector. Enter ON to turn on the routing characteristic specified in field RCSELR. When ON is specified, that particular routing characteristic is used for translation.
Note: BC is defaulted on. All others are defaulted off. The default value is applicable to those routing characteristics that are not specified.			

Datafill example for table TRKRCSEL

The following example shows sample datafill for table TRKRCSEL.

MAP display example for table TRKRCSEL

```
GRPKEY              RCFILTER
________________________________________________________
PRITRK             (BC ON) (CDN OFF) (TNS OFF) (OSA OFF) $
```

Error messages for table TRKRCSEL

The following error messages apply to table TRKRCSEL.

Error messages for table TRKRCSEL

Error message	Explanation and action
`This table only supports PRI trunks`	A filter was defined for non-PRI trunks. Define filters only for PRI trunks.
`***ERROR - Must be 2W or INCOMING trunk`	The trunk specified is not a 2W or INCOMING trunk. Specify trunks as 2W or incoming.

Datafilling table RTECHAR

The following table shows the datafill specific to PRI Bearer Capability Routing for table RTECHAR. Only those fields that apply directly to PRI Bearer Capability Routing are shown. For a description of the other fields, refer to the data schema section of this document.

PRI Bearer Capability Routing (continued)

Table RTECHAR defines an RCNAME by assigning it a set of routing characteristics. For each RCNAME, up to seven sets of routing characteristics can be listed.

The table permits call routing based on the transmission service identified by BCNAMEs.

Datafilling table RTECHAR (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
RCKEY		see subfield	Routing characteristics key. Datafill subfield RCNAME. You are not prompted for the subfield individually.
	RCNAME	alphanumeric (1 to 8 characters)	Routing characteristic name Enter a name from table RCNAME. ***Note:*** The default routing characteristic name cannot be used.
GROUPRC		see subfields	Routing characteristics groupings. Datafill subfields RCSEL and BCNAME as one concatenated entry. Separate the two values with a blank. End the entry with a blank and a $. You are not prompted for the subfields individually. Up to seven GROUPRC values can be assigned to each RCKEY. The tuple automatically ends after a seventh value. Enter a $ to end the tuple.
	FIRSTRC	alphanumeric	First routing characteristic group. This is made up of subfields RCSEL and BCNAME. Only one FIRSTRC can be assigned within a GROUPRC.

PRI Bearer Capability Routing (continued)

Datafilling table RTECHAR (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	RCSEL	BC, CDN, OSA, PI, SR, or TNS	Routing characteristic selector. Enter one of the entries with its respective refinements. Enter BC and datafill refinement BC. Enter CDN and datafill refinement CDNTON. Enter OSA and datafill refinement OSA. Enter PI and datafill refinement PI. Enter SR and datafill refinement SR. Enter TNS and datafill refinement TNSTON.
	BCNAME	alphanumeric	Bearer capability name Enter the BC name from table BCDEF applicable to this set of routing characteristics.

Datafill example for table RTECHAR

The following example shows sample datafill for table RTECHAR. The tuple defines RCNAME 64KDATA, which allows routing based on a transmission type of 64-kit/s data identified by BCNAME 64KDATA.

MAP display example for table RTECHAR

```
  RCKEY
                                                GROUPRC
______________________________________________________

 64KRTE
(BC 64KDATA (OSA NIL) (CDN NIL) (TNS NIL) $)  $
```

PRI Bearer Capability Routing (continued)

Error messages for table RTECHAR

The following error messages apply to table RTECHAR.

Error messages for table RTECHAR

Error message	Explanation and action
AT LEAST ONE GROUP OF ROUTING CHARACTERISTICS MUST BE PRESENT	A tuple has no value for field GROUPRC. Enter a routing characteristic in field GROUPRC.
NILNAME CANNOT BE USED IN THIS TABLE	The default RCNAME cannot be used in field RCKEY. Use another name.

Translation verification tools

The following five examples show TRAVER outputs for a private terminating call, a public terminating call, a private originating call, and a public originating call.

> ***Note:*** Some messages and table accesses that do not relate directly to the capability have been removed from the TRAVER examples, so that it is easier to follow the progression through main routing tables.

Private terminating call

The following example shows the output from TRAVER when it is used to verify PRI Bearer Capability Routing for a private call terminating in the DMS-100.

In a simulation, the TRAVER command replaces the SETUP message that the DMS-100 would receive in a real situation, and provides all the information normally contained in the SETUP message. In the TRAVER command shown at the top of the example

- tr indicates that a trunk name follows, and bnrpraic is the trunk name
- n replaces the called digits which would be entered here for a non-ISDN call simulation
- cdn indicates that CDN IE information follows, which includes pvt and 55982 in this case
- pvt (private) is the NPI, and 55982 represents the digits
- prvt is the NSF
- bc indicates that a BC IE follows, and 56kdata is the bearer capability
- b indicates that the type of trace required is “both," meaning that both a table trace and a digit trace are to be performed.

PRI Bearer Capability Routing (continued)

The routing process shown in the TRAVER example is as follows:

1. In lines 1 and 2 of the example, table RTECHAR is accessed with the transmission characteristics from the SETUP message, which are defined by the RCNAME 56KDATA.
2. In lines 3 and 4, table TRKGRP is accessed with the trunk group CLLI, BNRPRAIC, and provides the trunk group LTID, ISDN 501.
3. In lines 5 and 6, the LTID and the call type derived from the SETUP message, PVT, are used to access table LTCALLS, which provides the customer group name, IBNTST, and the NCOS, 0.
4. The customer group name is used to search for a translator name for the customer group. First, in lines 7 and 8, table NCOS is accessed with the customer group name and the NCOS, but it doesn't contain a translator. Table CUSTHEAD (lines 9 and 10), however, does provide a customer group translator, CXT3, which is used to access table XLAMAP.
5. In lines 11 and 12, table XLAMAP is accessed with the RCNAME, 56KDATA, and the translator from table CUSTHEAD, CXT3, and provides a new translator, XLAT.
6. In lines 13 and 14, the new translator and the dialed digits are used to access table IBNXLA. The tuple in IBNXLA contains selector EXTN (extension), which provides the SNPA and central office code used to key

PRI Bearer Capability Routing (continued)

into tables TOFCNAME, DNINV, and DNATTRS, the process continuing with standard translations.

TRAVER output example for PRI Bearer Capability Routing private terminating call

Line **Output**

>traver tr bnrpraic n cdn pvt 55982 prvt bc 56kdata b

```
TABLE RTECHAR
 . 56KDATA ( BC 56KDATA $)$
TABLE TRKGRP
BNRPRAIC PRA 0 PRAC NCRT DSEQ N (ISDN 501) $ $
TABLE LTCALLS
ISDN 501 PVT XLAIBN 0 IBNTST 0 0 $
TABLE NCOS
IBNTST 0 0 0 TST10 ( XLAS CXT1 RXCFN NDGT) ( OHQ 0 TONE_OHQ) ( CBQ 0 1 Y 2)
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
IBNTST NXLA CXT3 RXCFN 0 TST1
TABLE XLAMAP
 . 56KDATA CXT3 ( XLA XLAT) $
TABLE IBNXLA: XLANAME XLAT
XLAT 5 EXTN Y Y Y 613 621 5 $
TABLE TOFCNAME
613 621
TABLE DNINV
613 621 5982 ILC WITS 2
TABLE DNATTRS
613 621 5982
  (PUBLIC ( NAME WITS_2) $) $ $


+++ TRAVER: SUCCESSFUL CALLTRACE+++


DIGIT TRANSLATION ROUTES

1 LINE                   6136215982           ST

TREATMENT ROUTES.  TREATMENT IS:  GNCT
1 T120

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

Public terminating call

The following example shows the output from TRAVER when it is used to verify PRI Bearer Capability Routing for a public call terminating in the DMS-100.

In a simulation, the TRAVER command replaces the SETUP message that the DMS-100 would receive in a real situation, and provides all the information

PRI Bearer Capability Routing (continued)

normally contained in the SETUP message. In the TRAVER command shown at the top of the example

- tr indicates that a trunk name follows, and bnrpraic is the trunk name
- n replaces the called digits which would be entered here for a non-ISDN call simulation
- cdn indicates that CDN IE information follows, which includes e164 and 4015213 in this case
- e164 (public) is the NPI, and 4015213 represents the digits
- bc indicates that a BC IE follows, and 56kdata is the bearer capability
- b indicates that the type of trace required is “both," meaning that both a table trace and a digit trace are to be performed.

The routing process shown in the TRAVER example is as follows:

1. In lines 1 and 2 of the example, table RTECHAR is accessed with the transmission characteristics from the SETUP message, which are defined by the RCNAME 56KDATA.
2. In lines 3 and 4, table TRKGRP is accessed with the trunk group CLLI, BNRPRAIC, and provides the trunk group LTID, ISDN 501.
3. In lines 5 and 6, the LTID and the call type derived from the SETUP message, PUB, are used to access table LTCALLS, which provides the index to table LINEATTR, 12.
4. In lines 7 and 8, table LINEATTR is accessed with the index from table LTCALLS. In lines 9 and 10, the standard pretranslator name from table LINEATTR, P600, is used to access table PXLAMAP, which provides a new pretranslator for ISDN calls, P621.
5. The new pretranslator, P621, is used to access table STDPRTCT in lines 11 and 12, and standard translations follow until a route reference, 401, is obtained in line 18.

PRI Bearer Capability Routing (continued)

6. In lines 19 and 20, the call's BC value and the route reference, 401, are used to access mapping table RTEMAP, which provides a new route index for ISDN calls, 402.
7. In lines 21 and 22, table RTEREF is accessed with the new index.

TRAVER output example for PRI Bearer Capability Routing public terminating call

```
Line      Output

          >traver tr bnrpraic n cdn e164 4015213 bc 56kdata b
1         TABLE RTECHAR
2          . 56KDATA ( BC 56KDATA $)$
3         TABLE TRKGRP
4         BNRPRAIC PRA 0 PRAC NCRT DSEQ N ( ISDN 501) $  $
5         TABLE LTCALLS
6         ISDN 501 PUB XLAIBN 12 IBNTST 0 0 $
7         TABLE LINEATTR
8         12 1FR NONE NT FR01 0 613 P600 L613 TSPS 10 NIL NILSFC LATA1 NIL
          NIL NIL 00
9         TABLE PXLAMAP
10         . 56KDATA P600 ( XLA P621) $
11        TABLE STDPRTCT
12        P621 ( 1) ( 0) 0
13         . SUBTABLE STDPRT
14         . 40 410 N NP 0 NA
15        TABLE HNPACONT
16        613 710 2 ( 39) ( 1) ( 0) ( 2) 0
17         . SUBTABLE HNPACODE
18         . 401 401 LRTE 401
19         . SUBTABLE RTEMAP
20         . . 56KDATA 401 402
21         . SUBTABLE RTEREF
22         .  402 DN 613 722
23         . EXIT TABLE RTEREF
24        EXIT TABLE HNPACONT
25
26        +++ TRAVER:SUCCESSFUL CALL TRACE+++
27
28
29        DIGIT TRANSLATION ROUTES
30
31        1 LINE                   6137225213            ST
32
33        TREATMENT ROUTES.  TREATMENT IS:  GNCT
34        1 T120
35
36   +++ TRAVER: SUCCESSFUL CALL TRACE +++
```

Private originating call

The following example shows the output from TRAVER when it is used to verify PRI Bearer Capability Routing for a private call originating in the DMS-100.

PRI Bearer Capability Routing (continued)

In a simulation, the TRAVER command replaces the SETUP message that the DMS-100 would receive from the terminal in a real situation, and provides all the information normally contained in the SETUP message. In the TRAVER command shown at the top of the example

- l indicates that the DN of the originating line follows, and 6215982 is the DN
- n replaces the called digits which would be entered here for a non-ISDN call simulation
- cdn indicates that CDN IE information follows, which includes pvt and 15983 in this case
- pvt (private) is the call type, and 15982 represents the digits
- prvt is the NSF
- bc indicates that a BC IE follows, and 56kdata is the bearer capability
- b indicates that the type of trace required is “both," meaning that both a table trace and a digit trace are to be performed.

The routing process shown in the TRAVER example is as follows:

1. In lines 1 and 2 of the example, table RTECHAR is accessed with the transmission characteristics in the SETUP message from the terminal, which are defined by the RCNAME 56KDATA.
2. In lines 3 and 4, table KSETLINE is accessed to begin the translations of the call. The NPA and calling number from table KSETLINE are used to access table DNATTRS to check for any restrictions or subscription parameters.
3. In lines 7 to 10, tables NCOS and CUSTHEAD are accessed with the customer group name, IBNTST, from table KSETLINE, to find a translator name. The customer group translator from table CUSTHEAD, CXT3, is used to access table XLAMAP. In lines 11 and 12, the digit collection index from table CUSTHEAD is used to access table DIGCOL, which defines the number of digits to collect for this customer group.
4. In lines 13 and 14, table XLAMAP is accessed with the customer group translator from CUSTHEAD, CXT3, and the RCNAME associated with the call, 56KDATA. XLAMAP provides a new translator, CXT2, which is used to access IBNXLA.
5. In lines 15 and 16, table IBNXLA provides a route index to table IBNRTE, 800, but as there is a bearer capability associated with the call, table IBNMAP is accessed first.
6. In lines 19 and 20, table IBNRTE is accessed with the new routing index from IBNMAP, 700, and provides a trunk group CLLI for the call

PRI Bearer Capability Routing (continued)

BNRPRAOG. Because the ISA selector is used in table IBNRTE, the NPI (PVT) and NSF (PRVT) are specified for inclusion in the SETUP message.

PRI Bearer Capability Routing (continued)

7. In lines 21 and 22, table TRKGRP is accessed with the trunk group CLLI, and provides the LTID of the trunk group, ISDN 500, which is used to key into table LTCALLS.
8. The LTID and the call type (PVT) from table IBNRTE are used to find a tuple in table LTCALLS, which allows the call to go through to the trunk.
9. In lines 25 and 26, table DIGMAN is accessed with the digit manipulation index from table IBNRTE, 15, to obtain the prefix 401, which must be outpulsed before the digits.
10. Line 35 shows the information to be included in the SETUP message generated with the call:
    - CDN specifies that a CDN IE is to be generated
    - PVT is the NPI
    - L indicates that the type of number is local
    - 4015983 is the called number
    - PRVT is the NSF
    - 0 indicates that there is no facility number identified (as there could be for a FX or TIE call)
    - BC 56KDATA indicates that the BC IE will contain the BC value 56KDATA

PRI Bearer Capability Routing (continued)

TRAVER output example for PRI Bearer Capability Routing private originating call

Line **Output**

>traver l 6215982 n cdn pvt 15983 prvt bc 56kdata b

```
TABLE RTECHAR
. 56KDATA ( BC 56KDATA $)$
TABLE KSETLINE
WITS 2 1 DN Y 6215982 IBNTST 0 0 613 (RAG) (LNR) (SFC) (CFX) $
TABLE DNATTRS
613 621 5982
     (PUBLIC ( NAME WITS_2) $)$ $
TABLE NCOS
IBNTST 0 0 0 TST10 (XLAS CXT1 RXCFN NDGT) (OHQ 0 TONE_OHQ) (CBQ 0 1 Y 2)
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
IBNTST NXLA CXT3 RXCFN 0 TST1
TABLE DIGCOL
TST1 1 COL S 2
TABLE XLAMAP
 . 56KDATA CXT3 ( XLA CXT2) $
TABLE IBNXLA: XLANAME CXT2
CXT2 1 ROUTE N Y N 1 N 2 18 POTS N T IBNRTE 800
TABLE IBNMAP
. 56KDATA 800 700
TABLE IBNRTE
700 ISA N N N BNRPRAOG PVT 0 PVT 15
. TABLE TRKGRP
. BNRPRAOG PRA 0 PRAC NCRT ASEQ N (ISDN 500) $ $
. TABLE LTCALLS
. ISDN 500 PVT XLAIBN 0 IBNTST 0 0 $
. TABLE DIGMAN
. 15 (INC 401)
. EXIT TABLE DIGMAN
EXIT TABLE IBNRTE

+++ TRAVER:SUCCESSFUL CALL TRACE+++


DIGIT TRANSLATION ROUTES

1 BNRPRAOG              N CDN  PVT  L  4015983 PRVT 0   BC 56KDATA

TREATMENT ROUTES.  TREATMENT IS:  GNCT
1 T120

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

Public originating call

The following example shows the output from TRAVER when it is used to verify PRI Bearer Capability Routing for a public call originating in the DMS-100.

In a simulation, the TRAVER command replaces the SETUP message that the DMS-100 would receive from the terminal in a real situation, and provides all the information normally contained in the SETUP message. In the TRAVER command shown at the top of the example

- l indicates that the DN of the originating line follows, and 6215982 is the DN
- n replaces the called digits which would be entered here for a non-ISDN call simulation
- cdn indicates that CDN IE information follows, which includes e164 and 96605983 in this case
- e164 (public) is the NPI, and 96605983 represents the digits
- bc indicates that a BC IE follows, and 56kdata is the bearer capability
- b indicates that the type of trace required is “both," meaning that both a table trace and a digit trace are to be performed.

The routing process shown in the TRAVER example is as follows:

1. In lines 1 and 2 of the example, table RTECHAR is accessed with the transmission characteristics in the SETUP message from the terminal, which are defined by the RCNAME 56KDATA.
2. In lines 3 and 4, table KSETLINE is accessed to begin the translations of the call. The NPA and calling number from table KSETLINE are used to access table DNATTRS to check for any restrictions or subscription parameters.
3. In lines 7 to 10, tables NCOS and CUSTHEAD are accessed with the customer group name, IBNTST, from table KSETLINE, to find a translator name. The customer group translator from table CUSTHEAD, CXT3, is used to access table XLAMAP. In lines 11 and 12, the digit collection index from table CUSTHEAD is used to access table DIGCOL, which indicates that POTS digit collection is required.
4. In lines 13 and 14, table XLAMAP is accessed with the customer group translator from CUSTHEAD, CXT3, and the RCNAME associated with the call, 56KDATA. Table XLAMAP provides a line attribute index, 22, which is used to access table LINEATTR.
5. In lines 15 and 16, table LINEATTR provides a standard pretranslator index to table STDPRTCT, P601, but as there is a bearer capability associated with the call, table PXLAMAP is accessed first, and provides a new pretranslator, P621.
6. In lines 17 and 18, table PXLAMAP is accessed using 56KDATA as the key.
7. In lines 19 to 26, table STDPRTCT is accessed with the new standard pretranslator from PXLAMAP and the first two digits of the called

PRI Bearer Capability Routing (continued)

number, and standard translations follow until a routing index to table RTEREF, 13, is obtained.

8. Because there is a bearer capability associated with the call, table RTEMAP is accessed before table RTEREF, with the routing index from HNPACODE, 13, and the RCNAME. Table RTEMAP provides a new routing index to table RTEREF, 710, which provides a trunk group CLLI for the call, BNRPRAOG. Because the ISA selector is used in table RTEREF, the NPI (PUB) is specified for inclusion in the SETUP message.
9. In lines 31 and 32, table TRKGRP is accessed with the trunk group CLLI, and provides the LTID of the trunk group, ISDN 201, which is used to key into table LTCALLS.
10. The LTID and the call type (PUB) from table RTEREF are used to find a tuple in table LTCALLS, which allows the call to go through to the trunk.
11. In lines 35 and 36, table DIGMAN is accessed with the digit manipulation index from table IBNRTE, 20, which specifies that the first three digits

must be removed and replaced with the digits 401 before the number is outpulsed.

12. Line 45 shows the information to be included in the SETUP message generated with the call:
    - CDN specifies that a CDN IE is to be generated
    - E164 is the NPI
    - L indicates that the type of number is local
    - 4015983 is the called number
    - NIL_NSF indicates that there is no NSF, as it is a public call
    - BC 56KDATA indicates that the BC IE will contain the BC value 56KDATA.

PRI Bearer Capability Routing (continued)

TRAVER output example for PRI Bearer Capability Routing public originating call

Line	Output
	>traver l 6215982 n cdn e164 96605983 bc 56kdata b
1	TABLE RTECHAR
2	. 56KDATA (BC 56KDATA $)$
3	TABLE KSETLINE
4	WITS 2 1 DN Y 6215982 IBNTST 0 0 613 (RAG) (LNR) (SFC) (CFX) $
5	TABLE DNATTRS
6	613 621 5982 (PUBLIC (NAME WITS_2) $)$ $
7	TABLE NCOS
8	IBNTST 0 0 0 TST10 (XLAS CXT1 RXCFN NDGT) (OHQ 0 TONE_OHQ) (CBQ 0 1 Y 2)
9	TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND DIGCOL
10	IBNTST NXLA CXT3 RXCFN 0 TST1
11	TABLE DIGCOL
12	TST1 9 POTS Y
13	TABLE XLAMAP
14	. 56KDATA CXT3 (LINEATTR 22) $
15	TABLE LINEATTR
16	22 1FR NONE NOT FR01 0 613 P601 L613 TSPS 10 NIL NILSFC LATA1 NIL NIL NIL 00
17	TABLE PXLAMAP
18	. 56KDATA P601 (XLA P621) $
19	TABLE STDPRTCT
20	P621 (1) (0) 0
21	. SUBTABLE STDPRT
22	. 66 69 N NP 0 NA
23	TABLE HNPACONT
24	613 710 2 (39) (1) (0) (2) 0
25	. SUBTABLE HNPACODE
26	. 660 660 LRTE 13
27	. SUBTABLE RTEMAP
28	. . 56KDATA 13 710
29	. SUBTABLE RTEREF
30	. 710 ISA N N N BNRPRAOG PUB NONE N N 20
31	. . TABLE TRKGRP
32	. . BNRPRAOG PRA 0 PRAC NCRT ASEQ N (ISDN 201) $ $
33	. . TABLE LTCALLS
34	. . ISDN 201 PUB XLAIBN 0 IBNTST 0 0 $
35	TABLE DIGMAN
36	. . 20 (REM 3) (INC 401)
37	.. EXIT TABLE DIGMAN
38	. EXIT TABLE RTEREF
39	EXIT TABLE HNPACONT
40	+++ TRAVER: SUCCESSFUL CALL TRACE +++
41	
42	
43	DIGIT TRANSLATION ROUTES
44	
45	1 BNRPRAOG N CDN E164 L 4015983 NIL_NSF BC 56KDATA
46	
47	TREATMENT ROUTES. TREATMENT IS: GNCT
48	1 T120
49	+++ TRAVER: SUCCESSFUL CALL TRACE +++

PRI Bearer Capability Routing (continued)

In a simulation, the TRAVER command replaces the SETUP message that the DMS-100 would receive from the terminal in a real situation, and provides all the information normally contained in the SETUP message. In the TRAVER command shown at the top of the example

- tr indicates that the name of the trunk follows, and pracmr1aic is the trunk name
- n replaces the called digits that would be entered here for a non-ISDN call simulation
- cdn indicates that CDN IE information follows, which in this case is na and 6137227050
- na (public) is the NPI, and 6137227050 represents the digits
- bc indicates that a BC IE follows, and 64kdata is the bearer capability
- b indicates that the type of trace required is “both," meaning that both a table trace and a digit trace are to be performed.

The routing process shown in the TRAVER example is as follows:

1. In lines 1 and 2 of the example, table TRKRCSEL is accessed with the trunk name and the routing characteristics.
2. In lines 3 and 4, table RTECHAR is accessed with the transmission characteristics in the SETUP message from the terminal, which are defined by the RCNAME 64KDATA. RCNAME 64KDATA is used because routing characteristic CDN was defined as being off and the bearer capability is 64KDATA.
3. In lines 5 to 8, table TRKGRP is accessed with the CLLI from the routing table, and provides the LTID assigned to the trunk. With the LTID and the call type (from the routing table), table LTCALLS is accessed. If a tuple is found in table LTCALLS for the LTID and call type, the call is allowed to go through to the trunk.
4. In lines 9 to 13, table LINEATTR provides a standard pretranslator index to table STDPRTCT, P621, but as there is a bearer capability associated with the call, table PXLAMAP is accessed first. Because no type is found in table PXLAMAP, the default pretranslator name is used.
5. In lines 14 to 29, table STDPRTCT is accessed with the standard pretranslator and standard translations follow until routing index is obtained from table HNPACONT.
6. In lines 30 and 31, table TOFCNAME is accessed with the area and office codes of the terminating office.

PRI Bearer Capability Routing (continued)

7. In lines 32 to 38, table DNINV is accessed with the assigned directory number, and table DNATTRS specifies the DN attributes from table DNGRPS.
8. In lines 39 to 44, table LCASCRCN is accessed with the NPA of the trunk group, the local calling area name, and the prefix selector. Table LCASCRCN determines that the call is a non-local call. Table PFXTREAT is then accessed with the OPTL prefix selector from table LCASCRCN.
9. In lines 45 and 46, table CLSVSCRC is accessed.
10. Line 50 shows the information to be included in the SETUP message generated with the call.

PRI Bearer Capability Routing (continued)

TRAVER output example for PRI Bearer Capability Routing public originating call

Line	Output
	>traver tr pracmr1aic n cdn na 6137227050 bc 64kdata b
1	TABLE TRKRCSEL
2	.PRACMR1AIC (CDN OFF)$
3	TABLE RTECHAR
4	. 64KDATA (BC 64KDATA $)$
5	TABLE TRKGRP
6	PRACMR1AIC PRA 0 NPDGP NCRT DSEQ N (ISDN 565) $ $
7	TABLE LTCALLS
8	ISDN 565 PUB XLAIBN 600 COMKODAK 0 0 $
9	TABLE LINEATTR
10	600 IBN NONE NT FR01 0 613 P621 L613 TSPS 0 NIL NILSFC NILLATA 0 NIL NIL 00 N $
11	LCABILL OFF – BILLING DONE ON BASIS OF CALLTYPE
12	TABLE PXLAMAP
13	. Tuple not found. Default to old pretranslator name.
14	TABLE STDPRTCT
15	P621 (1) (65021) 0
16	. SUBTABLE STDPRT
17	WARNING: CHANGES IN TABLE STDPRT MAY ALTER OFFICE
18	BILLING. CALL TYPE DEFAULT IS NP. PLEASE REFER TO
19	DOCUMENTATION
20	. KEY NOT FOUND
21	. DEFAULT VALUE IS: N NP 0 NA
22	. SUBTABLE AMAPRT
23	. KEY NOT FOUND
24	. DEFAULT VALUE IS: NONE OVRNONE N
25	TABLE HNPACONT
26	613 984 1 (268) (1) (84) (0) 0
27	. SBUTABLE HNPACODE
28	. 613 613 HNPA 0
29	. 722 722 NPOSDN 613 722
30	TABLE TOFCNAME
31	613 722
32	TABLE DNINV
33	613 722 7050 MDN SCA 3
34	TABLE DNATTRS
35	613 722 7050
36	(PUBLIC (NONUNIQUE) $)$ $
37	TABLE DNGRPS
38	TUPLE NOT FOUND
39	TABLE LCASCRCN
40	613 L613 (13) OPTL N
41	. SUBTABLE LCASCR
42	. TUPLE NOT FOUND. DEFAULT IS NON-LOCAL
43	TABLE PFXTREAT
44	OPTL NP N DD UNDT
45	TABLE CLSVSCRC
46	KEY NOT FOUND
47	DEFAULT IS TO LEAVE XLA RESULT UNCHANGED
48	+++ TRAVER: SUCCESSFUL CALL TRACE +++
49	DIGIT TRANSLATION ROUTES
50	1 LINE 6137227050 ST
51	TREATMENT ROUTES. TREATMENT IS: GNCT
52	+++ TRAVER: SUCCESSFUL CALL TRACE +++

PRI Bearer Capability Routing (end)

SERVORD

PRI Bearer Capability Routing does not use SERVORD.

Subaddressing

Functionality code

Functional group ordering code: NI000008

Functionality ordering code: does not apply

Release applicability

BCS36 and later versions

Requirements

This document contains all the datafill information for this functionality. Complete installation can require software or hardware.

Description

The Subaddressing (SUB) Supplementary Service can expand the addressing capacity of the called user beyond the address the ISDN number provides. The SUB can identify a specified endpoint of a call beyond the ISDN access.

Operation

Through subscribing to the SUB Supplementary Service, the called user allows the transfer of an additional address element. The additional address element is the called party subaddress (CDS). Assign the PROVCDS option through SERVORD to table DNATTRS to provide SUB to the called party.

The PROVCDS option allows the transfer of the CDS information element (IE). The system transfers CDS IE to the called party in the terminating SETUP message in the following conditions:

- length of the CDS IE is in limits
- called party subscribes to PROVCDS

If these conditions are not satisfied, the system discards the CDS IE.

Enter the PROVCDS option against specified DNs in table DNATTRS. The PROVCDS is a suboption of the call type (CALLTYPE). Enter PROVCDS for one or both of the call types. The VBINFO is the call type for circuit-mode voice calls. The CMDATA is the call type for circuit-mode data calls. If you assign PROVCDS to both call types, datafill VBINFO first.

Translations table flow

Subaddressing does not affect translations table flow.

Subaddressing (continued)

Limits

If you assign PROVCDS to both call types, datafill VBINFO first.

Interactions

Subaddressing does not have functionality interactions.

Activation/deactivation by the end user

Subaddressing does not require activation or deactivation by the end user.

Billing

Subaddressing does not affect billing.

Station Message Detail Recording

Subaddressing does not affect Station Message Detail Recording.

Datafilling office parameters

Subaddressing does not affect office parameters.

Datafill sequence

The following table requires data entry to start Subaddressing.

Datafill requirements for Subaddressing

Table	Purpose of table
DNATTRS	Contains DN attributes, including the PROVCDS option. Specifies if subaddress information elements (IE) are transported in the SETUP message for intranetwork calls. Enter data in this table through SERVORD only.

Tools for verifying translations

Subaddressing does not use translation verification tools.

SERVORD

Use SERVORD to assign the PROVCDS option to specified DNs in table DNATTRS. You can assign the PROVCDS option to call types VBINFO, CMDATA or both call types.

SERVORD limits

If you assign PROVCDS to both call types VBINFO and CMDATA, make sure you specify VBINFO as the first CALLTYPE.

Subaddressing (continued)

SERVORD prompts

The SERVORD prompts that assign Subaddressing PROVCDS option to a DN appear in the following table.

SERVORD prompts for Subaddressing

Prompt	Valid input	Explanation
DN_OR_LEN	7 digits	Enter the primary directory number for the logical terminal.
OPTKEY	1 to 64	Enter 1, as the system assigns the option to the primary DN key.
OPTION	PROVCDS	Enter PROVCDS to indicate that the SETUP message transports the called number subaddress (CDS) information element (IE).
CALLTYPE	VBINFO, CMDATA	Enter VBINFO to indicate that the system is to transport IE specified for the OPTION prompt only for voice band calls. Enter CMDATA to indicate that the system is to transport IE specified for the OPTION prompt only for circuit-mode data calls.

SERVORD example for adding Subaddressing with the ADO command

The following SERVORD example shows how to add Subaddressing option PROVCDS to DN 723-1234. The ADO command adds the option. The system assigns the option to both call types.

Subaddressing (end)

SERVORD example for Subaddressing with the ADO command in prompt mode

```
>ADO
SONUMBER:  NOW 93 04 09
> (CR)
DN_OR_LEN:
> 7231234
OPTKEY:
> 1
OPTION:
> PROVCDS
CALLTYPE:
>VBINFO
CALLTYPE:
> CMDATA
OPTKEY:
> $
```

SERVORD example for Subaddressing with the ADO command in no-prompt mode

```
> ADO  $  7231234  1  PROVCDS  VBINFO  CMDATA  $
```

7 Datafilling NI0 NI-1 BRI Enhanced Maintenance

The following chapter describes the NI0 NI-1 BRI Enhanced Maintenance, NI000009, functionality.

ESTU - Enhanced Services Test Unit

Ordering codes

Functional group ordering code: NI000009

Functionality ordering codes: not applicable

Release applicability

NA002 and up

Prerequisites

To operate, ESTU - Enhanced Services Test Unit require the following functional groups:

- NI0 ISDN Base, NI000007
- NI0 NI-1 BRI, NI000008
- MDC minimum, MDC00001

Description

The enhanced services test unit (ESTU) is a type of line test equipment (LTE) used to address new metallic testing requirements. In the ESTU, digital signal processing (DSP) is used to perform tests for ISDN services. An ESTU system consists of an ESTU master module (EMM) and ISDN test module (ITM). An ITM can be requested to perform test functions that simulate a captive NT1 and other special ISDN loop test functions.

The ESTU system is controlled by the computing module (CM) through a control link. Test commands for the ESTU are sent by the CM through a speech channel using the control link. The same communication link is also used by the ESTU to send results back to the CM. The control link is through a high speed modem (HSM).

The multiprotocol controller (MPC) transmits messages to and from the ESTU at 9600 baud. Messages for the ESTU are sent to the input/output controller (IOC). The IOC then, through the NT1X89BB EMPC card, transfers messages to a HSM dataset. A dedicated line card makes a call to another dedicated line card.. A second HSM dataset then transmits and receives the messages to and from the ESTU.

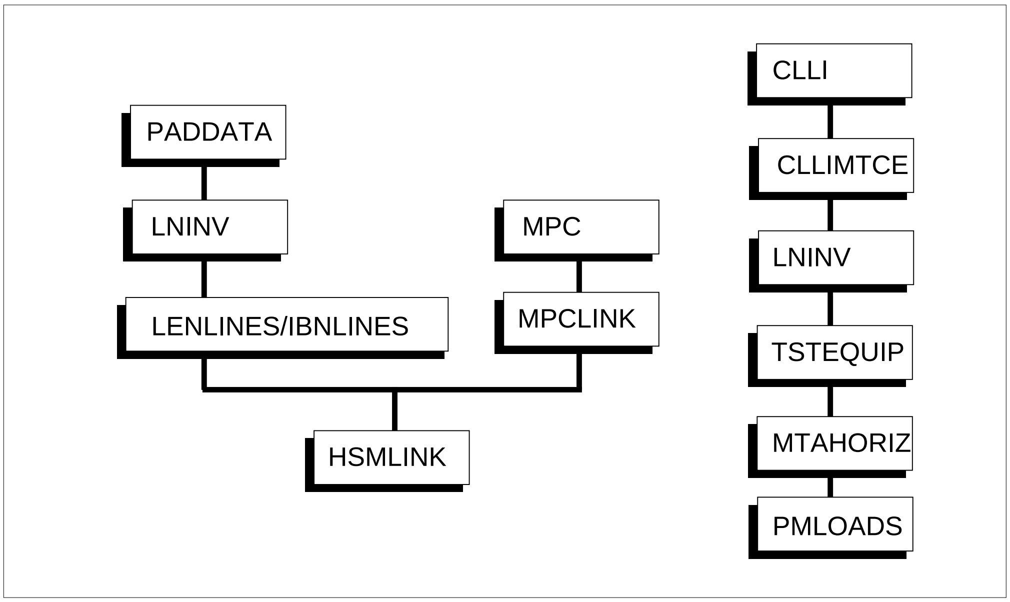
The LOADTE command at the ESTU MAP level is used to download the EMM and ITM. A download is required if an audit return to service (RTS) fails because the ESTU is not properly loaded.

ESTU - Enhanced Services Test Unit (continued)

The line equipment number is used in datafilling tables PADDATA, LNINV and TSTEQUIP.

The following figure shows the datafill dependencies for ESTU - Enhanced Services Test Unit.

Datafill dependencies for ESTU - Enhanced Services Test Unit



Limitations and restrictions

The following limitations and restrictions apply to ESTU - Enhanced Services Test Unit:

- Downloading through the slow speed digital modem is not allowed.
- The number of high speed modem links (EMPC, modem, line card) should be one greater than the number of ESTU.

Billing

ESTU - Enhanced Services Test Unit does not affect billing.

Datafilling office parameters

ESTU - Enhanced Services Test Unit does not affect office parameters.

ESTU - Enhanced Services Test Unit (continued)

Datafill sequence

The following table lists the ESTU - Enhanced Services Test Unit. The tables are listed in the order in which they are to be datafilled.

ESTU interface

Table	Purpose of table
PADDATA	Defines the loss and level plan for ESTU3.
LNINV	Contains data for each line card slot.
LENLINES/ IBNLINES	These tables contain line assignments.
MPC	Contains values necessary to implement the MPC.
MPCLINK	Contains link and protocol information for cards datafilled in table MPC.
HSMLINK	Contains an inventory of high speed modem links available for communication with the ESTU.
CLLI	Contains the common language location identifier (CLLI) used to uniquely identify the far end of each announcement, tone, trunk group, test trunk, national milliwatt line, and service circuit.
CLLIMTCE	Contains information that enables the operating company to perform DMS service testing.
LNINV	Contains data for each line card slot.
TSTEQUIP	Contains all provisioning data for stand-alone test equipment.
MTAHORIZ	Contains the assignments for horizontal agents.
PMLOADS	Stores the information on the device location of every PM load file and the mapping between the load names and the devices they reside on.

The following table shows sample input for datafilling ESTU - Enhanced Services Test Unit.

Sample input for ESTU Interface (Sheet 1 of 2)

Table	Sample input
PADDATA	ESTU ESTU 3L 3L
LNINV	HOST 67 0 10 21 6X18AB ESTU HASU Y NL Y NIL
LENLINES	HOST 67 0 10 21 S 0 6219999 DT 0 (NDC) (DTM)$

ESTU - Enhanced Services Test Unit (continued)

Sample input for ESTU Interface (Sheet 2 of 2)

Table	Sample input
MPC	0 2 16 1X89BA MPCA03AB
MPCLINK	0 2 Y ASYNC 0 (BAUDRATE B9600) (PARITY ODD) (MODMCTRL PARTIAL) (L1IDLY 10) (L2IDLY 20) $ $
HSMLINK	1 0 2 HOST 67 0 10 21
CLLI	ESTU 495 9 ESTU_LINE_TEST_EQUIPMENT
CLLIMTCE	ESTU ESTU 25 50 100 NSS 0 0 N N (2)
LNINV	HOST 67 0 10 21 6X18AB ESTU HASU Y NL Y NIL
TSTEQUIP	1 ESTU 1 MIS 1 60 1 E 5 N LINE HOST 67 0 10 22 HSM (EMM EMMAB09) (ITM ITMAB06)$
MTAHORIZ	8 0 L ESTU 1 N (0 8)
PMLOADS	ITMAB06 ITMAB06 S00DPMLOADS ITMAB06 S00DPMLOADS NEMMAB09 EMMAB09 S00DPMLOADS EMMAB09 S00DPMLOADS N

Datafilling table PADDATA

Table PADDATA contains the loss and level plans for the DMS-100 switch, ensuring acceptable voice quality for calls over the interface. The table has an entry for each destination trunk group accessible by the interface.

Create a new PAD group which will be used to both control lines to add extra padding loss. The extra attenuation is needed because the modems are so close to the switch. The following table shows the datafill specific to ESTU for table

ESTU - Enhanced Services Test Unit (continued)

PADDATA. Only those fields that apply directly to ESTU are shown. For a description of other fields, refer to the data schema section of this document.

Datafilling table PADDATA

Field	Subfield or refinement	Entry	Explanation and action
PADKEY		see subfields	*PADDATA key* Datafill subfields PADGRP1 and PADGRP2 as one concatenated entry. Separate the two values with a blank. The system will not prompt for the individual subfields.
	PADGRP1	alphanumeric (up to 5 characters)	PAD group 1. Enter a name that defines the originating PAD group.
	PADGRP2	alphanumeric (up to 5 characters)	PAD group 2. Enter a name that defines the destination PAD group.
PAD1TO2		alphanumeric (up to 3 characters)	*PAD group 1 to PAD group 2* Enter 3L.
PAD2TO1		alphanumeric (up to 3 characters)	*PAD group 2 to PAD group 1* Enter 3L.

Datafill example for table PADDATA

The following example shows sample datafill for table PADDATA.

MAP display example for table PADDATA

```
        PADKEY  PAD1TO2  PAD2TO1
---------------------------------------------------------------------
PRAC STDLN       3L       3L
```

Datafilling table LNINV

Table LNINV lists the data for each line card slot and specifies the physical access points (access lines) for each to the DMS-100 switch.

ESTU - Enhanced Services Test Unit (continued)

The ISDN line concentrating module (LCME) supports a mixture of plain ordinary telephone service (POTS) and Integrated Business Network (IBN) lines. LCMEs can support ISDN, data unit, integrated bit error rate test (IBERT) ILC, electronic business set (EBS), and POTS/IBN lines with the restriction that ISDN and non-ISDN lines types cannot share the same drawer. Each physical line drawer has three logical drawers. Each logical drawer can be equipped with a maximum of 16 POTS/IBN lines or 8 ISDN lines. Therefore, each physical drawer can house 24 ISDN lines. Due to heat requirements, the number of ISDN line cards must be limited to a maximum of 20.

Field LEN must be datafilled in the peripheral module (PM) inventory tables (for example, RDTINV) prior to datafilling table LNINV.

> ***Note:*** ESTU requires two ground start lines. The first is for table HSMLINK. The second is for table TSTEQUIP, and is between tables CLLIMTCE and TSTEQUIP in the datafill sequence.

ESTU - Enhanced Services Test Unit (continued)

The following table shows the datafill specific to ESTU for table LNINV. Only those fields that apply directly to ESTU are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table LNINV (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
LEN		see subfields	*Line equipment number* This field defines the physical location of the equipment that is connected to a specific telephone line. Because field LEN is common to more than 60 tables, it is documented in a single data schema section to avoid unnecessary duplication. Refer to section “Common entry field LEN" for a complete description of field LEN and associated subfields. Field LEN consists of subfields SITE, FRAME, UNIT, LSG, and CIRCUIT.
CARDCODE		6X18AB	*Card code* Enter the product engineering code (PEC) of the line card. Entry values other than those listed in this field description can also be valid. 6X18AB is the ground start line card.
PADGRP		ESTU	*Pad group* Enter the name of the new PAD group created in table PADDATA. NPDGP is for no pad group.
STATUS		CUTOFF HASU RESERVED UNEQUIPWO RKING	*Line inventory availability status* Enter the line inventory availability status. Valid entries are CUTOFF, HASU (hardware assigned/software unequipped), RESERVED, UNEQUIP (unequipped), and WORKING.
GND		Y or N	*Ground* Enter Y (yes).
BNV		L NL	*Balanced network value* Enter NL.

ESTU - Enhanced Services Test Unit (continued)

Datafilling table LNINV (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
MNO		Y or N	*Manual override* Enter Y if the on-hook balance network test is to be prevented from updating field BNV in table LNINV. Enter N to allow the off-hook balance network test to update field BNV.
CARDINFO		see subfield	*Card information* This field consists of subfield CARDTYPE and its refinements.
	CARDTYPE	NIL	*Card type* The NIL value is the default.

Datafill example for table LNINV

The following example shows sample datafill for table LNINV.

MAP display example for table LNINV

```
             LEN CARDCODE PADGRP   STATUS GND BNV MNO        CARDINFO
---------------------------------------------------------------------
HOST  67 0 10 21   6X18AB PADDATA  WORKING   Y  NL   Y             NIL
```

Datafilling table LENLINES or IBNLINES

Datafilling these tables must be done through SERVORD. The following is an example of datafilling table LENLINES through SERVORD:

```
new $ 6219999 1 FR HOST 02 1 08 14 fani 10 dtm ndc dgt $
```

The ESTU interface requires options NDC, DTM, and DGT.

If there is universal access to RES features, the SERVORD NEW command differs, and the table datafilled is IBNLINES instead of LENLINES.

Datafilling table MPC

Table MPC contains values necessary to implement the multiprotocol controller (MPC) in the DMS. Table MPC identifies the MPC card hardware

ESTU - Enhanced Services Test Unit (continued)

to the DMS switch central control (CC) and requires one entry or tuple for each MPC.

Each entry contains

- an index number for the MPC
- the number of the IOC shelf where the card resides
- the card circuit number
- the product engineering code (PEC)
- the identification (ID) for the preferred download file to be used

The following table shows the datafill specific to ESTU for table MPC. Only those fields that apply directly to ESTU are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table MPC (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
MPCNO		see subfield	*Multiprotocol controller number* This field consists of subfield K.
	K	0 to 255	*Multiprotocol controller number key* Enter the number of one multiprotocol controller (MPC). The MPC cards can be numbered as desired.
MPCIOC		0 to 19	*Multiprotocol controller input/output controller* Enter the number of the IOC shelf on which the MPC card sits.
IOCCCT		0, 4, 8, 12, 16, 20, 24, 28, 32	*Input/output circuit number* Enter the slot position on the IOC shelf multiplied by 4, from 0 (zero) to 32. Entries outside this range are invalid.

ESTU - Enhanced Services Test Unit (continued)

Datafilling table MPC (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
EQ		1X89BB	*Equipment code* Enter the NT PEC. Enter 1X89BB for the enhanced MPC (EMPC) card.
DLDFILE		MPCA03AB (8 characters)	*Download file* Enter A for asynchronous protocol software, followed by four alphanumeric characters used to designate the load designation. For example, ANA04.

Datafill example for table MPC

The following example shows sample datafill for table MPC.

MAP display example for table MPC

```
MPCNO MPCIOC IOCCCT      EQ   DLDFILE
________________________________________________________
    0      2      16  1X89BB   MPCA03AB
```

Datafilling table MPCLINK

Table MPCLINK specifies link and protocol information for cards datafilled in table MPC. Table MPCLINK must be datafilled with the specific multiprotocol controller (MPC) link definition and protocol combination shown.

ESTU - Enhanced Services Test Unit (continued)

The following table shows the datafill specific to ESTU for table MPCLINK. Only those fields that apply directly to ESTU are shown.

Datafilling table MPCLINK (Sheet 1 of 3)

Field	Subfield or refinement	Entry	Explanation and action
LINKKEY		see subfields	*Link key* This key field consists of subfields MPCNO and LINKNO.
	MPCNO	0 to 255	*Multiprotocol controller number* This field specifies the existing multiprotocol controller (MPC) card for this entry. Enter the MPC number as datafilled in table MPC.
	LINKNO	2 or 3	*Link number* Enter the MPC link number. Ports 2 and 3 are the only ports on the MPC card supported by the protocols.
LINKALM		Y or N	*Link alarm* Enter Y (yes) to enable the MPCLINK alarm for system busy (SYSB) MPC links. Otherwise, enter N (no).
PRTCLDAT		see subfield	*Protocol data area* This field consists of subfield PROTOCOL.
	PROTOCOL	ASYNC	*Link protocol data* The protocol choice must be consistent with the download file specified in table MPC.

ESTU - Enhanced Services Test Unit (continued)

Datafilling table MPCLINK (Sheet 2 of 3)

Field	Subfield or refinement	Entry	Explanation and action
	LINKNABL	0	*Link enable* Enter the time-out, in minutes, before a link that has failed to fully enable is system busied (SBSY) and returned to service (RTS). This value must be a multiple of 5. Enter 0 (zero) to disable the function. ***Note:*** If the entry is non-zero, one link is enabled, and when the other link has reached the timeout threshold, both the enabled link and the MPC card are system busies and returned to service. To prevent this, datafill 0 (zero) to disable the function.
	PARM	APLDEFN BAUDRATE CHARBITS ECHO FCHARCNT FLOWCTRL IMODE L1IDLY L2IDLY LINEMODE LNKDOWN MODMCTRL NCHARTMO NCHTMOIN OMODE PARITYSTO PBITS XPARENT	*Parameter protocol* This is a vector field consisting of 19 parameter options. When less than 19 options are required, enter $ to end the list. Set only the following parameters: BAUDRATE, L1IDLY, L2IDLY, MODMCTRL, and PARITY. When all parameter options are datafilled, go to field STRASYNC. Enter BAUDRATE (baud rate) to specify the link baud rate and datafill refinement RATE. Enter L1IDLY (level 1 input delay) to specify the maximum layer 1 input delay when passing an input buffer to the layer 2 or layer 3 protocol for further processing and datafill refinement T0. Enter L2IDLY (level 2 input delay) to specify the maximum layer 2 input delay allowed in handling an input buffer output to the CC for further processing and datafill refinement T1. Enter MODMCTRL (modem control) to specify the type of modem control presented by the link and datafill refinement MODM. Enter PARITY (parity) to specify the type of parity used on the link and datafill refinement PRTY.
	L1IDLY	0 to 255	*Level 1 input delay* Enter 10.

ESTU - Enhanced Services Test Unit (continued)

Datafilling table MPCLINK (Sheet 3 of 3)

Field	Subfield or refinement	Entry	Explanation and action
	L2IDLY	0 to 1000	*Level 2 input delay* Enter 20.
	MODM	DIAL FULLMODM NOMODMPA RTIAL	*Modem control* IEnter PARTIAL.
	PRTY	EVEN NONE ODD	*Parity* Enter ODD.
	RATE	B300 B600 B1200 B2400 B4800 B9600 B19200	*Baud rate* Enter B9600.

Datafill example for table MPCLINK

The following example shows sample datafill for table MPCLINK.

MAP display example for table MPCLINK

```
 LINKKEY LINKALM
                                                          PRTCLDAT
__________________________________________________________________

     0 2       Y
ASYNC  0  (BAUDRATE B9600) (PARITY ODD) (MODMCTRL PARTIAL)
(T0 10) (T1 20)  $
```

Datafilling table HSMLINK

Table HSMLINK keeps an inventory of the high speed modem links available for communication with the ESTU.

ESTU - Enhanced Services Test Unit (continued)

The following table shows the datafill specific to ESTU for table HSMLINK. Only those fields that apply directly to ESTU are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table HSMLINK

Field	Subfield or refinement	Entry	Explanation and action
HSMNUM		0 to 30	*High speed modem number* Enter the number to be used as the key. Start with the first entry as 0.
MPCNO		0 to 255	*Multiprotocol controller number* This field specifies the existing multiprotocol controller (MPC) card for this entry. Enter the MPC number as datafilled in tables MPC and MPCLINK.
LINKNO		0 to 3	*Link number* Enter the MPC link number. Ports 2 and 3 are the only ports on the MPC card supported by the protocols. Enter the link number as datafilled in table MPCLINK. There is no default.
LEN		see subfields	*Line equipment number* This field defines the physical location of the equipment that is connected to a specific telephone line. Because field LEN is common to more than 60 tables, it is documented in a single data schema section to avoid unnecessary duplication. Refer to section “Common entry field LEN" for a complete description of field LEN and associated subfields. Field LEN consists of subfields SITE, FRAME, UNIT, LSG, and CIRCUIT.

Datafill example for table HSMLINK

The following example shows sample datafill for table HSMLINK.

In this example, the tuple specifies the location of high speed modem number 0. The multiprotocol controller number is 1. The MPC link number is 1. The line equipment number is HOST 67 0 10 21.

ESTU - Enhanced Services Test Unit (continued)

MAP display example for table HSMLINK

```
   HSMNUM  MPCNO  LINKNO           LEN
 _________________________________________________________

        0      1       2 HOST 67 0 10 21
```

Datafilling table CLLI

This table defines a new CLLI for the ESTU. If this table is not datafilled with an ESTU CLLI, the test pair connection to the DMS cannot be datafilled in table MTAHORIZ.

Datafilling table CLLI

Field	Subfield or refinement	Entry	Explanation and action
CLLI		alphanumeric (1 to 16 characters)	Common language location identifier. Enter a name to uniquely identify the announcement.
ADNUM		0 to 8191	Administrative trunk group number. Enter a number to uniquely identify the announcement CLLI.
TRKGRSIZ		0 to 255	Trunk group size. Enter 8.
ADMININF		alphanumeric (1 to 32 characters)	Administrative information. Enter an identifier.

Datafill example for table CLLI

The following example shows sample datafill for Recorded Announcements Enhancements in table CLLI. In the example, the number in the field TRKGRSIZ indicates the number of members in table ANNMEMS.

MAP display example for table CLLI

```
        CLLI ADNUM    TRKGRSIZ                  ADMININF
---------------------------------------------------------
        ESTU 495      8          ESTU_LINE_TEST_EQUIPMENT
```

Datafilling table CLLIMTCE

Table CLLIMTCE (Common Language Location Identifier Maintenance) defines the threshold for TRK MISC alarms generated by ESTUs.

The following table shows the datafill specific to ESTU - Enhanced Services Test Unit for table CLLIMTCE. Only those fields that apply directly to ESTU - Enhanced Services Test Unit are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table CLLIMTCE

Field	Subfield or refinement	Entry	Explanation and action
CLLI		alphanumeric	Common Language Location Identifier. This field specifies the code in the CLLI table assigned to the trunk group by the operating company. Enter an alphanumeric CLLI name.
MINALM		1 to 101	Minor Alarm. This field specifies a minor alarm indication and the percentage of out-of-service trunks in the trunk group which activates the minor alarm. Enter a value from 1 to 101. The recommended value is 25.
MAJALM		1 to 101	Major Alarm. This field specifies a major alarm indication and the percentage of out-of-service trunks in the trunk group which activates the major alarm. Enter a value from 1 to 101. The recommended value is 50.
CRITALM		1 to 101	Critical Alarm. This field specifies a critical alarm indication and the percentage of out-of-service trunks in the trunk group which activates the critical alarm. Enter a value from 1 to 101. The recommended value is 100.

Datafill example for table CLLIMTCE

The following table shows the datafill specific to ESTU - Enhanced Services Test Unit for table CLLIMTCE. Only those fields that apply directly to ESTU - Enhanced Services Test Unit are shown. For a description of the other fields, refer to the data schema section of this document.

ESTU - Enhanced Services Test Unit (continued)

MAP display example for table CLLIMTCE

```
CLLI      SCLLI    MINALM   MAJALM   CRITALM   SYNCTYPE
TSTNOIND   MWIDX   SIGTST   PRFXDIGS
________________________________________________________

ESTU       ESTU     25       50      100       NSS
0   0         N      N       (2)
```

Datafilling table TSTEQUIP

Table TSTEQUIP stores all provisioning data for stand-alone test equipment. Each TSTEQUIP tuple consists of an index field and a field that contains test equipment provisioning information.

Note: Ensure that LNINV is datafilled for both ground start lines.

The following table shows the datafill specific to ESTU for table TSTEQUIP. Only those fields that apply directly to ESTU are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TSTEQUIP (Sheet 1 of 4)

Field	Subfield or refinement	Entry	Explanation and action
EQINDEX		see subfield	*Equipment index* This field consists of subfield EQINDEX.
	EQINDEX	0 to 255	*Equipment index* Enter a unique index number for each test equipment tuple. Start with the first entry as 0.
EQINFO		see subfield	*Equipment information* This field consists of subfield EQTYPE and its refinements.

ESTU - Enhanced Services Test Unit (continued)

Datafilling table TSTEQUIP (Sheet 2 of 4)

Field	Subfield or refinement	Entry	Explanation and action
	EQTYPE	ESTU	*Equipment type selector* Enter the symbol corresponding to the test equipment feature package. Symbols are added to the range of this field when each test equipment feature package is loaded into the DMS switch. Datafill the refinements ESTUNUM, FRTYPE, FRNO, SHPOS, FLOOR, ROW, FRPOS, DIALIN, and CSIF.
	ESTUNUM	0 to 254	*ESTU number* Enter a unique identification number for each ESTU. Start with the first entry as 0.
	FRTYPE	alphanumeric (1 to 5 characters)	*Frame type* Enter the symbolic name corresponding to the frame type. The recommended entry value is MIS (miscellaneous).
	FRNO	0 to 511	*Frame number* Enter a numeric value to specify the ESTU frame number.
	SHPOS	0 to 77	*Shelf position* Enter a numeric value to specify the position of the ESTU on the shelf.
	FLOOR	0 to 99	*Floor position* Enter a numeric value to specify the position of the ESTU frame on the floor.
	ROW	A to Z or AA to ZZ (except I, O II, and OO)	*Row position* Enter one- or two-character value to specify the row on the floor where the ESTU frame is located.
	FRPOS	0 to 99	*Frame position* Enter a numeric value to specify the position of the ESTU frame.

ESTU - Enhanced Services Test Unit (continued)

Datafilling table TSTEQUIP (Sheet 3 of 4)

Field	Subfield or refinement	Entry	Explanation and action
	DIALIN	N	*Dial-in number* Enter N for no Dial-in.
	CSIF	LINE	*C-side interface selector* This refinement specifies the C-side interface selector for the ESTU. Enter LINE for a plain ordinary telephone service (POTS) line connected to a dedicated ESTU port and datafill refinement LEN.
	LEN	see subfields	*Line equipment number* This field defines the physical location of the equipment that is connected to a specific telephone line. Because field LEN is common to many tables, it is documented in a single data schema section to avoid unnecessary duplication. Refer to section “Common entry field LEN" for a complete description of field LEN and associated subfields. Field LEN consists of subfields SITE, FRAME, UNIT, DRAWER or LSG, SHELF, SLOT, and CIRCUIT.
	LINK	HSM	*Control link* The control interface between the computing module and the ESTU. ISDN integrated testing and MAP testing is supported on both control links.Enter HSM for high speed modem.
	LOADINFO	see subfields	*Load information* This field consists of subfields MODULE and LOAD. Two load information entries can be made in a tuple. Enter a $ to end the subfield.

ESTU - Enhanced Services Test Unit (continued)

Datafilling table TSTEQUIP (Sheet 4 of 4)

Field	Subfield or refinement	Entry	Explanation and action
	MODULE	EMMITM	*Module name* The name of the module in an installed system. ESTU must have entries for both EMM and ITM modules. Enter EMM and ITM
	LOAD	alphanumeric (1 to 8 characters)	*Load name* The load name of the module.

Datafill example for table TSTEQUIP

The following example shows sample datafill for table TSTEQUIP.

In this example, the tuple defined at index 0 specifies that ESTU 0 is located on MIS frame 4 at shelf position 4, fourth floor, row A, and frame position 9. The C-side interface is LINE, with the dedicated port connected to line equipment number HOST 67 0 10 21. The link is a high speed modem (HSM). There is an EMM and ITM module in the installed ESTU system Each has a load name for the module.

MAP display example for table TSTEQUIP

```
   EQINDEX
                                                                  EQINFO
________________________________________________________________________

      0
ESTU  0  MIS 4 4 4 A 9 N LINE HOST 67 0 10 21 HSM (EMM EMMAB09)
(ITM ITMAB06) $
```

Datafilling table MTAHORIZ

Table MTAHORIZ (metallic test access horizontal connection) lists the assignment of horizontal agents to an MTA horizontal and horizontal group of MTA minibars (MTAM). Horizontal agents include line test units (LTU), multiline test units (MTU), operator verification, metallic jacks, incoming test access trunks, extended MTA, and short circuits.

The ESTU makes measurements on ISDN lines by way of a metallic connection established through the MTA. This requires that the horizontal

ESTU - Enhanced Services Test Unit (continued)

assigned here has access to the ISDN lines by datafilling table MTAVERT and MTAMDRVE beforehand.

The following table shows the datafill specific to ESTU - Enhanced Services Test Unit for table MTAHORIZ. Only those fields that apply directly to ESTU - Enhanced Services Test Unit are shown.

For a description of the other fields, refer to the data schema section of this document.

Datafilling table MTAHORIZ

Field	Subfield or refinement	Entry	Explanation and action
HORIZ		0 to 127	MTA horizontal. Enter the MTA horizontal where the horizontal agent test equipment is connected. Values are from 0 to 127.
HORIZGRP		0 to 159	MTA horizontal group. Enter the horizontal group number that identifies the horizontal and its horizontal agent as a unique tuple. The purpose of the horizontal group is to allow assignment of different test equipment on the same MTA horizontal. Group numbers range from 0 to 159.
HORIZAGT		see subfield	Horizontal agent. This field contains several subfields that depend on the value of SELECTOR used.
	SELECTOR		Selector. The range is S, L, T, B, E, MJ, J, and LA. Enter L for ESTU assignment and complete subfields CLLI, EXTRKNM, and ALTUSE.
	CLLI	alphanumeric	Common language location identifier. Enter ESTU.
	EXTRKNM	0 to 9999	External trunk number. Enter the ESTUNUM assigned in table TSTEQUIP.
	ALTUSE	Y or N	Automatic line test use. Enter N.

Datafill example for table MTAHORIZ

The following example shows sample datafill for table MTAHORIZ.

ESTU - Enhanced Services Test Unit (continued)

MAP display example for table MTAHORIZ

```
TABLE:  MTAHORIZ

HORIZ
        HORIZGRP          HORIZAGT
                                     MTAGRP
________________________________________________________

   8
        0   L            ESTU  1
   N                                      ( 0 8)$
```

Datafilling table PMLOADS

Table PMLOADS stores the device location of every PM load file. It also stores the mapping between the load names and the devices that the loads reside on, and permits autoload to locate load files without the intervention of operating company personnel.

For convenience, the loadinfo for modules EMM and ITM should have entries in table PMLOADS. If not, both must be in the user's symbol table before attempting to RTS or LOADTE.

The following table shows the datafill specific to ESTU - Enhanced Services Test Unit for table PMLOADS. Only those fields that apply directly to ESTU - Enhanced Services Test Unit are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table PMLOADS (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
LOADNAME		alphanumeric (1 to 32 characters)	Peripheral module load name. Enter a string to specify XPM load file name.
ACTFILE		alphanumeric (1 to 32 characters)	Active load file name. Enter a string to specify the active XPM load file name.
ACTVOL		alphanumeric (1 to 16 characters)	Active volume. Enter a string to specify the device where the active load file is stored.

ESTU - Enhanced Services Test Unit (end)

Datafilling table PMLOADS (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
BKPFILE		alphanumeric (1 to 32 characters)	Backup load file name. Enter a string to specify the backup XPM load file name. In BCS36 and up, this is the load file that NT shipped and it should be the same as the entry in field LOAD in the inventory tables.
BKPVOL		alphanumeric (1 to 16 characters)	Backup volume. Enter a string to specify the device where the backup load file is stored.
UPDACT		N	Update active load file. Enter N.

Datafill example for table PMLOADS

The following example shows sample datafill for table PMLOADS.

MAP display example for table PMLOADS

```
LOADNAME    ACTFILE     ACTVOL      BKPFILE
BKPVOL      UPDACT

_____________________________________________________________
ITMAB06     ITMAB06     S00DPMLOADS ITMAB06
S00DPMLOADS N
```

ISDN BRI office configuration tables

ISDN ordering codes

Functional group ordering codes: NI000009

Functionality ordering codes: not applicable

Release applicability

NA002 and up

Prerequisites

To operate, ISDN BRI office configuration tables require the following functional groups:

- MDC - MDC Minimum, MDC00001
- NI0 NI-1 BRI, NI00008
- NI0 ISDN Base, NI000007

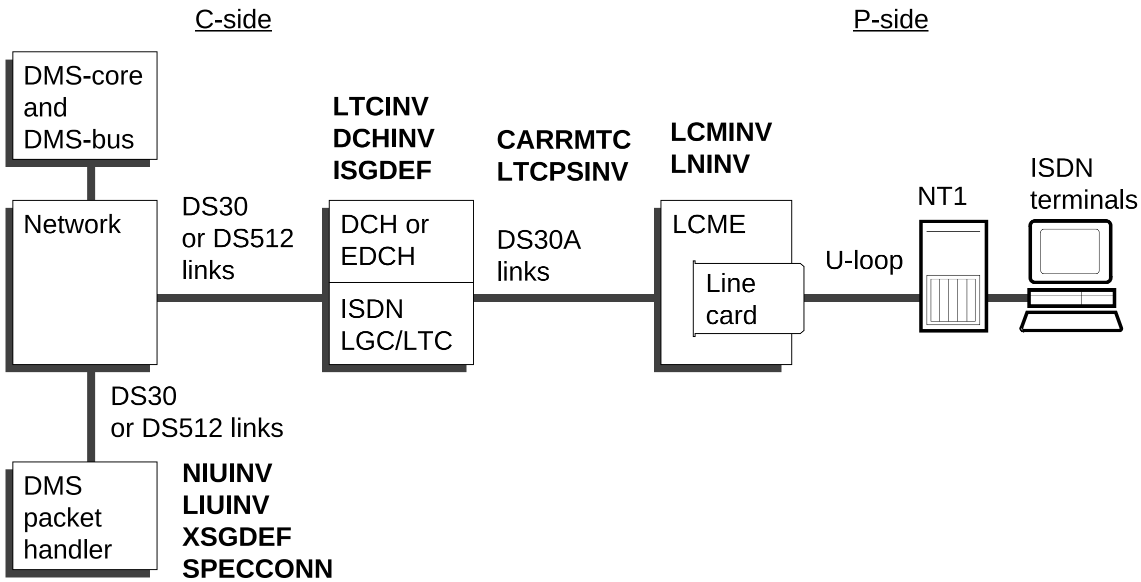
Description

Office configuration tables contain information that defines the physical facility used to provide services. For ISDN BRI services, these tables are used to configure the ISDN hardware, provide logical connections through software, and specify default service parameters.

The following figure shows the hardware required to support BRI service in a central office, and indicates the tables that must be datafilled to configure that hardware.

ISDN BRI office configuration tables (continued)

ISDN BRI office configuration and datafill tables



Legend:

DCH	D-channel handler
EDCH	Enhanced D-channel handler
LCME	Enhanced ISDN line concentrating module
LGCO	ISDN line group controller offshore
NT1	Network termination 1

The following list provides an overview of the tasks associated with datafilling the ISDN BRI office configuration tables. The tables are discussed in the order in which they must be datafilled.

- In table LTCINV, define the LTC or LGC hardware and the control side (C-side) links to the network.
- In table CARRMTC, define maintenance control information for the DS30 peripheral side (P-side) links to the LTC or LGC.
- In table LTCPSINV, define the P-side links for the LTC or LGC:
  - — assign the DS-1 circuits starting at port 0, in ascending order
  - — assign DS30A and DCH ports starting at port 19, in descending order
  - — use only odd-numbered ports for DCH or EDCH circuits
- In table LCMINV, define the LCME hardware and the C-side links to the LTC or LGC.

ISDN BRI office configuration tables (continued)

- In tables DCHINV and ISGDEF
  - datafill the DCH or EDCH cards and card location information in table DCHINV
  - datafill the DCH channel and service assignments in table ISGDEF (table ISGDEF entries include ISDN service group numbers that permit use of the DCH sparing capability in the ISDN LTC or LGC)
- In table LNINV, define the ISDN line cards. Note that
  - the link between the LENs and the ISG BRA channels is made automatically when this table is datafilled
  - you can use the QLEN command to display the ISG BRA channel to which the LEN has been attached
- In table NIUINV, define the network interface unit (NIU) that supports the X.25 link interface unit (XLIU).
- In table LIUINV, define the XLIUs that provide the packet handler functionality.
- In table XSGDEF, define the X.25 service groups, which are logical representations of the XLIUs.
- In table SVCDATA, define default X.25 service parameters.
- In table SVCRATE, define the billing rates to be applied to X.25 packet service.
- In table SPECCONN, connect the ISG Bd-channels to the appropriate XSG channels.

This chapter contains a brief description of each of these tables, the relevant datafill for ISDN BRI services, and an example of datafill for each table.

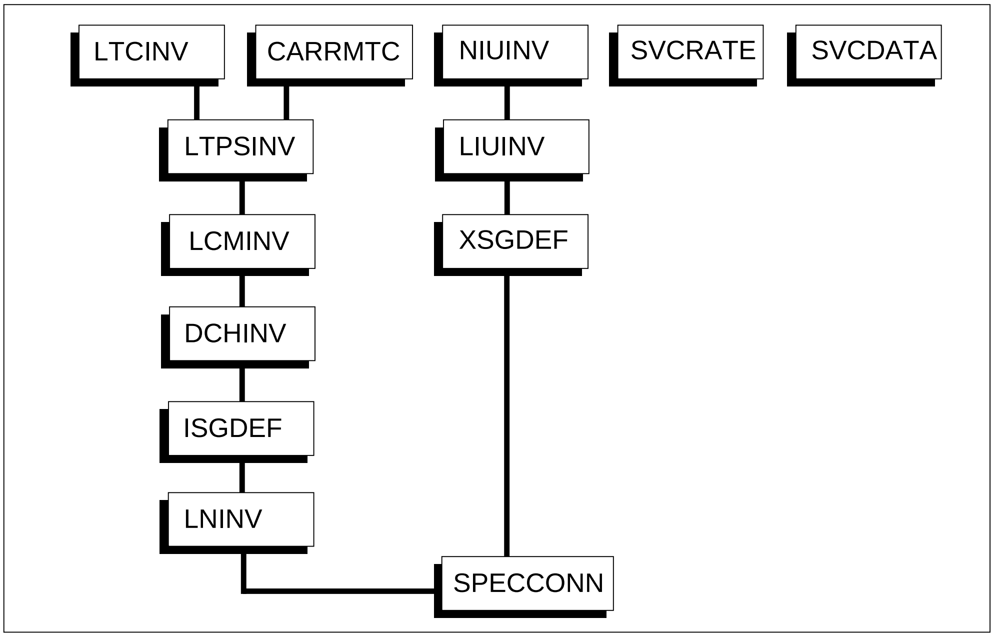
For some tables, the order of datafill is critical. The figure that follows illustrates a typical datafill sequence for ISDN BRI with the DMS PH. Datafill the tables as shown, generally from left to right and from top to bottom.

Multiple lines going to a particular table indicate that more than one table must be datafilled before that table is datafilled. For example, before you can datafill table LNINV, you must datafill tables LCMINV and ISGDEF. Before you can datafill table SPECCONN, you must datafill tables LNINV and XSGDEF.

The following figure shows the datafill dependencies for ISDN BRI office configuration tables.

ISDN BRI office configuration tables (continued)

Datafill dependencies for ISDN BRI office configuration tables



Limitations and restrictions

The following limitations and restrictions apply to ISDN BRI office configuration tables.

LTID limitations

The limit on ISDN lines is based on the number of LTIDs. The following limitations apply:

- The DMS-100 switch supports up to 32 704 LTIDs; however, a maximum of 16000 LTIDs can support source access point identifier 16 (SAPI 16) access, due to packet service limitations.

  Note: The limit of 32 704 LTIDs represents the total number of terminals (digital telephone sets and personal computers) physically located on all of the ISDN lines in a DMS-100 office. Neither the LTID numbers nor the terminal endpoint identifier (TEI) numbers by themselves represent the limit accurately, since no TEI number is assigned to B-channel packet terminals.

- Each D-channel handler supports a maximum of 511 LTIDs.
- Each ISDN line can have up to eight LTIDs associated with it, although only two LTIDs can be used for B-channel terminals.

With minor variations, remote lines are treated the same as host lines, since LTID limits include the sum of host line and remote line requirements.

DN limitations

The DMS-100 switch supports a maximum of 3275 ISDN BRI DNs for each ISDN XMS-based peripheral module (XPM), and 6650 ISDN BRI DNs for the common peripheral module (CPM)-based remote cluster controller 2 (RCC2). Once the maximum number of BRI DNs has been reached, subsequent BRI DN additions are accepted, but those lines cannot be put into service.

Billing

ISDN BRI office configuration tables do not affect billing.

Datafilling office parameters

The following table shows the office parameters used by ISDN BRI office configuration tables. For more information about office parameters, refer to *Office Parameters Reference Manual.*

Office parameters used by ISDN BRI office configuration tables

Table name	Parameter name	Explanation and action
OFCENG	DCH_BD_ STATMUX_RATIO	This parameter specifies the maximum number of logical terminals that can be statistically multiplexed onto one Bd channel on a DCH. The value is engineered based on the number of packet terminals required, the level of traffic expected, and the amount of data packets per second. Default = 64 Maximum = 64
	MAXNUCS	For an office equipped with the junctored network (JNET), this parameter specifies the maximum number of nailed-up connections required for the switch. This parameter is not required for offices equipped with the enhanced network (ENET). A warm restart is required to activate this parameter. Default = 0 Maximum = 9126
	NUM_RC_EXT_ BLKS	When datafilling for packet calls, the value of entry NUM_RC_EXT_BLKS in table OFCENG should be increased by 5 over the existing value for voice calls. Default = 0 Maximum = 32766

ISDN BRI office configuration tables (continued)

Datafill sequence

The following table lists the ISDN BRI office configuration tables. The tables are listed in the order in which they are to be datafilled.

ISDN BRI office configuration tables

Table	Purpose of table
LTCINV	Line Trunk Controller Inventory defines the physical attributes of the LTC.
CARRMTC	Carrier Maintenance contains maintenance control information for DS-1s.
LTCPSINV	Line Trunk Controller P-side Inventory contains the assignment of P-side links for the peripheral modules.
LCMINV	Line Concentrating Module Inventory lists the LCME and LCMI C-side port assignments to the LTC.
DCHINV	D-channel Handler Inventory defines the physical attributes of the DCH card, including the location and software load.
ISGDEF	ISDN Service Group Definition defines the service requirements of the DCH card.
LNINV	Line Inventory lists the data for each line card slot.
NIUINV	Network Interface Unit Inventory describes the physical attributes of the NIUs.
LIUINV	Link Interface Unit Inventory describes the physical attributes of the XLIUs.
XSGDEF	XLIU Service Group Inventory defines the connection between an XLIU and a service group.
SPECCONN	Special Connections contains P-side to P-side special connections on an XPM.

Note: Tables LIMINV, SUSHELF, PMLOADS, and NETWORK must be datafilled, but are not specific to ISDN, and therefore are not described in this chapter. Refer to the data schema section of this document for more information.

ISDN BRI office configuration tables (continued)

The following table shows sample input for datafilling ISDN BRI office configuration tables.

Sample input for ISDN BRI office configuration tables

Table	Sample input
LTCINV	LTC 10 LTEI 511 51 99 JJ 99 6X02NA ELIO2CI POTS POTSEX KEYSET KSETEX PRAB DTCEX $ 31 63 31 61 28 14 $ ISP UTR15 MSG6X69 $ NORTHAM MX77AA MX77AA MX77MA21 $ 6X40AC N
CARRMTC	LTC 64KBD 255 255 DS1 NT6X50AB MU_LAW SF B8ZS BPV NILDL N 250 1000 50 50 150 1000 3 6 864 100 17 511 4 255
LTCPSINV	LTC 10 N 0 DS1 DEFAULT N 1 DS30A 2 DS1 DEFAULT N 3 DS1 DEFAULT N 4 DS1 64KBD N 5 DS1 64KBD N 6 DS1 DEFAULT N 7 DS30A 8 DS30A 9 DCH 10 DS30A 11 DCH 12 DS30A 13 DCH 14 DS30A 15 DS30A 16 DS30A 17 DCH 18 DS30A 19 DCH $
LCMINV	HOST 40 1 LCE 32 1 D 7 BX30AA LCMI02A LTC 10 N 0 256K 256K LCMI Y C 16 14 $
DCHINV	52 LTC 10 BX02AA DCH36A 11
ISGDEF	1 LTC 10 BRA PD $ 0 RESERVED 1 BRA 2 BRA 3 BRA 4 BRA 5 BRA 6 BRA 7 BRA 8 BRA 9 BRA 10 BRA 11 BRA 12 BRA 13 BRA 14 BRA 15 BRA 16 BRA 17 BRA 18 BRA 19 BRA 20 BRA 21 BRA 22 BRA 23 BD 24 BD 25 BD 26 BD 27 BD 28 BD 29 BD 30 BD 31 BD $
LNINV	HOST 55 0 00 18 BX27AA NPDGP WORKING N NL Y NIL
NIUINV	2 LIM 0 3 NRS02AO NTEX22BB NTEX25AA NTEX28AA NTEX22BB NTEX25BA NTEX28AA 1 58 3 62 1 17 3 56 $
LIUINV	XLIU 121 LIM 0 2 12 XRC02AQ NTEX22BB NTFX10AA NTFX09AA
XSGDEF	2 LIM 0 2 30
SVCDATA	DNCHNLD NDPS Y 64 64 $
SVCRATE	07HOUR R3 $
SPECCONN	XSGCHNL 3 $ DCHCHNL 2 31 CON ACTIVE

Datafilling table LTCINV

Table LTCINV contains the inventory data assignment, (except the assignment for the P-side links done in table LTCPSINV), for each bay associated with the various peripheral module (PM) types.

ISDN BRI office configuration tables (continued)

LTCINV identifies the

- exact location of the PM in the central office
- product engineering code (PEC) of the PM
- load name of the PM software
- terminal type required for data lines
- executive programs required by the PM
- control-side (C-side) links
- optional cards equipped
- tone set used
- optional attributes of the PM

Note: Datafill table LTCINV before table LTCPSINV.

The following table shows the datafill specific to ISDN BRI for table LTCINV. Only those fields that apply directly to ISDN BRI are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table LTCINV (Sheet 1 of 4)

Field	Subfield or refinement	Entry	Explanation and action
LTCNAME		see subfields	Line trunk controller name. This field consists of subfields XPMTYPE and XPMNO.
	XPMTYPE	LTC or LGC	XMS peripheral module type. The type of peripheral module.
	XPMNO	0 to 255	XMS peripheral module number. The number of the PM. ***Note:*** Operating company personnel can number the XPMs from 0 to 255 but the total number of tuples in tables LTCINV and LTCRINV combined cannot exceed 210 XPMs. The XPM types can be any combination of types accepted by the two tables.
FRTYPE		LTEI	Frame type. The type of frame on which the PM is mounted.
FRNO		0 to 511	Frame number. The number of the frame on which the PM is mounted.

ISDN BRI office configuration tables (continued)

Datafilling table LTCINV (Sheet 2 of 4)

Field	Subfield or refinement	Entry	Explanation and action
SHPOS		18, 32, 51, or 65	Shelf position. The shelf position where the PM is located.
FLOOR		0 to 99	Floor. The floor on which the PM is located.
ROW		A to H, J to N, P to Z, AA to HH, JJ to NN, or PP to ZZ	Row. The row on the floor where the PM is located.
FRPOS		0 to 99	Frame position. The bay position of the PM equipment frame.
EQPEC		See the data schema section for complete values.	Equipment product engineering code. The product engineering code of the PM.
LOAD		alphanumeric up to 8 characters	Load. The name of the software load required for the PM. The load name must be datafilled in table PMLOADS.
EXECTAB		see subfields	Executive table. This field consists of subfields TRMTYPE and EXEC.
	TRMTYPE	KEYSET or PRAB	Terminal type. The type of terminal used.
	EXEC	KSETEX	Executive programs. The set of executive programs required for the terminal specified in field TRMTYPE.
CSLINKTAB		see subfields	C-side link table. This field consists of subfields that depend on whether the switch is equipped with a JNET or an ENET. For a JNET, datafill subfields NMPAIR and NMPORT. For an ENET, datafill subfields ENSHELF, ENSLOT, ENLINK, and ENDS30. ***Note:*** This field must contain at least three C-side link pairs.

ISDN BRI office configuration tables (continued)

Datafilling table LTCINV (Sheet 3 of 4)

Field	Subfield or refinement	Entry	Explanation and action
	NMPAIR	0 to 31	Network module pair number. The network link to which the PM is assigned, corresponding to C-side links 0 to 15 of the PM.
	NMPORT	0 to 63	Network module port. The network port corresponding to the network link.
	ENSHELF	0 to 7	ENET shelf number. The shelf number to which the PM is assigned.
	ENSLOT	10 to 16, or 25 to 32 for SuperNode, 13 to 19 for SuperNode SE	ENET slot number. The crosspoint slot number to which the PM is assigned, corresponding to C-side links.
	ENLINK	0 to 18	ENET link number. The link on the crosspoint to which the PM is assigned, corresponding to C-side links 0 to 18 of the PM.
	ENDS30	0 to 15	ENET DS30. This field defaults to 0 if the link is a DS30.
OPTCARD		See the data schema section for complete values.	Optional card. A vector with up to 10 entries separated by + and ending with $.
TONESET		NORTHAM	Tone set. The name of the tone set for the switch being datafilled.
PECS6X45		See the data schema section for complete values.	6X45 equipment PECs. The two PECs of the 6X45 card, one for each unit of the XPM.
E2LOAD		alphanumeric	Electrically erasable programmable read only memory. Enter the EEPROM load name. ***Note:*** Datafill the PMLOAD file name in table PMLOADS before datafilling this field.

ISDN BRI office configuration tables (continued)

Datafilling table LTCINV (Sheet 4 of 4)

Field	Subfield or refinement	Entry	Explanation and action
OPTATTR		See the data schema section for complete values.	Optional attribute. Enter optional attributes.
PEC6X40		6X40CA	6X40 equipment PEC. Enter the PEC for ISDN.

Datafill example for table LTCINV

The following example shows sample datafill for table LTCINV.

MAP display example for table LTCINV

```
      LTCNAME   FRTYPE FRNO SHPOS  FLOOR  ROW FRPOS  EQPEC     LOAD
                                                                    EXECTAB
                                                                   CSLNKTAB
                                                                    OPTCARD
   TONESET           PECS6X45
                              E2LOAD
                                                                    OPTATTR
   PEC6X40                                      EXTINFO
----------------------------------------------------------------------------
      LTC  10     LTEI    1    18      1    D    10 6X02NA  ELI02CN
 (POTS POTSEX) (KEYSET KSETEX) (ABTRK FXODCM) (PRAB DTCEX) $
 (0 8) (0 14) (2 1) (2 8) (2 14) (2 17) (0 19) (0 44) (0 5) (0 30) (2 4)
 (2 19) (2 34) (2 46) (2 57) (2 63) $
                                 (     UTR15 ) (   MSG6X69 ) (     ISP )$
   NORTHAM      MX77AA MX77AA
                            MX77MA21
                                                                          $
    6X40AC                                           N
```

Datafilling table CARRMTC

Table CARRMTC contains DS-1 maintenance control information in peripherals, out-of-service limits for alarms, and in-system return-to-service occurrences.

Up to 16 entries exist for each type of peripheral that is capable of providing carrier links in the switch. One entry for each peripheral type is allotted as a default entry.

Note: Datafill table CARRMTC directly before table LTCPSINV.

ISDN BRI office configuration tables (continued)

The following table shows the datafill specific to ISDN BRI for table CARRMTC. Only those fields that apply directly to ISDN BRI are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table CARRMTC

Field	Subfield or refinement	Entry	Explanation and action
CSPMTYPE		LGC or LTC	C-side node PM type. The type of PM on the C-side of the carrier link.
TMPLTNM		alphanumeric 1 to 16 characters	Template name. The template name for the PM. The default value is DEFAULT.
RTSML		0 to 255	Return-to-service maintenance limit. The number of times within the audit interval that a carrier can be returned to service by the system before a warning is issued.
RTSOL		0 to 255	Return-to-service out-of-service limit. The number of times within the audit interval that a carrier can be returned to service by the system before it is permanently put out of service.
ATTR		see subfields	Attribute. This field consists of subfield SELECTOR.
	SELECTOR	DS1	Selector. Enter DS1 for CSPMTYPE of LGC or LTC. Datafill subfield CARD and its refinements.
	CARD	see the data schema section for complete values	Card. Enter the product engineering code of the interface card used , and datafill the appropriate subfields.

Datafill example for table CARRMTC

The following example shows sample datafill for table CARRMTC.

ISDN BRI office configuration tables (continued)

MAP display example for table CARRMTC

```
CSPMTYPE    TMPLTNM RTSML RTSOL                                   ATTR
----------------------------------------------------------------------
     LTC    DEFAULT   255   255 DS1 NT6X50AA MU_LAW SF ZCS BPV NILDL N
                         250 1000 50 50 150 1000 3 6 864 100 17
                         511 4 255
     LGC    DEFAULT   255   255 DS1 NT6X50AA MU_LAW SF ZCS BPV NILDL N
                         250 1000 50 50 150 1000 3 6 864 100 17
                         511 4 255
```

Datafilling table LTCPSINV

Table LTCPSINV contains the assignment of peripheral-side (P-side) links for the LTC or LGC. An entry in this table is automatically added when an XPM is added to table LTCINV.

Assign DS-1 ports in ascending order starting at port 0. Assign DCH ports and DS30A ports in descending order starting at port 19. DCH circuits use odd-numbered ports only.

> ***Note:*** Datafill table LTCPSINV after tables LTCINV and CARRMTC, and before tables LCMINV and DCHINV.

The following table shows the datafill specific to ISDN BRI for table LTCPSINV. Only those fields that apply directly to ISDN BRI are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table LTCPSINV (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
LTCNAME		see subfields	Line trunk controller name. This field consists of subfields XPMTYPE and XPMNO.
	XPMTYPE	LTC or LGC	XMS peripheral module type. The type of peripheral module.

ISDN BRI office configuration tables (continued)

Datafilling table LTCPSINV (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	XPMNO	0 to 255	XMS peripheral module number. The number of the PM. ***Note:*** Operating company personnel can number the XPMs from 0 to 255 but the total number of tuples in tables LTCINV and LTCRINV combined cannot exceed 210 XPMs. The XPM types can be any combination of types accepted by the two tables.
PSLNKTAB		see subfields	P-side link table. This field consists of subfields PSLINK and PSDATA.
	PSLINK	0 to 19	P-side link. The number of the P-side port.
	PSDATA	see subfields	P-side data. This field consists of subfield AREASELCT.
	AREASELCT	DCH, DS30A, or DS1	Area select. Enter DCH for a DCH interface. Enter DS30A for an interface to the LCME. Enter DS1 for a DS-1 interface, and datafill subfields CARRIDX and ACTION.
	CARRIDX	alphanumeric 1 to 16 characters	Carrier index. Enter the template name used in field TMPLTNM in table CARRMTC. The default template name is DEFAULT.
	ACTION	Y or N	Action. Enter Y to indicate that the carrier is removed from service when the out-of-service limit for frame, slip, errored second, or severe errored second is exceeded.

Datafill example for table LTCPSINV

The following example shows sample datafill for table LTCPSINV.

ISDN BRI office configuration tables (continued)

MAP display example for table LTCPSINV

```
LTCNAME
                                                     PSLNKTAB
--------------------------------------------------------------
LTC   2
   (0 DS1 DEFAULT N) (1 DS1 DEFAULT N) (2 DS1 DEFAULT N)
   (3 DS1 DEFAULT N) (4 DS1 DEFAULT N) (5 DS1 DEFAULT N)
   (6 DS1 DEFAULT N) (7 DS30A ) (8 DS1 DEFAULT N)
   (9 DS1 DEFAULT N) (10 DS1 DEFAULT N)(11 DS1 DEFAULT N)
   (12 DS1 DEFAULT N) (13 DS1 DEFAULT N) (14 DS30A )(15 DS30A)
   (16 DS1 DEFAULT N) (17 DS1 DEFAULT N) (18 DS1 DEFAULT N)
   (19 DS30A ) $
```

Datafilling table LCMINV

Table LCMINV maintains a list of enhanced line concentrating modules (LCME) datafilled in the ISDN switch. The table identifies the exact location of the LCMEs, and describes C-side link assignments, product engineering codes (PEC), and other information.

> ***Note:*** Datafill table LCMINV after table LTCPSINV and before table LNINV.

The following table shows the datafill specific to ISDN BRI for table LCMINV. Only those fields that apply directly to ISDN BRI are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table LCMINV (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
FRTYPE		LCEI	Frame type. The frame type in which the peripheral module equipment is mounted.
EQPEC		BX30AA, BX30AB, BX3118	Equipment PEC. A PEC matching an LCM from the following list: • BX30AB (LCME) • BX30AA (LCMI) • BX3118 (ISDN line concentrating array shelf assembly)

ISDN BRI office configuration tables (continued)

Datafilling table LCMINV (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
LCMTYPESEL		LCMI or LCME	LCM type selector. Enter the LCM type corresponding to the entry in field EQPEC as follows: • LCMI (BX30AA) • LCME (BX30AB)
LCDI_INFO		2 to 20 (vector of up to 18 entries)	ISDN LCD information If the entry in field LCMTYPE is LCMI or LCME, enter the LTC links (0 to 19) on which the ISDN LCM is assigned corresponding to C-side links LK0 to LK9 of the ISDN LCM. The first link is the message (MSG) link to the ISDN LCM unit 0, and the second link is the MSG link to the ISDN LCM unit 1.

Datafill example for table LCMINV

The following example shows sample datafill for table LCMINV.

MAP display example for table LCMINV

```
      LCMNM FRTYPE SHPOS FLOOR ROW FRPOS  EQPEC     LOAD            CSPMNO
BICTST ADNUM   MEMSIZE
                                                                     LCMTYPE
----------------------------------------------------------------------------
HOST  01 0     LCE     4     1   B     4 6X04AA   LCM36A        LTC      0
     N     0  64K  64K
                       LCM Y         C  HLCM                ( 0) ( 1) ( 2)$
```

Datafilling table DCHINV

Table DCHINV contains engineering information for D-channel handlers (DCH) and enhanced D-channel handlers (EDCH) on ISDN LTCs and LGCs. This information includes the DCH or EDCH identification number, the host PM, the card code to distinguish initial and load file name, and the DS-1 slot location to be occupied.

> ***Note:*** Datafill table DCHINV after tables LTCPSINV and LCMINV, and before tables ISGDEF, LNINV, SPECCONN, and LTMAP.

ISDN BRI office configuration tables (continued)

The following table shows the datafill specific to ISDN BRI for table DCHINV. Only those fields that apply directly to ISDN BRI are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table DCHINV

Field	Subfield or refinement	Entry	Explanation and action
DCHNO		0 to 255	D-channel handler index number. Enter the external identification number used by the system to represent a specific DCH or EDCH.
PMTYPE		LGC or LTC	Peripheral module type. Enter the type of PM in which the DCH or EDCH is located.
PMNO		0 to 255	Peripheral module number. Enter the number of the PM where the DCH or EDCH is located (0 to 127 for NT40 switches, or 0 to 255 for DMS SuperNode switches).
DCHPEC		BX02AA for DCH, or BX02BA for EDCH	D-channel handler product engineering code. Enter the PEC of the DCH or EDCH.
LOAD		alphanumeric up to 8 characters	Load file name. Enter the software load file name of the DCH or EDCH.
PORT		0 to 19	LGC/LTC P-side port. Enter the DS-1 port that the DCH/EDCH uses. ***Note:*** For the LGC and LTC, DCH ports must be datafilled beginning at port 19 and proceeding in a descending order on odd ports. For example, ports 19, 17, 15, and so on.

Datafill example for table DCHINV

The following example shows sample datafill for table DCHINV.

ISDN BRI office configuration tables (continued)

MAP display example for table DCHINV

```
DCHNO     PMTYPE PMNO DCHPEC     LOAD PORT
--------------------------------------------
    1        LTC    6 BX02BA  EDH02CI   15
    2        LTC    6 BX02BA  EDH02CI   17
    3        LTC    6 BX02BA  EDH02CI   19
   13        LTC    5 BX02AA   DCH02B   13
   15        LTC    5 BX02AA   DCH02B   15
   17        LTC    5 BX02AA   DCH02B   17
   19        LTC    5 BX02AA   DCH02B   19
```

Datafilling table ISGDEF

Table ISGDEF defines the service and channel assignments for the D-channel handlers. It contains information on the ISDN service group (ISG) numbers, PM type, services provided, and allocation of services to channels.

If packet data (PD) and BRA services are specified for an ISG in table ISGDEF, a default channel assignment of 29 BRA and 2 Bd channels can be automatically datafilled. More Bd channels per DCH can be datafilled if needed for additional packet traffic. If only BRA service is specified, all 31 channels default to BRA.

Note: Datafill table ISGDEF after table DCHINV and before table LNINV.

The following table shows the datafill specific to ISDN BRI for table ISGDEF. Only those fields that apply directly to ISDN BRI are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table ISGDEF (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
ISGNO		0 to 255	ISDN service group number. Enter the reference number to be used by ISDN loop allocation to assign ISDN D-channels to DCHs through ISGs.
PMTYPE		LGC or LTC	Peripheral module type. Enter the PM type in which the DCH resides.
PMNO		0 to 255	Peripheral module number. Enter the number of the LGC or LTC where the DCH is located (0 to 127 for NT40 switches, or 0 to 255 for DMS SuperNode switches).

ISDN BRI office configuration tables (continued)

Datafilling table ISGDEF (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
SERVICE		BRA or PD	Service. Enter the services that the DCH card will provide (BRA—basic rate access, for circuit-mode service; PD—low speed packet data).
CHNLTAB		see subfields or enter $	Channel information. Specifies the functions of each of the channels. Datafill subfields D_CHNL and CH_TYPE, or enter a dollar sign ($) to assign the following default values: channel 0—reserved; channels 1 to 29—BRA; channels 30 and 31—Bd.
	D_CHNL	0 to 31	D-channel. Enter the external identifier for the D-channel.
	CH_TYPE	see subfield	Channel type. This field consists of subfield CHNL_TYPE.
	CHNL_TYPE	NIL, BRA, BD or RESERVED	Channel type. Enter the type of service the D-channel provides.

Datafill example for table ISGDEF

The following example shows sample datafill for table ISGDEF.

MAP display example for table ISGDEF

```
ISGNO     PMTYPE PMNO            SERVICE
                                                         CHNLTAB
----------------------------------------------------------------------
    1        LTC   10       (BRA) ( PD)$
(0 RESERVED ) (1 BRA) (2 BRA) (3 BRA) (4 BRA) (5 BRA) (6 BRA)
(7 BRA) (8 BRA) (9 BRA) (10 BRA) (11 BRA) (12 BRA) (13 BRA)
(14 BRA) (15 BRA) (16 BRA) (17 BRA) (18 BRA) (19 BRA) (20 BRA)
(21 BRA) (22 BRA) (23 BRA) (24 BRA) (25 BRA) (26 BRA) (27 BRA)
(28 BRA) (29 BRA) (30 BD) (31 BD) $
```

Changing datafill for table ISGDEF

This section describes how to change the datafill in table ISGDEF to increase the number of Bd channel assignments. Consult engineering personnel to ensure that the increased D-channel packet-switched traffic is supported.

ISDN BRI office configuration tables (continued)

Perform the following procedure to change datafill for table ISGDEF.

CAUTION
Loss of service
Do not attempt to change a BRA channel that is supporting in-service terminals. Performing this procedure for BRA channels which are supporting in-service terminals will result in a loss of service to those terminals.

Changing a BRA channel to a Bd channel in table ISGDEF

At the MAP terminal

1. Select a BRA channel to change to Bd.

   Note: Steps 2 and 3 describe how to determine if the BRA channel is supporting in-service terminals.

2. Query the BRA channel and note the LENs assigned to it.

   >QDCH BRA ISG isg_number bra_channel_number

   Example of a MAP display:

   ```
   DCH ISG CHNL             LEN
   ------------------------------------------------------
   2   1   16     HOST 02 1 15 03     BX27AA
                  HOST 02 1 15 05     BX27AA
   ```

3. Query each LEN to determine if any LTIDs are attached to the LEN. If the LEN is supporting in-service terminals, as indicated under the LTID header, select another BRA channel to change.

   >QLEN len

   Example of a MAP display:

   ```
   LEN:     HOST  02 1 15 03
   ISG: 1 DCH: 2 ISG BRA CHANNEL: 16
   CARDCODE:  BX25AB    PADGRP: NPDGP
   PM NODE NUMBER     :    133
   PM TERMINAL NUMBER :    244

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

4. Post each LEN assigned to the BRA channel.

   >MAPCI;MTC;LNS;LTP;POST L len

ISDN BRI office configuration tables (continued)

Example of a MAP display:

```
LCC PTY RNG ....LEN.......    DN    STA F S LTA  TE  RESULT
ISDN LOOP  HOST 02 1 15 03 722 7854 IDL
```

5. Installation busy each loop.

>BSY INB

Example of a MAP display:

```
LCC PTY RNG ....LEN.......    DN    STA F S LTA  TE  RESULT
ISDN LOOP  HOST 02 1 15 03 722 7854 INB
```

6. Enter table LNINV and change the status of the LENs from WORKING to HASU.

   Note: When all of the LENs associated with the BRA channel are set to HASU, the ISG channel is no longer connected and goes offline.

>TABLE LNINV

>POSITION len

>CHANGE STATUS HASU

Example of a MAP display:

```
HOST  02 1 15 03   BX25AB  NPDGP     HASU   N  NL   Y     NIL
```

7. Enter table ISGDEF, and change the BRA channel to a Bd channel.

>TABLE ISGDEF

>POSITION isg_number

>CHANGE CHNLTAB channel_number_+1

>channel_number BD

8. Enter table SPECCONN, and define the special connection for the Bd channel.

>TABLE SPECCONN

>ADD DCHCHNL isg_number channel_number XSGCHNL xsg_number $ CON ACTIVE

9. Return the ISG channel to service.

>MAPCI;MTC;PM;POST xpm xpm_number;ISG;POST isg_number

>BSY channel_number

ISDN BRI office configuration tables (continued)

>RTS channel_number

Note: The XPM and XPM number are displayed for the appropriate ISG in table ISGDEF.

10. You have completed this procedure.

Datafilling table LNINV

Table LNINV lists the data for each line card slot and specifies the physical access points (access lines) for each to the DMS-100 switch.

Note 1: For NA002 and up, only the card code BX04AA is valid for an LCMI. All existing tuples created prior to NA002 that do not have the entry BX04AA in field CARDCODE must be deleted.

Note 2: Datafill table LNINV after tables LCMINV and ISGDEF and before table SPECCONN.

The following table shows the datafill specific to ISDN BRI for table LNINV. Only those fields that apply directly to ISDN BRI are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table LNINV (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
LEN		see subfields	Line equipment number. This field consists of subfields SITE, FRAME, UNIT, LSG, and CIRCUIT.
	LSG	0 to 23 for LCMI, or 0 to 15 for LCME	Line subgroup. Enter the line subgroup number to which the line card is assigned
	CIRCUIT	0 to 15 for LCMI, or 0 to 31 for LCME	Line card circuit number. Enter the circuit number in the line subgroup to which the line card is assigned.
CARDCODE		BX04AA for LCMI, and BX26AA or BX27AA for LCME	Card code. Enter the product engineering code (PEC) of the line card. ***Note:*** Only BX04AA is valid on an LCMI.
PADGRP		NPDGP	Pad group. Enter NPDGP for ISDN lines.

Datafilling table LNINV (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
STATUS		WORKING	Line inventory availability status. Enter WORKING for ISDN lines.
GND		N	Ground. Enter N for ISDN lines.
BNV		NL	Balanced network value. Enter NL as ISDN is a non-loaded network.
MNO		Y	Manual override. Enter Y for ISDN lines.
CARDINFO		NIL	Card information. Enter NIL for ISDN lines.

Datafill example for table LNINV

The following example shows sample datafill for table LNINV.

MAP display example for table LNINV

```
          LEN CARDCODE PADGRP   STATUS GND BNV MNO        CARDINFO
_____________________________________________________________________
HOST  55 0 00 18  BX27AA   BRA   WORKING  N  NL  Y            NIL
```

Error messages for table LNINV

The following error messages apply to table LNINV.

Error messages for table LNINV

Error message	Explanation and action
LINE CARD SPECIFIED NOT VALID FOR AN LCMITHE LCMI ONLY SUPPORTS BX04AA LINE CARD	For LCMIs, datafill only BX04AA line cards in field CARDCODE.

Datafilling table NIUINV

Table NIUINV contains one entry for each network interface unit (NIU) in an office installation. The entry describes the physical location of the NIU, the software release load number entered in the switch, the data for the common

ISDN BRI office configuration tables (continued)

cards used for each NIU, and the links that are used for connection to the DMS network.

> ***Note:*** Datafill table NIUINV after tables LIMINV, SUSHELF, PMLOADS, and NETWORK, but before table LIUINV. Tables LIMINV, SUSHELF, PMLOADS, and NETWORK are not specific to ISDN, and therefore are not described in this chapter.

The following table shows the datafill specific to ISDN BRI for table NIUINV. Only those fields that apply directly to ISDN BRI are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table NIUINV (Sheet 1 of 3)

Field	Subfield or refinement	Entry	Explanation and action
NUMBER		0 to 29	Number. Enter the number assigned to the NIU.
LOCATION		see subfields	Location. This field consists of subfields CONTROL and SHELF.
	CONTROL	LIM or MS	Control. If the host is a LIM, enter LIM and datafill refinement LIMNUM. If the host is the message switch (MS), enter MS and datafill refinements MSCARD and MSPORT.
	LIMNUM	0 to 16	Link interface module number. Enter the LIM number.
	MSCARD	5 to 23	Message switch card. Enter the MS card number.
	MSPORT	0 to 3	Message switch port. Enter the MS port number.
	SHELF	1 to 3	Shelf. If the host is a LIM, enter the shelf number (1 to 3). If the host is an MS, enter 1 for a fiberized link interface shelf (FLIS), or 1 or 2 for a rate adapter (RA).
LOAD		alphanumeric vector of up to 8 characters	Default loadfile. Enter the name of the default loadfile as datafilled in table PMLOADS.
U0INFO		see subfields	Network interface unit 0 information. This field consists of the PEC information for NIU 0. Datafill subfields PROCPEC, CBCPEC, and PBPEC.

ISDN BRI office configuration tables (continued)

Datafilling table NIUINV (Sheet 2 of 3)

Field	Subfield or refinement	Entry	Explanation and action
U1INFO		see subfields	Network interface unit 1 information. This field consists of the PEC information for NIU 1. Datafill subfields PROCPEC, CBCPEC, and PBPEC.
	PROCPEC	NTEX22BB	Processor product engineering code. Enter NTEX22BB to specify the integrated processor and F-bus interface card PEC.
	CBCPEC	NTEX25AA or NTEX25BA	Channel bus controller product engineering code. Enter NTEX25AA to specify the NIU CBC card PEC for field U0INFO. Enter NTEX25BA to specify the NIU CBC card PEC for field U1INFO.
	PBPEC	NTEX28AA	Paddleboard product engineering code. Enter NTEX28AA to specify the NIU DS30 link interface paddleboard PEC.
NETLINKS		see subfields	Network links. For junctored network (JNET) offices, enter a vector of up to four multiples of subfields NMPAIR and NMPORT to specify the network links. For enhanced network (ENET) offices, enter a vector of up to four multiples of subfields ENSHELF, ENSLOT, ENLINK, and ENDS30 to specify the network links. Each entry must be separated by a blank space. Enter $ to indicate the end of the vector.
	NMPAIR	0 to 31	Network module pair. Enter a number to specify the network module (NM) pair.
	NMPORT	0 to 63	Network module port. Enter a number to specify the NM port.
	ENSHELF	0 to 3	Enhanced network shelf. Enter a number to specify the ENET shelf. For a 16K ENET, 0 (zero) is the only valid entry. For a 128K ENET, the valid entry range is 0 to 3. Values 4 to 7 are reserved for Northern Telecom use only.
	ENSLOT	10 to 19 and 25 to 32	Enhanced network slot. Enter a number to specify the ENET slot. For a 16K ENET, the entry range is 13 to 19. For a 128K ENET, the entry range is 10 to 16 and 25 to 32.

ISDN BRI office configuration tables (continued)

Datafilling table NIUINV (Sheet 3 of 3)

Field	Subfield or refinement	Entry	Explanation and action
	ENLINK	0 to 18	Enhanced network link. Enter the ENET link number.
	ENDS30	0	DS30 link. Enter 0 (zero) to specify the DS30 link.

Datafill example for table NIUINV

The following example shows sample datafill for table NIUINV. The first tuple shows datafill for an NIU configured on a JNET switch. The second tuple shows datafill for an NIU configured on an ENET switch.

```
NUMBER   LOCATION     LOAD                         U0INFO
                    U1INFO                             NETLINKS
---------------------------------------------------------------
     1   LIM  0 2  NRX36CI NTEX22BB NTEX25AA NTEX28AA
NTEX22BB NTEX25BA NTEX28AA ( 1 20) ( 3 16) ( 1 51) ( 3 39)$

     2   LIM  2 3  NRS37AO NTEX22BB NTEX25AA NTEX28AA
NTEX22BB NTEX25BA NTEX28AA
(  0 16 10  0) (  0 16 11  0) (  0 16 12  0) (  0 16 13  0)$
```

Changing datafill for table NIUINV

Before you can change datafill in table NIUINV, the NIU must be either in the manual-busy (ManB) or in the offline (OffL) state.

Datafilling table LIUINV

Table LIUINV permits the specification of either the message switch (MS) or a link interface module (LIM) as the controlling entity to which the XLIU is connected.

> ***Note:*** Datafill table LIUINV after tables LIMINV, NIUINV, CARRMTC, PMLOADS, and SUSHELF, and before table XSGDEF.

ISDN BRI office configuration tables (continued)

The following table shows the datafill specific to ISDN BRI for table LIUINV. Only those fields that apply directly to ISDN BRI are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table LIUINV (Sheet 1 of 3)

Field	Subfield or refinement	Entry	Explanation and action
LIUNAME		see subfields	Link interface unit name. This is the key field, which consists of subfields LIUTYPE and LIUNO. This field uniquely identifies the type of LIU peripheral that is present in the link peripheral processor (LPP).
	LIUTYPE	XLIU	Link interface unit type. Enter XLIU for the DMS packet handler. ***Note:*** The X.25 and X.75 link interface unit (XLIU) requires the HDLC frame processor card (NTFX10AA) and the channel bus interface paddle board (NTFX09AA).
	LIUNO	0 to 511	Link interface unit number. Enter the number assigned to the XLIU.
LOCATION		see subfields	Location. This field consists of subfields CTRL, SHELFNUM, and LIUSLOT, and specifies the location of the XLIU on the host link interface module.
	CTRL	see subfield	Control information. This field consists of subfield CONTROL.
	CONTROL	MS or LIM	Controlling host entity. Enter MS if the host is a message switch and datafill subfields MSCARD and MSPORT. Enter LIM if the controlling host is a link interface module and datafill field LIMNUM.
	MSCARD	6 to 23	Message switch card. If the entry in field CONTROL is MS, enter the message switch card number.
	MSPORT	0 to 3	Message switch port. If the entry in field CONTROL is MS, enter the message switch port number.

ISDN BRI office configuration tables (continued)

Datafilling table LIUINV (Sheet 2 of 3)

Field	Subfield or refinement	Entry	Explanation and action
	LIMNUM	0 to 16 or blank	Link interface module number. If the entry in field CONTROL is LIM, enter the host LIM number on which the LIU resides (0 to 16). Otherwise, leave this field blank.
	SHELFNUM	0 to 3	Shelf number. Enter the shelf number, at the host LIM, on which the LIU is located.
	LIUSLOT	8 to 31	Link interface slot. Enter the slot number, at the host LIM, on which the XLIU resides. The XLIU occupies two slots; the leftmost slot represents the logical location of the card. All the shelves that are datafilled on a particular controller must be of the same type (two- or three-slot).
LOAD		alphanumeric vector of up to 8 characters	Software load name. Enter the table software load name applicable to the XLIU. This load is found in table PMLOADS.
PROCINFO		see subfields	Processor information. This field consists of subfield PROCPEC. It specifies the product engineering code (PEC) of the processors used in the XLIU.
	PROCPEC	NTEX22AA, NTEX22BA, or NTEX22BB	Processor product engineering code. Enter the PEC of the processor card used in the XLIU as follows: • NTEX22AA for the 4-Mbyte STP integrated processor and F-bus interface card. • NTEX22BA and NTEX22BB are the PECs for the 8-Mbyte integrated processor and F-bus interface cards. The difference between the NTEX22BA and NTEX22BB cards is in firmware only, the hardware is identical.
PFIPEC		blank	Processor F-bus interface product engineering code. Leave this field blank when the entry in field PROCPEC is NTEX22AA, NTEX22BA, or NTEX22BB.
CARDINFO		see subfield	Card information. This field specifies the card data and consists of subfield APPLPEC.

ISDN BRI office configuration tables (continued)

Datafilling table LIUINV (Sheet 3 of 3)

Field	Subfield or refinement	Entry	Explanation and action
	APPLPEC	NTFX10AA	Application product engineering code. Enter NTFX10AA for XLIU applications.
PBPEC		NTFX09AA	Paddle board product engineering code. Enter the PEC of the paddle board.

Datafill example for table LIUINV

The following example shows sample datafill for table LIUINV.

MAP display example for table LIUINV

```
  LIUNAME      LOCATION     LOAD      PROCINFO
                                                  CARDINFO
 --------------------------------------------------------
 XLIU 121   LIM  0 2 12  XRX36CI     NTEX22BB
                                       NTFX10AA NTFX09AA
```

Datafilling table XSGDEF

Table XSGDEF contains X.25 service information for all X.25 link interface units (XLIU). X.25 service groups (XSG) are logical representations of the XLIUs, providing the connection between an XLIU hardware entity and its service entity. XSGs are assigned to XLIUs on a one-to-one basis. Each XSG created must be assigned to an XLIU, whereas an XLIU need not have a XSG assigned to it.

> ***Note:*** Datafill table XSGDEF after table LIUINV. The number of tuples in table XSGDEF may not exceed the number of XLIU tuples in table LIUINV.

The following table shows the datafill specific to ISDN BRI for table XSGDEF. Only those fields that apply directly to ISDN BRI are shown. For

ISDN BRI office configuration tables (continued)

a description of the other fields, refer to the data schema section of this document.

Datafilling table XSGDEF

Field	Subfield or refinement	Entry	Explanation and action
XSGNO		0 to 749	XSG external index number. Enter the X.25 service group number assigned to the XLIU.
HOST		see subfields	Host controller. This field consists of subfield CONTROL.
	CONTROL	LIM or MS	LIU host controller. Enter the host peripheral module (PM) of the XSG/XLIU. Enter LIM for link interface module and datafill refinement LIMNUM. Enter MS for the message switch and datafill refinements MSCARD and MSPORT.
	LIMNUM	0 to 16	Link interface module number. Enter the LIM number. Go to field SHELF.
	MSPORT	0 to 3	Message switch port. Enter the MS port number.
SHELF		0 to 3	Shelf. Enter the LPP shelf number in which the XLIU is located.
CHANNELS		1 to 31	Channels. Enter the number of channels to configure on the XSG. The recommended value is 20, which allows other channels to be assigned as required.

Datafill example for table XSGDEF

The following example shows sample datafill for table XSGDEF.

MAP display example for table XSGDEF

```
XSGNO     HOST SHELF CHANNELS
------------------------------
    1   LIM  3     3       20
    2   LIM  3     3       20
    3  MS 15 0     1       30
    4  MS 15 0     1       30
```

Datafilling table SVCDATA

Table SVCDATA stores default values for X.25 service parameters associated with the DMS packet handler. This table stores the default values for the parameters that appear in tables DNCHNL and DNCTINFO.

Table SVCDATA provides the functionality for the Telco Settable Defaults feature introduced in BCS36. This feature allows operating companies to globally change the default values for X.25 service, thus overriding the engineered set of defaults as specified in TR301 and TR846 (NI-1 compliance).

Default values can be modified for:

- switchwide X.25 parameters
- parameters in table DNCTINFO
- LAPB parameters in table DNCHNL
- LAPD parameters in table DNCHNL

> ***Note:*** Table SVCDATA is not dependent on any other tables and may be datafilled at any time in the datafill sequence.

The following table shows the datafill specific to ISDN BRI for table SVCDATA. Only those fields that apply directly to ISDN BRI are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table SVCDATA (Sheet 1 of 11)

Field	Subfield or refinement	Entry	Explanation and action
KEY			Service data key. Key field for the table.
SWOPTS		see subfields	Switch options. This field consists of subfield SVCTYPE.

ISDN BRI office configuration tables (continued)

Datafilling table SVCDATA (Sheet 2 of 11)

Field	Subfield or refinement	Entry	Explanation and action
	SVCTYPE	see subfields	Service type. The tuple for which default values are to be changed (ISDNPH, DNCTINFO, DNCHNLB, DNCHNLD).
			To change default values for switchwide X.25 parameters, position on tuple ISDNPH, enter CHA, and datafill the following subfields as required: TRDELAY, INIC, SECONSUB, SENSORID, SEGTHRES, SEGSIZE, INTERSUP, CHARFAIL, X75LATAN, and PVCINTV.
			To change default values for parameters in table DNCTINFO, position on tuple DNCTINFO, enter CHA, and datafill the following subfields: FSA, RCA, ICS, TCN, FCPN, OCB, ICB, LCP, and RPOAB.
			To change default values for LAPB parameters in table DNCHNL, position on tuple DNCHNLB, enter CHA, and datafill the following subfields: LLFSQ, LLWS, T1, T2, T3, N2, LCA, PLSQ, NDWS, NDPS, and DTCA.
			To change default values for LAPD parameters in table DNCHNL, position on tuple DNCHNLD, enter CHA, and datafill the following subfields: NDPS, DTCA, LCA, PLSQ, and NDWS.
The following parameters apply to tuple ISDNPH:			
	TRDELAY	0 to 32767	Switch transit delay. Enter a numeric value (1 to 32767, in milliseconds) to specify the delay imposed by a switch on an X.25 intra-switch call (for Transit Delay Indication [TDI]). Otherwise, accept the default value (0).
	INIC	0000 to 9999	Switch International identifier code. Enter a four-digit numeric string identifying the country of location for the DMS SuperNode.
			The default value (9001) is invalid for call processing, and must be changed to a valid entry.

ISDN BRI office configuration tables (continued)

Datafilling table SVCDATA (Sheet 3 of 11)

Field	Subfield or refinement	Entry	Explanation and action
	SECONSUB	0-7	Secondary (billing) subclass. Enter a secondary billing level subclass identifying the type of network charge being levied. Subclass 0 is X.25; subclass 4 is X.75/X.75'. The default value is 0.
	SENSORID	six-digit string	Originating sensor identifier. Enter a six-digit string that allows the operating company to identify network elements. The second digit in the string must be a 0, 1, or 2. The default value is 000000.
	SEGTHRES	10 to 90 in multiples of 10	Segment count overflow threshold. Enter a percentage of the maximum possible segment count used by DMS PH (10 to 90, in multiple units of ten percent); otherwise, accept the default value (50). This value is used to activate the count at which an automatic message accounting (AMA) record is generated and the counter reset.
	SEGSIZE	64, 128, or 256	Segment size. Enter the measurement unit (in octets) used for charging for the volume of information transmitted and/or received (128 or 256); otherwise, accept the default value (64). The segment size is the number of octets contained in a packet segment. The number of segments contained in a packet is determined by dividing the number of octets of user data contained in a chargeable packet by the segment size, then rounding the resulting value up to a whole value. A chargeable packet that contains no user data is counted as one segment.
	INTERSUP	Y or N	Inter-network billing suppression. Enter Y (yes) to indicate that accounting will be suppressed on all inter-network calls; otherwise, accept the default value N (no).

ISDN BRI office configuration tables (continued)

Datafilling table SVCDATA (Sheet 4 of 11)

Field	Subfield or refinement	Entry	Explanation and action
	CHARFAIL	Y or N	Chargeable failed call attempt indication. Enter Y to indicate that failed call attempts are chargeable; otherwise, accept the default value (N). ***Note:*** The switch does not generate billing records for failed call attempts, even when this parameter is set to Y. Attempting to record failed call attempts would cause excessive billing records to be generated.
	X75LATAN	up to 16 characters	X.75 LATA name. Enter a character string used to assign a default originating LATA to an incoming trunk (up to 16 characters, as defined in table LATANAME). The default value is NILLATA, which is not a valid LATA name. This information and the called number are used to determine the LATA status of an incoming trunk call. It is active only for switches where the equal access packet is supported.
	PVCINTV	300 to 6000 in multiples of 100	PVC retry interval. Enter the number of milliseconds (in 100-ms units) the DMS PH will wait after a PVC call fails before it will attempt to retry to connect the call (300 to 6000); otherwise, accept the default value of 600 (6 s).
The following parameters apply to tuple DNCTINFO:			
	FSA	Y or N	Fast select acceptance. Enter Y to allow the called party to receive incoming fast select calls; otherwise, accept the default (N).
	RCA	Y or N	Reverse charging accepted. Enter Y to allow the called party to accept charges for the call; otherwise accept the default (N).
	ICS	Y or N	Interexchange carrier subscription. Enter Y to allow the user to select a preferred interexchange carrier, and datafill parameters E164RPOA and X121RPOA; otherwise, accept the default (N).

ISDN BRI office configuration tables (continued)

Datafilling table SVCDATA (Sheet 5 of 11)

Field	Subfield or refinement	Entry	Explanation and action
	E164RPOA	4-digit string	E.164 registered private operating agency. Enter a four-digit DNIC/INIC to specify the preselected ISDN packet interexchange carrier.
	X121RPOA	4-digit string	X.121 registered private operating agency. Enter a four-digit DNIC/INIC to specify the preselected PSPN packet interexchange carrier.
	TCN	Y or N	Throughput negotiation allowed. Enter Y to allow the calling party, called party, and network to engage in a negotiation of the throughput class; otherwise, accept the default (N).
	FCPN	Y or N	Flow control parameter negotiation allowed. Enter Y to allow the calling party, called party, and network to engage in a negotiation of the flow control parameters (maximum packet size, layer three window size) for each direction of communication on a virtual call; otherwise, accept the default (N).
	LCP	Y or N	Local charging prevention. Enter Y to prohibit subscribers from charging virtual calls to their ISDN directory number. The default value is N (not enabled).
	OCB	Y or N	Outgoing calls barred. Enter Y to prohibit the network from accepting any outgoing call requests from the subscriber; otherwise, accept the default (N).
	ICB	Y or N	Incoming calls barred. Enter Y to prohibit the network from accepting any incoming call requests to the subscriber; otherwise, accept the default (N). ***Note:*** ICB and OCB should not be set to Y.
	RPOAB	Y or N	RPOA selection barred. Enter Y to prohibit the subscriber from signaling a transit carrier for handling an inter-LATA or intra-LATA call; otherwise, accept the default (N).
The following parameters apply to tuple DNCHNLB:			

ISDN BRI office configuration tables (continued)

Datafilling table SVCDATA (Sheet 6 of 11)

Field	Subfield or refinement	Entry	Explanation and action
	LLFSQ	MOD8 or MOD128	Link level frame sequencing. Specifies the sequential number of frames allowed for each direction of transmission (MOD8 or MOD128). The default value is MOD8.
	LLWS	1 or 7	Link level window size. Specifies the maximum number of frames allowed in transit at one time (1 to 7 for MOD8, or 1 to 127 for MOD128). The default value is 7.
	T1	10 to 200	Acknowledgement timer. Specifies the time period between the transmission of consecutive frames, in units of 100 ms. Enter a number between 10 and 200, or accept the default value of 20 (2 s).
	T2	0 to 4	Response timer. Specifies the response time (in units of 100 ms) between the reception of the last bit of the frame and the sending of the corresponding acknowledgement. Enter a number between 0 and 4, or accept the default value of 2 (0.2 s).
	T3	1 to 30	Idle channel timer. Specifies the period of time (in 1-s increments) that the LAPB channel can stay idle before layer 3 protocol applies failure procedures. Enter a number between 1 and 30, or accept the default value (5 s).
	N2	2 to 15	Maximum retransmissions. Specifies the maximum number of attempts permitted to compile a successful transmission. Enter a number between 2 and 15, or accept the default value (3).

ISDN BRI office configuration tables (continued)

Datafilling table SVCDATA (Sheet 7 of 11)

Field	Subfield or refinement	Entry	Explanation and action
	LCA	see subfields	Logical channel assignment. Specifies the assigned logical channels for each type of service at the time of subscription. This field consists of the following subfields: SLCN, NPVC, NOWI, NOWO, and NNRC. ***Note:*** The following restrictions apply to parameters SLCN, NPVC, NOWI, NOWO, and NNRC:1 £ NPVC + NOWI + NOWO + NNRC £ 512SLCN + NPVC + NOWI + NOWO + NNRC £ 4096
	SLCN	1 to 4095	Start logical channel number. Enter a number between 1 and 4095 to specify the starting channel for the logical channel assignment; otherwise, accept the default (1).
	NPVC	0 to 512	Number of permanent virtual circuits. Enter a number between 1 and 512 to specify the subscribed number of permanent virtual circuits; otherwise, accept the default (0).
	NOWI	0 to 512	Number of incoming one-way logical channels. Enter a number between 1 and 512 to specify the subscribed number of one-way incoming logical channels; otherwise, accept the default (0).
	NNRC	1 to 512	Number of non-restricted channels. Enter a number between 2 and 512 to specify the number of non-restricted logical channels; otherwise, accept the default (1).
	NOWO	0 to 512	Number of one-way outgoing logical channels. Enter a number between 1 and 512 to specify the number of one-way outgoing logical channels; otherwise, accept the default (0).
	PLSQ	MOD8 or MOD128	Packet level sequencing. Specifies the sequential number of packets allowed for each direction of transmission (MOD8 or MOD128). The default value is MOD8.

ISDN BRI office configuration tables (continued)

Datafilling table SVCDATA (Sheet 8 of 11)

Field	Subfield or refinement	Entry	Explanation and action
	NDWS	Y or N	Non-standard default window size. Enter Y to specify a non-standard packet layer window size for each direction of communication, and datafill subfields IPLWS and OPLWS; otherwise, accept the default (N).
	IPLWS	1 to 127	Incoming packet layer window size. Specifies the non-standard window size for incoming calls (1 to 7 when PLSQ = MOD8, or 1 to 127 when PLSQ = MOD128). The default value is 2 if NDWS = N.
	OPLWS	1 to 127	Outgoing packet layer window size. Specifies the non-standard window size for outgoing calls (1 to 7 when PLSQ = MOD8, or 1 to 127 when PLSQ = MOD128). The default value is 2 if NDWS = N.
	NDPS	Y or N	Non-default packet size. Enter Y to allow the user to subscribe to a maximum packet size for each direction of communication, and datafill subfields IMPS and OMPS; otherwise, accept the default (N).
	IMPS	16, 32, 64, 128, or 256	Incoming maximum packet size. Enter one of the following values to specify the non-default maximum packet size for incoming calls: 16, 32, 64, 128, 256. The default value is 128 if NDPS = N.
	OMPS	16, 32, 64, 128, or 256	Outgoing maximum packet size. Enter one of the following values to specify the non-default maximum packet size for outgoing calls: 16, 32, 64, 128, 256. The default value is 128 if NDPS = N.
	DTCA	Y or N	Default throughput class assignment. Enter Y to allow the user to subscribe to a default throughput class for each direction of communication, and datafill subfields IDTCA and ODTCA; otherwise, accept the default (N).

ISDN BRI office configuration tables (continued)

Datafilling table SVCDATA (Sheet 9 of 11)

Field	Subfield or refinement	Entry	Explanation and action
	IDTCA	75, 150, 300, 600, 1200, 2400, 4800, 9600, 19200, 48000, or 64000	Incoming default throughput class assignment. Enter one of the following values to specify the non-default throughput class for incoming calls: 75, 150, 300, 600, 1200, 2400, 4800, 9600, 19200, 48000, 64000. The default value is 64000 if DTCA = N.
	ODTCA	75, 150, 300, 600, 1200, 2400, 4800, 9600, 19200, 48000, or 64000	Outgoing default throughput class assignment. Enter one of the following values to specify the non-default throughput class for outgoing calls: 75, 150, 300, 600, 1200, 2400, 4800, 9600, 19200, 48000, 64000. The default value is 64000 if DTCA = N.
The following parameters apply to tuple DNCHNLD:			
	NDPS	Y or N	Non-default packet size. Enter Y to allow the user to subscribe to a maximum packet size for each direction of communication, and datafill subfields IMPS and OMPS; otherwise, accept the default (N).
	IMPS	16, 32, 64, 128, or 256	Incoming maximum packet size. Enter one of the following values to specify the non-default maximum packet size for incoming calls: 16, 32, 64, 128, 256. The default value is 128 if NDPS = N.
	OMPS	16, 32, 64, 128, or 256	Outgoing maximum packet size. Enter one of the following values to specify the non-default maximum packet size for outgoing calls: 16, 32, 64, 128, 256. The default value is 128 if NDPS = N.
	DTCA	Y or N	Default throughput class assignment. Enter Y to allow the user to subscribe to a default throughput class for each direction of communication, and datafill subfields IDTCA and ODTCA; otherwise, accept the default (N).
	IDTCA	75, 150, 300, 600, 1200, 2400, 4800, or 9600	Incoming default throughput class assignment. Enter one of the following values to specify the non-default throughput class for incoming calls: 75, 150, 300, 600, 1200, 2400, 4800, 9600. The default value is 9600 if DTCA = N.

ISDN BRI office configuration tables (continued)

Datafilling table SVCDATA (Sheet 10 of 11)

Field	Subfield or refinement	Entry	Explanation and action
	ODTCA	75, 150, 300, 600, 1200, 2400, 4800, or 9600	Outgoing default throughput class assignment. Enter one of the following values to specify the non-default throughput class for outgoing calls: 75, 150, 300, 600, 1200, 2400, 4800, 9600. The default value is 9600 if DTCA = N.
	LCA	see subfields	Logical channel assignment. Specifies the assigned logical channels for each type of service at the time of subscription. This field consists of the following subfields: SLCN, NPVC, NOWI, NNRC, and NOWO. ***Note:*** The following restrictions apply to parameters SLCN, NPVC, NOWI, NNRC, and NOWO:1 £ NPVC + NOWI + NOWO + NNRC £ 64SLCN + NPVC + NOWI + NOWO + NNRC £ 4096
	SLCN	1 to 4095	Start logical channel number. Enter a number between 1 and 4095 to specify the starting channel for the logical channel assignment; otherwise, accept the default (1).
	NPVC	0 to 64	Number of permanent virtual circuits. Enter a number between 1 and 64 to specify the subscribed number of permanent virtual circuits; otherwise, accept the default (0).
	NOWI	0 to 64	Number of incoming one-way logical channels. Enter a number between 1 and 64 to specify the subscribed number of one-way incoming logical channels; otherwise, accept the default (0).
	NNRC	1 to 64	Number of non-restricted channels. Enter a number between 2 and 64 to specify the number of non-restricted logical channels; otherwise, accept the default (1).
	NOWO	0 to 64	Number of one-way outgoing logical channels. Enter a number between 1 and 64 to specify the number of one-way outgoing logical channels; otherwise, accept the default (0).

ISDN BRI office configuration tables (continued)

Datafilling table SVCDATA (Sheet 11 of 11)

Field	Subfield or refinement	Entry	Explanation and action
	PLSQ	MOD8 or MOD128	Packet level sequencing. Specifies the sequential number of packets allowed for each direction of transmission (MOD8 or MOD128). The default value is MOD8.
	NDWS	Y or N	Non-standard default window size. Enter Y to specify a non-standard packet layer window size for each direction of communication, and datafill subfields IPLWS and OPLWS; otherwise, accept the default (N).
	IPLWS	1 to 127	Incoming packet layer window size. Specifies the non-standard window size for incoming calls (1 to 7 when PLSQ = MOD8, or 1 to 127 when PLSQ = MOD128). The default value is 2 if NDWS = N.
	OPLWS	1 to 127	Outgoing packet layer window size. Specifies the non-standard window size for outgoing calls (1 to 7 when PLSQ = MOD8, or 1 to 127 when PLSQ = MOD128). The default value is 2 if NDWS = N.

Datafill example for table SVCDATA

The following example shows sample datafill for table SVCDATA.

MAP display example for table SVCDATA

```
             KEY
                                                                        SWOPTS
----------------------------------------------------------------------------
          ISDNPH
ISDNPH (TRDELAY 0) (INIC 9001) (SECONSUB 0) (SENSORID 000000) (SEGTHRES 50)
(SEGSIZE 64) (INTERSUP N) (CHARFAIL Y) (X75LATAN LATA2) (PVCINTV 600) $

        DNCTINFO
DNCTINFO (FSA N) (RCA N) (ICS N ) (TCN N) (FCPN N) (OCB N) (ICB N) (LCP N)
(RPOAB N) $

         DNCHNLB
DNCHNLB (LLFSQ MOD8) (LLWS 7) (T1 20) (T2 2) (T3 5) (N2 3)
(LCA (SLCN 1) (NPVC 0) (NOWI 0) (NNRC 1) (NOWO 0) $) (PLSQ MOD8) (NDWS N )
(NDPS N ) (DTCA N ) $

         DNCHNLD
DNCHNLD (NDPS N ) (DTCA N ) (LCA (SLCN 1) (NPVC 0) (NOWI 0) (NNRC 1)
(NOWO 0) $) (PLSQ MOD8) (NDWS N ) $
```

ISDN BRI office configuration tables (continued)

Changing datafill for table SVCDATA

Packet service parameters cannot be added to, or deleted from, table SVCDATA, they can only be changed. After entering the table, position on the appropriate tuple, and use the CHA command to modify the values.

ATTENTION
When you change the value of the SEGSIZE parameter in tuple ISDNPH, you must return all affected XLIUs to service to prevent inaccurate billing values from being generated.

Datafilling table SVCRATE

Table SVCRATE specifies the rates that are applied for ISDN X.25 packet service. Billing rates are specified on the basis of service type, the day of the week, and the hour of day.

Note: Table SVCRATE is not dependent on any other tables and may be datafilled at any time in the datafill sequence.

The following table shows the datafill specific to ISDN BRI for table SVCRATE. Only those fields that apply directly to ISDN BRI are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table SVCRATE (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
KEY		see subfields	Service rate key. This field is the key to the table and consists of subfields SVCTYPE and DAY.
	SVCTYPE	ISDNPH	Service type. Enter ISDNPH.
	DAY	DAILY	Day of the week. Enter DAILY to specify that the billing rate applies for all days of the week.

ISDN BRI office configuration tables (continued)

Datafilling table SVCRATE (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
DAYTIME		see subfields	Hourly billing rates. This field consists of a vector of up to 24 multiples of subfields ANHOUR and ARATE. Each multiple specifies the billing rate for a one-hour slot. A blank space must separate each entry. Enter the required ANHOUR and ARATE entries, followed by $ to indicate the end of the vector. Where additional information for a tuple is contained in the next record, enter + in the CONTMARK field.
	ANHOUR	00HOUR, 01HOUR, 02HOUR, 03HOUR, 04HOUR, 05HOUR, 06HOUR, 07HOUR, 08HOUR, 09HOUR, 10HOUR, 11HOUR, 12HOUR, 13HOUR, 14HOUR, 15HOUR, 16HOUR, 17HOUR, 18HOUR, 19HOUR, 20HOUR, 21HOUR, 22HOUR, or 23HOUR	Hour in day. Enter the name of the hour slot for which a rate must be specified. Each hour slot name corresponds to the start of the one-hour slot (for example, the entry 02HOUR corresponds to the time slot from 2:00 AM to 3:00 AM).
	ARATE	R1, R2, R3, or R4	Rate for specified hour. Enter the rate for the specified time slot.

Datafill example for table SVCRATE

The following example shows sample datafill for table SVCRATE.

ISDN BRI office configuration tables (continued)

MAP display example for table SVCRATE

```
         KEY                                                        DAYTIME
    ----------------------------------------------------------------------
    ISDNPH DAILY
    (00HOUR R1) (01HOUR R1) (02HOUR R1) (03HOUR R1) (04HOUR R1) (05HOUR R1)
    (06HOUR R1) (07HOUR R1) (08HOUR R1) (09HOUR R1) (10HOUR R1) (11HOUR R1)
    (12HOUR R1) (13HOUR R1) (14HOUR R1) (15HOUR R1) (16HOUR R1) (17HOUR R1)
    (18HOUR R1) (19HOUR R1) (20HOUR R1) (21HOUR R1) (22HOUR R1) (23HOUR R1) $
```

Datafilling table SPECCONN

Table SPECCONN is used to datafill special connections needed in the switch. Each entry describes a P-side to P-side connection, or endpoints that identify the connected terminals.

For Base Service with the DMS PH, table SPECCONN specifies two types of special connections:

- for D-channel packet terminals, provisioned D-channel connections between DCH channels (DCHCHNL) and XSG channels (XSGCHNL) on the DMS PH
- for B-channel packet terminals, provisioned B-channel connections between ISDN line cards (ISLC) and XSGCHNLs on the DMS PH

Beginning in BCS 36, a single XLIU can serve both X.25 lines and X.75 trunks. For X.25 service, a mixture of B-channel and D-channel terminals can be provisioned on the same XLIU.

Typically, D-channel connections are provisioned when a DCH is installed and an ISG is defined. B-channel connections are provisioned when a B-channel packet terminal is attached to a LEN using the SERVORD command SLT ATT. Refer to the section “ISDN Basic Access" for information on using SERVORD to provision B-channel connections for packet terminals.

Note: Datafill table SPECCONN after tables LNINV and XSGDEF.

The following table shows the datafill specific to ISDN BRI for table SPECCONN. Only those fields that apply directly to ISDN BRI are shown.

For a description of the other fields, refer to the data schema section of this document.

Datafilling table SPECCONN

Field	Subfield or refinement	Entry	Explanation and action
ENDPT1		see subfields	End point. Consists of subfield SCSEL.
	SCSEL	XSGCHNL or DCHCHNL	End-point selector. The identifier for the first endpoint of the connection. Either endpoint can be the XSG endpoint. Enter one of the following for the first endpoint: • XSGCHNL for a DMS PH endpoint, and datafill subfields XSGNO, CHANNEL, CONTYPE, and STATUS. • DCHCHNL for a DCH endpoint, and datafill subfields ISGNO and CHNL.
	XSGNO	0 to 749	XSG number. Enter the XSG number.
	CHNL	$	Channel. Enter a dollar sign ($). The system assigns the first available free channel.
	ISGNO	0 to 255	ISG number. Enter the number of the ISG.
	CHNL	0 to 31	DCH channel number. Enter the DCH channel number.
ENDPT2		see subfields	End point. This field consists of subfield SCSEL.
	SCSEL	XSGCHNL or DCHCHNL	End-point selector. The identifier for the second endpoint of the connection. Enter one of the following for the second endpoint: • XSGCHNL for a DMS PH endpoint, and datafill subfields XSGNO, CHANNEL, CONTYPE, and STATUS as described above. • DCHCHNL for A DCH endpoint, and datafill subfields ISGNO and CHNL as described above.
	CONTYPE	CON	Connection type. Enter the connection type (CON — connected).
	STATUS	ACTIVE	Connection status. Enter the status of the connection.

ISDN BRI office configuration tables (end)

Datafill example for table SPECCONN

The following example shows sample datafill for table SPECCONN. The first tuple shows a provisioned D-channel connection between DCH 22, channel 30, and XSG 1, channel 2 on the DMS PH. The second tuple shows a provisioned B-channel connection between an ISLC and XSG 2, channel 6.

MAP display example for table SPECCONN

```
            ENDPT1                            ENDPT2
                                       CONTYPE    STATUS
---------------------------------------------------------
XSGCHNL   1 ( 2)$
                                      DCHCHNL  22 30
                                           CON    ACTIVE

XSGCHNL   2 ( 6)$
                            ISLC HOST  01 0 00 05 B1
                                           CON    ACTIVE
```

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Data, ISDN, and Internet Services Part 1 of 3

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