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!
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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:

Volume 9

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.

Volume 14

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:

Volume 14

Changes made to Group Intercom All Call (Q00100917)

Volume 16

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:

Volume 1-8

No changes

Volume 9

Modified – Call Forward/Interface Busy by CR Q01038988

Volume 10-25

No change

December 2004

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

Volume 1-12

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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DMS-100 Family

North American DMS-100

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1 Introduction to Residential Enhanced Services

Understanding Residential Enhanced Services translations

This section provides an introduction to Residential Enhanced Services (RES) and discusses its capabilities and operation. For the purposes of this document, RES will be referred to as Subscriber Services.

Subscriber Services

Subscriber Services is the successor to plain old telephone service (POTS). It is built from POTS and Meridian Digital Centrex (MDC) software. With these two environments bridged, subscribers have access to features previously available only to subscribers of MDC.

With Subscriber Services, the POTS dialing plan is used. POTS translations route Subscriber Services calls, while MDC translations are used for any MDC feature activation.

Subscriber Services lines support the following ringing schemes:

- coding ringing, a combination of long and short tones
- superimposed ringing, a combination of interrupted ringing and continuous signal
- frequency selective ringing, ringing patterns of different signal frequencies

Subscriber Services introduces the following:

- Subscriber Services Residential line class code (LCC)
- enhancements to call forwarding and speed calling
- a simplified service order input facility

RES line class code

The RES LCC supports current POTS features and Subscriber Services features.

The RES LCC is serviced by the following:

- Subscriber Services software, which duplicates the operation of main POTS services offered on a POTS line
- extensions to the MDC control tables, which provide access to:
  - — POTS-equivalent feature processing when the subscriber dials POTS access codes
  - — additional MDC processing introduced to offer Subscriber Services
- POTS directory number (DN)-to-route translations, which are used to validate and route all DNs dialed on a Subscriber Services line

Enhanced call forwarding and speed calling services

Subscriber Services call forwarding offers additional options for Call Forwarding Busy (CFB), Call Forwarding Busy Line (CFBL), Call Forwarding Don't Answer (CFDA), and Call Forwarding Group Don't Answer (CFGDA).

With option N, the subscriber cannot activate or deactivate the call forwarding features. The operating company activates and deactivates the features. This is the same as POTS one-party flat rate (1FR) call forwarding feature activation.

With option F, the forward-to DN for call forwarding features is always the same. The subscriber can activate or deactivate the feature.

With option C, the forward-to DN can be programmed as part of the activation procedure carried out by the subscriber.

Simplified service order facility

A simplified service order facility allows option codes for Subscriber Services features to be used as if they were on a POTS 1FR or one-party message rate (1MR) line. When a Subscriber Services feature is added to a POTS line, the facility automatically changes the LCC from 1FR to RES or from 1MR to RES. When the last Subscriber Services feature is deleted from a line, the LCC automatically changes from RES to 1FR or from RES to 1MR. Subscriber Services features can either be included when a POTS line is set up or added to an existing line.

The simplified service order facility is only available if the RES_AS_POTS option in office parameter RES_SO_SIMPLIFICATION is enabled.

The simplified service order facility also controls the query commands (QDN and QLEN) for Subscriber Services lines. Even if the actual LCC is RES, the LCC displayed is 1FR or 1MR. If any Subscriber Services-based options are present, they are shown on a different line from the other options.

Subscriber Services types

There are two types of Subscriber Services:

- Subscriber ServicesRES
- Subscriber Services Custom Local Area Signaling Services (CLASS)

Subscriber Services RES

Subscriber Services RES is the platform for all Subscriber Services applications. It offers most POTS features, and additional features and capabilities available to MDC, such as customer groups. Customer groups include Subscriber Services lines that have the same feature or features, such as Teen Service Secondary Directory Number (SDN).

Subscriber Services RES includes the following pre-BCS34 feature types:

- RES
- CLASS
- CLASS on MDC
- CLASS on Multiline Variety Package (MVP)
- CLASS on Meridian business set (MBS)
- enhanced network
- network messaging

Subscriber Services CLASS

Subscriber Services CLASS combines the results of call processing at the originating switch and call processing at the destination switch. CLASS is offered for the following types of calls:

- origination and destination are served by the same central office
- origination and destination are served from different central offices located in the same local access and transport area (LATA) with an office-to-office trunk connection using common channel signaling no. 7 (CCS7) protocol

Subscriber Services CLASS includes the following pre-BCS34 feature types:

- CLASS
- CLASS on MDC
- CLASS on MVP
- CLASS on MBS
- enhanced network
- network messaging

Subscriber Services CLASS on MDC CLASS on MDC enhances CLASS functionality for businesses. Business subscribers can use public network CLASS features while preserving their MDC characteristics.

CLASS on MDC features function in the following MDC attributes:

- flexible and private dial plans
- customer groups
- private trunking
- use of MBSs
- LCC of IBN and PSET

For example, CLASS on MDC provides calling line identification (CLI) of calls from within the customer group and outside the customer group, including POTS calls. Abbreviated dialing is also provided by CLASS on MDC.

The CLASS on MDC packages allow Subscriber Services CLASS features to be assigned to lines having an LCC of IBN. Subscriber Services CLASS on MDC features are available to subscribers with 500/2500 sets or MBSs.

Note: Subscriber Services CLASS on MDC is not available on integrated voice and data sets (IVDS) and integrated services digital network (ISDN) sets.

Subscriber Services in the DMS network

Subscriber Services in the DMS network is divided into the following two groups:

- nodal Subscriber Services (Subscriber Services RES and CLASS features)
- network Subscriber Services (Subscriber Services CLASS features)

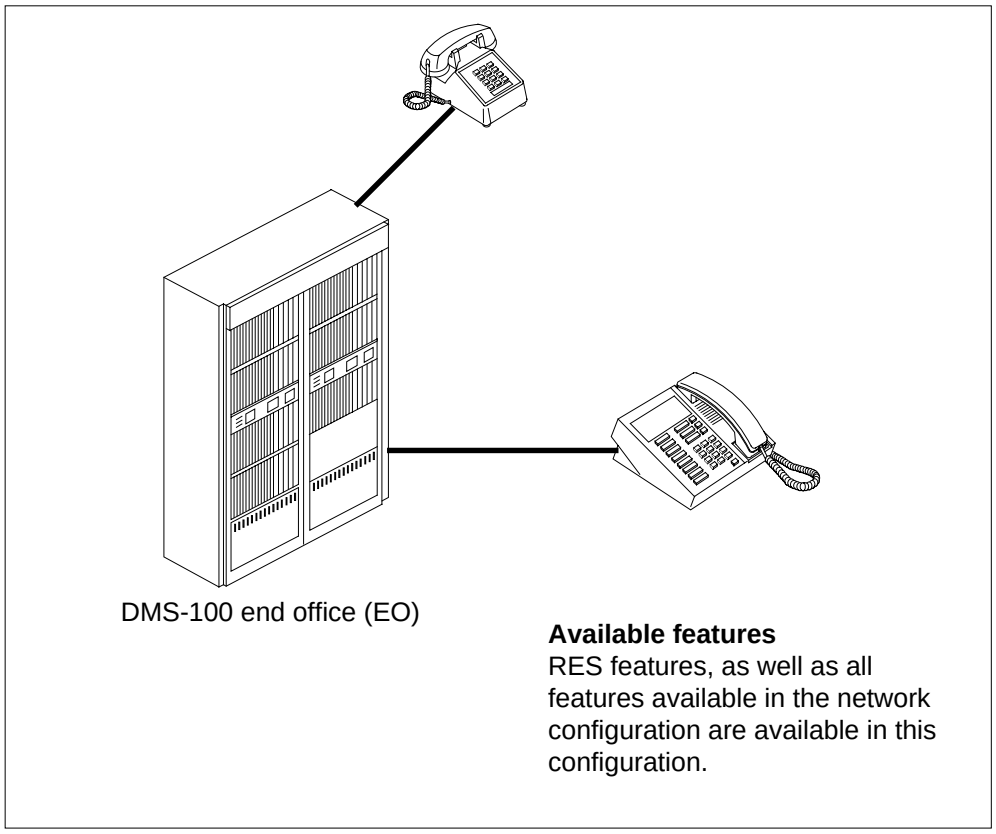
Nodal Subscriber Services

The nodal Subscriber Services features, which include the Subscriber Services RES and CLASS features, are offered in a nodal (intraswitch) environment. Nodal services function independently of the switching network that comprises multiple nodes across a telephone service area. Network-derived signaling protocols are not required. Individual subscribers receive full feature functionality without special signaling through the network.

Note: Subscriber Services CLASS features are available in both nodal and network environments. Subscriber Services RES features are available *only* in nodal environments.

The following figure shows the configuration of nodal Subscriber Services.

Figure 1-1 Configuration of nodal Subscriber Services



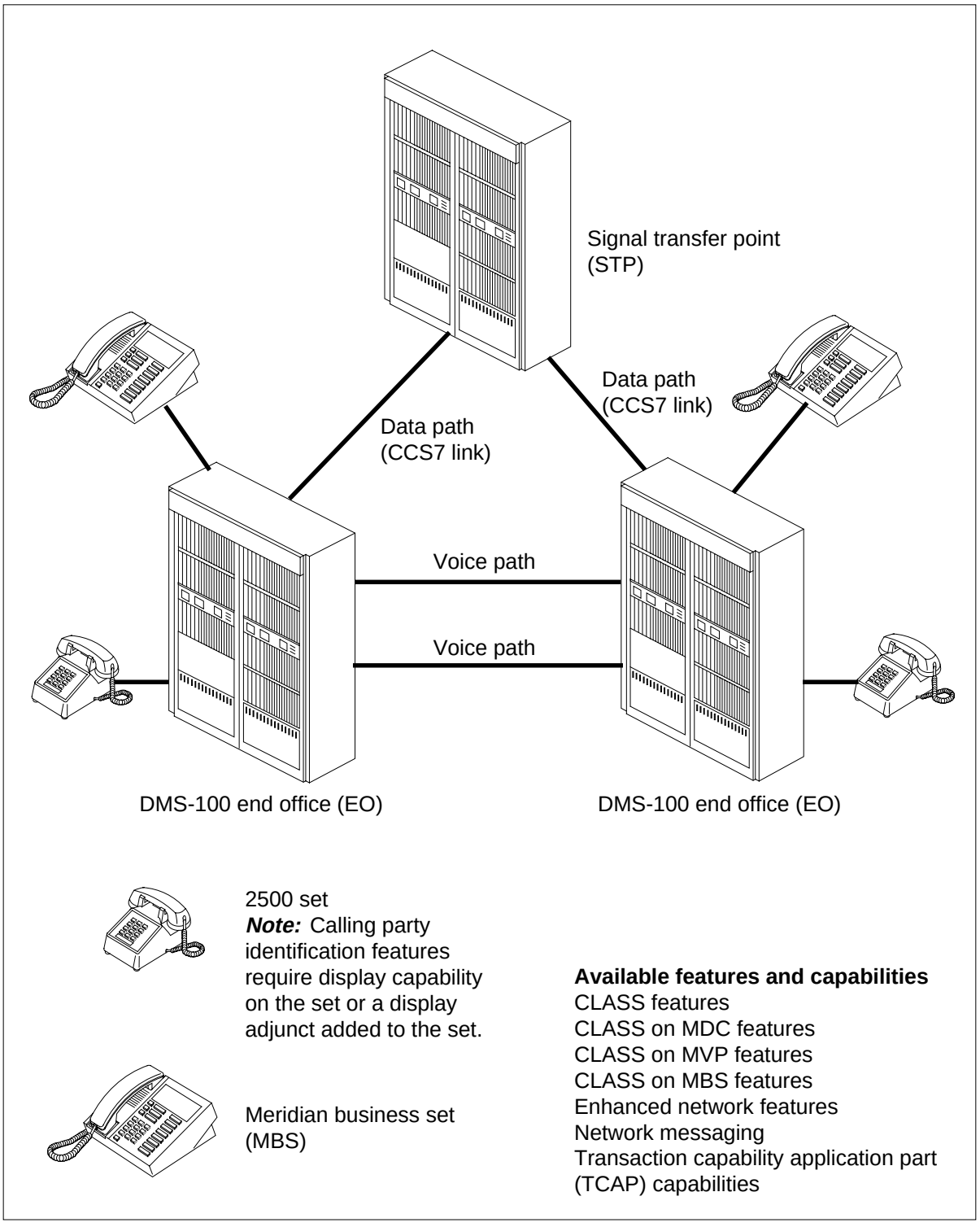
Network Subscriber Services

Network Subscriber Services features, which include Subscriber Services CLASS features, are designed to work within a CLASS (network or interswitch) environment. They provide the most sophisticated capabilities offered in today's residential environment.

The following figure shows the configuration of network Subscriber Services.

Note: CCS7 connectivity is required to offer CLASS on an interoffice basis.

Figure 1-2 Configuration of network Subscriber Services



Signaling for Subscriber Services

This section discusses CCS7, its network components, architecture, function, and characteristics.

CCS7 signaling

In a telephone network, voice communication is controlled by signaling performed by telephone switches. Prior to CCS7 protocol, telephone switches used per-trunk signaling, which transmits the signaling component of a call on the same facility as the voice component of a call. Therefore, each voice trunk needed dedicated signaling equipment.

CCS7 uses two paths for transmitting telephone calls. CCS7 partitions the components so the signaling component travels on signaling links and the voice and data component follows voice trunks. Thus, a signaling link can be used for a large number of voice trunks without becoming overloaded. CCS7 performs call setup and dialing and provides supervisory signals for call progression and billing.

Note: Different organizations use the terms common channel signaling no. 7 and signaling system 7 (SS7). In this document, SS7 can be substituted for CCS7.

Types of CCS7 signaling

CCS7 signaling is divided into two types:

- connection-oriented signaling
- connectionless signaling

Connection-oriented signaling

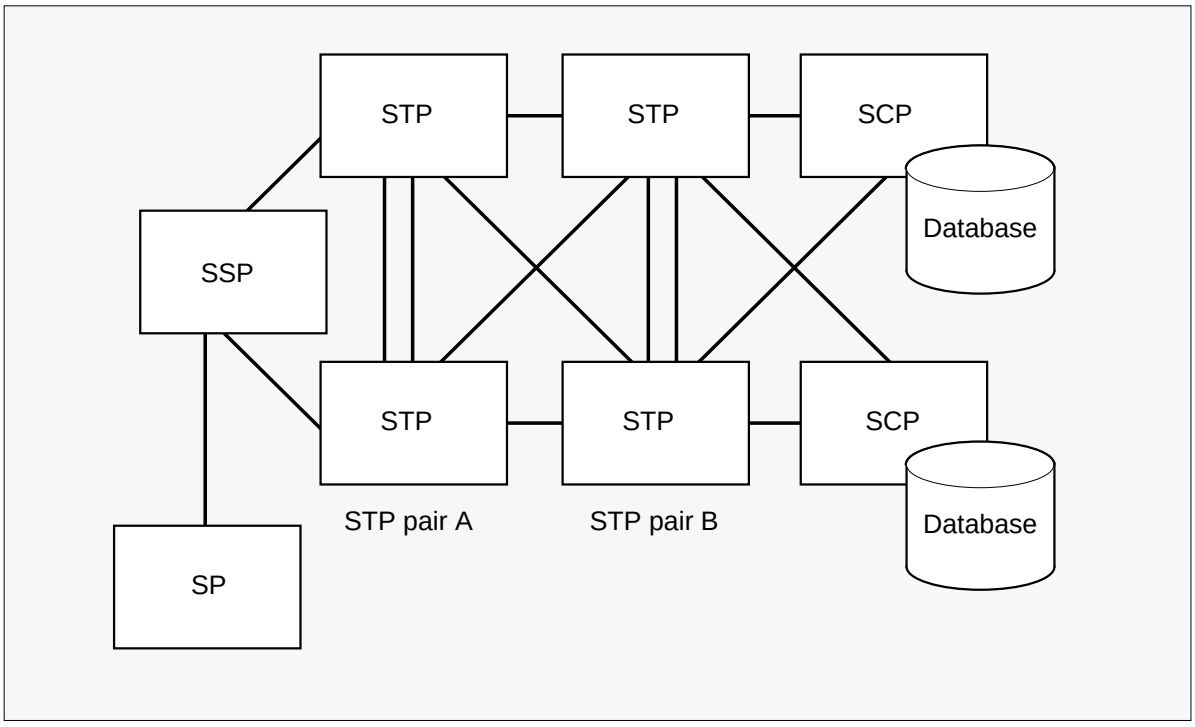
Connection-oriented signaling, also referred to as trunk signaling, corresponds to the signaling process in which a fixed end-to-end path is established for the call. The signaling protocol establishes a fixed path although the signaling itself can travel by way of different paths for the duration of the call. All the information associated with the call follows a fixed path even though the signaling itself is not connection-oriented.

Connectionless signaling

In the case of connectionless signaling, also referred to as transaction services, no fixed end-to-end connection is associated with the call. The route followed by the information and signaling between the originating and terminating subscribers is not fixed and can change from one message to the next. For example, signaling used to access a database for 800 number translations and maintenance signaling messages between signaling points are considered to be connectionless signaling.

The following figure illustrates a basic CCS7 network configuration.

Figure 1-3 CCS7 nodes in a signaling network



CCS7 network components

A CCS7 network is composed of the following components:

- signaling point (SP)
- service switching point (SSP)
- signaling transfer point (STP)
- service control point (SCP)

Signaling point

An SP is a node in a CCS7 signaling network that either originates, terminates, or transfers signaling messages from one signaling link to another. The SP can be an SSP or an SCP.

The following two types of SPs provide signaling:

- link peripheral processor (LPP) SSP
- message switch and buffer 7 (MSB7) SSP

> ***Note:*** Each installation will have one or the other of these SPs, but not both.

Link peripheral processor-based service switching point

An SSP is an SP with the capability of routing processing operations to an SCP on a CCS7 network and receiving messages from the SCP. The SSP can be an equal access end office (EAEO) or an access tandem. It contains the following components:

- DMS SuperNode front end
- network modules
- LPP
- DTC
- transmission links

DMS SuperNode front end The DMS SuperNode front end consists of the dual plane combined core cabinet (DPCC). The DPCC is a DMS SuperNode equipment cabinet that houses the DMS-Core and the DMS-Bus.

Network modules Network modules provide signaling paths for communication between the DTC and the DMS-Bus.

Link peripheral processor The LPP is an equipment frame that contains two types of peripheral modules (PM):

- a link interface module (LIM)
- a series of CCS7 link interface units (LIU7).

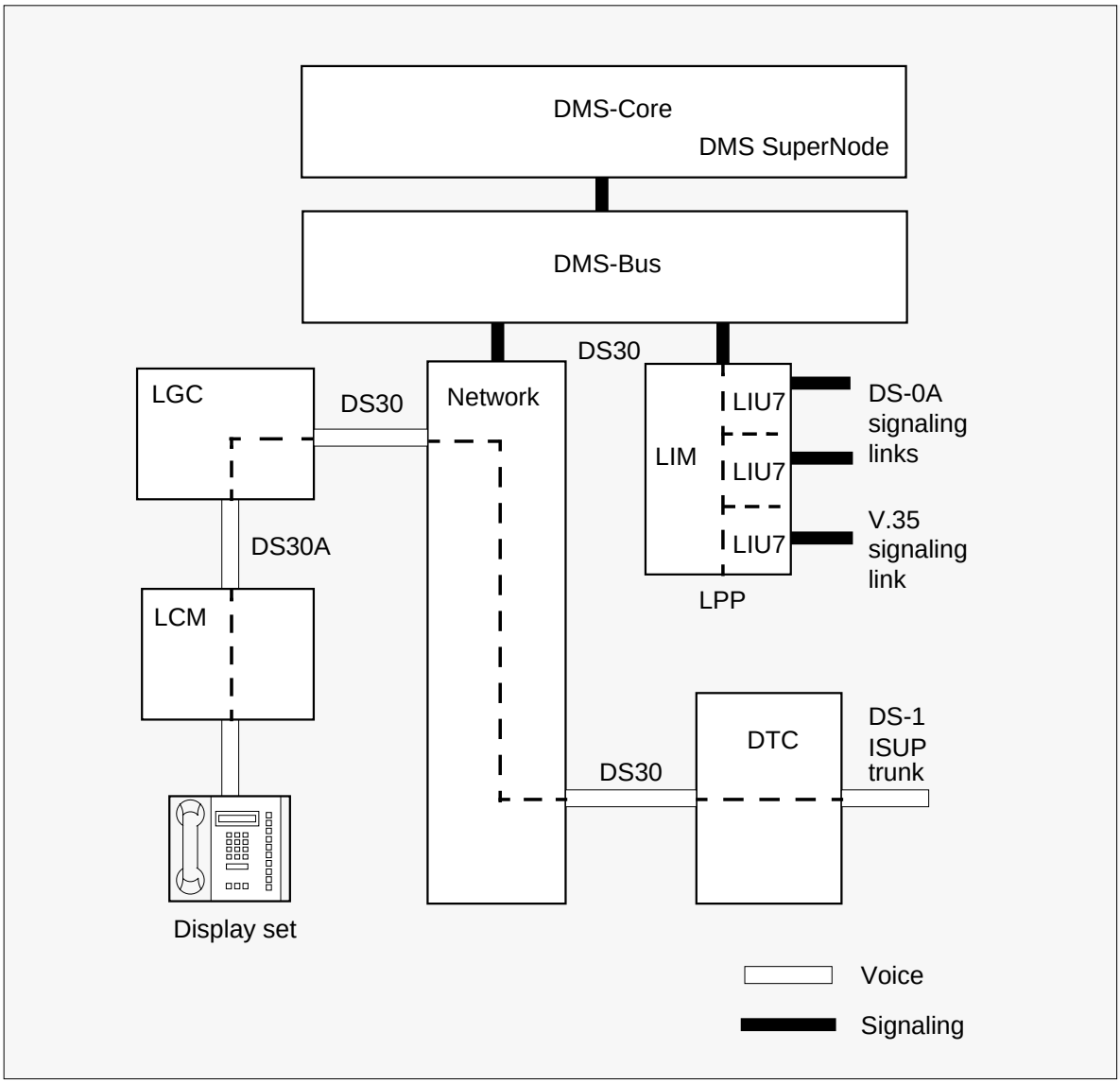
The LIM, which consists of two local message switches (LMS) and two frame transport buses (F-Bus), controls messaging between LIU7s in the LPP and messaging between the LPP and the DMS-Bus. The LIU7s process the messages that enter and leave an LPP through individual signaling data links.

Digital trunk controller The DTC is a PM that provides an interface between ISDN user part (ISUP) trunks and the LPP-based SSP. A DTC can be mounted in either a data terminal equipment (DTE) frame or a line group controller (LGC) frame.

Transmission links For the CCS7 network, the transmission link (TL) is a T1 digital carrier terminating on a DTC. Within the switch, the TL is a single voice carrier on a DS30 link over connections through the network and into the MSB7.

The following figure shows a typical configuration of the LPP-based SSP message flow between the CLASS central office and the CCS7 network.

Figure 1-4 LPP-based SP/SSP message flow



Message switch and buffer-based service switching point

A DMS SSP is a DMS-100 Family switch equipped with CCS7 signaling network capabilities. These capabilities allow the SSP to originate, terminate, or transfer signaling messages from one signaling link to another. When equipped with transaction capability application part (TCAP) and network application processes, the SSP can generate query messages for SCPs.

DMS SuperNode front end The DMS SuperNode front end consists of the DPCC. The DPCC is a DMS SuperNode equipment cabinet that houses the DMS-Core and the DMS-Bus.

Network modules Network modules provide nailed-up interperipheral message links (IPML) between the PMs used by an MSB7-based SSP. Each IPML consists of two network paths between the PMs.

Digital trunk controller The DTC is a PM that provides an interface between either DS-1 digital trunks or DS-0A signaling links and the MSB7-based SSP. A DTC can be mounted in either a DTE frame or an LGC frame.

Message switch and buffer 7 The MSB7 routes signals received at the signaling terminal through the switching network and to the DTC. It also receives control messages and routes them on to the signaling link by way of the signaling terminal.

Signaling terminal The signaling terminal (ST) presents and accepts message-based data to and from the MSB7 and can provide an interface with the signaling links in a bit-oriented manner. The ST7 contains a master processor, which reformats incoming messages to the MSB7 and formats outgoing messages for the data link processor, and a data link processor, which checks the message format by adding necessary digits or removing unwanted digits.

Signaling transfer point
The STP transfers incoming and outgoing signaling messages in the appropriate direction on the CCS7 network.

Dual-plane combined core cabinet The DPCC is a DMS SuperNode equipment cabinet that houses the following:

- DMS-Core
- DMS-Bus

The DMS-Core is the call management and system control component of a DMS SuperNode. It consists of a computing module and a system load module.

The DMS-Bus is the messaging control component of a DMS SuperNode. It consists of a pair of message switches.

Link peripheral processor The LPP is an equipment frame that contains the following two types of PMs:

- LIM
- series of LIU7s

The LIM, which consists of two LMSs and two F-Buses, controls messaging between LIU7s in the LPP and messaging between the LPP and the DMS-Bus.

The CCS7 link interface unit is a PM that processes messages entering and leaving an LPP through an individual signaling data link. Each LIU7 consists of a set of cards and paddle boards that are provisioned in one of the link interface shelves of an LPP.

Input/output equipment frame The input/output equipment (IOE) frame supports all the peripheral magnetic tape units, disk drive units, and administration and maintenance systems that provide an interface for the STP.

Office alarm unit The office alarm unit is a system that reports trouble conditions to office personnel who are located either on-site or at a remote site. The severity of each problem is indicated according to its level of urgency, that is, critical, major, or minor alarms.

Service control point

An SCP supports service logic programs and application databases. It also accepts queries for information, retrieves the requested information from one of its application databases, and sends response messages to the originator of the query.

CCS7 protocol architecture

The following paragraphs discuss CCS7 protocol architecture.

Message transfer part

The message transfer part (MTP) routes signaling messages between any pair of network nodes that rely on the transport capabilities of the MTP. The MTP has the following three levels:

- signaling data link
- signaling link function
- signaling network function

Signaling data link level This level defines the physical, electrical, and procedural characteristics for a 56- or 64-Kbit/s signaling data link.

Signaling link function level This level ensures a secure signaling link between pairs of signaling points. This level provides signal unit alignment, error detection and correction, signaling link alignment, signaling link error monitoring, and flow control.

Signaling network function level This level performs logical address routing. It also provides reliable signal transfer even when signaling links or signaling points fail.

Signaling connection control part

The signaling connection control part (SCCP) provides application addressing and management. It also keeps track of the status of applications and lets the subscriber know when an application is unavailable.

Integrated Services Digital Network user part

The ISUP provides signaling for setting up, monitoring, and taking down CCS7 calls on ISUP trunks.

Transaction capability application part

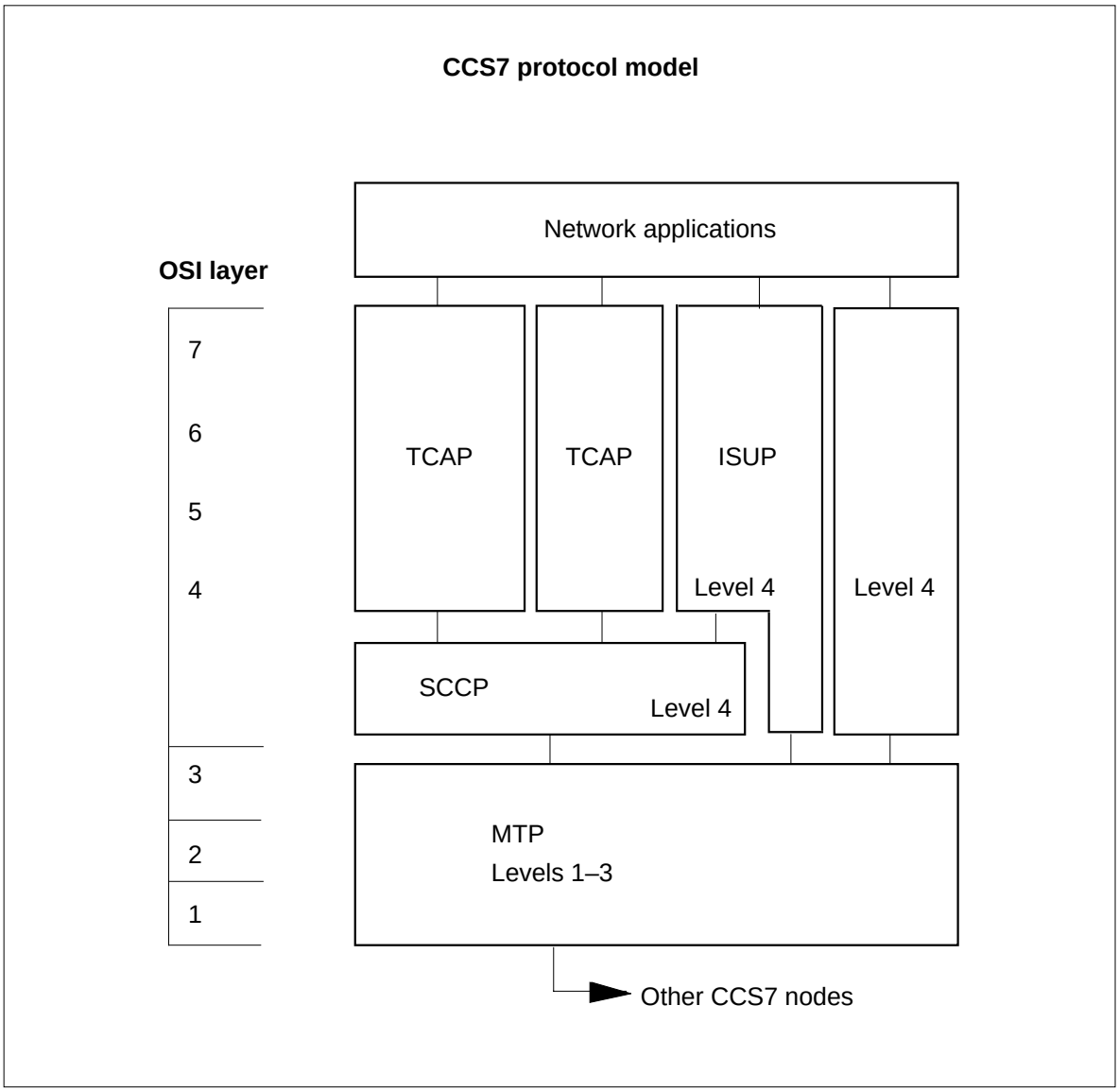
The TCAP provides a set of generic procedures for transaction-based applications. The TCAP controls noncircuit-related information transfer between two or more nodes in a signaling network.

Network application process

Network application processes are CCS7-based services that involve interprocess transactions, call control, or database applications.

The following figure shows the CCS7 protocol model and illustrates how the CCS7 layers fit together.

Figure 1-5 CCS7 architecture



Preparing to datafill Subscriber Services

The following section discusses the preparations necessary for Subscriber Services datafill.

Planning the digit translation for a Subscriber Services office

The datafill required to implement the translation of dialed digits from Subscriber Services lines LCC of RES requires additions to the MDC

translations tables and amendments to one POTS translation table: Table LINEATTR.

Note: Since Subscriber Services lines have an LCC of RES, these lines are also referred to as RES lines.

To make the coordination of the two sets of datafill easier, it is recommended that a planning chart be completed prior to updating table LINEATTR.

The planning chart

The planning chart is intended to:

- help create a translation process for each entry in table LINEATTR
- coordinate the names to be used to access the information datafilled in the POTS and MDC tables accessed by Subscriber Services call processing
- ensure a correct match between common information included in more than one table

It is a simple table with seven columns, one column for each of the following items of information:

- line attribute index (LAI)
- line treatment group (LTG)
- customer group name* (CUSTNAME)
- network class of service* (NCOS)
- NCOS name* (NCOSNAME)
- main translator* (1STTRAN)
- secondary translator* (2NDTRAN).

Note: The values for all items marked with an asterisk (*) are specially created for the implementation of Subscriber Services RES. It is recommended that the examples in this section be followed when datafilling the DMS-100.

Subscriber Services RES features are provided by using MDC processing to translate feature codes and POTS processing to translate dialed numbers.

The Subscriber Services software includes the ability to switch between a POTS line and an MDC line with an LCC of RES.

POTS subscribers using 1FR and 1MR lines are combined into groups using the POTS line attributes in table LINEATTR. A 1FR subscriber is not

allocated the same LAI as a 1MR subscriber. Subscribers with the same LCC are not allocated the same LAI if one of the following is true:

- they are in separate geographical locations that require different translations
- they require a special type of service, such as hotel lines

Subscriber Services implementation retains these differences by setting up a separate translation process for each entry in table LINEATTR that has an LCC of 1FR, 1MR, ETW (enhanced two-way WATS), EOW (enhanced outward WATS), INW (inward WATS), OWT (outward WATS), or 2WW (two-way WATS).

Filling out a planning chart

Complete the following steps to fill out a planning chart:

- Complete the LAI column. Scan table LINEATTR and write in the LAI for each tuple that has an LCC of 1FR, 1MR, ETW, EOW, INW, OWT, or 2WW.
- Complete the LTG and CUSTNAME columns. It is recommended that all RES lines be entered in the same customer group. Enter 0 and RESGRP, respectively, in the LTG and CUSTNAME columns beside each of the LAI entries.

  Note: Different LTGs and customer groups are only used where there is a requirement to divide subscribers with the same LAI into more than one customer group.

- Complete the NCOS and NCOSNAME columns. Starting with zero on the first line, sequentially number the NCOS column and enter an NCOS name. The NCOS name must be the string RNCOS, followed by the NCOS number.
- Complete the 1STTRAN and 2NDTRAN columns. Create main and secondary translator names for each line in the chart. The main translator name must be the string RXCMN, followed by the LAI.The secondary translator name must be the string RXCML, followed by the LAI.

Example of completed planning chart

The following figure provides an example of a completed planning chart.

Figure 1-6 Example of planning chart for RES

	LAI	LTG	CUSTNAME	NCOS	NCOSNAME	1STTRAN	2NDTRAN
SAMPLE ENTRY 1	200	0	RESGRP	0	RNCOS0	RXCMN200	RXCML200
SAMPLE ENTRY 2	201	0	RESGRP	1	RNCOS1	RXCMN201	RXCML201
SAMPLE ENTRY 3	202	0	RESGRP	2	RNCOS2	RXCMN202	RXCML202

Table LINEATTR and the planning chart

The number of rows in the chart equals the number of entries in table LINEATTR that have an LCC of 1FR. In the example, there are three entries in table LINEATTR with an LCC of 1FR, so there are three rows in the chart.

The LAI associated with a RES line is used to access table LINEATTR, where the following information is found: the serving numbering planning area (SNPA), the customer group (CUSTGRP), the customer subgroup (SUBGRP), and the NCOS of a line.

The entries in table LINEATTR with an LCC of 1FR, 1MR, ETW, EOW, INW, OWT, or 2WW are modified to set the RESINFO subfield to Y. When this field is changed, the following fields are prompted for:

- CUSTGRP - enter the CUSTNAME from the planning chart (RESGRP)
- SUBGRP - enter the integer 0
- NCOS - enter the NCOS from the planning chart (0 for sample entry 1)

When a RES-specific (Subscriber Services-specific) option is added to any 1FR line using the service order system (SERVORD), a RES line entry is created in table IBNLINES. This entry includes the LAI copied from the canceled POTS (1FR, 1MR, ETW, EOW, INW, OWT, or 2WW) line entry in table LENLINES.

Later in the translation process, the LAI obtained from table XLANAME is used to access table LINEATTR as part of digit translation.

To ensure that RES lines keep the attributes associated with their LAIs, these lines must be translated through table IBNXLA network (NET) general (GEN) tuples that contain the identical LAI in the LATTR option.

Line treatment group

It is recommended that all RES lines datafilled on a given switch belong to the same customer group. If more than one customer group is required, follow the datafill guidelines summarized next.

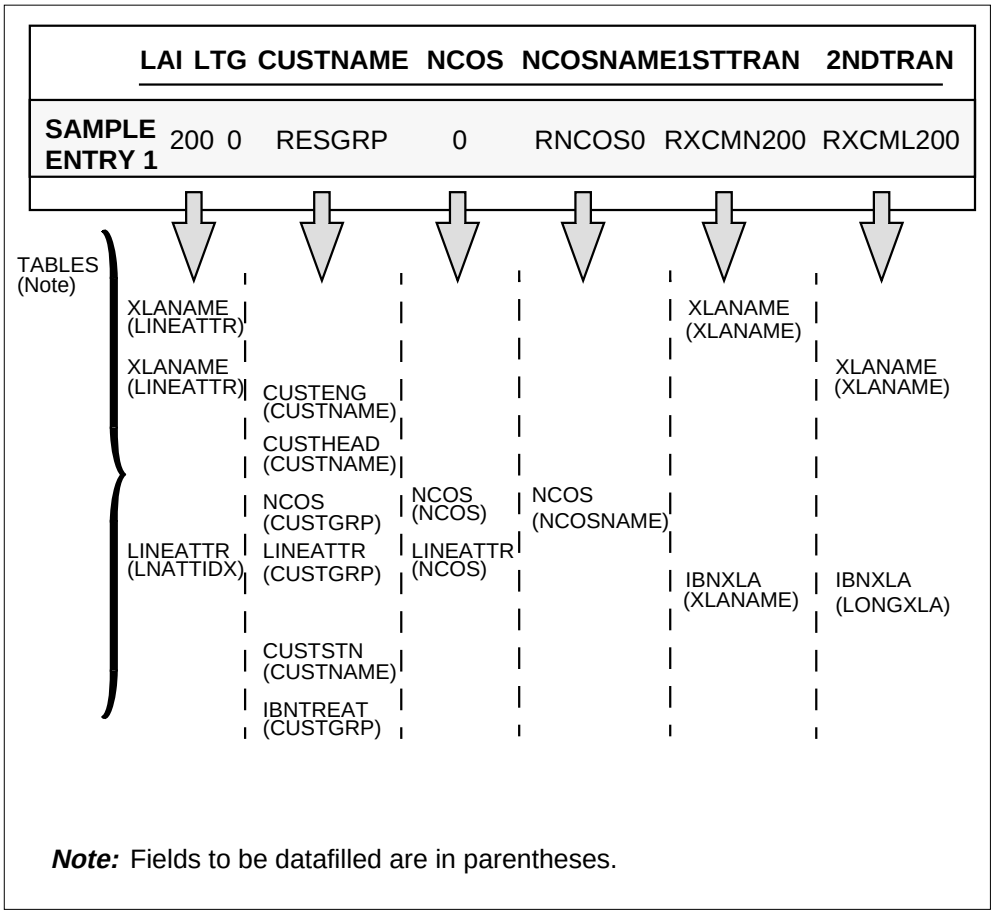
An LTG is used when more than one customer group exists for RES lines on a switch. The LTG is datafilled in table LINEATTR. To activate LTG prompting, the office parameter SO_PROMPT_FOR_LTG in table OFCVAR must be set to Y. Then, tuples in table LINEATTR with RESINF set to Y can be assigned to different customer groups.

Using the information from the planning chart

The entries in the planning chart are used to update the DMS-100 tables and the fields in the tables as shown in the following figure.

The datafill for individual tables refers back to the information recorded in the planning chart.

Figure 1-7 Tables to be updated with planning chart information



CLASS implementation

CLASS features are implemented as advanced Subscriber Services features and basic MDC features.

CLASS combines the results of call processing at the originating switching and call processing at the destination switch. CLASS is offered for the following calls:

- origination and destination are served by the same central office (nodal, or intraoffice)
- origination and destination are served from different central offices located in the same LATA with an office-to-office trunk connection using CCS7 (network, or interoffice)

CLASS features are designed to work within a network environment. When the Subscriber Services RES Base is combined with the CLASS base, the DMS-100 can support the CLASS feature packages described in this document. CLASS features require feature package NTXA82AA, CLASS Line Office Data, which, in turn, requires feature package NTXA64AA, RES Base.

Note: The network base is also referred to as the CLASS base.

In this document, CLASS features are grouped into the following five categories:

- screening list editing features
- calling party identification features
- additional features
- CLASS on MDC features
- enhanced network features.

Network configuration of CLASS

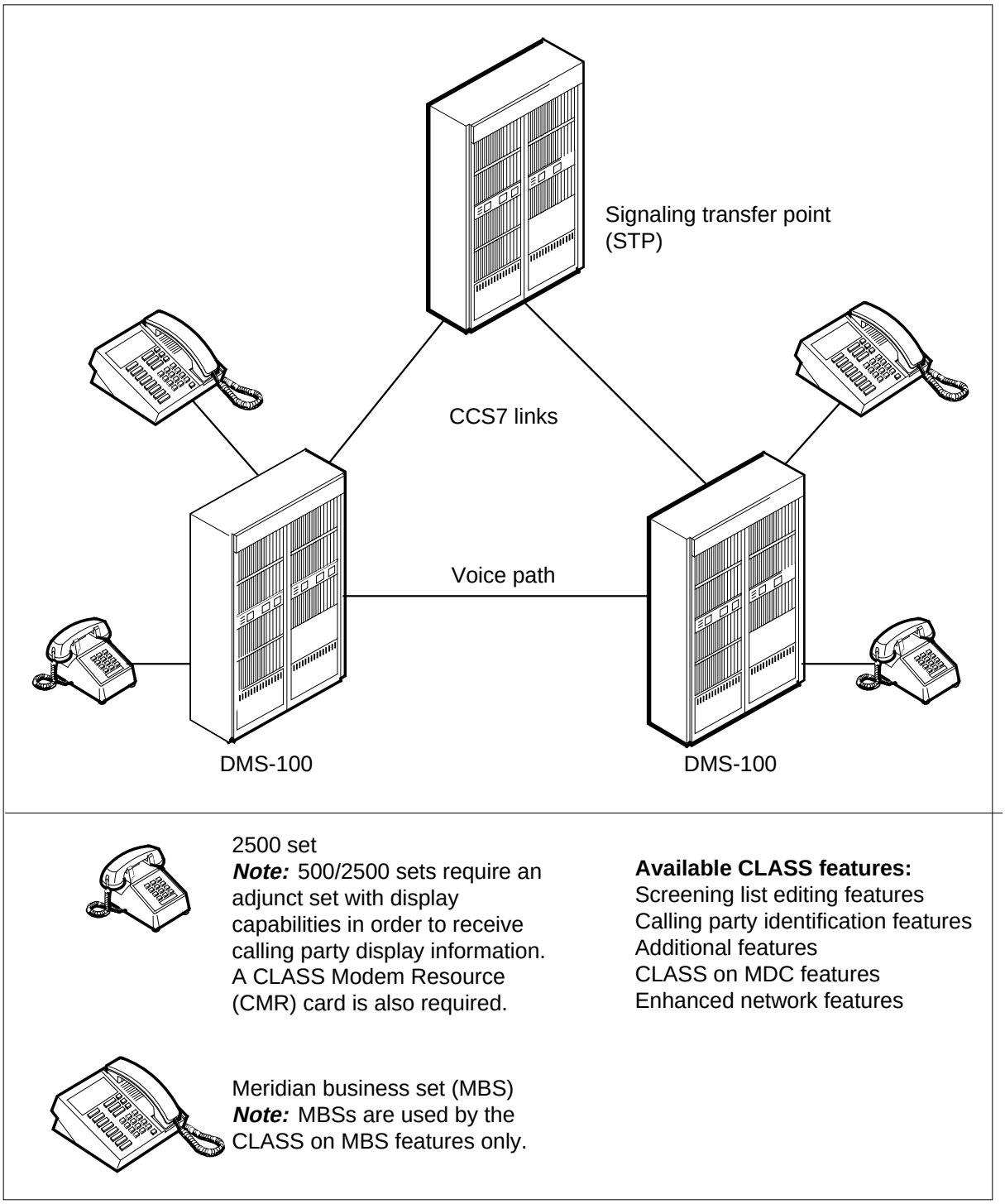
CCS7 connectivity is required for network configuration of NTXA82AA. The following feature packages are required for CCS7 connectivity:

- NTX167AB - CCS7 Trunk Signaling
- NTX550AA - CCS7 Transaction Service Support
- One of the following:
  - — NTX041AB - MTP/SCCP Associated and Non-associated Signaling
  - — NTXR72AA - MTP/SCCP on LPP Based Platform.

The following figure is an illustration of the network configuration of CLASS.

Note: In order to make the CLASS subsystem known to the DMS, entries must be made to four CCS7 tables.

Figure 1-8 Network configuration of CLASS



CLASS subscription usage sensitive pricing

Subscription usage sensitive pricing (SUSP) provides the capability for each subscriber to be charged for CLASS services based on the user's implementation. SUSP is enabled for the whole office in table AMAOPTS.

When SUSP is enabled the following occurs:

- An automatic message accounting (AMA) billing record is generated each time a CLASS feature is successfully activated from a line where the option code for the feature is qualified with the AMA billing code.
- An AMA/NOAMA parameter is prompted for each time a CLASS option is added to a line using service orders.

When SUSP is disabled the following occurs:

- No AMA billing records are generated even if features are activated for lines where the option code is qualified with the AMA billing code.
- No AMA/NOAMA prompts appear in service order inputs.

Subscriber activation of CLASS features

All CLASS features include activation sequences in which the subscriber dials a code to activate the feature.

The Automatic Recall (AR) and Customer Originated Trace (COT) features can be activated using

- one-level activation (where the feature is activated after successful processing of the subscriber-dialed activation code)
- two-level activation (where, after successful processing of the subscriber-dialed activation code, the subscriber is prompted to dial the digit 1 to confirm that activation should proceed)

The operation of each CLASS feature is specified in a tuple in table RESOFC. The AR and COT tuples include an activation level field.

Automatic Call Back (ACB), Calling Number Delivery (CND), and Calling Number Delivery Blocking (CNDB) use one-level activation.

Note: CND features only require user activation when usage-based charging SUSP is applied to the line.

Tones and announcements

The operating company can choose to use tones or announcements as part of system-subscriber interactions.

Two types of announcements can be used by some CLASS features:

- Customized announcements include, for each line, a customized DN and a choice of language. The DN can be customized on an individual call basis. ACB and AR are examples of features that use customized announcements.
- Standard announcements include simple officewide phrases. Selective Call Acceptance (SCA) and Selective Call Rejection (SCRJ) are examples of features that use standard announcements.

The phrases are recorded by the operating company using the DMS-100 digital recorded announcement machine (DRAM). Individual numbers can be generated to provide the DN for the customized recall confirmation announcement. This optional capability requires additional DRAM announcement cards.

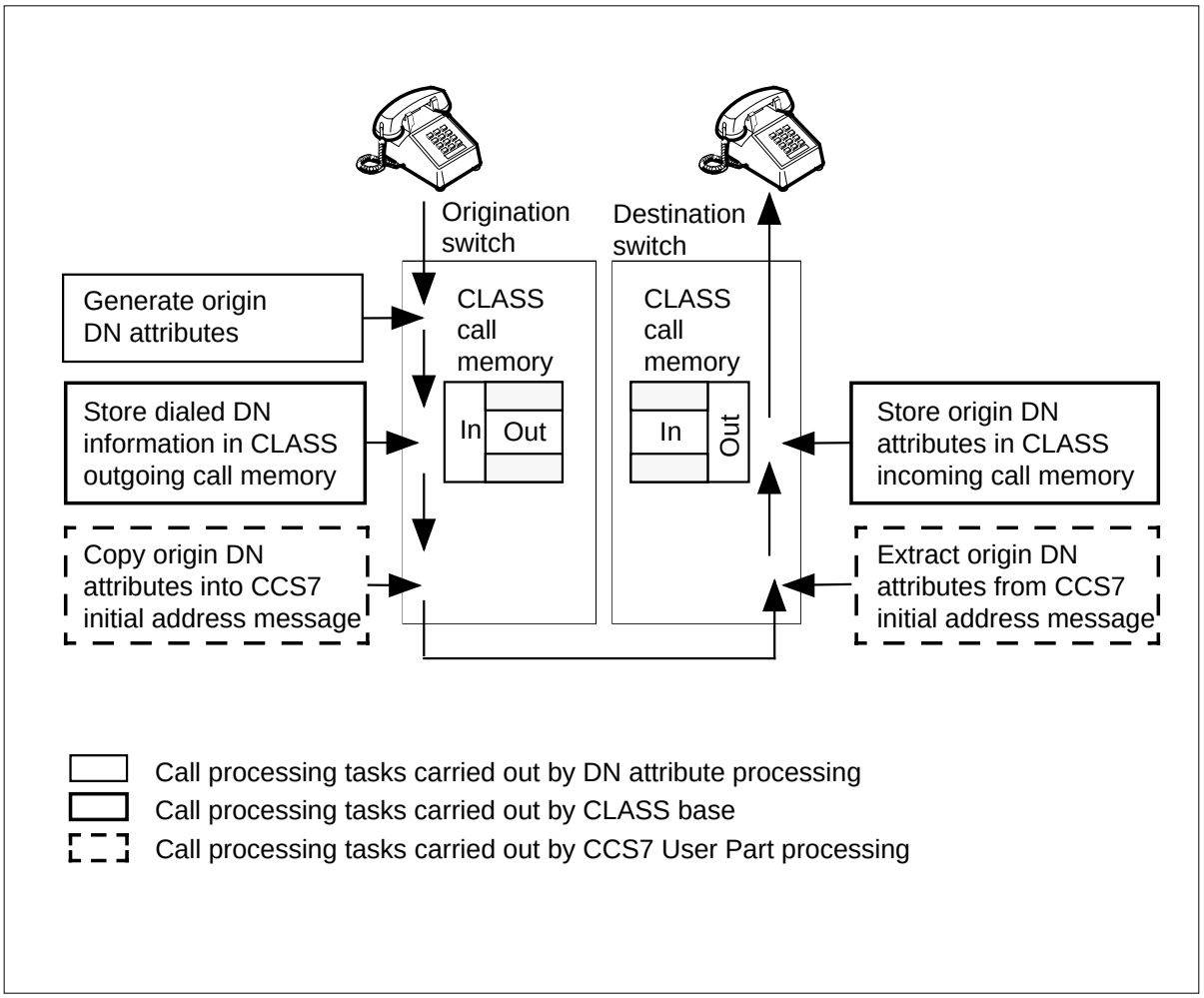
Call processing used by CLASS base

Three call processing steps are required to support the operation of the CLASS.

- For incoming calls, one step is required:
  - — update CLASS incoming call memory (to record the calling DN and DN attributes for each call to a line equipped with AR or COT)
- For outgoing calls, two steps are required:
  - — generate the DN attributes to be sent to the destination office with the calling party's DN
  - — update CLASS outgoing call memory (to record the dialed digits and the outgoing DN attributes for each call from a line equipped with ACB)

Note: Only the updates of CLASS incoming and outgoing call memory are carried out by CLASS base processing. However, to give a complete picture, the generation of the DNs and DN attributes used by the CLASS base and CLASS features is also described on the following pages.

Figure 1-9 Call processing used by CLASS base



Generating calling DN and DN attributes

The DN and the associated DN attributes to be sent to the call destination are generated using the following sequence of actions:

- extract stored DN options
- select calling DN
- select associated DN attributes (uniqueness and suppression)

Extracting stored DN attributes

The stored DN attributes are extracted from the sources shown in the following table.

Table 1-1 Storage of DN attributes

Source level	Stored in table	DN attribute
Total switch (public network)	NETNAMES	Suppression
		Name delivery method
DN group	DNGRPS	Substitute DN
		Name
		Uniqueness
		Suppression
Individual line	DNATTRS	Uniqueness
		Suppression
		Name

Selecting the calling DN

The DN normally sent to the call destination is the internal ten-digit DN associated with each calling line. However, total or partial DN substitution may occur.

Total substitution occurs if a complete address is found in the table DNGRPS tuple accessed when the internal DN of the origin line falls within the range defined in the key fields.

Partial substitution occurs if a partial address is found in the table DNGRPS tuple accessed when the internal DN of the origin line falls within the range defined in the key fields. A partial address contains a mixture of numbers and uppercase Ns (used as wild cards). Each digit in the internal DN corresponding to the position of an N is not overwritten.

After substitution has occurred, the substituted DN is processed as the calling DN. The DN attributes are sent as attributes of the substituted DN.

Selecting the uniqueness attribute value

A DN is allocated a standard value of UNIQUE for its uniqueness attribute indicating that there is a one-to-one relationship between the DN supplied and the calling line.

The value is reset to NONUNIQUE if the uniqueness indicator is set to NONUNIQUE in either or both of the following tuples:

- the table DNGRPS tuple, accessed when the internal DN of the origin line falls within the range defined in the key field
- the table DNATTRS tuple, accessed when the internal DN of the origin line matches the key field.

Selecting suppression attribute value

The calling number suppression attribute is allocated a standard value of UNSUPPRESSED, indicating that the DN supplied is available for display (and announcement, as part of the recall confirmation announcement) at the call destination. The value is reset to SUPPRESSED if any one of the following is found:

- the internal SUPPRESS indicator is set in the PUBLIC network tuple in table NETNAMES, and both the line originating the call and the destination line are served from the same central office
- the network level external SUPPRESS indicator is set and the destination line is serviced from another central office
- the SUPPRESS indicator is set in a table DNGRPS tuple, and accessed when the internal DN of the origin line falls within the range defined in the key fields of the tuple
- the SUPPRESS indicator is set in a table DNATTRS tuple, and accessed when the internal DN of the origin line matches the key field of the tuple

> ***Note:*** The value of the calling number suppression attribute can sometimes be reversed using the CNDB feature. However, the CNDB feature cannot override the SUPPRESS indicator in table NETNAMES.

Examples of generated origin DN attributes

The examples in the next two tables show different ways to configure the attributes of a DN. In the following table, the final attribute set is as follows:

- calling number: 613-727-4736 (partial substitution)
- DN suppressed: YES

- Unique DN: YES
- Name associated with DN: YES.

Table 1-2 DN attributes for public network call from 613-367-4736

	Substitute DN	Suppression attribute	Uniqueness attribute	Name attribute
Individual attributes	N/A	SUPPRESS	blank	NAME
Group attributes	613727NNNN	blank	blank	blank
Network attributes	N/A	blank	N/A	QUERY
Standard attributes	6133674736 (real DN)	UNSUPPRESSED	UNIQUE	blank
Final attributes	6133674736	SUPPRESS	UNIQUE	NAME

In the following table, the final attribute set is as follows:

- calling number: 514-896-6572 (total substitution)
- DN suppressed: YES
- Unique DN: NO
- Name associated with DN: NO

Table 1-3 DN attributes for public network call from 613-727-4444

	Substitute DN	Suppression attribute	Uniqueness attribute	Name attribute
Individual attributes	N/A	blank	blank	blank
Group attributes	5148966572	blank	NONUNIQUE	N/A
Network attributes	N/A	SUPPRESS	N/A	blank
Standard attributes	6137274444 (real DN)	UNSUPPRESSED	UNIQUE	blank
Final attributes	5148966572	SUPPRESS	NONUNIQUE	No NAME

Updating CLASS incoming call memory

Each line assigned the CLASS AR or COT features is allocated CLASS incoming call memory to hold details of the most recent call to alert the subscriber set.

Incoming call memory is updated when the subscriber is notified, regardless of whether the call is answered.

Note: Calls that are call waited update CLASS incoming memory as soon as the alert tone is sent to the subscriber. The call waited indicator is set to Y.

Information stored in incoming call memory

The following information is retained in incoming call memory:

- DN of the originating party
  - — For interoffice calls where the originating DN is not available, the incoming trunk identification is recorded in place of the originating DN.
  - — For intraoffice calls where the originating DN is not available, the LEN of the originating line is recorded in place of the originating DN.
  - — For calls not originating from a line or trunk (such as calls from the operator), “DN unavailable" is stored in place of the originating DN.
- DN suppression status of the originating DN
- date and time that the subscriber was alerted
- originating address type indicator - as the numbers received over CCS7 trunks are ten-digit, only two line types are required for the initial implementation of CLASS:
  - — unique national significant number
  - — nonunique national significant number
- ISUP interworking encountered indicator - Y means that a CCS7 end-to-end connection was not established
- interoffice call indicator - Y means that the call was received from another CO
- call waiting indicator - Y means that the call details held in incoming call memory are from a call that was “call waited"

Updating CLASS outgoing call memory

Each line assigned the CLASS ACB feature is allocated CLASS outgoing call memory to hold details of the most recent call made from the subscriber line.

Outgoing call memory is updated when the call is successfully routed, regardless of whether the call is answered.

Outgoing call memory is not updated for the following types of calls:

- operator-assisted calls (0- and 0+ dialing)
- special three-digit codes
- directory assistance (555-1212 and NPA-555-1212).

Information stored in outgoing call memory

The following information is retained in outgoing call memory:

- called number (up to 11 digits)

  Note: For equal access calls or calls where an invalid DN is dialed, “DN unavailable" is stored in place of the called number.

- DN suppression status - only used if AR is invoked. Y means that the DN cannot be included in the recall confirmation announcement.
- calling number delivery blocking activated indicator - Y means that CNDB was activated for the last outgoing call.
- interoffice call indicator - Y means that the last outgoing call was routed to another CO
- call forwarded indicator - Y means that the last outgoing call was an intraoffice call that was call forwarded to a destination other than the called number

Call memory display

The contents of call memory can be displayed using the QCM (query call memory) command.

Calling name delivery

In intraoffice calls, the calling party name information associated with a DN is retrieved from switch memory and delivered to the called party as part of basic call setup. In interoffice calls, the calling party name information is transmitted between switches as part of basic call setup and is then delivered to the called party. The transport mechanism for delivery of name information between networked nodes uses CCS7 signaling.

Two methods are available to convey the name information across the public network:

- setup
- query

The setup method delivers the name information of the calling party in the call establishment messages that are transmitted between the originating and

terminating switches. The setup method is used within networks that are highly populated with display sets.

The query method delivers the availability of name information of the calling party in the call establishment message that is sent to the terminating office. If the terminating switch determines that name display is required, a message is sent from the terminating switch to the originating switch to request the calling party's name. The query method is used within networks that are not highly populated with display sets or where demand for network name delivery is low.

Functional groups for Subscriber Services

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

RES Access Management, RES00001

To operate, RES Access Management requires RES Service Enablers, RES00006.

RES Advanced Custom Calling, RES00002

To operate, RES Advanced Custom Calling requires RES Service Enablers, RES00006.

RES Display Functionality and Privacy, RES00003

To operate, RES Display Functionality and Privacy requires RES Service Enablers, RES00006.

RES Interface Functionality, RES00004

To operate, RES Interface Functionality requires RES Service Enablers, RES00006.

RES Non-Display Services, RES00005

To operate, RES Non-Display Services requires RES Service Enablers, RES00006.

RES Service Enablers, RES00006

To operate, RES Service Enablers requires MDC Minimum, MDC00001.

RES Signaling, Routing, and OAM, RES00007

RES Signaling, Routing, and OAM has no prerequisites.

2 Datafilling RES Access Management

The following chapter describes the RES Access Management, RES00001, functionality.

Suppressed Ringing Access (SRA)

Ordering codes

Functional group ordering code: RES00001

Functionality ordering code: RES00043

Release applicability

NA004 and up

Prerequisites

To operate, Suppressed Ringing Access (SRA) has the following prerequisites:

- Functional Group RES00001 RES Access Management Function, RES00010 Telemetry Application (UTS Software)
- Functional Group BAS00003 BAS generic (LAMA software)
- Functional Group SS700001 Basic ISUP software (TEL00008 is required if LPP based CCS7 is used)

Description

The Suppressed Ringing Access (SRA) switch feature introduces a new line option SRA. The presence of the SRA option on a specific line allows any authorized server to establish a connection to that customer's line without applying audible ringing.

Operation

The following section will provide a detailed look at a SRA call from initiation to disconnect.

SRA activation

The SRA switch feature requires standard PRI to ISUP interworking at the originating switch, along with full CCS7 connectivity in the network.

A SRA call is first established when a service provider initiates a call over a PRI trunk connected to the originating DMS switch. The service provider assigns a Routing DN to the Called Party Number (CdPN) parameter of the PRI setup message. Calls to the terminating DMS switch are routed through the network using Routing DNs supplied to the service provider by the telephone company. A call to a Routing DN triggers the SRA feature through datafill in table DNROUTE.

The service provider maintains a table matching end user's DNs to Routing DNs served by the terminating DMS switch. The service provider assigns the

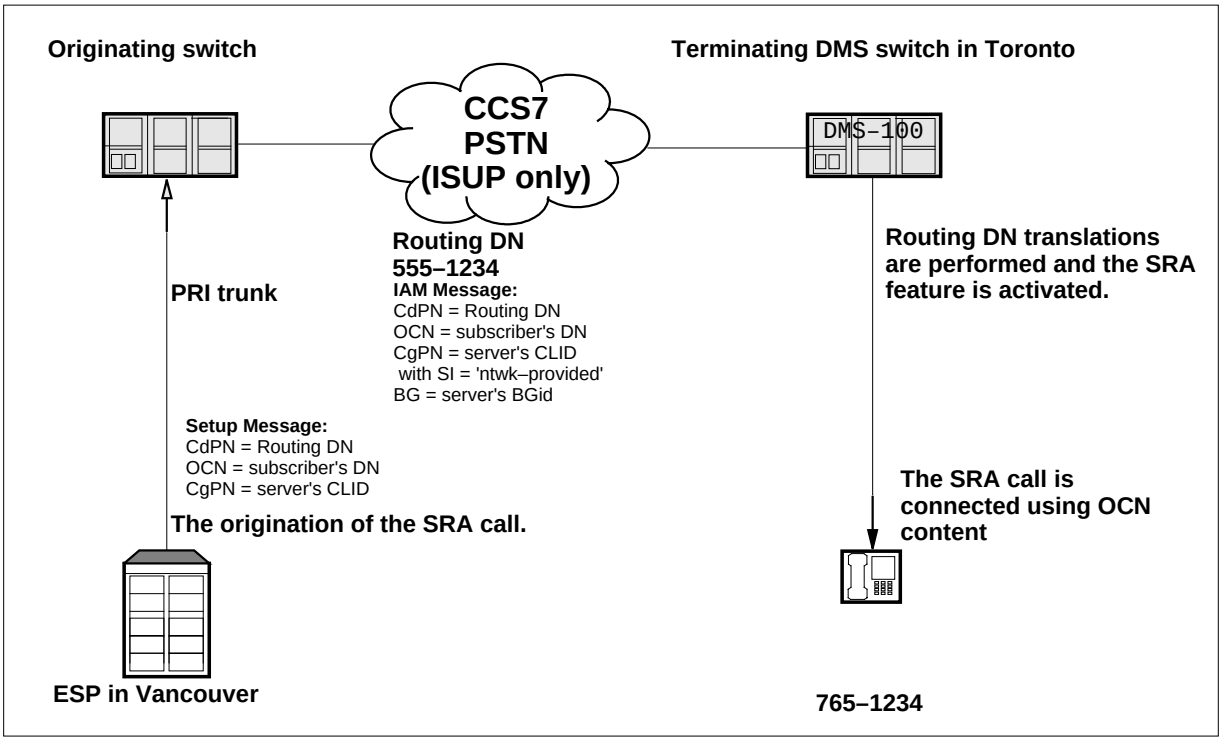
Suppressed Ringing Access (SRA) (continued)

subscriber's DN to the 10-digit Original Called Number (OCN) parameter of the PRI setup message.

If the originating switch and the terminating DMS switch are not part of the same Equal Access Server (EAS), the server initiates a toll call. In this case the originating switch must provide the appropriate Charge Number in the Initial Address Message (IAM), as per normal call setup procedures.

The SRA feature is activated when the Routing translations are performed at the terminating DMS switch. At the terminating office, the SRA feature either sends the call to treatment or connects the SRA call based on the information found in the IAM message and the Routing DN tuple in table DNROUTE. Before the SRA feature can be established at the subscriber's premises, screening functions are performed by the feature at the terminating DMS switch.

Basic SRA call setup



SRA Call Screening

Before suppressed ringing access is established, a number of screening functions are performed by the SRA feature at the terminating DMS switch:

Suppressed Ringing Access (SRA) (continued)

Local Call Area (LCA) Screening

Standard Local Call Area (LCA) screening is performed from the SRA Routing DN to the target end-user's DN when field LCASCREEN of feature selector SRA in table DNROUTE is set to Y.

Security Mechanisms

Security mechanisms are based on screening of either the calling Directory Number (DN) the Business Group identifier (BG) or the Customer Group name (CG) associated with the server.

The server must pass SRA security to gain access to the suppressed ringing functionality. Security can be disabled by an option called MASTER SECURITY. This option is found in field SECUMAST in the Routing DN's tuple in table DNROUTE.

The security types are labelled as security types DN, BG, and CG found in the DNROUTE tuple or in table SRASCRN. Only one security mechanism or type is supported per Routing DN. The following list describes the security mechanisms:

- DN: SRA retrieves the server's CLID and SI from the incoming IAM. If SI is set to network provided, SRA determines if the CLID is part of a screening list.
- BG: SRA retrieves the server's Business Group Identifier (BGid) from the IAM and determines if it is part of a screening list.
- CG: SRA retrieves the customer group name and determines if it is part of a screening list. To use this security mechanism, MBG datafill must be present at the terminating DMS switch. In addition the same BGid-to-Customer-Group mapping must be datafilled at the originating and terminating DMS switches in table BGDATA.

The SRA feature can use MBG functionality so that the server's Business Group Identifier (BG) and/or Customer Group is available at the terminating DMS switch. The term Multilocation Business Group (MBG) is used to describe a customer group extended across two or more switches over the public CCS7 facilities. The MBG software is not required when the security screening type is DN. The MBG software is required in the following situations:

- Security screening type is Business Group (BG). In this case only the originating switch is required to have MBG software installed in order to have the BGID parameter in the ISUP IAM message.
- Security screening type is Customer Group name (CG): The MBG software is required at both sides in order to have the BGid parameter in

the ISUP IAM message from the originating switch and to be able to map the BGid back onto a customer group at the terminating office.

Please refer to *MDC Translations Guide for more information about MBGs.*

End-user DN screening

SRA can provide cut-through only to numbers that are datafilled on the switch and that have the SRA feature assigned to the line. Normal translations are used to perform this screening.

Line option screening

The SRA line option is used to control suppressed ringing access to subscriber lines. It also ensures that the line has a compatible LCC and that other features assigned to the line are compatible with SRA.

- Feature Interaction screening: Feature interaction is determined by datafill in table OPTOPT and within SRA software. Not all features are compatible with the SRA feature. A list of compatible features is provided in the Interactions section on of this chapter.
- Line Class Code (LCC) screening: Suppressed ringing access is provided on lines with specific LCCs. LCC screening is determined by the SERVORD table control when the SRA line option is being assigned. The LCCs compatible with SRA are datafilled in table LCCOPT.

Line State screening

Suppressed ringing access can only be provided by the SRA feature on idle lines.

Message Protocols

Although standard ISUP and PRI signalling are used throughout the network for SRA, the server must format its Setup message in a specific manner.

Access to Suppressed Ringing Service at the originating switch is through a PRI trunk. When initiating a suppressed ringing call the server assigns the parameters in the PRI Setup message as shown in the table below.

PRI Setup Message Parameters

Message Parameters	Content
Called Party Number (CdPN)	Routing DN
Original Called Number (OCN)	End-User's DN
Calling Party Number (PgPN)	Blank

Suppressed Ringing Access (SRA) (continued)

Note 1: A 10-digit OCN (NPA+XXX-XXXX) must be used.

Note 2: The CgPN must be left blank for security purposes. It is filled in the IAM by the originating switch.

The originating switch interworks the PRI Setup message to the ISUP Initial Address Message (IAM) so that the Setup message's CdPN and OCN parameters are mapped into the corresponding IAM parameters. The originating switch provides the server's Calling Line ID (CLID) in the CgPN parameter and marks the Screening Indicator (SI) as “Network-Provided". When the received CgPN is blank, the originating switch retrieves a DN that was datafilled for the PRI trunk and provides this as the CgPN parameter in the IAM. Since the CgPN is provided by the originating switch, the screening indicator is set to network provided.

As an alternate mechanism, the switch may add the Business Group parameter to the IAM with the server's Business Group Identifier (BGid), assuming that the server belongs to a Multilocation Business Group (MBG).

When an SRA call is established the server and CPE interact by their own communications protocol. Server-CPE interactions and transmissions are transparent to the network's switches and to the SRA feature.

Standard ISUP/PRI message protocols are used when an SRA call is disconnected.

SRA Call Connection

The SRA switch feature provides connection to end-user's lines without applying power ringing. Two basic connections are possible, ISUP trunk-to-line connection for inter-switch (between switches) SRA calls and PRI trunk-to-line connections for intra-switch (same-switch) SRA calls.

Once the suppressed ringing call has passed all screening tests, the call is routed using the DN found in the OCN field of the IAM message. Refer to the SRA basic call flow for origination and connection figure for an overview of SRA basic call flow.

Note: During intraswitch calls in loads prior to NA006, if the Routing DN starts with a `1', a `1' is added to the OCN.

At cut-through an Answer Message (ANM) is returned through the CCS7 network, then translated to a Connect Message to the server. No audible ringback is provided. The server then sends a TR-30 alerting modem burst to wake-up the end user's CPE; when awakened it sends back an off-hook signal to the switch. The SRA feature informs the server of the off-hook signal by

Suppressed Ringing Access (SRA) (continued)

sending a Information message (INF) encapsulated in a TR-317 compliant Pass Along Message (PAM) (to insure that the INF message is propagated through intermediate switches). The INF message is mapped to a Notify message at the PRI interface.

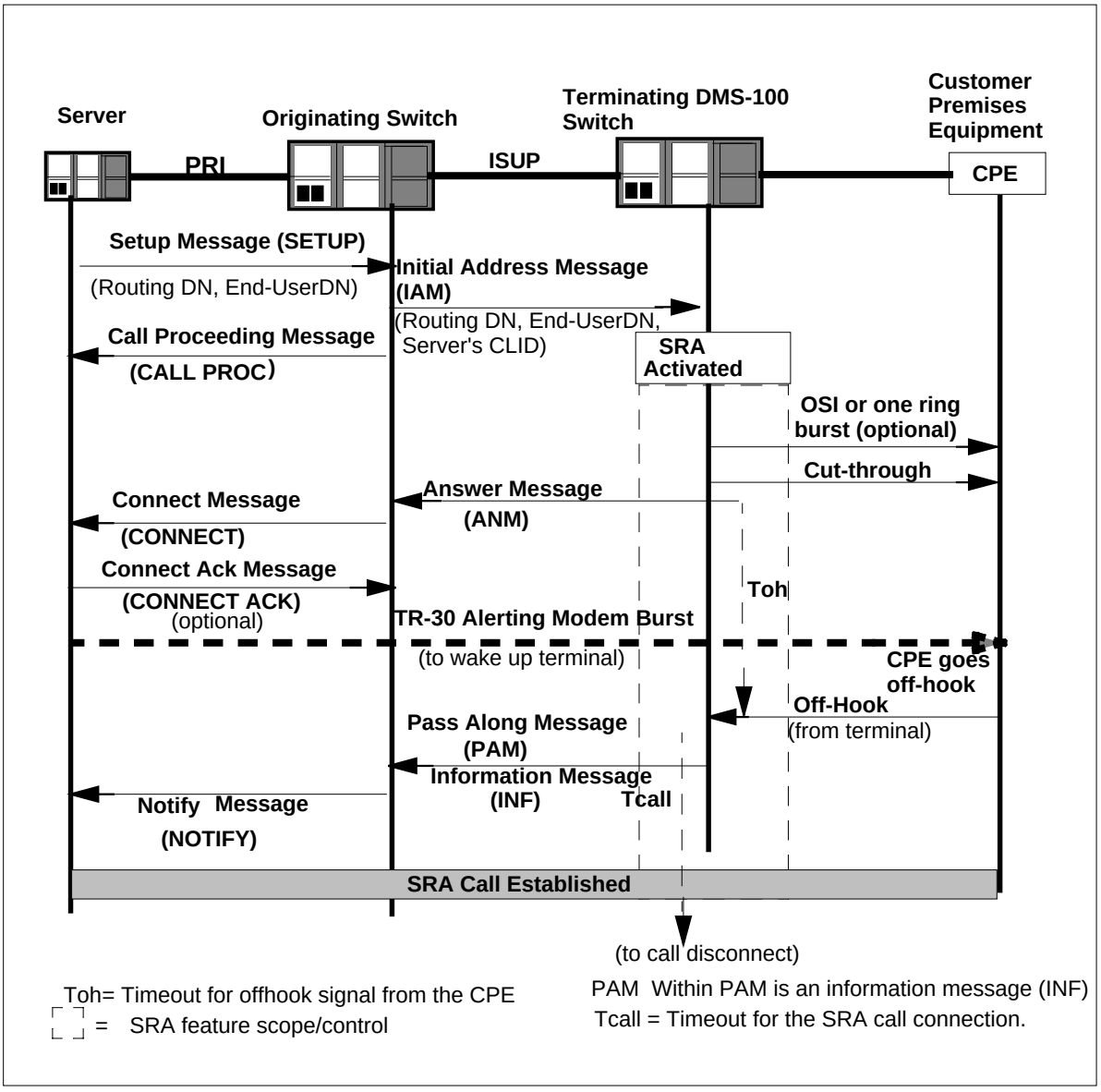
Note: All switches in the ISUP network must be able to handle TR-317 compliant messages.

The SRA feature uses timers, Toh and Tcall. The Toh timer is the timer value from the ANM message to the off-hook detection on the end-user's line. The Tcall timer is the timer value from the sending of the PAM (INF) message until call disconnection.

The value for Toh is assignable on an office-wide basis through the field OHTIME of the office parameter SRA_TIMERS in table OFCENG. The value of Tcall is assignable on a Routing DN basis through the TCALL field of the Routing DN's tuple in table DNROUTE.

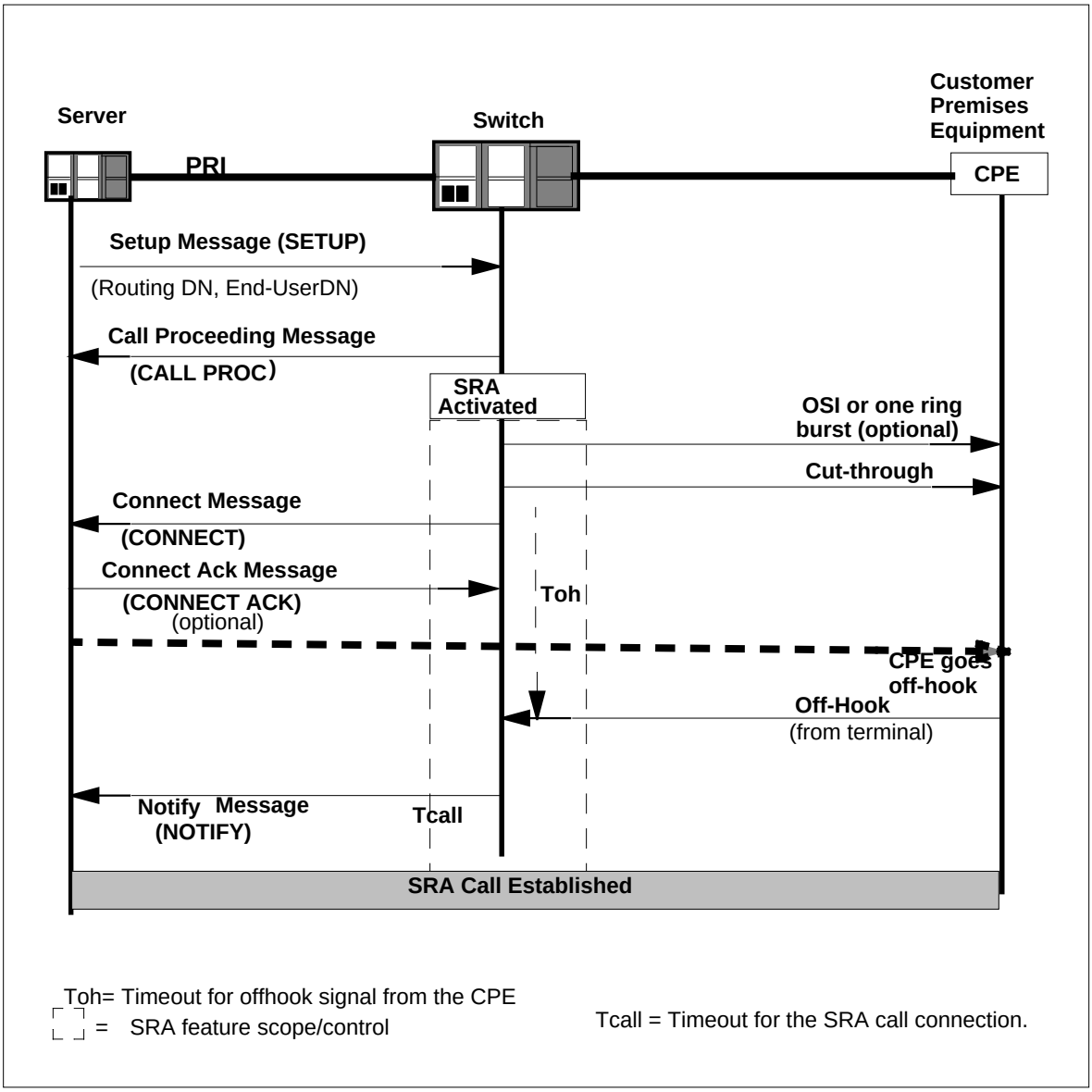
Suppressed Ringing Access (SRA) (continued)

SRA basic call flow - for origination and connection



Suppressed Ringing Access (SRA) (continued)

PRI to line call



Universal Digital Loop Carriers

Lines on Universal Digital Loop Carriers (UDLCs) require special considerations to establish cut-through connections. The launching of the ANM is delayed by the duration of OSIsetup and the 300-millisecond silence period.

If the UDLC is not TR-NWT-000057 (issue 2) compliant, then a ring burst must be applied to induce the UDLC into assigning a talk path to the end-user's

Suppressed Ringing Access (SRA) (continued)

line. The call flow for SRA calls established with a one-ring-cycle is the same as with suppressed ringing SRA calls.

For SRA calls established with a one-ring-cycle, a distinctive ringing cycle is applied upon cut-through.

The ring pattern (RPATTERN) and duration (DURATION) of the ring cycle can be datafilled in the Routing DN tuple of table DNROUTE. The default distinctive ring pattern chosen for this type of SRA access is Multiparty code 5 which is pattern 6. Compared to other ringing patterns this ring pattern allows for the most ringing in a six second cycle. This pattern was chosen to provide the highest probability that the server's modem burst will be successful on a UDLC. The UDLCs must keep the talk path open for 4.5 seconds after the last ring pulse within the initial six second ringing cycle.

One-cycle-ringing access is only an interim solution to the UDLC issue. Ideally, an abbreviated ringing duration of approximately 500 milliseconds would be provided however this is dependent on development of abbreviated ringing capability on DMS peripherals. When this capability becomes available on the DMS peripherals, abbreviated ringing access could replace one-cycle-ringing access. Therefore, three access types (NORING, OSI and RING) are supported for SRA.

These access types are specified on a Routing DN basis through the ACCESS field in the Routing DN's tuple in table DNROUTE. The following list briefly describes these access types.

- NORING - suppressed ringing. There is no audible ring when cut through is achieved.
- OSI - Suppressed Ringing with Open Switch Interval (OSI) applied when establishing cut through. Lines on UDLC's that are TR-NWT-000057 (issue 2) compliant, require OSI to establish cut-through. This duration can be datafilled through the SRA_TIMERS parameter in table OFCENG.
- RING - one cycle ringing. If the UDLC is not TR-NWT-000057 (issue 2) compliant, a ring burst must be applied to the UDLC, so that a talk path can be established.

Currently the DMS switch can provide a 500 millisecond ringsplash (for example, call forwarding reminder). When this ringsplash occurs within the 6-second ring cycle cannot be guaranteed by the SRA software. For example, if the ringsplash occurs within the first second of the ring cycle, then the UDLCs 4.5 second open talk path period would end before the SRA could provide cut through and launch the ANM.

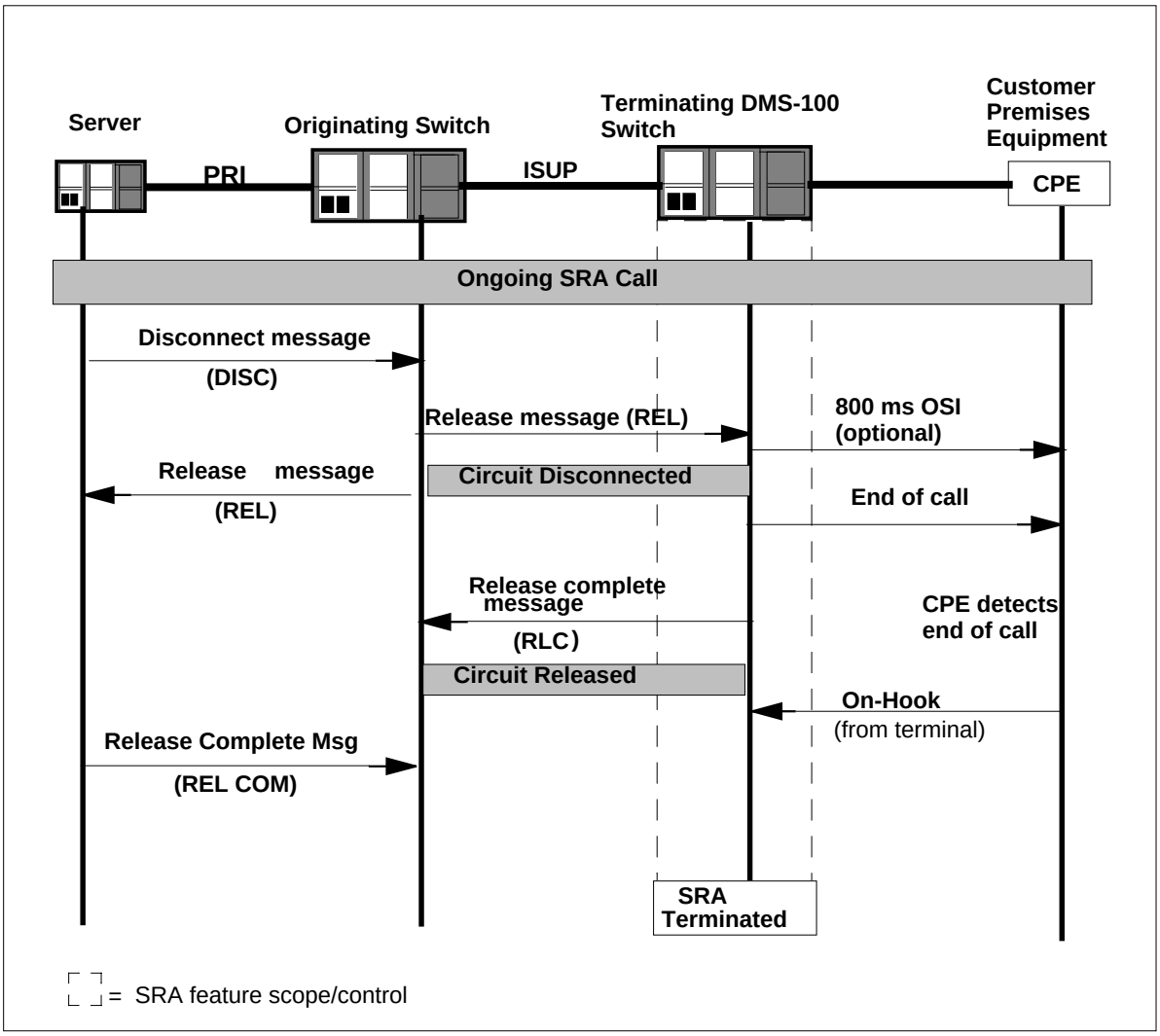
Suppressed Ringing Access (SRA) (continued)

Call Disconnect

The SRA feature is terminated in one of the following ways:

- server or switch (for example Toh or Tcall expiration) or terminal-initiated disconnect (refer to the Call Flow for Server-Initiated Disconnect, Call Flow for Switch Initiated Disconnect, and Call Flow for Terminal Initiated Disconnect flow charts).
- end-user interruption (the subscriber picks up a handset).
- if enabled, incoming call interruption (Call Flow for SRA Incoming Call Interruption flow chart).
- an error condition.

Call Flow for Server-Initiated Disconnect



Suppressed Ringing Access (SRA) (continued)

Some CPEs may require that an OSI be applied to indicate call disconnection. If enabled, OSI (called OSIdisc) is applied immediately before placing the end-user's line in idle state, in both the server and switch-initiated disconnects. Whether OSIdisc is applied or not, is specified on a Routing DN basis through the OSIDISC option in the Routing DN's tuple in table DNROUTE (default is DISABLED). The duration of OSIdisc is variable and can be set between 10 milliseconds and 2.5 seconds.

ISUP Release messages from within SRA are sent with cause values set to `normal unspecified'. No other cause values are possible from within SRA.

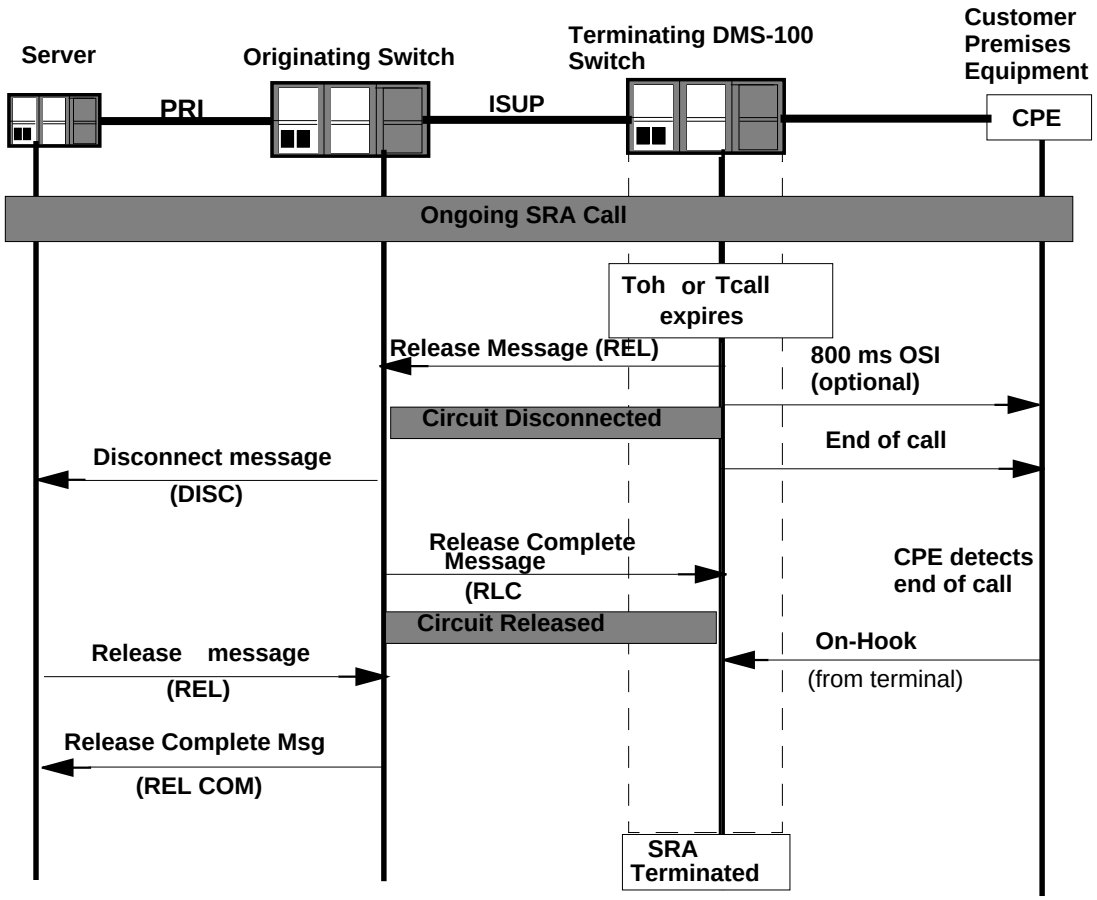
Note 1: In streams prior to NA006 the duration of OSIdisc was fixed at 800 milliseconds and field OSIDISC in the Routing DN's DNROUTE tuple had two possible values of YES or NO.

Note 2: The SRA feature may terminate before reception of on-hook indication from terminal.

Note 3: The SRA feature may terminate before reception of Release Complete Message from the originating switch.

Suppressed Ringing Access (SRA) (continued)

Call Flow for Switch Initiated Disconnect



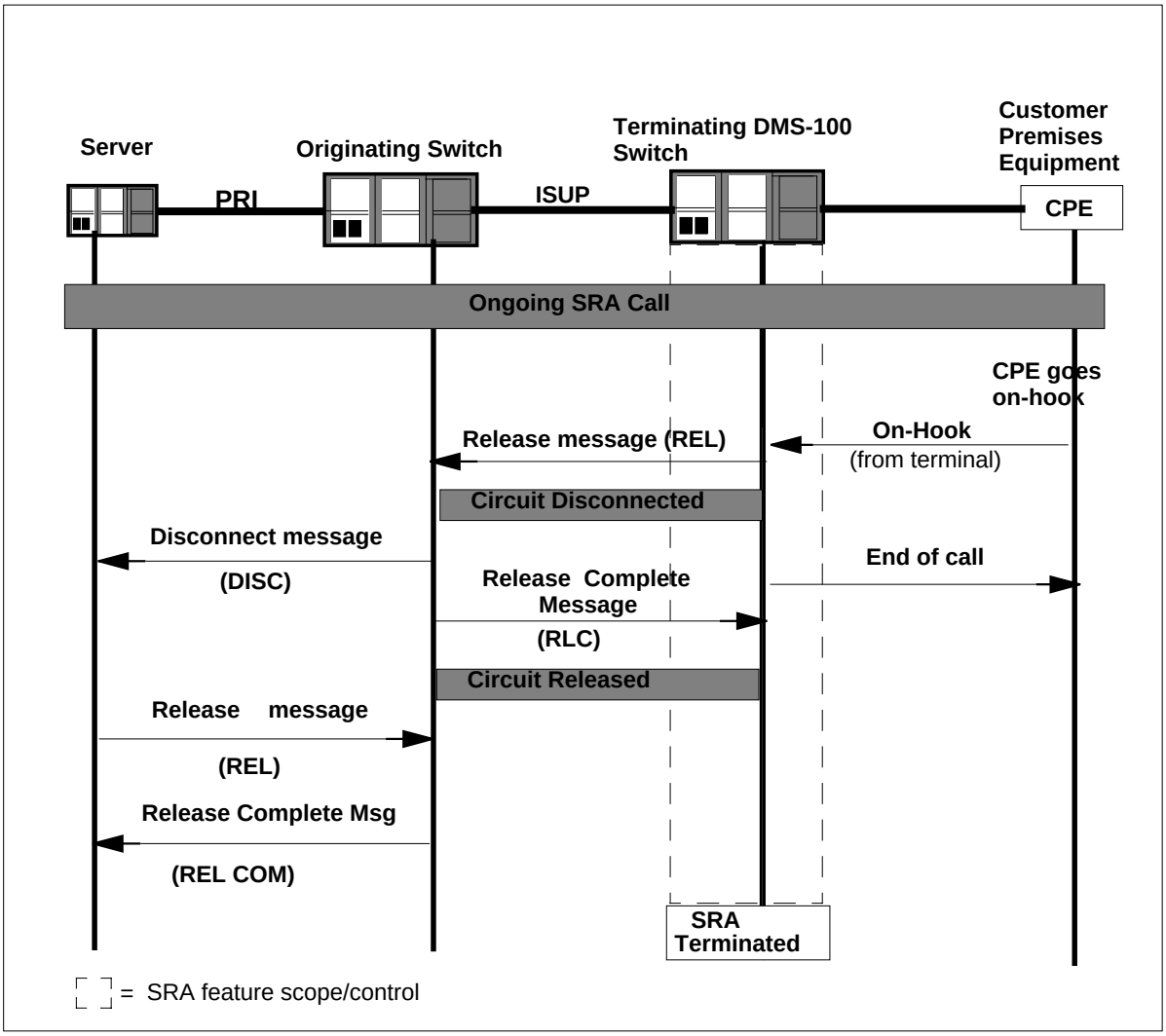
= SRA feature scope/control

T_{call} = Timeout for the SRA call connection.

T_{oh} = Timeout for offhook signal from CPE.

Suppressed Ringing Access (SRA) (continued)

Call Flow for Terminal Initiated Disconnect



Call Interrupt

The SRA feature allows incoming calls to the end user's line to interrupt ongoing SRA calls. This capability is determined by setting the incoming call interruption option (CALLINTR) in the Routing DN's tuple in table DNROUTE. An incoming call interruption is also possible during the time period associated with the off-hook timer Toh but not during the OSIsetup period.

The call flow on the following page illustrates this option. The incoming call is suspended and the SRA call is interrupted by placing the line-side connection on hold and disconnecting the trunk-side connection. The end user's line is monitored for on-hook indication from the CPE. At the same

Suppressed Ringing Access (SRA) (continued)

time, SRA also waits for the expiration of an interrupt timer called Tinterrupt. The time period specified by Tinterrupt represents the period for which SRA waits for an on-hook from the CPE.

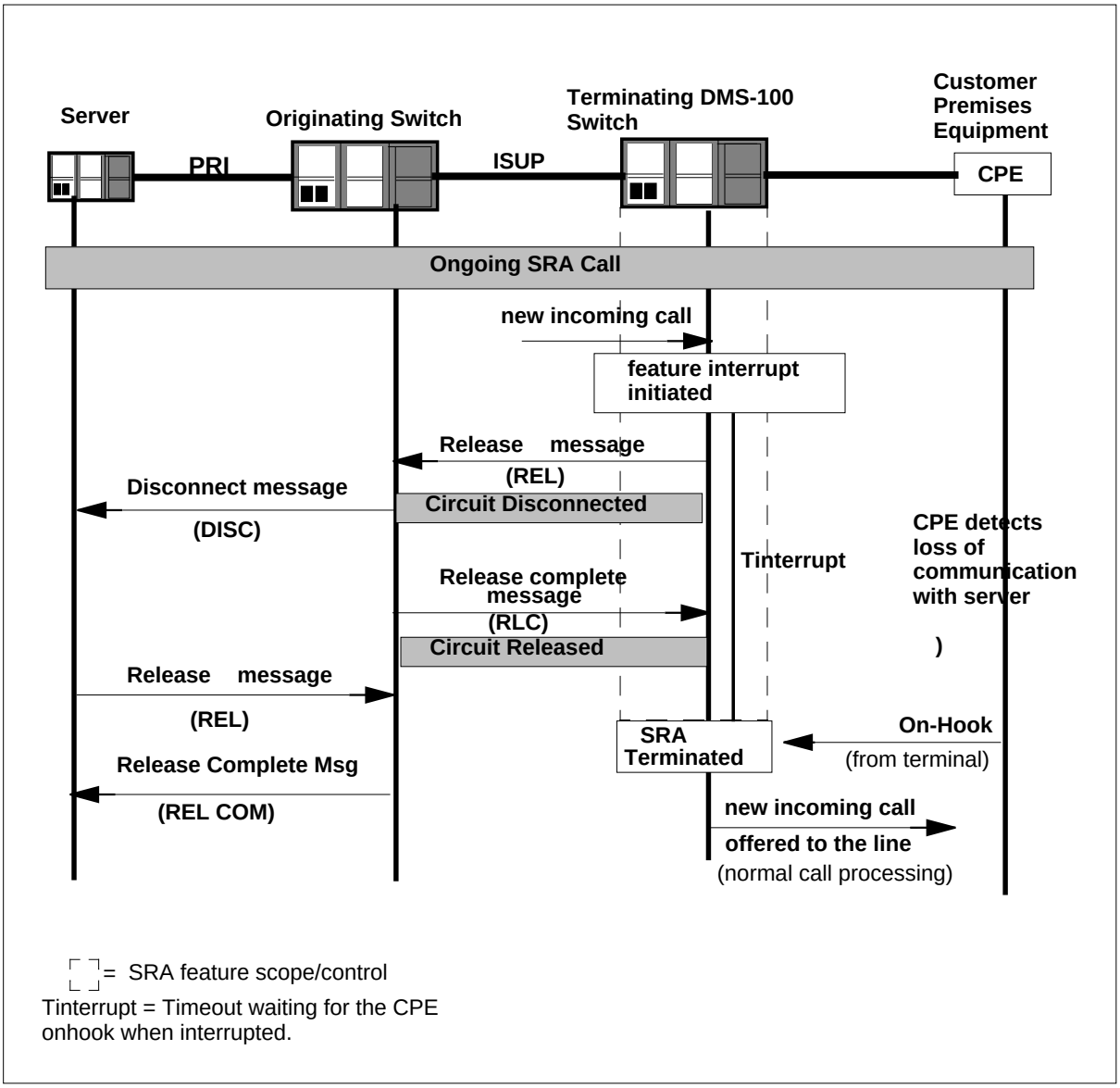
The expiration value for Tinterrupt is assignable on an office-wide basis through the field INTRTIME of office parameter SRA_TIMERS in table OFCENG.

If the end user's line goes on-hook, the SRA feature disconnects the line-side connection and allows the incoming call to terminate on the now idle line. The incoming call is handled by standard call processing and the SRA feature is no longer involved. If the CPE has not yet returned to an on-hook state before the Tinterrupt timer expires, then the incoming call receives busy treatment.

Increasing the value of Tinterrupt may increase the success of incoming call interruptions at the expense of introducing longer average suspension times for the incoming calls.

Suppressed Ringing Access (SRA) (continued)

Call Flow for SRA Incoming Call Interruption



Several scenarios are possible when an ongoing SRA call is interrupted by the end-user lifting the handset of one of the phones at the customer's premises:

1. The end user picks up the communicating CPE's handset. In this case, the communicating CPE returns on-hook and the call flow in the Call Flow for Terminal Initiated Disconnect figure is followed for SRA call

disconnection. The CPE then goes off-hook to indicate to the switch that a new call is being originated.

2. The end user picks up an extension phone's handset, notices the modem bursts on the line and subsequently goes on-hook temporarily to retry the call origination. In this scenario the communicating CPE detects the extension phone's off-hook state and goes on-hook. When the end user goes on-hook, the switch detects a line-side disconnect and so the same call flow as illustrated in the Call Flow for Terminal Initiated Disconnect figure is followed for call disconnection. Dial tone is returned to the end user as quickly as possible.
3. The end user picks up an extension phone's handset and subsequently remains on the line. In this case the communicating CPE may have returned on-hook but the switch will continue to detect off-hook from the extension phone. This scenario requires that the server detect the end of the information exchange session with the communicating CPE and then initiate call disconnect. The call sequence in the Call Flow for Server Initiated Disconnect figure is then followed with the exception that no on-hook detection will be received from the line side and with the addition of returning dial tone to the end user as soon as possible after receiving the trunk-side Release message.

In the last scenario, the SRA feature cannot detect the end-user interruption and is dependent on the server to disconnect the SRA call. Depending on the server-CPE protocol, the server may not detect this situation until significant time has elapsed (for example 15 seconds), resulting in significant delay before dial tone is provided to the end user. It is the operating company's responsibility to minimize the occurrence of this situation as it is outside of the scope and control of the SRA feature. After the server-initiated disconnect is completed, the dial tone delay from this point in time should fall within the normal range. Refer to the Call Flow for Server Initiated Disconnect figure for server-initiated disconnect call flow.

Error Conditions

Depending on SRA datafill in the terminating DMS switch, either Standard DMS treatment or tones are used when a specified error is encountered during SRA call processing.

If standard DMS treatment is used, the SRA feature determines the appropriate treatment and then reverts to normal call processing. Standard DMS treatment

Suppressed Ringing Access (SRA) (continued)

involves referencing table TMTMAP and subtables in TMTCNTL.TREAT. Depending on datafill in these tables one of the following occurs:

- a Release message may be sent to the originating switch
- an Address Complete Message (ACM) may be sent back with a tone or announcement provided on the voice connection

In either of these cases, a log may be generated depending on datafill.

If tones are used, the SRA feature sends an ACM and applies the specified tone for a specified duration and then disconnects the call by sending an ISUP Release message with “normal unspecified" cause.

The actual SRA treatment is dependent on the field TRMTTPE of the office parameter SRA_TREATMENT in table OFCENG. This parameter determines whether STANDARD DMS treatment or the specified tone is to be provided. If tones are provided, the field TONETIME of office parameter SRA_TREATMENT contains the duration that tone is to be applied.

If tones are provided, the corresponding standard treatment OMs are pegged and log FTR138 is generated as in normal treatment procedures. The following tables lists errors that are specific to SRA functionality and those errors that are not SRA specific.

Translations table flow

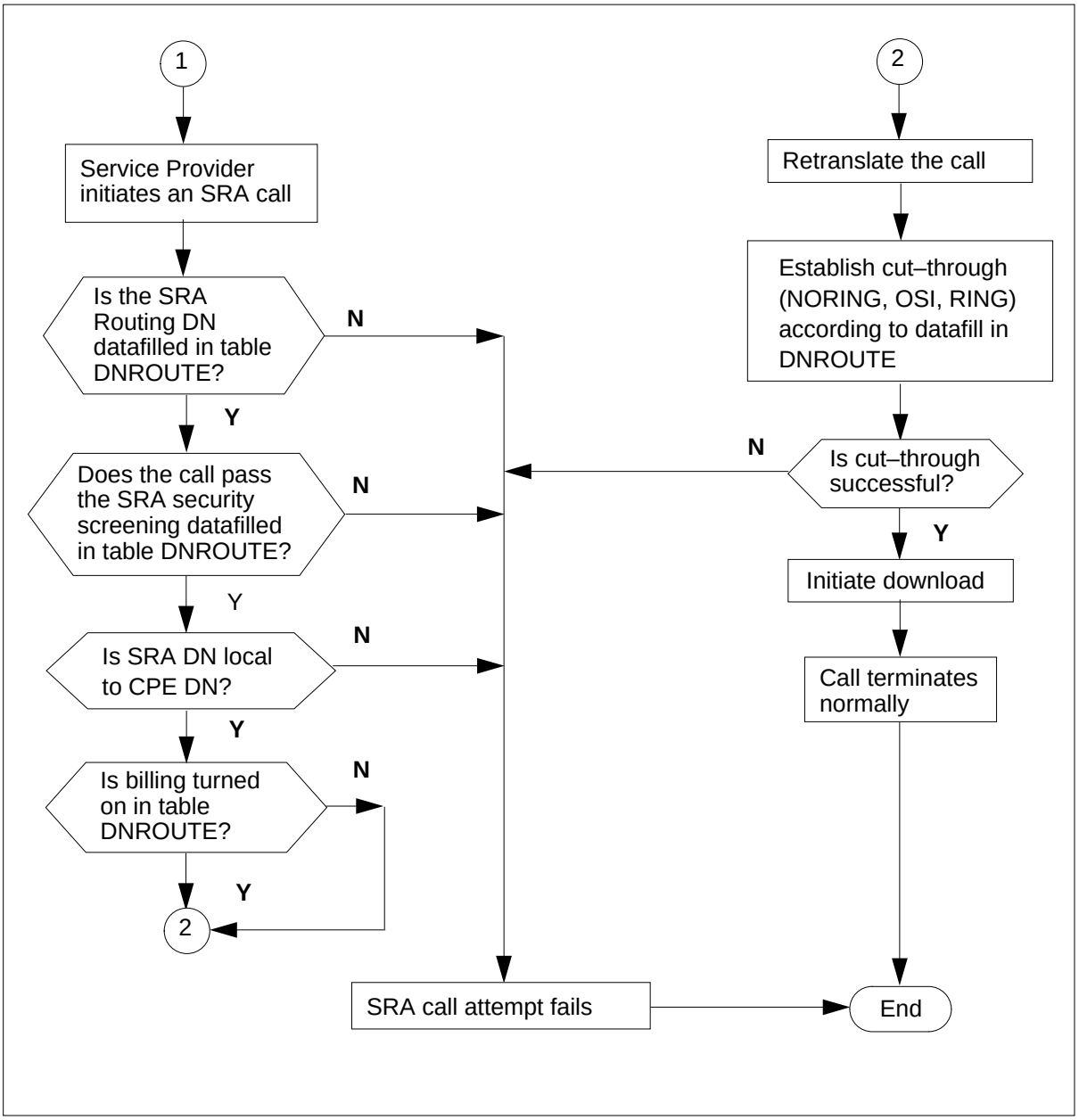
The Suppressed Ringing Access (SRA) translations tables are described in the following list:

- Table DNROUTE

The Suppressed Ringing Access (SRA) translation process is shown in the flowchart that follows.

Suppressed Ringing Access (SRA) (continued)

Table flow for Suppressed Ringing Access (SRA)



Suppressed Ringing Access (SRA) (continued)

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

Datafill example for Suppressed Ringing Access (SRA)

Datafill table	Example data
DNROUTE	Routing DN, for example 613-765-1234
DNROUTE	SECUMAST (ON or OFF)
	LCASCREEN (Y or N)
	SECURITY (DN, BG, CG)
DNROUTE	BILLMAST (ON or OFF)
	BILLOPT (Y or N)
	BILLBUSY (Y or N)
	BILLCTHR (Y or N)
	BILLINTR (Y or N)
DNROUTE	ACCESS (NORING, OSI, RING)

Limitations and restrictions

The following limitations and restrictions apply to Suppressed Ringing Access (SRA):

- Universal Digital Loop Carriers (UDLCs)
  - — Some UDLCs require physical ringing before assigning a time slot. Therefore when an SRA call terminates on one of these lines, ringing is not suppressed.To allow connection to the UDLCs, the SRA feature uses one cycle of physical ringing.
  - — Integrated DLCs will perform identically to standard line terminations.
- Line module (LM) and remote line module (RLM) peripherals
  - — SRA does not support NORING or OSI access for LMs or RLMs. SRA only supports RING access for LMs and RLMs.
- SRA call interruption restrictions

  An incoming SRA call cannot interrupt an ongoing SRA or UTS call.

The following list describes how an ongoing SRA call is affected by an ONP (SWACT):

— The SRA billing records are generated at the beginning of an ONP SWACT operation, even if the SRA call is still in progress.

— If the SRA call is still active after the ONP SWACT, all time outs are deactivated.

— If the SRA call is still active after the ONP SWACT, it will no longer be interruptible, even when the CALLINTR field in table DNROUTE is set to Y. In addition no OSIdisc will be applied upon disconnect. The Tcall timer will be deactivated during and after the ONP SWACT operation.

- IBN PRI Trunks and CG Screening

  When CG is the type of screening to be used and security is `ON', the PRI trunk must be an IBN trunk type to allow PRI to line calls to achieve call connection properly. One of the following IBN PRI trunks must be used:

  — IBNT2 (two way)

  — IBNTI (incoming)

Interactions

The following paragraphs describe the interactions between Suppressed Ringing Access (SRA) and other functionalities.

SRA call interruption

Unless stated otherwise, the call interruption part of the SRA activity will interact with other features as follows:

SRA call entered as interruptible in table DNROUTE

If an incoming call is not able to terminate to an idle line due to a feature on that line, then that same incoming call to an SRA busy line cannot interrupt the SRA call. It will receive the same treatment as normal incoming calls to that line. For example, no incoming call can interrupt an SRA call to a line that has the DTM option.

If an incoming call is able to terminate to an idle line, then that same incoming call will be able to interrupt an SRA call active on that line.

In some cases, the SRA call interrupt will not be able to interrupt an SRA call. The following list identifies line features that affect the SRA call interrupt functionality. This chapter also provides a more detailed description of the interaction between SRA and these features in the feature interactions listings that follow the list below.

Suppressed Ringing Access (SRA) (continued)

Attendant console A call from an attendant console does not interrupt a line that is busy with an SRA call.

Call forwarding feature Calls that are forwarded to a line that is busy with an SRA call may not be able to interrupt an SRA call.

Hunt group Incoming calls do not interrupt SRA calls established to a hunt group line.

Inhibit Line Busy An incoming call to an SRA busy line with the CFB, ILB, and MBK options active will interrupt the SRA call and then will be forwarded.

Multiple appearance directory number Incoming calls will not interrupt a MDN MCA line that is busy with an SRA call.

Series completion An incoming call does not interrupt a SCMP line that is busy with an SRA call.

Teen Service The interaction between SRA and Teen Service varies depending on the type of SDN. SRA interacts with the different types of SDN lines as follows:

- SDN type `E' - An incoming call to either the primary DN or the secondary DN does not interrupt an ongoing SRA call established to a secondary DN. An incoming call to the primary DN interrupts an ongoing call to the primary DN.
- SDN type `P' and `N' - An incoming call to an SDN of type P or N interrupts an onging SRA call established to the primary DN or to the secondary DN.

SRA call is entered as uninterruptible in table DNROUTE
Incoming calls will behave as if the destination line is normally busy.

900 Fraud Prevention

900 Fraud Prevention prevents a type of 1-900 fraud. This type of fraud occurs when people dial a clients ten-digit directory number (DN) instead of the 900 number that corresponds with that DN. With 900 Fraud Prevention, fraudulent 1-900 calls do not terminate to the dialed DN. These calls receive a special treatment and generate a log.

SRA has precedence over 900 Fraud.

Suppressed Ringing Access (SRA) (continued)

911 features

SRA calls cannot terminate on lines which have a variant of 911 features. An SRA call to 911 lines receives feature action NACK with intercept tone treatment.

The SRA feature is not compatible with the Line-ended Public Safety Answering Point (LINEPSAP) line opton because this line option is part of the 911 service.

AIN 0.1

The following section describes SRA interaction with various AIN 0.1 features.

Public Office Dialing Plan (PODP) Trigger

The 3/6/10 digit PODP trigger type occurs between the INFOANAL and the Selecting Route points in call in the originating call model.

SRA controls over translation and routing. SRA disables AIN triggers because the responses from the database query are not compatible with SRA functionality.

N11 Trigger

The N11 trigger type occurs between the INFOANAL and Selecting Route points in the call in the originating call model.

A server is able to request termination on an N11 number. SRA blocks AIN queries because their responses are not compatible with SRA.

Customized Dial Plan (CDP) Trigger

The CDP trigger type occurs at the INFOANAL TDP that is between the INFOANAL and the Selecting Route points in call in the originating basic call model.

SRA controls translation and routing. SRA disables AIN triggers because the responses from the database query are not compatible with SRA functionality.

Automatic Flexible Routing (AFR) Trigger

The AFR trigger type occurs after the Selecting Route point in call in the originating call model. The AFR trigger is an entry in the routing list. The AFR trigger occurs when none of the previous routes in the list is available.

SRA controls translation and routing. SRA disables AIN triggers because the responses from the database query are not compatible with SRA functionality

Suppressed Ringing Access (SRA) (continued)

Termination Attempt (TERMATT) Trigger

The TERMATT trigger type occurs between the null and Authorizing Termination points in call in the terminating call model.

When AIN 0.1 supports the originating agent, any attempt to terminate on a DN that subscribes to the TERMATT trigger causes a query to the off-board processor.

SRA controls translation and routing. SRA disables AIN triggers because the responses from the database query are not compatible with SRA functionality.

Attendant Console

During an ongoing SRA session, SRA calls do not terminate on an attendant console. An attendant console can not barge into SRA calls

SRA call interrupt does not interrupt an ongoing SRA call when the originator of the incoming call is an attendant console.

Automatic Call Distribution (ACD) and Universal Call Distribution (UCD) features

SRA calls cannot terminate on an ACD or UCD directory number because these numbers are virtual DNs.

SRA calls to individual DNs that have the ACD or UCD options will terminate. When a line with the ACD or UCD option is involved in an SRA call, the SRA call will be interrupted in the following instances:

- A caller directly dials the DN that has the ACD or UCD options.
- The line that has the ACD or UCD options goes off-hook.

If an individual DN with the ACD or UCD line option is involved in an SRA call, the ACD and UCD features will treat that line as if it is busy. Incoming calls to the ACD or UCD virtual DNs will not terminate on a line that is busy.

The following features are ACD enhancements:

- Answer Emergency Key (ACDNR)
- Call Agent (CAG)
- Controlled Interflow (CIF)
- Call Supervisor (CLSUP)
- Display Agent Status (DASK)
- Display Queue Threshold (DQT)

- Emergency Key (EMK)
- Forced Agent Availability (FAA)
- Night Service (NGHTSRVCE)
- Observe Agent (OBS)
- Supervisor (SUPR)

The following features are UCD enhancements:

- Uniform Call Distribution Login (UCDLG)
- Uniform Call Distribution Signal Distributor (UCDSD)

Call Forwarding features

There are several scenarios in which SRA interacts with call forwarding features. The interaction between SRA and call forwarding differs depending on the scenario. The following sections define the interaction between:

- SRA calls and call forwarding features
- SRA call interrupt and call forwarding features
- SRA call interrupt and forwarding DNs

SRA calls and call forwarding features

Call Forwarding features do not forward SRA calls. If the dialed line is idle but forwarded, the SRA call terminates on the dialed line. When a line with the Call Forward Busy Line feature is busy, SRA treats that line as a busy line.

DENYSRA is compatible with call forwarding features.

SRA call interrupt and call forwarding features

The different types of call forwarding features belong to the following three categories:

- Call forwarding busy features
- Call forwarding do not answer features
- Other call forwarding features

The following sections describe the interaction between SRA call interrupt when the CALLINTR field in table DNROUTE is set to `Y' and the three categories of call forwarding features.

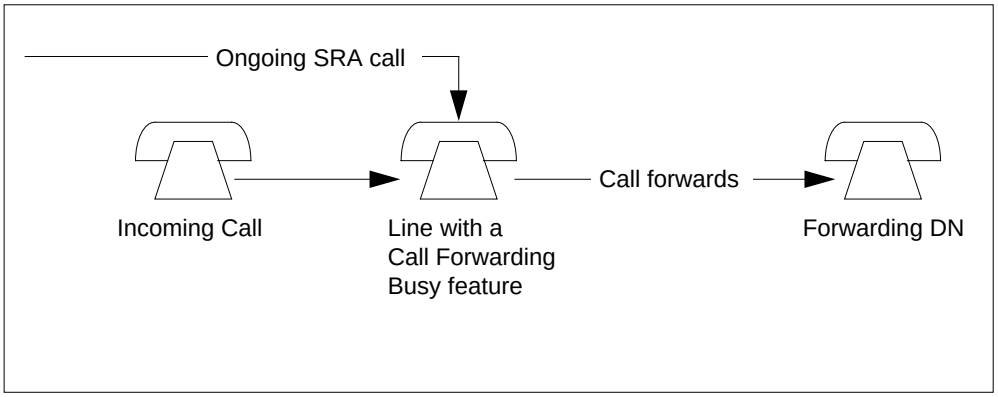
Call Forwarding Busy (all variations) All call forwarding busy features have precedence over SRA call interruption. When a line with any call forwarding

Suppressed Ringing Access (SRA) (continued)

busy feature is busy with an SRA call incoming calls forward to the forwarding DN. Line features with call forwarding busy functionality are:

- Call Forwarding Busy Internal Calls Only (CBE)
- Call Forwarding Busy Unrestricted (CBU)
- Call Forwarding Busy (CFB)
- Call Forwarding Busy Line (CFBL)
- Internal/External Call Forwarding Busy (IECFB)

Call Forwarding Busy features and SRA call interrupt

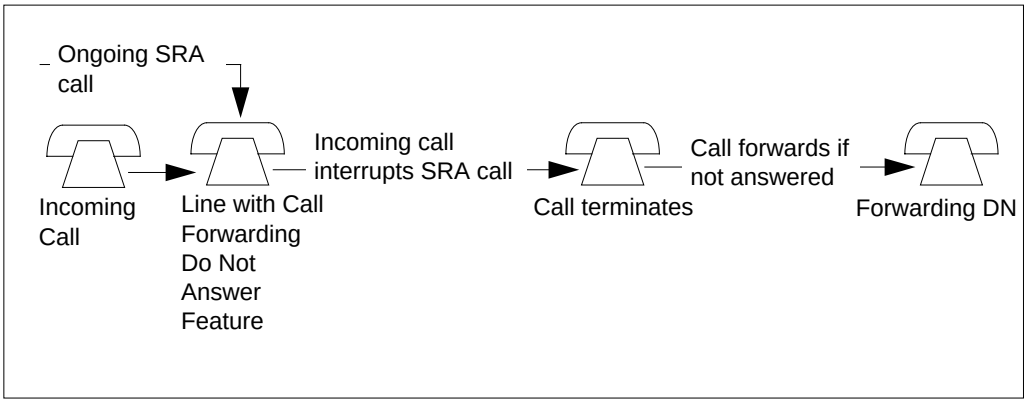


Call Forwarding Do Not Answer (all variations) The SRA call interrupt functionality has precedence over call forwarding do not answer features. When a line with a call forwarding do not answer feature is busy with an SRA call, incoming calls will interrupt the SRA call. If the subscriber does not answer the call, it forwards as per normal call forward do not answer functionality. Line features that provide call forward do not answer functionality are:

- Call Forwarding Do Not Answer Unrestricted (CDU)
- Call Forwarding Do Not Answer (Business Sets) (CFD)
- Call Forwarding Do Not Answer (Residential) (CFDA)
- Call Forwarding Do Not Answer Variable Timer (CFDVT)
- Call Forwarding Group Do Not Answer (CFGDA)
- Internal/External Call Forwarding Do Not Answer (IECFD)
- Subscriber Programmable Ringing (SPRING)

Suppressed Ringing Access (SRA) (continued)

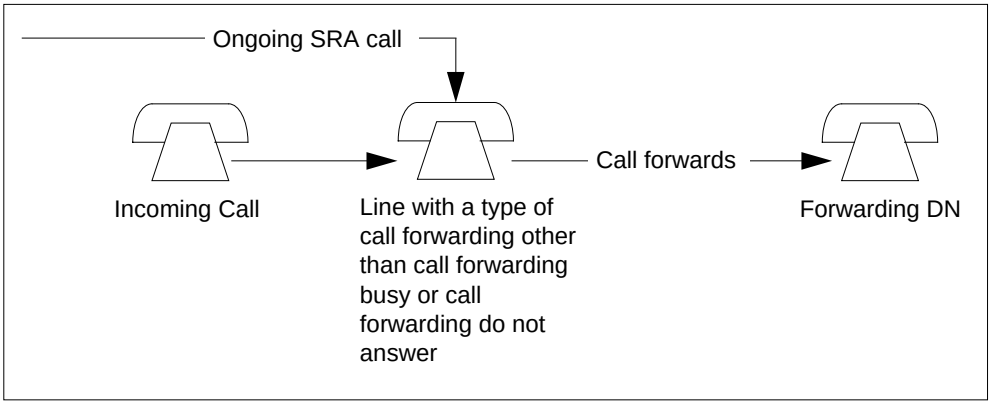
Call Forwarding Do Not Answer and SRA call interrupt



Other types of call forwarding features When a line with a type of call forwarding other than call forwarding busy or call forwarding do not answer is busy with an SRA call, all incoming calls forward. The following types of call forwarding have precedence over SRA call interruption:

- Exclude External Calls from Call Forwarding (CDE)
- Exclude Intragroup Calls from Call Forwarding (CDI)
- Call Forwarding Fixed (CFF)
- Call Forwarding Do Not Answer for Hunt Group (CFGD)
- Call Forwarding on a Per Key Basis (CFK)
- Call Forwarding MADN Secondary Member (CFMDN)
- Call Forwarding Remote Access (CFRA)

Other types of Call Forwarding and SRA call interrupt



Suppressed Ringing Access (SRA) (continued)

SRA call interrupt and forwarding DNs

There are also second order interactions between call forwarding features and SRA. When a call forwards to a line that is busy with an SRA call and the CALLINTR field in table DNROUTE is set to `Y', SRA call interrupt does not function normally. The following tables describe the behavior of SRA call interrupt in this situation.

SRA call interrupt and IBN call forwarding features

Type of call forward	A call from a POTS/RES line to an IBN line forwards to an IBN line that is involved in an ongoing SRA call	A call from an IBN line to another IBN line forwards to a POTS/RES line that is involved in an ongoing SRA call	A call from a POTS/RES line to an IBN line forwards over a trunk to another IBN line that is involved in an ongoing SRA call
CFU	Interrupted	Interrupted	Interrupted
CFD	Not Interrupted	Not Interrupted	Interrupted
CFB	Interrupted	Interrupted	Interrupted

SRA call interrupt and POTS/RES call forwarding features

Type of call forward	A call from a IBN line to a POTS/RES line forwards to another POTS/RES line	A call from a POTS/RES line to another POTS/RES line forwards to an IBN line	A call from an IBN line to a POTS/RES line forwards over a trunk to an IBN line
CFW	Interrupted	Interrupted	Interrupted
CFDA	Not Interrupted	Not Interrupted	Interrupted
CFBL	Interrupted	Interrupted	Interrupted

Call Pickup Features

Lines which have Call Pickup options can not pickup another line if that line is involved in an SRA call.

Line features with Call Pickup options are as follows:

- Call Pickup (CPU)
- Directed Call Pickup Barge-In (DCBI)
- Directed Call Pickup (DCPU)

Suppressed Ringing Access (SRA) (continued)

Call Screening, Monitoring and Intercept (CSMI)

When a line with CSMI is involved in an SRA call, incoming calls forward to the voice mail system if the CALLINTR field in DNROUTE is set to `N'. At the end of the SRA call, a ring burst notifies the subscriber that there is a call in the voice mail system.

Call Waiting (CWT)

An SRA call does not wait on a busy line which has Call Waiting (CWT). The SRA call receives BUSY tone. The called party does not receive a call waiting tone.

When a line with the CWT option is busy with an SRA call, an incoming call to that line can encounter two situations.

- A line with CWT is busy with an SRA call and the SRA Routing DN has the CALLINTR option enabled:
  - — In this case the incoming call interrupts the SRA call.
- A line with CWT is busy with an SRA and the SRA Routing DN has the CALLINTR option disabled:
  - — In this case the incoming call does not interrupt the SRA call. The call receives BUSY treatment.

Line features with the Call Waiting functionality are listed below:

- Dial Call Waiting (CWD)
- Call Waiting Intragroup (CWI)
- Call Waiting Originating (CWO)
- Call Waiting Ringback (CWR)
- Call Waiting (CWT)
- Distinctive Ringing/Call Waiting (DRCW)
- Deluxe Spontaneous Call Waiting Identification (DSCWID)
- Spontaneous Call Waiting Identification (SCWID)

Call Waiting Auto Suppression (CWAS)

The Call Waiting Auto Suppression (CWAS) feature allows subscribers to receive data calls on a Secondary Directory Number (SDN) without the call being interrupted by call waiting alerting. When a line with the CWAS option is busy with a call, incoming SRA calls receive a busy treatment.

Suppressed Ringing Access (SRA) (continued)

Calling Line Identification (CLI)

SRA calls that terminate on a line with the CLI option generate a CLI log, similar to normal calls.

Calling Memory Features

Incoming SRA calls will not update the call memory. Features which use call memory will not have the SRA call as part of the call memory. SRA calls cannot erase or override previous call memory on a line.

During an Automatic Call Back (ACB) or Automatic Recall (AR) to a line that is busy with a SRA call, call interrupt will not be activated. Instead, the users will be asked whether they want to be recalled when the busy line is free. This scenario is similar to when the called back line or the recalled line is busy.

Line features which use call memory features are listed below:

- Automatic Call Back (ACB)
- Automatic Recall (AR)
- Automatic Recall Dialable Directory Number (ARDDN)
- Customer Originated Trace (COT)
- Selective Call Rejection (SCRJ)

CLASS Screening Features

CLASS Screening features will not screen incoming SRA calls. Termination to the called line is done if the line is in the appropriate state. For example, no attempt will be made to forward the SRA call when the line has the feature Selective Call Forwarding.

Line features of this type are listed below:

- Anonymous Caller Rejection (ACRJ)
- Selective Call Acceptance (SCA)
- Selective Call Forwarding (SCF)
- Selective Call Rejection (SCRJ)

Cutoff on Disconnect (COD)

The COD software does not send an open battery signal to the line for SRA calls.

Suppressed Ringing Access (SRA) (continued)

However it is possible for an SRA call to send an open battery signal depending on the value of OSIDISC in table DNROUTE.

- If OSIDISC is set to a value in the range of 1 to 255 (units of 10 milliseconds) in table DNROUTE
  - — SRA calls send an open battery signal in the range of 10 to 2550 milliseconds to the line upon disconnect once, regardless of the fact that the line being terminated to has the COD option.
- If OSIDISC is set to DISABLED in table DNROUTE
  - — SRA calls will not send any open battery signal to the line upon disconnect, even when the line where SRA terminates has the COD option.

Denied Termination/Suspend Service

SRA calls are able to terminate on lines with Deny Termination or Restrictive Service provided the lines are idle.

Line features of this type are listed below:

- Denied Incoming Calls (DIN)
- Denied Termination (DTM)
- Requested Suspension (RSUS)
- Suspended Service (SUS)

Display Features

SRA calls will not send display data to the terminating line for any display features. Incoming calls will interrupt ongoing SRA calls. The incoming calls will connect to the line and will deliver the calling number or calling name.

Line features with display call data are listed below:

- Bulk Calling Line Identification (BCLID)
- Calling Name Delivery (CNAMD)
- Calling Number Delivery (CND)
- Calling Number Delivery Blocking (CNDB)
- Dialable Directory Number (DDN)

Distinctive Ringing (DRING)

SRA calls can apply ringing through RING access, therefore the DRING option does not affect the ring pattern for SRA call terminations.

Suppressed Ringing Access (SRA) (continued)

Emergency Service Line (ESL)

An SRA call is not allowed to terminate on an emergency service line. An attempt to do so results in feature action NACK treatment with intercept tone.

The SRA line option cannot be added to an ESL line.

Essential Line (ELN)

An SRA call is allowed to terminate on an essential line.

Executive Busy Override (EBO)

If a user attempts to barge in on an SRA call using the EBO option, the user will receive NACK treatment with intercept tone. EBO cannot barge in on an SRA call.

Feature groups

Lines equipped with FTRGRP option are treated as if the individual options associated with the FTRGRP were assigned to the line.

Flash activated features

Flash features are not supported on the terminating line while a connection is established from the server to the line. The CPE and other extensions should not be off-hook simultaneously and it is the function of the CPE to detect this condition. If the server tries to reach a line without a CPE (by mistake) or reach a line with a defective CPE, SRA prevents the activation of flash features by ignoring flashes that may occur on the line. SRA ignores flashes that may occur on the line, regardless if there are flash activated features datafilled against that line.

Line features of this type are listed below:

- Call Hold (CHD)
- Calling Line Identification with Flash (CLF)
- Called Party Hold (CPH)
- Directed Call Park (DCPK)
- Permanent Hold (HLD)
- Call Park (PRK)
- Residential Call Hold (RCHD)

Hunt Group features

Incoming SRA calls can terminate on any member of a DNH group. Incoming SRA calls will not perform hunting. If the line is busy, busy treatment is returned even if the hunt group has the Line Overflow to Directory Number

option (LOD) or the Line Overflow to Route (LOR) option (Those options forward to another DN an incoming call that attempts to terminate on a hunt group with all the members busy).

If a call attempts to terminate on the PILOT of a hunt group which is already busy with an SRA call, the SRA call interruption portion of this activity will not be activated and the call will hunt, as for normal calls. Hunt processing currently has priority over the SRA call interruption functionality.

When a call attempts to terminate on an SRA busy line provisioned with a hunt group line feature and the Stop Hunt (SHU) line feature, the incoming call will receive busy tone. Hunt group software has priority over the SRA call interruption software, therefore busy treatment is returned to the incoming call.

The following features are hunt group line options:

- Bridged Night Number (BNN)
- Circular Hunt (CIR)
- Directory Line Hunt (DLH)
- Line Overflow to Directory Number (LOD)
- Line Overflow to Route (LOR)
- Preferential Hunting (PRH)
- Random Make busy (RMB)
- Stop Hunt (SHU)

Inhibit Line Busy

SRA calls to a busy line receive busy treatment, even when the line has CFB and/or ILB.

The SRA call interrupt has a special interaction with lines that have the CFB and MBK and the ILB option available and activate. These options are described below. The behavior as described below is only true when the MBK and ILB options are active.

1. A call to a busy line with CFB, MBK and ILB routes to busy treatment.
2. A call to an idle line with CFB, MBK and ILB forwards.

An incoming call to a line with an ongoing SRA call and the CFB, MBK and ILB options, interrupts the SRA call. Since the interrupted line now becomes idle, the call forwards. This call scenario is equivalent to case number 2 above.

Suppressed Ringing Access (SRA) (continued)

Local Number Portability (LNP)

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

SRA requires that an SRA DN and a subscriber's DN reside in the same switch. This restriction affects the interaction between SRA and LNP as follows:

- If a subscriber's DN is ported due to LNP, then an Enhanced Service Provider (ESP) can only access that subscriber's DN by using an SRA DN that resides on the new switch.
- If an SRA DN is ported due to LNP, then an ESP can use that SRA DN only to access subscribers that reside on the new switch.

Long Distance Signalling (LDS)

A long distance SRA call with one-cycle ringing access should not apply the LDS distinctive ringing. An incoming long distance call should not wait on a line that has an SRA call in progress. When the CALLINTR boolean is set to `Y', the incoming call will cancel the SRA call. The called line will receive distinctive ringing. When the Call Interrupt parameter is disabled, the incoming call will get BUSY tone.

Make Busy Key (MBK)

SRA calls can terminate on lines that have the MBK option active. SRA calls can also terminate on lines that have MBK and IMB options active. An incoming call to a line busy with an SRA call receives BUSY tone.

Line features of this type are listed below:

- Inhibit Make Busy (IMB)
- Make Busy Key (MBK)

Make Set Busy (MSB)

An SRA call can terminate on a line which has the MSB option if this line is idle and on-hook. Incoming calls to lines busy with an SRA call will get BUSY tone, regardless of the state of the CALLINTR boolean.

Suppressed Ringing Access (SRA) (continued)

MADN ringing options

When an SRA call terminates on a line, it never rings the line, even if the line is an MADN line with a MADN ringing option. Line features of this type are listed below:

- MADN Ring Forward (MRF)
- MADN Ring Forwarding Manual (MRFM)

Multiparty Bridging (MPB)

An SRA call can terminate on an MPB line. If a member of the MPB group goes off hook during an ongoing SRA session, dial tone is provided. The member will not be bridged to the SRA call. If a third member goes off hook during an ongoing SRA session and establishes a normal call, the member is bridged to the normal call, not the SRA call.

Multiparty Lines

An SRA call can terminate on an MPB line. If a member of the MPB group goes off hook during an ongoing SRA session, the member receives dial tone. The member will not bridge to the SRA call. If a third member goes off hook during an ongoing SRA session and establishes a normal call, the member bridges to the normal call, not the SRA call.

Multiple Appearance Directory Number (MADN)

During an ongoing SRA session, calls terminate on MADN lines. For all types of MADN the SRA call terminates on the primary LEN of the MADN group.

The SRA line options can not be added to a secondary member of a MADN.

The following sections describe the interaction between SRA and the different types of MADN:

MADN SCA

If an attempt is made to terminate an SRA call on a MADN SCA group where a secondary member is busy, the SRA call receives busy treatment.

If a secondary member goes off-hook while an SRA call is active, the secondary member will receive the same treatment as when the primary member is normally busy.

Incoming calls will interrupt an ongoing SRA call on a MADN SCA primary member.

Suppressed Ringing Access (SRA) (continued)

MADN SBA & EXB

If an attempt is made to terminate an SRA call on an MADN SBA (or EXB) group where a secondary member is busy, the SRA call receives busy treatment

If a secondary member goes off hook while the primary member is in an SRA session, the secondary member receives the same treatment as when a member of the MADN group goes off hook and the number of MADN member in the conference call is already at its maximum. In that scenario, the SRA call will be taken down.

Incoming calls will interrupt an ongoing SRA call on a MADN SBA or EXB primary member.

MADN MCA

A secondary member can place an outgoing call while the primary member is busy with an SRA session. An incoming call to a secondary member of the MADN MCA group will connect to that member, even if there is an ongoing SRA session on the primary member.

SRA calls established on MADN MCA lines cannot be interrupted. Incoming calls will terminate to other members of the MADN MCA group.

Plug-up (PLP)

SRA calls do not terminate on PLP lines. An SRA call to PLP lines receives NACK treatment with intercept tone treatment.

Private Virtual Network(PVN) Priority Line (PPL)

SRA calls will not terminate on PPL lines. An SRA call to a PPL line receives NACK treatment with intercept tone.

Query busy station (QBS)

A station with the QBS option can monitor the busy status of a line involved in an SRA call.

Ring Again (RAG)

If a line with the RAG option attempts to terminate on a line busy with an uninterruptible SRA call, the user can activate the RAG feature. The user will be notified when the SRA call is over.

When a line with RAG option calls a interruptible SRA busy line, the SRA call is interrupted. The originator cannot activate the RAG option because a busy condition was not encountered.

Suppressed Ringing Access (SRA) (continued)

When a line with the RAG option calls an interruptible SRA busy line, the SRA call is interrupted. The originator cannot activate the RAG option because he or she does not encounter a busy condition.

Series completion (SCMP)

An SRA call will terminate on a SCMP line only when the line is idle. If the line is busy, the SRA call does not forward and receives busy treatment.

Hunt processing has priority over the SRA call interruption functionality. A call to an SCMP line busy with an SRA call will activate SRA call interruption. The call will hunt as for normal calls.

Single-Line Variety package

Subscribers cannot transfer or put SRA calls on hold. An SRA call receives busy tone if the line is busy with the intercom feature. Line features of this type are:

- Single-line Variety Package (SLVP)
- Group Intercom (GIC)

Spontaneous Call Waiting Identification (SCWID) / Deluxe Spontaneous Call Waiting Identification (DSCWID)

An SRA call does not wait on a busy line which has Spontaneous Call Waiting Identification (SCWID) or Deluxe Spontaneous Call Waiting Identification (DSCWID). The SRA call receives busy tone. The called party does not receive a call waiting tone.

When a line with the SCWID/DSCWID option is busy with an SRA call, an incoming call to that line can encounter two situations.

- A line with SCWID/DSCWID is busy with an SRA call and the SRA Routing DN has the CALLINTR option enabled:
  - — In this case the incoming call interrupts the SRA call.
- A line with SCWID/DSCWID is busy with an SRA call and the SRA Routing DN has the CALLINTR option disabled:
  - — In this case the incoming call does not interrupt the SRA call. The call receives busy tone.

Subscriber Line Usage (SLU)

The Subscriber Line Usage (SLU) feature counts the originating and terminating calls on a line.

SRA calls peg the SLU termination count.

Suppressed Ringing Access (SRA) (continued)

Teen Service

Teen Service allows multiple directory numbers (DN) to be assigned to a line without the expense of additional line equipment. In the case of the SRA line option, only the primary DN can have SRA. When the primary DN has the SRA line option, an SRA call can terminate on either the primary DN or the secondary DN.

The interaction between SRA and Teen Service varies depending on the type of SDN. SRA interacts with the different types of SDN lines as follows:

- SDN type `E' - An incoming call to either the primary DN or the secondary DN does not interrupt an ongoing SRA call established to a secondary DN. An incoming call to the primary DN interrupts an ongoing SRA call to the primary DN.
- SDN type `P' and `N' - An incoming call to an SDN of type P or N, interrupts an ongoing SRA call established to the primary DN or to the secondary DN.

Three Way Calling (3WC) / Usage Sensitive Three Way Calling (U3WC)

The following situation describes the interaction between Three Way Calling (3WC) / Usage Sensitive Three Way Calling (U3WC) and SRA. A line with 3WC / U3WC is involved in a call with another party. The first party tries to establish a 3-way call with a third party. The third party's line is involved in an SRA call. If CALLINTR is enabled, the 3-way call cancels the SRA call. If CALLINTR is disabled, the first party receives busy tone.

Virtual Facility Group (VFG)

SRA calls do not bypass VFG if they are routed through a VFG defined in table VIRTGRPS; telemetry calls are subject to the same constraint imposed by VFG as normal calls, i.e., telemetry calls are blocked by VFG if the size limit defined for that VFG is exceeded. Generalized No Circuit (GNCT) treatment is returned and the reorder tone is applied in this case.

SRA interacts with VFG differently for the first and the second translations. For the first translation between the incoming trunk and the Routing DN, the VFGs are checked and allocated. Before the second translation which is between the incoming trunk and the OCN, the VFG's members reserved for the first translation are released. The second translation handles the VFG normally. This restriction implies that a VFG specific for the Routing DN will not be reserved during the SRA call. A VFG attributed against the incoming trunk or the OCN will be handled normally.

Furthermore starting with the second translation, only up to three consecutive re-translations with VFGs are supported for a SRA call. That is, SRA will only re-translate up to three times when it stops at a VFG route while trying to reach

the OCN. If this limit is exceeded, Negative Acknowledgment (NACK) treatment is returned and the intercept tone is applied.

Activation/deactivation by the end user

Suppressed Ringing Access (SRA) requires no activation or deactivation by the end user.

Billing

SRA billing is optional on a Routing DN basis. In order to enable SRA billing, the operating company must enter the appropriate SRA billing datafill.

SRA Billing Options

Master Billing (BILLMAST)

The Master Billing option, BILLMAST (in table DNROUTE) controls SRA AMA generation. This option allows the operating company to disable SRA billing without changing the settings for individual billable events. When BILLMAST is `OFF'', no SRA calls will generate an AMA record. When BILLMAST is `ON', SRA calls generate AMA records according to the settings of the BILLOPT, BILLBUSY, BILLCTHR and BILLINTR fields in table DNROUTE

The operating company can enable or disable individual billing events through the BILLOPT, BILLBUSY, BILLCTHR and BILLINTR fields in table DNROUTE. The operating company can control the various billing events by setting these fields to either `Y' (on) or `N' (off)

The default value for the Master billing option (BILLMAST) is OFF.

Line Option Billing (BILLOPT)

The Line Option Billing option, BILLOPT (in table DNROUTE) controls the SRA AMA generation for SRA calls to SRA-compatible lines that do not have the SRA line option.

When BILLOPT is set to `Y', an SRA call attempt to an SRA-compatible line that does not have the SRA line option will cause an AMA record to generate.

The default value for the Line Option Billing option (BILLOPT) is `N' (disabled).

Busy Billing Option (BILLBUSY)

The Busy Billing option, BILLBUSY (in table DNROUTE) controls the generation of SRA AMA records for SRA call attempts to busy lines.

Suppressed Ringing Access (SRA) (continued)

The SRA feature generates an AMA record if BILLMAST is `ON', BILLBUSY is set to `Y', and if an SRA call attempts to terminate on a busy line.

The default value for the Busy Billing option (BILLBUSY) is `N' (disabled).

Cut-through Billing (BILLCTHR)

The Cut-through Billing option, BILLCTHR (in table DNROUTE) controls the generation of SRA AMA records for SRA calls that establish cut-through.

The SRA feature generates an AMA record if BILLMAST is `ON', BILLCHTR is set to `Y', and an SRA reaches cut-through. SRA billing duration for cut-through calls begins when the ANM is sent to the originating switch, to indicate that the SRA call has established cut-through, and ends when the call disconnects. Calls disconnection occurs due to normal disconnect, Toh or Tcall expiry, end-user interrupt, and incoming call interrupt.

The default value for the Cut-through Billing option (BILLCTHR) is `N' (disabled).

Incoming Call Interrupt Billing (BILLINTR)

The Incoming Call Interrupt Billing option, BILLINTR (in table DNROUTE) controls the generation of SRA AMA records for the interruption of SRA calls by incoming calls.

The SRA feature generates an AMA record if BILLMAST is `ON', BILLINTR is set to `Y', and an incoming call interrupts an ongoing SRA call.

The default value for the Incoming Call Interrupt Billing option (BILLINTR) is `N' (disabled).

Operating companies can enable interrupt billing only when they also enable cut-through billing.

SRA Billing Records

SRA generates Bellcore-formatted records that use AMA structure 00500 with call code 550. Operating companies can use the SRA_BILLING office parameter in table OFCENG to set the service feature codes for the various SRA billing events. The service feature code is intended to indicate which SRA billing event occurs.

The following example shows an AMA record for call code 550 that uses AMA structure code 500. The prefix digit 4 added to structure code 500

indicates that a module code is attached to the AMA record. The service feature code is set to 0.

Call code 550

```
*HEX ID:AA STRUCTURE CODE:40500C CALL CODE: 550c SENSOR TYPE:036C
SENSOR ID:0200200C REC OFFICE TYPE:036C REC OFFICE ID:0200200C
DATE:31001C CLD PTY OFF–HK:1C SERVICE FEATURE:000C ORING NPA:613C
ORIG NUMBER:6211088C OVERSEAS IND:OC TERM NPA:00613C
TERM NUMBER:6211089C CONNECT TIME:1344504C ELAPSED TIME:000098182C
```

Station Message Detail Recording

Suppressed Ringing Access (SRA) does not affect Station Message Detail Recording.

Datafilling office parameters

The following table shows the office parameters used by Suppressed Ringing Access (SRA). For more information about office parameters, refer to *Office Parameters Reference Manual.*

Office parameters used by Suppressed Ringing Access (SRA) (Sheet 1 of 2)

Table name	Parameter name	Explanation and action
OFCENG	SRA_BILLING	This parameter contains the Service Feature Codes (SFC) which are used in SRA BIlling records (structure code 500 - call type code 550). SRA_BIlling consists of the following four fields: SRC_LOPT, SFC_BUSY, SFC_CTHR, and SFC_INTR.

Suppressed Ringing Access (SRA) (continued)

Office parameters used by Suppressed Ringing Access (SRA) (Sheet 2 of 2)

Table name	Parameter name	Explanation and action
OFCENG	SRA_TIMERS	This parameter contains the timer values for SRA. The following three fields have been added: OSISETUP, OHTIME, and INTRTIME.
OFCENG	SRA_TREATMENT	The information contained in this parameter determines whether STANDARD DMS treatment or specified tone treatment is to be provided. SRA_TREATMENT contains two fields: TRMTTYPE and TONETIME.

Datafill sequence

The following table lists the tables that require datafill to implement Suppressed Ringing Access (SRA). The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Suppressed Ringing Access (SRA)

Table	Purpose of table
SRASCRN	Contains additional security screening information to be used by the SRA feature.
DNROUTE	Lists information for writable directory numbers (DN) in the DMS switch, such as a DN that identifies a route.
BCCODES	Is used in Bellcore switching offices for automatic message accounting (AMA).
AMAOPTS	Is used to control the activation and scheduling of the recording options for automatic message accounting (AMA).
LTDATA	Stores service-related data associated with the logical terminal identifier (LTID).

Datafilling table SRASCRN

The following table shows the datafill specific to Suppressed Ringing Access (SRA) for table SRASCRN. Only those fields that apply directly to

Suppressed Ringing Access (SRA) (continued)

Suppressed Ringing Access (SRA) are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table SRASCRN

Field	Subfield or refinement	Entry	Explanation and action
INDEX		Character string (1 to 16 characters)	*Index* This field is the key of SRASCRN. The index can be referenced by SRADNROUTE tuples. There is no default.
SECURITY			*Security Type* This field identifies the kind of security that is used for a Routing DN. The SRA feature provides three different security mechanisms: DN, BG, and CG. There is no default.
	DN	A list of up to 10 different DNs.	If DN is specified a list of DNs is stored in the security list field.
	BG	A list of up to 10 BG ids.	If BG is specified a list of BGids is stored in the security list field.
	CG	A list of up to 10 customer groups.	If CG is specified a list of customer group names is stored in the security list field. ***Note:*** If customer groups are added to table CUSTENG specifically for the SRA feature, then table CUSTENG must be datafilled first.

Datafill example for table SRASCRN

The following example shows sample datafill for table SRASCRN.

MAP display example for table SRASCRN

```
>SRASCRN

INDEX                                              SCRNLIST

-------------------------------------------------------------

STRING1      DN    (6136210000)       (5147221111)  $
```

Suppressed Ringing Access (SRA) (continued)

Error messages for table SRASCRN

The following error messages apply to table SRASCRN.

Error messages for table SRASCRN

Error message	Explanation and action
`DN must be numeric`	Enter a numeric DN.
`Table SRASCRN is full.`	The maximum capacity has been reached.
`This tuple is referenced by table DNROUTE.`	The tuple is referenced in table DNROUTE. Delete the DNROUTE tuple first.
`SRASCRN internal problem, this tuple does not exist.`	A software error occurred. Contact the next level of support.
`SECURITY cannot be changed when the tuple is referenced by table DNROUTE.`	This tuple is referenced by a DNROUTE tuple and both SECURITY fields must match. To modify it, change the SECURITY tuple in table DNROUTE first. ***Note:*** Changing this tuple datafill implies that indexes in the screening are no longer valid.
`DN (DN number) has been found 5 times in the screening list.`	The DN was repeated in the list. Remove the duplication.
`Business Group (BG) National, has been found x times in the screening list.`	The BG was repeated in the list. Remove the duplication.
Customer Group (CG) ABCCABLE has been found x times in the screening list.	The CG was repeated in the screening list. Remove the duplication.

Datafilling table DNROUTE

The following table shows the datafill specific to Suppressed Ringing Access (SRA) for table DNROUTE. Only those fields that apply directly to

Suppressed Ringing Access (SRA) (continued)

Suppressed Ringing Access (SRA) are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table DNROUTE (Sheet 1 of 7)

Field	Subfield or refinement	Entry	Explanation and action
AREACODE		0 to 999 (1 to 3 digits)	*Area code* The area code identifies a major geographical area served by the switch. If office parameter ACTIVE_DN_SYSTEM in table OFCENG is set to North American, the area code must be three digits long.
OFCCODE		0 to 9999999 (0 to 7 digits)	*Office code digit register* The office code is a subregion of the area code. If office parameter ACTIVE_DN_SYSTEM in table OFCENG is set to North American, the area code must be three digits in length. The office code must be specified in table TOFCNAME. Tuples can be added if the value of field OFCCODE is $ as specified in table TOFCNAME. They cannot contain STNCODEs whose leading digits are an OFCCODE in the same area code. ***Note:*** If SECUMAST is equal to ON and Security List is empty, no SRA calls will be allowed for this RoutingDN.

Suppressed Ringing Access (SRA) (continued)

Datafilling table DNROUTE (Sheet 2 of 7)

Field	Subfield or refinement	Entry	Explanation and action
STNCODE		0 to 99999999 (up to 8 digits)	*Station Code* The station code identifies a unique station within the terminating office (TOFC). If office parameter ACTIVE_DN_SYSTEM in table OFCENG is set to North American, the station code must be one or four digits in length. If one digit is entered, it is treated as a D-digit, where the D-digit represents the fourth digit in the format ABC-DEFG. A D-digit is then given the appropriate DN result. For example, if area code 613 and office code 226 are entered, and if 5 is entered as the station code, any calls to a number beginning with 613 2265 are automatically routed to the specified treatment. If 5 is the D-digit, and DNROUTE is datafilled as 613 226 5 D OPRT, any numbers for 6132265 are routed to the operator treatment as set in table TMTCNTL. Ambiguity within the STNCODEs of one TOFC is not permitted. For example, 8594 and 859 cannot be specified as STNCODEs within one TOFC. ***Note:*** STNCODE is in DEFG format.
DN_SEL		FEAT	The DN selector
FEATURE		SRA	The feature selector SRA is added.
ACCESS		NORING, OSI, RING	*Access Type* There are three types of access supported by the SRA feature: NORING - suppressed ringingOSI - suppressed ringing with OSI setupRING - one-cycle-ringing The default is NORING. ***Note:*** When changing the entry in this field, from RING to one of the other two access types, fields in the tuple will be cleared of inputs. These fields are cleared, due to the ACCESS field being a normal field as opposed to a selector field. This method fulfills the need to maximize the amount of information that SRA requires in the tuple.

Suppressed Ringing Access (SRA) (continued)

Datafilling table DNROUTE (Sheet 3 of 7)

Field	Subfield or refinement	Entry	Explanation and action
RPATTERN		0 - 15	*Ring Pattern* This field only appears when ACCESS = RING. A ringing cycle must be applied. The ringing pattern used depends on the value found in this field.The default is 6.
DURATION		1 -255 (units: 0.1 seconds)	*Duration* Duration applies for SRA calls that have ACCESS = RING. This field determines the length of time for which ringing is applied. The default is 60 (in units of 0.1 seconds is 6 seconds).
BILLMAST		ON, OFF	*Master Billing* BILLMAST turns off all SRA AMA generation. This option disables SRA billing without having to change the settings for the individual billable events. The default is OFF.
BILLOPT		Y, N	*Line Option Billing* An AMA record generates when all of the following conditions are met: - The master billing option BILLMAST is set to ON.-The BILLOPT option is set to Y.- If an SRA attempt is made to an SRA-compatible line that does not have the SRA line option. The default is N.
BILLBUSY		Y, N	*Busy Billing Option* An AMA record generates when all of the following conditions are met: - The master billing option BILLMAST is set to ON.- BILLBUSY is set to `Y'.- An SRA call reaches a busy end-user's line. The default is N.

Suppressed Ringing Access (SRA) (continued)

Datafilling table DNROUTE (Sheet 4 of 7)

Field	Subfield or refinement	Entry	Explanation and action
BILLCTHR		Y, N	*Cut Through Billing* An AMA record is generated when the following conditions are met: - If the BILLMAST is set to ON.- If BILLCTHR is set to Y.- If an SRA call has successfully reached cut-through. The default is N.
BILLINTR		Y, N	*Incoming Call Interrupt Billing* An AMA record is generated when the following conditions are met: - If the BILLMAST is set to ON.- If BILLINTR is Y.- If BILLCTHR is Y.- If an incoming call interrupts an ongoing SRA call. The default is N. ***Note:*** Interrupt billing can be set Y only when cut-through billing is set to Y.
TCALL		1 - 999 (sea) or DISABLED	*Maximum Call Duration Timer* TCALL is the maximum call duration timer from PAM/IINF message until call disconnect. The default is 150 seconds.
CALLINTR		Y, N	*Incoming Call Interrupt* The incoming call interrupt is used to enable or disable incoming call interruption.The default is Y.

Suppressed Ringing Access (SRA) (continued)

Datafilling table DNROUTE (Sheet 5 of 7)

Field	Subfield or refinement	Entry	Explanation and action
OSIDISC		1-255 (units of 10 milliseconds) or DISABLED	*Open Switch Interval (OSI) upon Disconnect (OSIdisc)* Some CPEs require the application of an OSI to indicate call disconnection. The setting of OSIDISC determines if OSIdisc is applied. The default is 80. ***Note:*** In streams prior to NA006, the duration of OSIdisc was fixed at 800 milliseconds and field OSIDISC had two possible values, YES or NO. During and ONP from loads <NA006, field OSIDISC is reformatted. The OSIDISC field will be set to DISABLED if it was set to N in the old load. OSIDISC will be set to 200 if it was set to Y and the patch was active in the old load. OSIDISC will be set to 80 if it was set to Y and the patch was not active in the old load.
LCASCREEN		Y or N	*Local Calling Area Screening* When LCASCREEN is set to Y, SRA performs standard LCA screening from the SRA routing DN to the terminating DN. LCA screening ensures that the routing DN and the terminating DN are within the same LCA. When the two DNs are in different LCAs, the LCA screening ensures proper billing. There is no default value for this field. ***Note:*** In loads prior to NA011, LCA screening was enabled through the LINEATTR field in tablel DNROUTE. In NA011 LINEATTR is replaced by LCASCREEN and its refinements. During an ONP to NA011, the LINEATTR field is reformatted. LCASCREEN will be set to N when there is no value entered for LINEATTR. Similarly, LCASCREEN will be set to Y and LCANAME and HSTS will be properly initialized when LINEATTR is datafilled on the old side.

Suppressed Ringing Access (SRA) (continued)

Datafilling table DNROUTE (Sheet 6 of 7)

Field	Subfield or refinement	Entry	Explanation and action
	LCANAME	alphanumeric	*Local Calling Area Name* This refinement only applies for SRA calls that have LCANAME set to Y. The LCA screening between the SRA DNROUTE DN and the terminating DN requires the LCA name.
	HSTS	alphanumeric	*Home Service Translation Scheme* This refinement only applies for SRA calls that have LCANAME set to Y. The LCA screening between the SRA DNROUTE DN and the terminating DN requires the HSTS. There is no default value for this field.
SECUMAST		OFF, ON	*Master Security* IF SECUMAST is enabled the server must pass SRA security to gain access to the suppressed ringing functionality. If it is set to OFF, SRA security is not performed. For example, the security information mentioned in the SRA security fields (SECURITY and security list) will be ignored. The default is ON.

Suppressed Ringing Access (SRA) (continued)

Datafilling table DNROUTE (Sheet 7 of 7)

Field	Subfield or refinement	Entry	Explanation and action
SCRNTBL		DNROUTE, SRASCRN	SCRNTBL specifies the name of the table which holds the screening list. If the SCRNTBL field has a value of SRASCRN, the screening list is found in the SCREENING LIST field of table SRASCRN. In this case the SECURITY LIST field of table DNROUTE will contain a list of indices to table SRASCRN. The default is DNROUTE.
SECURITY		DN, BG, CG	*Security Type* This field identifies the kind of security that the switch uses for a routing DN. The SRA feature provides three different security mechanisms; they are DN, BG, and CG. If this field specifies DN, then the security list field stores a list of up to 5 DNs or 10 indices to table SRASCRN. If this field specifies BG, then the security list field stores a list of up to 5 BGids or 10 indices to table SRASCRN. If this field specifies CG, then the security list field stores a list of up to 5 customer group names or 10 indices to table SRASCRN. The default is DN. The information found in the security list depends on the values the SCRNTBL and SECURITY fields specify. Refer to the following section, Supplementary Information. If SECUMAST is ON and Security List is empty, no SRA calls will be allowed for this Routing DN.

Datafill example for table DNROUTE

The following example shows sample datafill for table DNROUTE.

Suppressed Ringing Access (SRA) (continued)

MAP display example for table DNROUTE

```
>DNROUTE

AREACODE  OFCODE                    DN_RESULT
-----------------------------------------------------------

6137651234 FEAT SRA NORING OFF Y Y Y Y 999 N 80 N ON
DNROUTE DN $
```

Error messages for table DNROUTE

The following error messages apply to table DNROUTE.

Error messages for table DNROUTE (Sheet 1 of 2)

Error message	Explanation and action
BILLCTHR=N and BILLINTR=Y to set BILLINTR to Y, BILLCTHR must also be set to Y.	There are two options. Either set BILLCTHR to Y or set BILLINTR to N.
This office does not use Bellcore AMA format. BILLMAST must also be set to Y.	There are two options. Either set BILLMAST to OFF or access table CRSFMT, and change the AMA tuple from FORMAT to BCFMT.
This office does not have the LAMA feature, BILLMAST must be equal to OFF.	There are two options. Either set BILLMAST to OFF or access table OFCOPT and set LAMA_OFFICE to Y.
DN (1234BCDEF) found x times in the screening list.	The DN was repeated in the list. Remove the duplication.
Invalid DN 1234BCDEF.	Enter digits only.
BG (LOCAL 1234) found x times in the screening list.	The BG was repeated in the list. Remove the duplication.
CG (COMKODAK) found x times in the screening list.	The CG was repeated in the list. Remove the duplication.
Index (INDEX NAME) found x times in the screening list.	The INDEX NAME was repeated in the list. Remove the duplication.
Screening type mismatch, bad reference to SRASCRN index.	Field SECURITY in DNROUTE and SRASCRN must match.

Error messages for table DNROUTE (Sheet 2 of 2)

Error message	Explanation and action
`Maximum number of SRA tuples has been reached.`	Maximum capacity of the table has been reached.
`BILLCATHR=N and BILLINTR=Y, TO set BILLCATHR to Y, BILLINTR must also be set to Y.`	There are two options. Either set BILLCATHR to Y or set BILLINTER to N.

Datafilling table BCCODES

The following table lists the SRA datafill for table BCCODES. The tables shows only the fields that SRA modifies or uses.

Datafilling table BCCODES

Field	Subfield or refinement	Entry	Explanation and action
CALLYPE		AIN, HIGHREV, LOCAL, TOLL, or TOPS	*Bellcore call type* Enter either LOCAL (local) or TOLL (toll).
CODES		numeric (up to 46 call codes)	*Bellcore call codes* Enter call code 550 (automatic meter reading call). The call codes must be separated from each other by a blank space. Enter $ to indicate the end of the vector.
Note: Equal access calls, answered and unanswered, generate AMA records regardless of the datafill in tables AMAOPTS and BCCODES. In addition, if EA calls have line usage studies applied, the study indicator of the record generated reflects the type of study assigned to the line.			

Datafill example for table BCCODES

The following example shows sample datafill for table BCCODES.

Suppressed Ringing Access (SRA) (continued)

MAP display example for table BCCODES

```
>BCCODES

 CALLTYPE                                                CODES
-------------------------------------------------------------
 LOCAL
     (005) (048) (067) (271) (961) (963) (550) $
 TOLL
     (006) (008) (021) (042) (068) (072) (090) (092)
     (110) (117) (119) (134) (135) (142) (950) (960)
     (999) (550)$
```

Datafilling table AMAOPTS

The following table lists the SRA datafill for table AMAOPTS. The tables shows only the fields that SRA modifies or uses.

Datafilling table AMAOPTS (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
OPTION		see subfield	*Option* This field consists of subfield AMAOPT.
	AMAOPT	alphanumeric	*AMA option* LOGAMA - controls the generation of AMAB117 log reports. It this option is set to ON, AMAB117 log reports are generated for each record that is put on the AMA tape. (This billing option is used instead of office parameter SPECIAL_AMA_REPORT in table OFVCAR). The default value is OFF.
Note: Equal access calls, answered and unanswered, generate AMA records regardless of the datafill in tables AMAOPTS and BCCODES.			

Suppressed Ringing Access (SRA) (continued)

Datafilling table AMAOPTS (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	AMAOPT (continued)		UNANS_LOCAL - controls the recording of unanswered local calls. Only those local calls that generate AMA reocrds are recorded. The call is defined as toll, local, high revenue, or Traffic Operator Position System (TOPS) in table BCCODES. The unanswered call must have the associated call code datafilled in table BCCODES. If option UNANS_LOCAL is set to ON, answered and unaswered calls are recorded. Equal access calls are unaffected. The default value is OFF. Equal access calls are unaffected; see note. UNANS_TOLL - controls the recording of unanswered toll calls. Only those toll calls that generate AMA records are recorded. The unaswered calls must have the assoicated call code datafilled in table BCCODES. If option UNANS_TOLL is set to ON, answered and unaswered toll calls are recorded. Option UNANS_TOLL is used instead of office parameter, NO_ANS_CALLS_ONTAPE in table OFCENG. The default value is OFF. Equal access calls are unaffected; see note.
Note: Equal access calls, answered and unanswered, generate AMA records regardless of the datafill in tables AMAOPTS and BCCODES.			

Datafill example for table AMAOPTS

The following example shows sample datafill for table AMAOPTS.

Suppressed Ringing Access (SRA) (continued)

MAP display example for table AMAOPTS

```
OPTION                                    SCHEDULE
_________________________________________________
LOGAMA                                       ON

UNANS_LOCAL                                  ON

UNANS_TOLL                                   ON
```

Datafilling table LTDATA

The following table lists the SRA datafill for table LTDATA. The tables shows only the fields that SRA modifies or uses.

Datafilling table LTDATA (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
LTDKEY		see subfields	*Logical terminal datakey* This field consists of subfields LTGRP, LTNUM, and DATATYPE.
	LTGRP	alphanumeric (up to 8 characters)	*Logical terminal group* Enter the logical terminal group name.
	LTNUM	1 to 1022	*Logical terminal number* Enter the logical terminal number within the group. The quantity of group numbers is restricted. A maximum of 31 entries are allowed.
	DATATYPE	CLI, DN, or SERV	*Logical terminal data type* Enter the logical terminal data type as follows: • Enter DN for directory number. • Enter SERV for service-related data associated with a logical terminal identifier (LTID) or PRA interface.
LTDSRLT		see subfields	*Logical terminal result* This field consists of subfield DATATYPE.

Suppressed Ringing Access (SRA) (continued)

Datafilling table LTDATA (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	DATATYPE	CLI, DN, or SERV	*Logical terminal data type* Enter the logical terminal data type. Any entries outside this range are invalid.
	DFLTCGN	see subfields	*Default calling party number* The default calling party number is a ten-digit directoy number (DN) to which the call defaults if no CGN is supplied on originations. If CGN screening is enabled, this DN is the only DN that can originate calls on this interface. The default CGN consists of the values entered in subfields SNPA, NXX, and STATION.
	SNPA	numeric (up to 3 digits)	*Serving numbering plan area* Enter the area code.
	NXX	0 to 9, N, B, C, D, E, or F	*NXX* Enter the first three characters of the DN.
	STATION	0 to 9, N, B, C, D, E, or F	*Station* Enter the last four characters of the DN.
	OPTION	CUSTGRP, DFLTPI, EDITCLI, NOSCRN or $	*Option* For SRA and SRA, enter $.

Datafill example for table LTDATA

The following example shows sample datafill for table LTDATA.

MAP display example for table LTDATA

```
>LTDATA

LTDKEY                                    LTDRSLT
_______________________________________________________

ISDN155                    1  DN  DN  613 331 3000
```

Suppressed Ringing Access (SRA) (continued)

Translation verification tools

Suppressed Ringing Access (SRA) does not use translation verification tools.

SERVORD

The SERVORD is used to add and to delete the Suppressed Ringign Access (SRA) line option.

SERVORD limitations and restrictions

Suppressed Ringing Access (SRA) has no SERVORD limitations and restrictions.

SERVORD prompts

The following table provides the system prompts for the SRA line option.

SERVORD prompts for Suppressed Ringing Access (SRA)

Prompt	Valid input	Explanation
ADO	SRA	Add option
DEO	SRA	Delete option

SERVORD example for adding Suppressed Ringing Access (SRA)

The following MAP display shows the addition of SRA line option to a line.

Suppressed Ringing Access (SRA) (end)

SERVORD example for Suppressed Ringing Access (SRA) in prompt mode

```
>SERVORD
SO:
> ADO
SONUMBER: nOW 97 7 3 PM
> $
DN_OR_LEN:
> 6211090
OPTION:
> SRA
OPTION:
> $
COMMAND AS ENTERED:
ADO NOW 96 11 13 PM 6211090 (SRA) $
ENTER YY TO CONFIRM, N TO REJECT OR E TO EDIT
> y
```

SERVORD example for Suppressed Ringing Access (SRA) in no-prompt mode

```
> ADO   $   6211090   SRA   $
```

Telemetry Application

Ordering codes

Functional group ordering code: RES00001

Functionality ordering code: RES00010

Release applicability

NA002 and up

Prerequisites

To operate, Telemetry Application requires the following functional groups:

- RES00005, RES Non-Display Services
- BAS00003, BAS Generic

Description

Telemetry Application gives utility companies or other service providers the ability to connect to subscriber lines through the telephone network to collect telemetry data. The subscriber's telephone does not ring when a connection is made. There is no disruption to the subscriber's usual activities, and connection is made only when the subscriber's line is idle.

Telemetry Application provides the capability for incoming calls to interrupt a telemetry session so that the incoming call can terminate normally. Currently, there are limitations on the types of calls that can be interrupted. For example, a telemetry call that is established to a hunt group line cannot be interrupted. For details about the call interruption activity, refer to section “Interactions."

Operation

Telemetry Application is accomplished by means of a new trunk type, the utility telemetry (UT) trunk. The following figure shows a network configuration for telemetry.

A telemetry session begins when a Utility Controller (UC), located on a utility company's premises, uses existing dial-up or private lines to connect to a Central Office Service Unit (COSU). The COSU, located in a DMS switch office, initiates calls to subscriber lines based on information received from the UC.

A UT trunk group connects the COSU to the switch. The COSU translates each address it receives from the UC into a directory number (DN) and initiates a call to the number. The switch translates the digits received from the COSU and attempts to establish a connection between the COSU and the subscriber's line. If the subscriber's line is idle, the line class code (LCC) is

Telemetry Application (continued)

compatible, and there are no incompatible feature interactions, the call terminates on the subscriber's line. The subscriber's telephone does not ring. The COSU collects telemetry data from a Telemetry Interface Unit (TIU) on the subscriber's line.

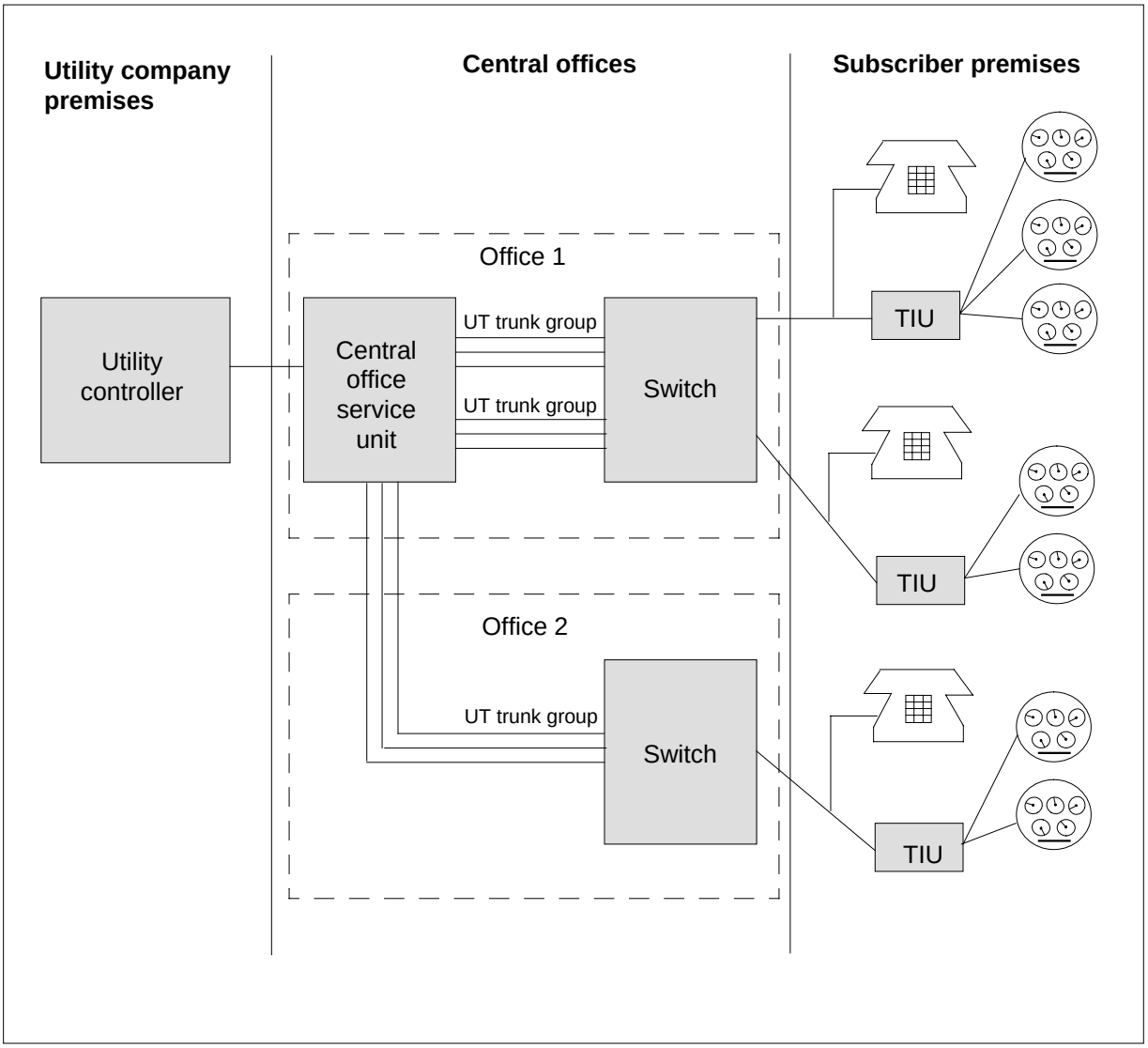
Telemetry Application supports only off-hook TIU transmission. As a result, the TIU must go off-hook when it receives the alert tone from the COSU and go on-hook when the telemetry session is over.

After the telemetry data has been transmitted to the COSU, the TIU sends a disconnect signal to the COSU and the COSU signals the switch that disconnect has occurred. The switch then takes down the trunk-to-line connection and, depending on the value of field OPENDISC in table TRKGRP, the switch may transmit a disconnect signal of approximately 800 ms of open battery to the line. The TIU immediately becomes inactive. The COSU then moves to the next address from the UC.

The following figure shows the network configuration for Telemetry Application.

Telemetry Application (continued)

Network configuration for Telemetry Application



Limitations and restrictions

The following limitations and restrictions apply to Telemetry Application.

Invalid line states

Incoming telemetry calls terminate only on idle lines.

Telemetry Application (continued)

Line class codes

Telemetry calls can terminate on lines with the following LCCs (LCCs not listed below are not supported):

- 1FR (individual flat rate, residence and business)
- 1MR (individual message rate)
- 2FR (two-party flat rate, residence and business)
- 2WW (two-way wide area telephone service [WATS])
- 4FR (four-party flat rate, residence and business)
- 8FR (eight-party flat rate, residence and business)
- 10FR (10-party flat rate, residence and business)
- CCF (coin, coin first prepay)
- CDF (coin, dial tone first)
- CFD (coin-free dialing)
- CSP (coin, semi-postpay)
- EOW (enhanced outward WATS)
- ETW (enhanced two-way WATS)
- IBN (integrated business network)
- INW (inward WATS)
- OWT (outward WATS)
- RES (Residential Enhanced Services)
- ZMD (zero minus denied)
- ZMZPA (zero minus zero plus allowed)

User goes off-hook during a telemetry call

If a telemetry call is established on a line and the subscriber goes off-hook, it is the responsibility of the TIU to detect that the subscriber is off-hook. If the TIU detects that the subscriber is off-hook, it sends a disconnect signal as part of the data stream to the COSU. In response to the disconnect signal, the COSU goes on-hook and the switch takes down the telemetry call. After the connection has been taken down successfully, the switch delivers dial tone to the subscriber.

Non-integrated digital loop carriers

Some non-integrated digital loop carriers (DLC) require power ringing before they assign a time slot. Telemetry Application is not supported on lines that are accessed by this means.

Telemetry Application (continued)

For newer non-integrated DLCs, an ST3P digit is reserved to apply an open switch interval (OSI). The OSI is a 400-ms open battery period on the line, which the non-integrated DLC interprets as a no-ring connection. The ST3P digit is not datafillable, so it does not appear as a field in table TRKGRP type UT.

Integrated DLCs perform identically to standard line terminations.

Telemetry call interruption restrictions

An incoming telemetry call cannot interrupt an ongoing telemetry call.

Switch of activity

A switch of activity (SWACT) affects an ongoing telemetry call in the following ways:

- The telemetry billing record is generated during the pre-SWACT operation, even if the telemetry call is not over.
- If the telemetry call is still active after the SWACT, the timeouts specified in fields MAXTIME and ANSWTIME in table TRKGRP are deactivated. (These timeouts do not survive a SWACT.)
- If the telemetry call is still active after the SWACT, the call is no longer interruptible, even when field CALLINTR in table TRKGRP is set to Y.

Interactions

Unless stated otherwise, the call interruption activity of Telemetry Application interacts with other line options in the following ways:

- When telemetry calls are datafilled as interruptible in table TRKGRP,
  - — Incoming calls that can terminate on an idle line can interrupt a telemetry call active on that line.
  - — Incoming calls that cannot terminate on an idle line because of a line option datafilled against the line cannot interrupt a telemetry call on that line. For example, an incoming call to a telemetry busy line with option DTM (Denied Termination) cannot interrupt a telemetry call on that line.
- When telemetry calls are datafilled as uninterruptible in table TRKGRP, incoming calls behave as if the line is busy with a normal call.

The following sections describe the interactions between Telemetry Application and other functionalities.

Telemetry Application (continued)

911 line options

Telemetry calls are not allowed to terminate on lines that have some variant of 911 line options. A telemetry call gets feature action negative acknowledgment (NACK) treatment with intercept tone if an attempt is made to terminate on such a line.

The following are 911 line options:

- ALI (Automatic Location Identification)
- LDTPSAP (Line Appearance on Digital Trunk PSAP)
- LINEPSAP (Line-Ended PSAP)

Advanced intelligent network trigger

A telemetry call does not terminate on an advanced intelligent network (AIN) trigger DN (XXTRG). If an attempt is made to terminate on an AIN trigger, the telemetry call gets feature action NACK treatment with intercept tone.

Automatic Call Distribution

Telemetry calls cannot terminate on Automatic Call Distribution (ACD) virtual DNs. However, telemetry calls can terminate on lines datafilled with the ACD functionality if their LCC is IBN.

The following line options have the ACD functionality:

- ACD (Automatic Call Distribution)
- ACDNR (Automatic Call Distribution Not Ready)
- AEMK (Answer Emergency Key)
- CAG (Call Agent)
- CIF (Controlled Interflow)
- CLSUP (Call Supervisor)
- DASK (Display Agent Status)
- DQS (Display Queue Status)
- DQT (Display Queue Threshold)
- EMK (Emergency Key)
- FAA (Forced Agent Availability)
- LOB (Line of Business)
- NGTSRVCE (Night Service)

Telemetry Application (continued)

- OBS (Observe Agent)
- SUPR (Supervisor)

Billing options

Assuming that field BILLING of table TRKGRP is set to Y, a billing record is always generated, regardless of whether a billing option such as FNT or TBO is datafilled against the line. There is always exactly one billing record generated, the telemetry billing record.

Call Forwarding line options

Incoming telemetry calls are not forwarded. If the dialed line is idle but forwarded, the telemetry call terminates on the dialed line. A line that has the Call Forwarding Busy (CFB) line option and is busy is treated as a busy line.

Call Forwarding line options interact with the call interruption activity of Telemetry Application, as follows:

- Call Forwarding Busy line options. An incoming call that attempts to terminate on a telemetry busy line with a CFB line option is forwarded. CFB line options have precedence over the call interruption activity of Telemetry Application. The following line options have the CFB functionality:
  - CFB
  - CBE (CFB Internal Calls Only)
  - CBU (CFB Unrestricted)
  - CFBL (CFB Line)
  - IECFB (Internal/External CFB)
- Call Forwarding Do Not Answer (CFDA) line options. When a line has a CFDA option and is busy with a telemetry call, an incoming call interrupts the telemetry call. The CFDA option is activated only if the user does not answer. The call interruption activity of Telemetry Application has precedence over the CFDA line options. The following line options have the CFDA functionality:
  - CDU (CFDA Unrestricted)
  - CFD (CFDA Business Sets)
  - CFDA (Residential)
  - CFDVT (CFDA Variable Timer)
  - CFGD (CFDA for Hunt Group)

— CFGDA (Call Forwarding Group Do Not Answer)

— IECFD (Internal/External CFDA)

- Other types of Call Forwarding line options. An incoming call that attempts to terminate on a telemetry busy line with a Call Forwarding line option other than CFB or CFDA is forwarded. The other types of Call Forwarding line options have precedence over the call interruption activity of Telemetry Application. The following line options have these other types of Call Forwarding functionalities:

  — CDE (Exclude External Calls from Call Forwarding)

  — CDI (Exclude Intragroup Calls from Call Forwarding)

  — CFF (Call Forwarding Fixed)

  — CFI (Call Forwarding Intragroup)

  — CFK (Call Forwarding on a Per Key Basis)

  — CFRA (Call Forwarding Remote Access)

  — CFS (Call Forwarding Simultaneous/Screening)

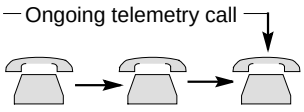
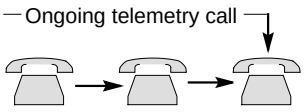
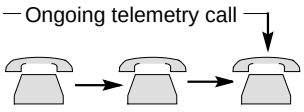
  — CFU (Call Forwarding Universal)

  — CFW (Call Forwarding)

  — CUSD (Call Forwarding Usage Sensitive Denial)

In addition to the interactions with the call interruption activity described above, there are second-order interactions. If a third party reaches a telemetry busy line as a result of being forwarded, the telemetry call is not always interrupted. The following table lists the second-order interactions with IBN types of Call Forwarding.

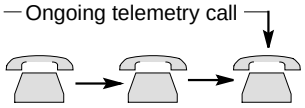
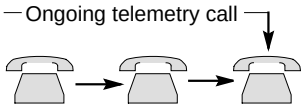
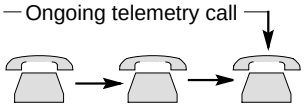
Second-order interactions with IBN types of Call Forwarding

CFW type	 POTS calls IBN fwd to IBN	 IBN calls IBN fwd to POTS	 POTS calls IBN fwd to IBN (fwd over a trunk)
CFU	interrupted	interrupted	interrupted
CFD	not interrupted	not interrupted	interrupted
CFB	not interrupted	interrupted	interrupted

Telemetry Application (continued)

The following table lists the second-order interactions with plain old telephone service (POTS) types of Call Forwarding.

Second-order interactions with POTS types of Call Forwarding

CFW type	 IBN calls POTS fwd to POTS	 POTS calls POTS fwd to IBN	 IBN calls POTS fwd to IBN (fwd over a trunk)
CFW	interrupted	interrupted	interrupted
CFDA	not interrupted	not interrupted	interrupted
CFBL	interrupted	interrupted	interrupted

To summarize, calls forwarded with option CFU, CFW, or CFBL always interrupt a telemetry call. Calls forwarded with option CFD or CFDA never interrupt a telemetry call unless the incoming call was forwarded over a trunk. Calls forwarded with the CFB options always interrupt a telemetry call unless the call was forwarded inside an IBN customer group.

Calling Line Identification

Telemetry calls that terminate on a line with the Calling Line Identification (CLI) option generate a CLI log, as do normal calls.

Call memory line options

Incoming telemetry calls do not update the call memory. Therefore, functionalities that use call memory do not have the telemetry call as part of the call memory, nor do telemetry calls erase or override previous call memory on a line. For example, the Automatic Call Back (ACB) functionality does not attempt to call the COSU, nor does Customer-originated Trace (COT) identify the telemetry trunk.

Calls originated by line options ACB, AR, and ARDDN line options cannot interrupt telemetry calls.

The following line options use call memory:

- ACB
- AR

- ARDDN (Automatic Recall Dialable DN)
- COT

Call Pickup line options

Lines that have Call Pickup (CPU) options are not allowed to pick up another line if a telemetry trunk is terminating on that other line.

The following line options are of this type:

- CPU
- DCBI (Directed Call Pickup Barge-In)
- DCPU (Directed CPU)

Call Waiting line options

If a line with a Call Waiting option is busy when an incoming telemetry call tries to terminate on it, the COSU receives busy treatment and the subscriber does not hear Call Waiting tones.

During a telemetry connection between the COSU and a line with Call Waiting, another call can interrupt the telemetry call if the telemetry call is marked as interruptible. The other call receives busy treatment if the telemetry call is marked as uninterruptible.

The following line options have the Call Waiting functionality:

- CWD (Dial Call Waiting)
- CWI (Call Waiting Intragroup)
- CWO (Call Waiting Originating)
- CWR (Call Waiting Ringback)
- CWT (Call Waiting)
- DRCW (Distinctive Ringing/Call Waiting)
- SCWID (Spontaneous Call Waiting Identification)
- DSCWID (SCWID with Disposition)

CLASS screening line options

Incoming telemetry calls are not screened by any Custom Local Area Signaling Services (CLASS) screening line options. For example, no attempt is made to forward the telemetry call when the line has the Selective Call Forwarding option. Incoming telemetry calls terminate on the dialed line if the line is in the appropriate state.

Telemetry Application (continued)

CLASS screening line options follow:

- ACRJ (Anonymous Caller Rejection)
- SCA (Selective Call Acceptance)
- SCF (Selective Call Forwarding)
- SCRJ (Selective Call Rejection)

Cutoff On Disconnect

The Cutoff On Disconnect (COD) software never sends an open battery signal to the line for telemetry calls. However, it is possible for a telemetry call to send an open battery signal, depending on the datafill of table TRKGRP:

- When field OPENDISC is set to Y, telemetry calls send an 800-ms open battery signal to the line upon disconnect once, regardless of the fact that the line has option COD.
- When field OPENDISC is set to N, telemetry calls do not send any open battery signal to the line upon disconnect, even when option COD is assigned to the line.

Denied Termination/Suspended Service

Incoming telemetry calls are allowed to terminate on lines with Denied Termination (DTM) or Suspended Service (SUS) provided the lines are idle.

The following line options are of this type:

- DIN (Denied Incoming Calls)
- DTM
- RSUS (Requested Suspension)
- SUS

Display line options

Incoming telemetry calls do not send display data to the terminating line for any of the display line options.

Incoming interrupting calls deliver the display line options.

Display line options follow:

- BCLID (Bulk Calling Line Identification)
- CNAMD (Calling Name Delivery)
- CND (Calling Number Delivery)

Telemetry Application (continued)

- CNDBO (Calling Number Delivery Blocking Override)
- DDN (Dialable DN)

Distinctive Ringing

Since telemetry calls never ring the line, the Distinctive Ringing (DRING) and Distinctive Ringing/Call Waiting (DRCW) options have no effect on telemetry calls.

Incoming interrupting calls are subject to distinctive ringing.

Emergency service line

A telemetry call is not allowed to terminate on an emergency service line (ESL). If a telemetry call attempts to terminate on such a line, feature action NACK treatment with intercept tone is delivered.

Essential line

A telemetry call successfully terminates on an essential line (ELN).

Executive Busy Override

The Executive Busy Override (EBO) line option is not allowed to barge in on a telemetry call. If an end user attempts to barge in on a telemetry call using option EBO, feature action NACK treatment with intercept tone is sent to the end user.

Feature groups

Lines that have the Feature Group (FTRGRP) option are treated as if the associated individual options were assigned to the line.

Flash-activated line options

Flash-activated line options are not supported on the terminating line while a connection is established from the COSU to the line. The TIU and line should not be off-hook simultaneously, and it is the function of the TIU to detect this condition. However, if the COSU tries to reach a line without a TIU (by mistake) or reaches a line with a defective TIU, Telemetry Application prevents the activation of any flash line options. This feature ignores any flashes that occur on the line, even if flash-activated line options are datafilled against the line.

The following line options are of this type:

- CHD (Call Hold)
- CLF (Calling Line Identification with Flash)
- CPH (Called Party Hold)

Telemetry Application (continued)

- DCPK (Directed Call Park)
- HLD (Permanent Hold)
- PRK (Call Park)
- RCHD (Residential Call Hold)

Hunt group line options

Incoming telemetry calls terminate on the dialed line if the line is part of a hunt group, whether or not the line is the pilot DN. Incoming telemetry calls do not hunt. If the target line is busy, the COSU receives busy treatment even if the hunt group has the Line Overflow to DN (LOD) or Line Overflow to Route (LOR) option.

If a call attempts to terminate on the pilot of a hunt group that is busy with a telemetry call, the call interruption activity of Telemetry Application is not activated, and the call hunts, as for normal calls. Hunt processing has precedence over the call interruption activity.

The following line options use hunt group functionality:

- BNN (Bridged Night Number)
- CIR (Circular Hunt)
- DLH (Distributed Line Hunt)
- DNH (DN Hunt)
- LOD (Line Overflow to DN)
- LOR (Line Overflow to Route)
- MLH (Multiline Hunt)
- PRH (Preferential Hunt)
- RMB (Random Make Busy)
- SHU (Stop Hunt)

Inhibit Line Busy

Telemetry calls to a busy line always receive busy treatment, whether or not the line has CFB or Inhibit Line Busy (ILB).

Telemetry Application (continued)

Lines that have line options CFB, Make-busy Key (MBK), and ILB datafilled and activated normally function as follows:

- An incoming call that attempts to terminate on an idle line with CFB, MBK, and ILB is forwarded.
- An incoming call that attempts to terminate on a busy line with CFB, MBK, and ILB is routed to busy treatment.

The call interruption activity of Telemetry Application has a special interaction with lines that have this combination of line options. A normal incoming call that attempts to terminate on a telemetry busy line interrupts the telemetry call. Since the interrupted line now becomes idle, the incoming call is forwarded.

Intercom features

A telemetry call receives busy treatment if the line is busy with an intercom feature.

The following features are of this type:

- GIAC (Group Intercom All Call)
- GIC (Group Intercom)
- ICM (Intercom)
- INT (Intercom)

Make-busy Key

Telemetry calls terminate on lines that have the MBK option active. They also terminate on lines that have the Inhibit Make Busy (IMB) option active.

Incoming calls do not interrupt an ongoing telemetry call and receive busy tone.

Make Set Busy

Telemetry calls terminate on lines that have the Make Set Busy (MSB) option.

Incoming calls do not interrupt an ongoing telemetry call and receive busy tone.

Multiple Appearance Directory Number

Telemetry calls terminate on Multiple Appearance Directory Number (MADN) lines. For all types of MADNs, the telemetry call always terminates

Telemetry Application (continued)

on the primary DN of the MADN group. The interaction details between Telemetry Application and the different kinds of MADNs follow:

- MADN single call arrangement (MDN SCA). If a telemetry call attempts to terminate on an MDN SCA group where a secondary member is busy, the telemetry call receives busy treatment. If a secondary member goes off-hook during a telemetry call, the secondary member receives the same treatment as the primary member does when busy with a normal call.
- MADN single bridge arrangement (MDN SBA) and extension bridging (EXB). If a telemetry call attempts to terminate on an MDN SBA (or EXB) group where a secondary member is busy, the telemetry call receives busy treatment.

  If a secondary member goes off-hook while the primary member is in a telemetry session, the secondary member gets the same treatment as does a member of the MADN group who goes off-hook when the number of MADN members in the conference call is already at the maximum. The result is that the telemetry call is taken down. The secondary member can complete a call after going on-hook and then off-hook again.
- MADN multiple call arrangement (MDN MCA). During a telemetry call to the primary member, a secondary member can place an outgoing call or an external call to a secondary member can connect to the secondary member.

Telemetry calls established to MDN SCA, SBA, or EXB primary members are interruptible. However, telemetry calls to MDN MCA lines are not interruptible: incoming calls terminate to other members of the MDN MCA group.

Multiple Appearance Directory Number ringing options

When a telemetry call terminates on a line, it never rings the line, even if the line is a MADN line with a MADN ringing option.

The following line options are of this type:

- MRF (MADN Ring Forward)
- MRFM (MADN Ring Forwarding Manual)

Multiparty bridging

Telemetry calls terminate on multiparty bridging (MPB) lines. If a member of the MPB group goes off-hook while there is an ongoing telemetry call with another member, it will get dial tone; it will not be bridged to the telemetry call. If a third member goes off-hook while a telemetry call and a normal call are established, the member is bridged to the normal call, not the telemetry call.

Telemetry Application (continued)

Multiparty lines

Incoming telemetry calls terminate on party lines. The control of multiple TIUs on the same cable pair is managed by the COSU.

Plug Up

Telemetry calls do not terminate on Plug Up (PLP) lines. If a telemetry call attempts to terminate on such a line, it receives feature action NACK treatment with intercept tone.

Private virtual network priority line

Telemetry calls do not terminate on private virtual network priority lines. If a telemetry call attempts to terminate on such a line, it receives feature action NACK treatment with intercept tone.

Query Busy Station

A station with the Query Busy Station (QBS) option can monitor the busy status of a line involved in a telemetry call.

Ring Again

If a line with the Ring Again (RAG) option attempts to terminate on a line that is busy with an uninterruptible telemetry call, busy treatment is returned. The end user can activate option RAG and be notified when the telemetry call is over.

If a line with option RAG attempts to terminate on a line that is busy with an interruptible telemetry call, the telemetry call is interrupted and the end user cannot activate option RAG since no busy condition was met.

Series Completion

A telemetry call terminates on a Series Completion (SCMP) line only when the line is idle. If the line is busy, the telemetry call is not forwarded; it receives busy treatment instead.

If an incoming call attempts to terminate on a line that is busy with a telemetry call, the call interruption activity of Telemetry Application is not activated, and the call is redirected, as for normal calls. SCMP processing has precedence over the call interruption activity.

Single Line Variety Package

Lines with the Single Line Variety Package (SLVP) cannot transfer a telemetry call or put a telemetry call on hold. A telemetry call receives busy treatment if the line is busy with an intercom feature.

Telemetry Application (continued)

Subscriber Line Usage

Subscriber Line Usage (SLU) features verify subscriber usage of the line. Telemetry calls are considered as calls for SLU. However, telemetry calls are not considered as calls for the Line Study (SDY) feature.

Teen Services

On lines with Teen Services (SDN), either the primary DN or secondary DN can be used to establish a telemetry session.

Incoming calls to lines with the Enhanced SDN option cannot interrupt telemetry calls. They behave as follows:

- An incoming call to a primary DN interrupts a telemetry call on either of the two DNs.
- An incoming call to a secondary DN does not interrupt a telemetry call. Busy treatment is returned.

Incoming calls to other kinds of SDN options interrupt telemetry calls.

Uniform Call Distribution

Telemetry calls cannot terminate on Uniform Call Distribution (UCD) virtual DNs. However, telemetry calls terminate on UCD group members.

The following line options have the UCD functionality:

- UCD (Uniform Call Distribution)
- UCDLG (Uniform Call Distribution Login)
- UCDSD (Uniform Call Distribution Signal Distributor)

Virtual Facility Groups

Telemetry calls do not bypass VFG if they are routed through a VFG defined in table VIRTGRPS. Telemetry calls are subject to the same constraint imposed by VFG as normal calls; that is, telemetry calls are blocked by VFG if the size limit defined for that VFG is exceeded. GNCT (generalized no circuit) treatment is returned, and the reorder tone is applied in this case.

Activation/deactivation by the end user

Telemetry Application requires no activation or deactivation by the end user.

Billing

Telemetry Application generates Bellcore-formatted Automatic Message Accounting (AMA) records using call code type 550 and structure code 500.

Telemetry Application (continued)

The generation of AMA records for telemetry calls is enabled or disabled for each UT trunk group through field BILLING of table TRKGRP. If BILLING is set to Y, Telemetry Application generates an AMA record for telemetry calls originating from the trunk group. If BILLING is set to N, no AMA record is generated.

For BILLING to be set to Y in table TRKGRP, the DMS switch office must meet the following requirements:

- It must use the Bellcore AMA format for its billing records. The billing format is specified in table CRSFMT (Call Record Stream Format).
- The LAMA software feature must be present. It is present if parameter LAMA_OFFICE is set to Y in table OFCOPT.

No billing record is generated by the Telemetry Application software if the telemetry call duration is less than the minimum call duration for billing record generation, which is determined by office parameter MINIMUM_CHARGES_DURATION in table OFCENG. To override the minimum call duration and generate billing records for telemetry calls that are less than the minimum, do the following:

1. In table AMAOPTS, set option UNANS_LOCAL to ON.
2. In table BCCODES, specify call code 550 against the key LOCAL.

For more information about the tables mentioned in this section, refer to the data schema section of this document. For more information about the parameters, refer to *Office Parameters Reference Manual*. For more information about AMA billing, refer to *Bellcore Format Automatic Message Accounting Reference Guide*, 297-1001-830.

The following figure is an example of an AMA record generated for a telemetry call. The record uses structure code 500 and call code 550.

Call code 550

```
*HEX ID:AA STRUCTURE CODE:00500C CALL CODE: 550C SENSOR TYPE:036C
SENSOR ID:0200200C REC OFFICE TYPE:036C REC OFFICE ID:0200200C
DATE:31001C CLD PTY OFF-HK:0C SERVICE FEATURE:000C ORIG NPA:613C
ORIG NUMBER:6211088C OVERSEAS IND:0C TERM NPA:00613C
TERM NUMBER:6211089C CONNECT TIME:1344504C ELAPSED TIME:000098182C
```

The service feature code for telemetry calls can be specified by setting field SFTRCODE in table TRKGRP. The default value of SFTRCODE is 0.

Telemetry Application (continued)

The 7- or 10-digit automatic number identification (ANI) received from the COSU is the local billing number of the utility company making the telemetry call.

- If a 10-digit ANI is received from the COSU, it is placed in the originating numbering plan area (NPA) and originating number fields of the AMA record.
- If a 7-digit ANI is received from the COSU, it is placed in the originating number field of the AMA record, and field SNPA of table TRKGRP is placed in the originating NPA field of the AMA record.

The COSU also sends a 7- or 10-digit called DN.

- If a 10-digit called DN is received from the COSU, it is placed in the terminating NPA and terminating number fields of the AMA record.
- If a 7-digit called DN is received from the COSU, it is placed in the terminating number field of the AMA record, and field SNPA of table TRKGRP is placed in the terminating NPA field of the AMA record.

Elapsed time of a telemetry call is the difference between the time of call connect and time of call disconnect. Trunk seizure occurs when the COSU goes off-hook, and call connect is defined as the time at which cut-through is made to the subscriber's line. Call disconnect is defined as the time at which the COSU goes on-hook to release the UT trunk. Interrupted telemetry calls are billable if field BILLING in table TRKGRP is set to Y.

Station Message Detail Recording

Telemetry Application does not affect Station Message Detail Recording.

Datafilling office parameters

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

Office parameters used by Telemetry Application

Table name	Parameter name	Explanation and action
OFCOPT	UT_MAX_AND_CURRENT_TRUNK_ COUNT	Utility Telemetry Maximum and Current Trunk Count. This parameter specifies the maximum and current number of UT trunks that can be provisioned for a DMS switch office. Because this parameter resides in table OFCOPT, it is write-protected. Only Northern Telecom (Nortel) can change the value of the maximum number of UT trunks, and any change should be requested through Nortel. The Telemetry Application software automatically adjusts the value of the current number of UT trunks, so this field should never require end user modification.

Error messages for UT_MAX_AND_CURRENT_TRUNK_COUNT

The following error messages apply to parameter UT_MAX_AND_CURRENT_TRUNK_COUNT.

Error messages for UT_MAX_AND_CURRENT_TRUNK_COUNT

Error message	Explanation and action
`ERROR: CURRENT number of UT trunks cannot exceed the MAXIMUM`	A change to the office parameter was attempted such that the CURRENT field would be greater than the MAXIMUM field. Consult Nortel.
`UT TRUNK MEMBER ERROR: Current UT trunk count is at the maximum. UT member additions will not be allowed. See office parameter ut_max_and_current_trunk_count.REPORT PROBLEM TO THE NEXT LEVEL OF SUPPORT.`	A UT trunk member addition into table TRKMEM was attempted when the CURRENT number of UT trunks was already equal to the MAXIMUM.

Telemetry Application (continued)

Datafill sequence

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

Datafill required for Telemetry Application

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 this feature affects office parameters.
CLLI	Common Language Location Identifier. This table defines a unique identifier for the trunk group.
TRKGRP (type UT)	Trunk Group (type UT). This table defines the logical characteristics of the trunk group.
TRKSGRP	Trunk Subgroup. This table defines the signaling characteristics of the trunk subgroup.
TRKMEM	Trunk Member. This table defines the physical characteristics of the trunk member.

Datafilling table TRKGRP type UT

The following table shows the datafill specific to Telemetry Application for table TRKGRP type UT. Only those fields that apply directly to Telemetry Application are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TRKGRP type UT (Sheet 1 of 3)

Field	Subfield or refinement	Entry	Explanation and action
GRPINFO		see subfields	Variable group data. This field consists of subfields GRPTYP, TRAFSNO, PADGRP, NCCLS, TRAFCLS, PRTNM, SCRNCL, SNPA, ORIGSRCE, OFFHKID, STDGT, STPDGT, ST2PDGT, MAXTIME, ANSWTIME, BILLING, CALLINTR, OPENDISC, and SFTRCODE.
	GRPTYP	UT	Group type. Enter UT to specify the group type for utility telemetry trunks.
	OFFHKID	0 to 99	Off-hook transmission protocol identifier. Enter the ANI II identifier for off-hook transmission.

Telemetry Application (continued)

Datafilling table TRKGRP type UT (Sheet 2 of 3)

Field	Subfield or refinement	Entry	Explanation and action
	STDGT	0	ST digit abbreviated ring duration. Enter 0 (zero). An abbreviated ring duration is not supported in this version.
	STPDGT	0	STP digit abbreviated ring duration. Enter 0 (zero). An abbreviated ring duration is not supported in this version.
	ST2PDGT	0	ST2P digit abbreviated ring duration. Enter 0 (zero). An abbreviated ring duration is not supported in this version.
	MAXTIME	1 to 999	Maximum call time. Enter the maximum duration (in seconds) of a telemetry call.
	ANSWTIME	0 to 20	Answer timeout. Enter a timeout value (in units of 100 ms) for the interval between the generation of the post-cut-through wink sent to the trunk and the TIU answering the call. For no timeout, enter 0 (zero).
	BILLING	Y or N	Billing record required. If calls originating on this trunk group will generate a billing record, enter Y. Otherwise, enter N. The DMS switch office must meet the following conditions for BILLING to be set to Y: • It must use the Bellcore AMA format for its billing records. The billing format is specified in table CRSFMT. • The LAMA software feature must be present. It is present if parameter LAMA_OFFICE is set to Y in table OFCOPT.
	CALLINTR	Y or N	Call interrupt. If calls originated on this trunk group can be interrupted by a new incoming call to the end user's line, enter Y. Otherwise, enter N, and incoming calls to the telemetry busy line receive busy treatment.

Telemetry Application (continued)

Datafilling table TRKGRP type UT (Sheet 3 of 3)

Field	Subfield or refinement	Entry	Explanation and action
	OPENDISC	Y or N	Open battery interval for disconnect. If an 800-ms open battery interval is to be applied to the line to disconnect the TIU, enter Y.
	SFTRCODE	0 to 999	Service feature code. Enter the service feature code that is to appear in the AMA record (if one is generated).

Datafill example for table TRKGRP type UT

The following example shows sample datafill for table TRKGRP type UT.

MAP display example for table TRKGRP type UT

```
GRPKEY          GRPINFO
_____________________________________________________

UTGRP1          UT 0 NPDGP NCRT NIL P621 NSCR 613 LCL 70
                0 0 0 20 5 Y N Y 0
```

Error messages for table TRKGRP type UT

The following error messages apply to table TRKGRP type UT.

Error messages for table TRKGRP type UT (Sheet 1 of 2)

Error message	Explanation and action
`UT trunk group error: STDGT can only equal 0`	The only permissible value for the abbreviated ringing duration is 0.
`UT trunk group error: STPDGT can only equal 0`	The only permissible value for the abbreviated ringing duration is 0.
`UT trunk group error: ST2PDGT can only equal 0`	The only permissible value for the abbreviated ringing duration is 0.

Error messages for table TRKGRP type UT (Sheet 2 of 2)

Error message	Explanation and action
`UT trunk group error: This office does not use Bellcore AMA format. BILLING must equal N`	The BILLING field was set to Y, but this central office does not use the Bellcore format for its AMA records. Telemetry Application only supports the Bellcore format; thus, no billing can be generated. Note that the AMA format is specified in table CRSFMT.
`UT trunk group error: This office does not have the LAMA feature. BILLING must equal N`	The BILLING field was set to Y, but the office parameter LAMA_OFFICE is set to N, indicating that this central office is not configured with the LAMA feature. No billing can be generated.

Data restrictions for table TRKSGRP

Telemetry Application does not modify table TRKSGRP. However, it restricts the permissible values of certain fields for UT trunks. Those fields are shown in the following table. For a description of the other fields, refer to the data schema section of this document.

Restricted fields for UT trunk subgroups

Field name	Permissible value
DIR	IC
IPULSTYP	MF
ISTARTSG	WK
OVLP	N
CCONT	NO
RNGBCK	NO
ESUPR	N
SAT	N
REMBSY	N
DIALMODE	M
ECSTAT	UNEQ

Telemetry Application (continued)

Datafill example for table TRKSGRP

The following example shows sample datafill for table TRKSGRP.

MAP display example for table TRKSGRP

```
                SGRPKEY  CARDCODE
SGRPVAR
                                                          SGRPVAR
_____________________________________________________________________

              UTGRP1 0    DS1SIG
    STD
IC MF WK N 10 10 NO NO N N N M UNEQ
```

Error messages for table TRKSGRP

The following error messages apply to table TRKSGRP.

Error messages for table TRKSGRP (Sheet 1 of 2)

Error message	Explanation and action
UT trunk subgroup error: DIR must equal IC (incoming)	Trunk group direction must be incoming
UT trunk subgroup error: IPULSTYP must equal MF	Incoming pulse type must be multifrequency (MF)
UT trunk subgroup error: ISTARTSG must equal WK	Incoming start dial signal must be wink (WK)
UT trunk subgroup error: OVLP must equal N	Overlap out-pulsing is not required
UT trunk subgroup error: CCONT must equal NO	Coin control is not required
UT trunk subgroup error: RNGBACK must equal NO	Ringback signal is not required
UT trunk subgroup error: ESUPR must equal N	Echo suppressor is not required
UT trunk subgroup error: SAT must equal N	Satellite routing is not allowed
UT trunk subgroup error: REMBSY must equal N	Remote Make Busy feature cannot be assigned to this subgroup

Error messages for table TRKSGRP (Sheet 2 of 2)

Error message	Explanation and action
`UT trunk subgroup error: DIALMODE must equal M`	Dialing mode must be machine dialed
`UT trunk subgroup error: ECSTAT must equal UNEQ`	Echo canceller is not to be equipped on this trunk subgroup

Translation verification tools

The following example shows the output from TRAVER for a call from a UT trunk (in the UTGRP1 trunk group) to line 621-1088.

The UT entry in table TRKGRP is as shown in the MAP display in section “Datafill example for table TRKGRP type UT."

Telemetry Application (end)

TRAVER output example for Telemetry Application

```
traver tr utgrp1 6211088 b
TABLE TRKGRP
UTGRP1 UT 0 NPDGP NCRT NIL P621 NSCR 613 LCL 70 0 0 0 20 5 Y N Y 0
Originator is not an AIN agent, therefore AIN info is not processed.
TABLE STDPRTCT
P621 ( 1) (65021) 0
 . SUBTABLE STDPRT
WARNING: CHANGES IN TABLE STDPRT MAY ALTER OFFICE
BILLING.  CALL TYPE DEFAULT IS NP.  PLEASE REFER TO
DOCUMENTATION.
 . 621 624 N NP 0 NA
 . SUBTABLE AMAPRT
 . KEY NOT FOUND
 . DEFAULT VALUE IS:   NONE OVRNONE  N
TABLE HNPACONT
613 832 1 ( 117) ( 1) ( 85) ( 0) 0
 . SUBTABLE HNPACODE
 . 621 621 DN 613 621
TABLE TOFCNAME
613 621
TABLE DNINV
613 621 1088 L HOST 00 0 01 04
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
TUPLE NOT FOUND

+++ TRAVER: SUCCESSFUL CALL TRACE +++

DIGIT TRANSLATION ROUTES

1 LINE                  6136211088         ST

TREATMENT ROUTES.  TREATMENT IS GNCT
1 T120

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

SERVORD

Telemetry Application does not use SERVORD.

Universal Access to CLASS Features

Functionality code

Functional group ordering code: RES00001

Functionality ordering code: RES00011

Release applicability

NA011 and up

Prerequisites

To operate, Universal Access to CLASS Features has the following prerequisites:

- BAS Generic, BAS00003
- MDC Minimum, MDC00001
- MDC Standard, MDC00003
- RES Service Enablers, RES00006
- SCM/SMS/SMV, BAS00016

Network configuration

Common Channel Signaling No. 7 (CCS7) connectivity is required for network (interoffice) configuration of Universal Access to CLASS Features. The following feature packages are required for CCS7 connectivity:

- Base ISUP, ISP70001
- TEL CCS7 Base, TEL00008

Description

Universal Access to CLASS Features allows all Subscriber Services Residential Enhanced Services (RES) lines in an office the ability to access a custom local area signaling service (CLASS) feature. The RES lines do not have to be assigned the CLASS feature individually through the Service Order System (SERVORD). With universal access, the subscriber does not need to notify the operating company to access a CLASS feature. The subscriber's access is on demand. In addition, Universal Access to CLASS Features gives the operating company the ability to *restrict* universal access to one or more CLASS features from individual subscribers or groups of subscribers.

Operation

Universal access does not change the operation of CLASS features. The subscriber dials the same feature access code for universal access as for subscription access. When universal access is available in an office for a

Universal Access to CLASS Features (continued)

particular feature, a subscriber can still have the feature assigned as a line option. Accessing a CLASS feature assigned to the subscriber as a line option or customer group option takes precedence over accessing the feature through universal access.

Note: Universal Access to CLASS Features does not allow universal access to display features.

Universal Access to CLASS Features provides universal access to the following CLASS features:

- Automatic Call Back (ACB)
- Automatic Recall (AR)
- Customer Originated Trace (COT)
- Anonymous Caller Rejection (ACRJ)
- Calling Number Delivery Blocking (CNDB)
- Calling Name Delivery Blocking (CNAB)

  Note: When feature package NTXE46AA, Calling Name/Number Delivery Blocking, is present in the office, universal access of CNDB or CNAB also allows universal access to Calling Number Blocking (CNB), Calling Name Number Blocking (CNNB), and Calling Name Number Delivery (CNND).

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

CLASS feature packages

The following CLASS feature packages provide specific CLASS features. They are required to give universal access to CLASS features:

- NTXA00AB, Call Setup (ACB and AR features)
- NTXA02AA, Customer Originated Trace (COT feature)
- NTXP12AA, Anonymous Caller Rejection (ACRJ feature)
- NTXA41AA, Calling Number Delivery Blocking Administration (CNDB feature)
- NTXQ29AA, Calling Name Delivery Blocking (CNAB feature)
- NTXA42AA, Distinctive Ringing/Call Waiting (DRCW feature)

- NTXA45AA, Selective Call Acceptance (SCA feature)
- NTXA95AA, Selective Call Forwarding (SCF feature)
- NTXA96AA, Selective Call Rejection (SCRJ feature)

Converting POTS lines to RES lines

Before universal access can be provided for an office, all plain old telephone service (POTS) lines that have an LCC supported by the RES environment must be converted to RES lines. Universal Access to CLASS Features provides a tool, the MAKERES command, that converts POTS lines to RES lines. For the operating company, the MAKERES command eases and speeds converting lines. The MAKERES command is used instead of the conventional SERVORD procedure.

MAKERES command

When the Universal Access to CLASS Features package is present in the office, the command interpreter (CI) MAKERES command can be used by the operating company to convert POTS lines to RES lines, allocate the necessary data store, and assign incoming and outgoing call memory to each RES line.

Note: The MAKERES command is present when the Universal Access to CLASS Features package is present; however, the MAKERES command can also be ordered separately (ordering code RES00052).

The MAKERES command has the following four subcommands:

- CONVERT, which converts POTS lines to RES lines within a range of line equipment numbers (LEN)
- DELOPT, which deletes a CLASS option already assigned to RES lines (on a subscription basis) within a range of LENs
- COPY, which provides a list of LENs for POTS lines that remain unconverted
- CHEKCM, which checks the incoming and outgoing call memory status of each RES line within a range of LENs

The MAKERES command is unable to convert a POTS line to a RES line under the following conditions:

- The line has POTS-specific options not supported by RES.
- Subfield RESINFO in table LINEATTR (Line Attribute Index) is not set to Y.
- The POTS line has LCCs incompatible with the RES LCC.
- The line is in the call processing busy state.

Universal Access to CLASS Features (continued)

With the MAKERES-STAYRES feature active, lines successfully converted to RES lines remain RES lines, and no SERVORD command can be used to convert them to POTS lines. At the execution of the MAKERES CONVERT command, a message is displayed warning the end user that these lines cannot revert to POTS. See the following example.

```
> MAKERES
MAKERES:
WARNING:Restarts, table control, and SERVORD changes
during the CONVERT process are NOT recommended.
> CONVERT START HOST 1 0 0 26 STOP HOST 1 0 0 26
WARNING: Lines made RES via MAKERES cannot revert to
POTS
Are you sure you want to convert lines to RES?
Please confirm (“YES”, “Y”, “NO”, OR “N”):
> YES
Conversion has begun...
Conversion Complete. Please COPY to display results.
>
```

Incoming and outgoing call memory Incoming and outgoing call memory must be assigned to all RES lines in the office to provide universal access to CLASS features that use updated call memory. Using the MAKERES command ensures that all converted POTS lines are assigned incoming and outgoing call memory.

When the universal access package is present in the office, all existing RES lines have incoming and outgoing call memory assigned.

Incoming and outgoing call memory are updated for all calls originating from and terminating to RES lines whether universal access for a feature is enabled for the office.

Universal Access to CLASS Features (continued)

Restricting universal access

The operating company can restrict universal access to a CLASS feature from a line or group of lines. Two methods can be used:

- To restrict access from a line—the line option DENY can be assigned to the subscriber line.
- To restrict access to a group of lines—the class of service for the customer group (set in table LINEATTR) can prevent access to feature translators or prevent the line from having a RES LCC.

Note: The capability to use the class of service to deny access for a customer group is an existing capability and is not changed in any way by Universal Access to CLASS Features.

Line option DENY

When the Universal Access to CLASS Features package is present in an office, option DENY can be assigned to a line through SERVORD. Once assigned to a line, option DENY prevents the line from gaining universal access to one or more CLASS features.

Note: Option DENY cannot be assigned on a customer group basis.

Class of service

When subfield RESINFO in table LINEATTR is set to Y, the feature translator for a particular network class of service (NCOS) can be used to deny (or allow) access to a particular feature in table IBNXLA. When subfield RESINFO in table LINEATTR is set to N, access is denied to all RES features, because the line cannot be converted to a RES line.

For more information on class of service and table LINEATTR, refer to “Datafilling table LINEATTR" in this feature description.

Translations table flow

The Universal Access to CLASS Features translations tables are described in the following list:

- Table LINEATTR (Line Attribute) assigns attributes to lines in table LENLINES and to Meridian stations and attendant consoles in the Meridian Digital Centrex (MDC) translation tables.
- Table RESOFC (Residential Line Class Office Data) determines whether the feature is enabled for an office. For this example, CNDB is enabled. Table RESOFC also determines whether the feature is accessed by subscription access or universal access when the Universal Access to

Universal Access to CLASS Features (continued)

CLASS Features package is present in the office. For this example, CNDB is accessed by universal access.

Note: The value UNIVER in subfield ACCESS in table RESOFC is valid only when the Universal Access to CLASS Features package is present in the office (and active), and only for CLASS features that allow universal access.

Note: Take care when you change RESOFC field ACCESS for CLASS features SCA, SCRJ, DRCW, and SCF. Any subscribers who may have activated the SCA/SCRJ/DRCW/SCF features while ACCESS type was UNIVER will automatically be assigned the active features when the ACCESS type is changed from UNIVER to SUBSCR.

- Table IBNFEAT (IBN Line Feature) defines the features assigned to Subscriber Services RES lines. The operating company can restrict a subscriber's universal access to a CLASS feature. Option DENY is a valid line option for RES lines. When option DENY is present in table IBNFEAT and a specific CLASS feature is denied, for example, DENYCNDB, universal access is denied to the subscriber. Table IBNFEAT is datafilled through SERVORD.

Note: The ACRJ, DRCW, SCA, SCF, and SCRJ features require an activation status when they are assigned with universal access. With the ACRJ feature, an activation status of UNIVA or UNIVI is automatically set in table IBNFEAT when ACRJ is activated or deactivated through universal access. When ACRJ is assigned as a line option, the activation status is set to ACT or INACT. With the DRCW, SCA, SCF, and SCRJ features, an activation status of UNIVA or UNIVI is automatically set in table RESFEAT when they are activated or deactivated through universal access. When they are assigned as a line option, the activation status is set to ACT or INACT.

The Universal Access to CLASS Features translation process is shown in the flowchart that follows. The flowchart shows the tables accessed when a subscriber activates the CNDB feature.

Note: In the flowchart, it is assumed that the subscriber line is set up as a RES line. If the line is not a RES line, the subscriber is routed to the feature not allowed (FNAL) treatment.

Universal Access to CLASS Features (continued)

Table flow for Universal Access to CLASS Features (CNDB activation)

The subscriber goes off-hook and dials the CNDB activation code.

Table LINEATTR
field RESINF
subfield RESINFO = Y or N

Table RESOFC
Position on tuple using
CNDB ENABLED = Y
ACCESS = UNIVER

Table IBNFFEAT
Position on tuple using deny option
DENYOPT = DENYCNDB

Y

The subscriber is routed to the FNAL treatment.

N

The subscriber successfully accesses CNDB by universal access; the subscriber's number is blocked.

Note: In table RESOFC, if ENABLED is set to N, the subscriber is routed to the FNAL treatment. If ACCESS is set to SUBSCR, CNDB must be assigned to the subscriber line in order for the subscriber to access the feature.

Universal Access to CLASS Features (continued)

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

Datafill example for Universal Access to CLASS Features

Datafill table	Example data
LINEATTR	0 1FR NONE NT FR01 0 613 P621 L613 TSPS 10 NIL NILSFC LATA1 0 NIL NIL 00 Y RESGRP 0 2 $
RESOFC	CNDB Y UNIVER CNDB AMA $ $
IBNFEAT	HOST 00 02 0 05 0 DENY DENY (DENYCNDB) $

Limitations and restrictions

The following limitations and restrictions apply to Universal Access to CLASS Features:

- Universal access is supported in the RES environment only, not in MDC.
- All RES lines must be assigned incoming and outgoing call memory.
- A POTS line cannot be converted to a RES line under the following conditions:
  - The POTS line has options assigned that are not supported in the RES environment.
  - Subfield RESINFO in table LINEATTR is not set to Y.
  - The POTS line has LCCs incompatible with the RES LCC.
- With the MAKERES-STAYRES feature active and Universal Access to CLASS Features not active, all RES lines remain RES lines even without the assignment of a RES-specific feature.
- When Universal Access to CLASS Features is active, all RES lines remain RES lines even without the assignment of a RES-specific feature.
- Subscription and customer group access take precedence over universal access.
- When the Universal Access to CLASS Features package is present in the office, field MAXCOUNT in table OPTCTL for the CLASS tuples is automatically set to 999 999.

Interactions

Universal Access to CLASS Features has no functionality interactions.

Universal Access to CLASS Features (continued)

Activation/deactivation by the end user

Universal Access to CLASS Features requires no activation or deactivation by the end user.

Billing

In addition to providing universal access to one or more CLASS features, the operating company can specify whether the feature is charged on a flat-rate or usage-sensitive basis. Information in table RESOFC determines the type of billing provided to the subscriber for a particular feature. When subfield ACCESS is set to UNIVER in table RESOFC, the BILLING_OPTION prompt appears to specify AMA or NOAMA billing. If billing is required, AMA can be specified; if no billing is required, NOAMA can be specified.

Note 1: Because billing is not provided for ACRJ and CNAB, NOAMA should be specified at the BILLING_OPTION prompt for these features.

Note 2: Two office parameters for AMA must be provisioned according to how many lines will have universal access with billing. These parameters in table OFCENG are CRS_PRU_POOL2_SIZE and CRS_SUBRU_POOL1_SIZE. Refer to *Office Parameters Reference Manual* for more information.

Precedence of subscription access to CLASS features

Subscription and customer group access to a CLASS feature takes precedence over universal access. Therefore, billing for universal access to a CLASS feature depends on whether the feature is also assigned to a subscriber's line or customer group. For example, a billing record is not produced when the subscriber dials the CNDB feature access code in the following scenario. CNDB is available with universal access and AMA billing in table RESOFC. The subscriber has CNDB with flat-rate billing assigned to the line.

Refer to the individual CLASS feature descriptions for information on billing, AMA records, call codes, structure codes, and module codes specific to each feature.

Station Message Detail Recording

Universal Access to CLASS Features does not affect Station Message Detail Recording.

Universal Access to CLASS Features (continued)

Datafilling office parameters

The following table shows the office parameters required by Universal Access to CLASS Features. For more information about office parameters, refer to *Office Parameters Reference Manual.*

Note: Although this feature does not affect office parameters, the following two AMA parameters must be provisioned according to how many lines will have universal access with billing.

Office parameters used by Universal Access to CLASS Features

Table name	Parameter name	Explanation and action
OFCENG	CRS_PRU_POOL2_SIZE	This parameter controls the provisioning for the CRS_PRU_POOL2 extension block pool. This parameter currently applies only to Bellcore Automatic Message Accounting (AMA) offices.
OFCENG	CRS_SUBRU_POOL1_SIZE	This parameter controls the provisioning for the CRS_SUBRU_POOL1 extension block pool. This extension block is required for generating Bellcore AMA structures that are specific to MD functions and Bellcore AMA structures that are specific to number service code functions (PVN and 800). Any Bellcore AMA billing record requires a maximum of one block from the pool.

Datafill sequence

The following table lists the tables that require datafill to implement Universal Access to CLASS Features. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Universal Access to CLASS Features (Sheet 1 of 2)

Table	Purpose of table
LINEATTR	Line Attribute Table. This table contains the line attributes assigned to regular lines in table LENLINES and Meridian stations and attendant consoles in the Meridian Digital Centrex (MDC) translation tables.

Universal Access to CLASS Features (continued)

Datafill tables required for Universal Access to CLASS Features (Sheet 2 of 2)

Table	Purpose of table
RESOFC	Residential Line CLASS Office Data. This table contains data on CLASS features and enables the features for the office.
IBNFEAT	IBN Line Feature. This table defines the features assigned to each Subscriber Services line. ***Note:*** IBNFEAT 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 LINEATTR

The following table shows datafill specific to Universal Access to CLASS Features for table LINEATTR.

Datafilling table LINEATTR (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
LNATTIDX		0 to 31 999	Line attribute index. This field specifies the index in the line attribute table.
RESINF		Y or N	RES information. This field consists of subfield RESINFO.
	RESINFO	Y or N	RES information selector. Enter Y (yes) if the line attribute index is required to support RES lines (the LCC must be 1FR, 1MR, OWT, EOW, INW, 2WW, ETW, CCF, CDF, CFD, CSP, ZMD, or ZMZPA). Datafill refinements CUSTGRP, SUBGROUP, and NCOS. Otherwise, enter N (no) and leave refinements CUSTGRP, SUBGRP, and NCOS blank.
	CUSTGRP	alphanumeric (up to 16 characters)	Customer group. Enter the customer group name assigned to the line attribute index. This name must appear in table CUSTENG field CUSTNAME.

Universal Access to CLASS Features (continued)

Datafilling table LINEATTR (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	SUBGRP	0 to 7	Customer subgroup. Enter the subgroup in the customer group associated with the line attribute index. This subgroup must appear in table SUBGRP.
	NCOS	0 to 511	Network class of service number. Enter the network class of service (NCOS) number in the customer group associated with the line attribute index. This number must appear in table NCOS field NCOS.

Datafill example for table LINEATTR

The following example shows sample datafill for table LINEATTR.

MAP display example for table LINEATTR

```
TABLE LINEATTR

LNATTIDX  LCC  CHGCLSS  COST  SCRNCL LTG STS PTRNM  LCANAME
ZEROMPOS  TRAFSNO
  MRSA      SPC  LATANM  MDI  IXNAME  DGCLNAME     FANIDIGS
              RESINF                                OPTIONS
-------------------------------------------------------------------
142   1FR  NONE     NT   NSCR    0  919  ARG1       NLCA
TOPS       0
 NIL     NILSFC   LATA10     0    NIL        NIL          00
             Y   IBNTST   0 3                        $
```

Datafilling table RESOFC

The following table shows the datafill specific to Universal Access to CLASS Features for table RESOFC. The example uses the CNDB feature. Only those fields that apply directly to Universal Access to CLASS Features are shown. Refer to the data schema section of this document for a description of the other fields.

Universal Access to CLASS Features (continued)

When the Universal Access to CLASS Features feature package is present, table RESOFC also determines whether universal access is available for the office.

Datafilling table RESOFC (Sheet 1 of 2)

Field	Subfield	Entry	Explanation and action
KEY		see subfield	Key. This field consists of subfield FEATNAME.
	FEATNAME	CLASS feature	Feature Name. This subfield is the key to the table. It specifies the name of the feature. Enter a CLASS feature, for example, CNDB.
ENABLED		Y or N	Enabled. This field specifies whether the feature is enabled in the office. Enter Y or N. ***Note:*** The default value for each CLASS feature included in the load is N (disabled).
FEATDATA		see subfields	Feature Data. This field consists of various subfields depending on the feature access (SUBSCR or UNIVER) for the office, and on the specific feature being assigned. For universal access of the CNDB feature, the subfields are ACCESS, BILLING_OPTION, FEATNAME, and ANNCS.
	ACCESS	SUBSCR or UNIVER	Feature Access. This subfield specifies who can access the feature. SUBSCR indicates subscription access only and is the default value. UNIVER indicates RES lines. For universal access, enter UNIVER and datafill subfield BILLING_OPTION. ***Note:*** Datafill in table RESOFC is not retained when access changes from UNIVER to SUBSCR or from SUBSCR to UNIVER. The entire tuple must be deleted and re-entered again.
	FEATNAME	see subfield	Feature Name. This subfield specifies the feature name as datafilled in field FEATNAME.

Universal Access to CLASS Features (continued)

Datafilling table RESOFC (Sheet 2 of 2)

Field	Subfield	Entry	Explanation and action
	BILLING_ OPTION	AMA or NOAMA	Billing Option. This subfield specifies the type of billing required when the subscriber accesses the feature through universal access. Enter AMA if a billing record should be produced. Enter NOAMA if no billing record should be produced. ***Note:*** Because billing is not supported for the ACRJ and CNAB features, NOAMA should be entered at the prompt.
	ANNCS	CNDBCONF plus the CLLI or $	Announcement. This subfield specifies whether a confirmation announcement is to be provided for CNDB. Enter CNDBCONF to identify the CNDB confirmation announcement, followed by the CLLI of the previously defined announcement. For CNDB, the recommended datafill for the new announcement is CNDBCONF. Enter $ if no confirmation announcement is to be provided.

Datafill example for table RESOFC

The following example shows sample datafill for table RESOFC. The CNDB feature tuple is used in the example.

MAP display example for table RESOFC

```
KEY      ENABLED        FEATDATA                    FNALANN
_________________________________________________________________
CNDB      Y             UNIVER  CNDB  AMA $              $
```

Translation verification tools

Universal Access to CLASS Features does not use translation verification tools.

SERVORD

Table IBNFEAT is datafilled through SERVORD. When the Universal Access to CLASS Features feature package is present and active, table IBNFEAT also determines whether universal access is restricted for a particular CLASS feature on the subscriber line.

Universal Access to CLASS Features (continued)

When the Universal Access to CLASS Features package is present in the office and active, the SERVORD commands NEW (establish new service), ADO (add option), and DEO (delete option) ensure that lines using universal access are equipped with the required incoming and outgoing call memory. The value of the office parameter RES_SO_SIMPLIFICATION in table OFCVAR determines how the NEW, ADO, and DEO commands ensure that the required memory is assigned. Refer to “Service order limitations and restrictions" in this feature description.

SERVORD can also be used to add, change, or delete option DENY on a Subscriber Services RES line. Option DENY restricts access to CLASS features.

Activation status for ACRJ, DRCW, SCA, SCF, and SCRJ

The ACRJ, DRCW, SCA, SCF, and SCRJ features require an activation status when they are assigned with universal access. With the ACRJ feature, an activation status of UNIVA (universal access active) or UNIVI (universal access inactive) is automatically set in table IBNFEAT when ACRJ is activated or deactivated through universal access. When ACRJ is assigned as a line option, the activation status is set to ACT or INACT.

Note: The QDN and QLEN commands show the universal activation status for features ACRJ, DRCW, SCA, SCF, and SCRJ after the feature is activated through universal access.

With the DRCW, SCA, SCF, and SCRJ features, an activation status of UNIVA or UNIVI is automatically set in table RESFEAT when they are activated or deactivated through universal access. When they are assigned as line options, the activation status is set to ACT or INACT.

Changing from universal access to subscription access

For features ACRJ, DRCW, SCA, SCF, or SCRJ, access can be changed from universal to subscription by using the CHF (change feature) and ADO commands.

Once the feature is activated by the subscriber through universal access, the CHF command can be used to change field STATUS from UNIVA or UNIVI to ACT or INACT. The ADO command can be used to add the feature to the subscriber line with field STATUS set to ACT or INACT.

SERVORD limitations and restrictions

The following SERVORD limitations and restrictions apply to Universal Access to CLASS Features (when active). When field RES_AS_POTS in the

Universal Access to CLASS Features (continued)

RES_SO_SIMPLIFICATION office parameter is set to Y, the conversion from POTS to RES operates as follows:

- The NEW command adds all POTS lines that can be converted to RES lines as RES lines with incoming and outgoing call memory assigned.
- The ADO command adds the incoming and outgoing call memory to a line when a RES-compatible feature is added to a POTS line, changing the LCC to RES.
- The DEO command does *not* convert a RES line to a POTS line when the last RES feature is deleted from the line.

  Note: If Universal Access to CLASS Features is not active, the NEW and DEO (delete option) commands are not affected. When the MAKERES-STAYRES feature is active, the DEO command does not convert a RES line to a POTS line when the last RES feature is deleted from the line, even if Universal Access to CLASS Features is not active.

- The CHF command adds the incoming and outgoing call memory to a line when a RES-compatible feature is modified on a POTS line, changing the LCC to RES.

When field RES_AS_POTS in the RES_SO_SIMPLIFICATION office parameter is set to N, all new lines with the RES LCC have incoming and outgoing memory automatically assigned, and all new POTS lines remain as POTS lines.

SERVORD prompts

The following table shows the SERVORD prompts used to assign Universal Access to CLASS Features to a line.

SERVORD prompts for Universal Access to CLASS Features (Sheet 1 of 2)

Prompt	Valid input	Explanation
DN_OR_LEN	7-digit DN or LEN	Specifies the 7-digit DN or LEN of the line to be changed
Note 1: When option DENY is added using ADO, a corresponding CLASS feature that is being denied must be specified. ***Note 2:*** A CLASS feature is incompatible with its DENY line option; for example, CNDB is incompatible with DENYCNDB.		

Universal Access to CLASS Features (continued)

SERVORD prompts for Universal Access to CLASS Features (Sheet 2 of 2)

Prompt	Valid input	Explanation
OPTION	DENY	Indicates the name of the option
DENYOPT	DENYACB, DENYAR, DENYACRJ, DENYCNAB, DENYCNB, DENYCNNB, DENYCNND, DENYCNAB, DENYCOT, DENYDRCW, DENYSCA, DENYSCF, DENYSCRJ	Specifies the CLASS feature that is being denied on the line
Note 1: When option DENY is added using ADO, a corresponding CLASS feature that is being denied must be specified. ***Note 2:*** A CLASS feature is incompatible with its DENY line option; for example, CNDB is incompatible with DENYCNDB.		

SERVORD example for implementing Universal Access to CLASS Features

The following SERVORD example shows how to assign the deny line option to deny ACB.

Universal Access to CLASS Features (continued)

SERVORD example for Universal Access to CLASS Features in prompt mode

```
> SERVORD
SO:
> ADO
SONUMBER NOW 92 11 14 AM
>
DN_OR_LEN:
> 6211233
OPTION:
> DENY
DENYOPT:
> DENYACB
DENYOPT:
> $
OPTION:
> $
COMMAND AS ENTERED:
ADO NOW 92 11 14 AM 6211233 ( DENY (DENYACB) $) $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
> Y
```

SERVORD example for Universal Access to CLASS Features in no-prompt mode

```
> ADO $ 6211233  DENY  DENYACB  $ $
```

The following example shows how option DENY is deleted from a line using the DEO command.

Universal Access to CLASS Features (continued)

Deleting option DENY using DEO in prompt mode

```
> SERVORD
SO:
> DEO
SONUMBER NOW 92 11 14 AM
>
DN_OR_LEN:
> 6211233
OPTION:
> DENY
DENYOPT
> DENYACB
DENYOPT:
> $
OPTION
>$
COMMAND AS ENTERED:
DEO NOW 92 11 14 AM 6211233 ( DENY (DENYACB) $) $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
> Y
```

SERVORD example for Universal Access to CLASS Features in no-prompt mode

```
> DEO $ 6211233  DENY DENYACB $$
```

The following example shows the message that is displayed when Universal Access to CLASS Features is not active and the MAKERES-STAYRES feature is active. In this example, the DEO command is performed to remove the last remaining RES option. The same message is displayed during a CHF command on a RES line with no remaining RES options. No message is displayed when Universal Access to CLASS Features is active, but the line remains a RES line.

Universal Access to CLASS Features (end)

DEO message received with Universal Access to CLASS feature deactivated and MAKERES-STAYRES feature active in prompt mode

```
> SERVORD
SO:
> DEO
SONUMBER NOW 95 3 31 PM
> $
DN_OR_LEN:
> 6210044
OPTION:
>CNAMD
OPTION:
> $
COMMAND AS ENTERED:
DEO NOW 95 3 31 PM 6210044 (CNAMD) $
ENTER Y TO CONFIRM, N TO REJECT, OR E TO EDIT
> Y
No RES specific option left on line.
MAKERES-STAYRES is active
Line will remain RES.
```

DEO message received with Universal Access to CLASS feature deactivated and MAKERES-STAYRES feature active in no-prompt mode

```
> DEO $ 6210044 CNAMD  $
```

Universal Suppressed Ringing Access

Ordering codes

Functional group ordering code: RES00001

Functionality ordering code: RES00084

Release applicability

Universal Suppressed Ringing Access was introduced in NA009.

Prerequisites

To operate, Universal Suppressed Ringing Access has the following prerequisites:

- RES Access Management - RES0001
- Network Suppressed Ringing - RES00043

Description

Universal Suppressed Ringing Access (USRA) allows an operating company to deploy the Suppressed Ringing Access (SRA) feature on an office-wide basis. This capability allows SRA calls to be completed to any SRA-compatible line, whether or not the SRA option is provisioned on the line. A line is SRA-compatible if the line has a Line Class Code (LCC) that supports SRA and if the line does not subscribe to any options that are incompatible with SRA.

Operation

Currently, only lines which have the SRA line option can be accessed under suppressed ringing conditions. Universal Suppressed Ringing Access (USRA) allows an operating company to deploy the Suppressed Ringing Access (SRA) feature on an office-wide basis. This capability allows SRA calls to be completed to any SRA-compatible line, whether or not the SRA option is provisioned on the line. A line is SRA-compatible if the line has a Line Class Code (LCC) that supports SRA and if the line does not subscribe to any options that are incompatible with SRA.

The USRA feature introduces a new line option, DENYSRA, in tables LENLINES and IBNLINES. The operating company can assign the

Universal Suppressed Ringing Access (continued)

DENYSRA line option in order to deny the SRA functionality on a line by line basis. The following conditions apply to the DENYSRA line option:

- The DENYSRA and SRA line options are not compatible. If DENYSRA is added to a line that has the SRA line option, SRA is automatically removed from the line.
- SRA cannot be added to a line which has DENYSRA. In order to add SRA to a line which has DENYSRA the DENYSRA option must first be removed. The SRA line option can then be added.

The USRA feature and the line option which it introduces, DENYSRA, support the same Line Class Codes (LCCs) as the SRA feature. The SRA office option and the SRA and DENYSRA line options support the following LCCs:

- 1FR (individual flat rate, residence and business)
- 1MR (individual message rate)
- 2FR (two-party flat rate, residence and business)
- 2WW (two-way WATS)
- 4FR (four-party flat rate, residence and business)
- 8FR (eight-party, flat rate, residence and business)
- 10FR (ten-party flat rate, residence and business)
- CCF (coin, coin first (prepay))
- CDF (coin, dial tone first)
- CFD (coin free dialing)
- CSP (coin, semi-postpay)
- ETW (enhanced two-way WATS)
- IBN (integrated business network)
- INW (INWATS)
- OWT (OUTWATS)
- RES (residential enhanced services)
- ZMD (zero minus denied)
- ZMZPA (zero minus zero plus allowed)

The USRA feature depends on the SRA feature. USRA functionality is not available unless the SRA feature is active. The Software Optionality Control (SOC) state for RES00043 must be set to ON in order to set the USRA SOC state to `ON'. If the RES00043 SOC state is not ON an error message will generate and the USRA SOC state will not set to `ON'. Likewise, when the

Universal Suppressed Ringing Access (continued)

USRA SOC state is set to `ON' and an attempt is made to change the RES00043 SOC state to IDLE, an error message will generate and the SOC state will not change.

Note: USRA uses the SRA functionality.

Activation of the USRA feature provides SRA functionality on an office-wide basis. The USRA feature adds the following checks to determine whether an SRA call termination attempt should proceed:

- USRA SOC option state is set to `ON'.
- Line option DENYSRA is not provisioned against the line.

The USRA feature causes an SRA call to generate an AMA record and to increment OM register SRALOPT in the SRA OM group when the following conditions are met:

- USRA SOC option state is set to `ON'
- the line has the DENYSRA line option
- line option screening failure billing is enabled

Translations table flow

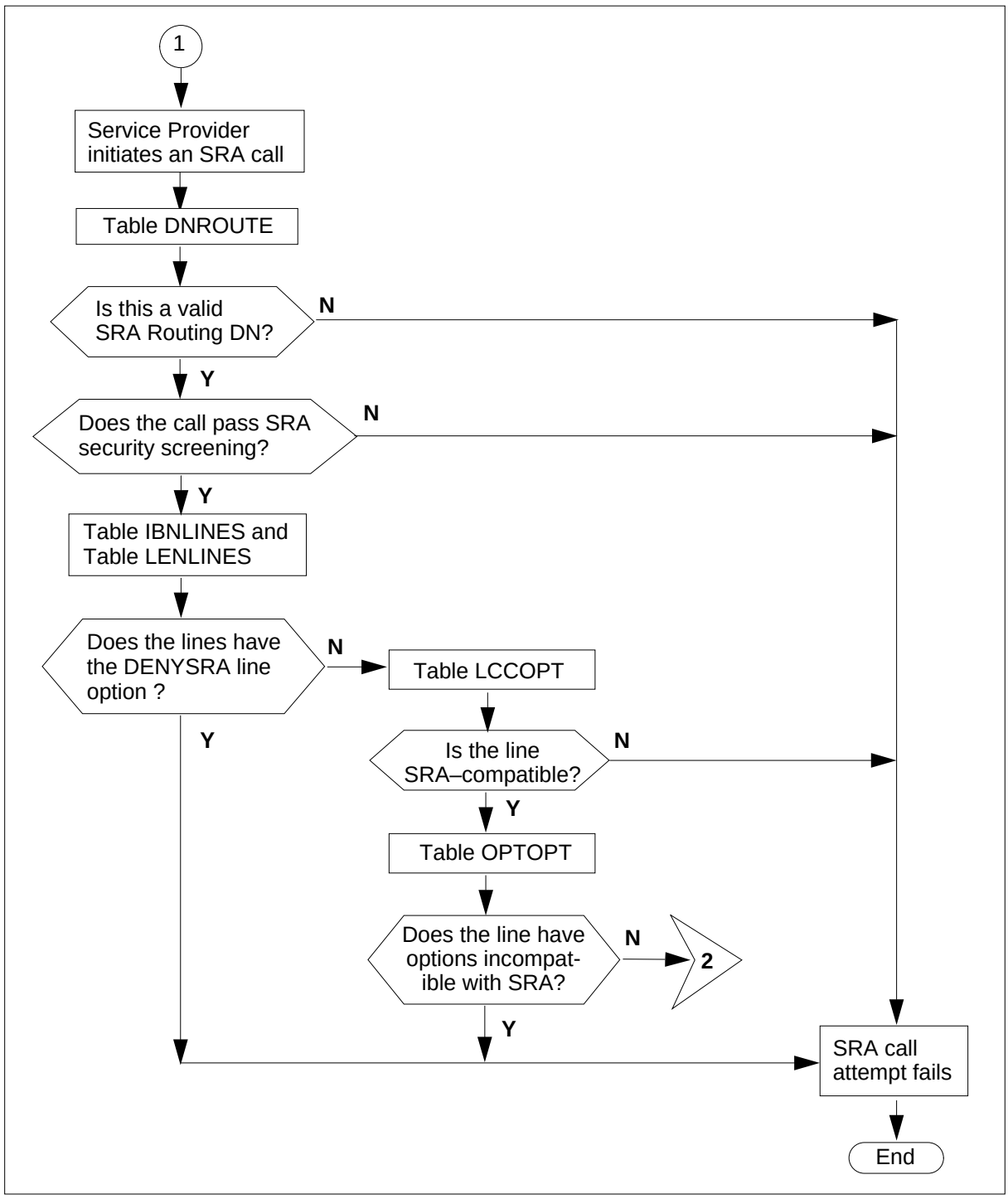
The Universal Suppressed Ringing Access translations tables are described in the following list:

- Table DNROUTE
- Table LCCOPT
- Table OPTOPT
- Table LENLINES
- Table IBNLINES
- Table BCCODES
- Table AMAOPTS
- Table LTDATA

The Universal Suppressed Ringing Access translation process is shown in the flowchart that follows.

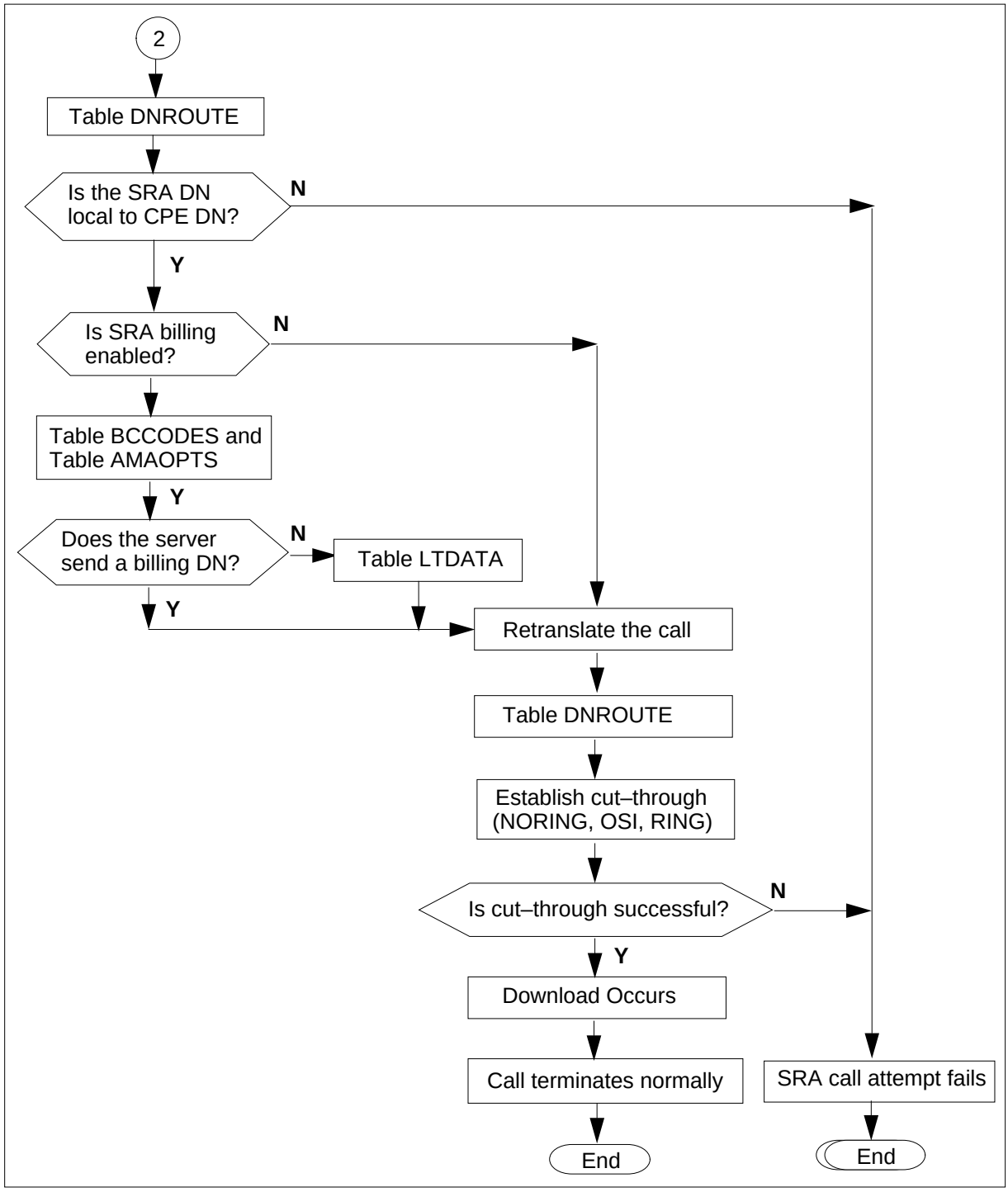
Universal Suppressed Ringing Access (continued)

Table flow for Universal Suppressed Ringing Access



Universal Suppressed Ringing Access (continued)

Table flow for Universal Suppressed Ringing Access (Continued)



Universal Suppressed Ringing Access (continued)

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

Datafill example for Universal Suppressed Ringing Access

Datafill table	Example data
DNROUTE	613 765 1234 FEAT SRA NORING OFF Y Y Y Y 999 N 80 ON DNROUTE DN $
IBNLINES	HOST 01 0 10 11 0 DT STN IBN 7321111 ECOIBN1 0 0 613 (DENYSRA)
LENLINES	HOST 00 0 00 04 S 0 6212222 DT 0 (DENYSRA)
LCCOPT	1FR (AIN) (AINDN) (AMATEST) (ATC) (AUL) (BCLID) (BNN) (CCW) (CFBL) (CFDA)(CFGDA) (CFW) (CIR) (CLF) (CLI) (COD) (CTD) (CUSD) (CWT) (DENYSRA) (DENYU3WC) (DGT)(DLH) (DNH) (DOR) (DTM) (ELN) (ESL) (FANI) (FGA) (FIG) (FNT) (FRO) (FRS)(FSR) (GLTC) (GND) (HOT) (ILB) (IMB) (INT) (IRR) (LCDR) (LDSA) (LDSO) (LOD)(LOR) (LPIC) (MAN) (MBK) (MLH) (MPB) (MTR) (NAME) (NDC) (NHT) (NLT) (NOH)(NPGD) (OFR) (OFS) (ONI) (PIC) (PILOT) (PLP) (PRH) (RCVD) (RMB) (RMP) (RMR)(RMS) (RSP) (RSUS) (SCMP) (SC1) (SC2) (SDN) (SDS) (SDSDENY) (SDY) (SETMODEL)(SHU) (SLU) (SPB) (SRA) (STRD) (SUPPRESS) (SUS) (TBO) (TDN) (TERM) (TES)(TFO) (TRMBOPT) (3WC) (WML) $
OPTOPT	ESL (AIN) (AINDN) (CLF) (CSDO) (DENYSRA) (FGA) (FIG) (MPB) (RSP) (SCMP) (SRA) $
BCCODES	LOCAL (005) (048) (067) (271) (550) (961) (963) $ TOLL (006) (008) (021) (042) (068) (072) (090) (092) (110) (117) (119) (134) (135) (142) (550) (950) (960) (999) $
AMAOPTS	LOGAMA ON UNANS_TOLL ON UNANS_LOCAL ON
LTDATA	ISDN15 1 DN DN 613 331 3000

Universal Suppressed Ringing Access (continued)

Limitations and restrictions

The following limitations and restrictions apply to Universal Suppressed Ringing Access:

- This feature applies to the NA009 stream.
- The target DMS platform for this feature is DMS-100 or DMS-100/200 BRISC.
- Activation of the USRA feature introduces a limitation for the number of tuples in table DNROUTE that may have the SRA FEAT selector. The limit in NA009 is 1023 tuples.

Interactions

The following paragraphs describe the interactions between Universal Suppressed Ringing Access and other functionalities.

SRA call interruption

Unless stated otherwise, the call interruption part of the SRA activity will interact with other features as follows:

SRA call entered as interruptible in table DNROUTE

If an incoming call is not able to terminate to an idle line due to a feature on that line, then that same incoming call to an SRA busy line cannot interrupt the SRA call. It will receive the same treatment as normal incoming calls to that line. For example, no incoming call can interrupt an SRA call to a line that has the DTM option.

If an incoming call is able to terminate to an idle line, then that same incoming call will be able to interrupt an SRA call active on that line.

In some cases, the SRA call interrupt will not be able to interrupt an SRA call. The following list identifies line features that affect the SRA call interrupt functionality. This chapter also provides a more detailed description of the interaction between SRA and these features in the feature interactions listings that follow the list below.

Attendant console A call from an attendant console does not interrupt a line that is busy with an SRA call.

Call forwarding feature Calls that are forwarded to a line that is busy with an SRA call may not be able to interrupt an SRA call.

Hunt group Incoming calls do not interrupt SRA calls established to a hunt group line.

Universal Suppressed Ringing Access (continued)

Inhibit Line Busy An incoming call to an SRA busy line with the Call Forward Busy (CFB), Inhibit Line Busy (ILB), and Make Busy Key (MBK) options active will interrupt the SRA call and then will be forwarded.

Multiple appearance directory number (MADN) Incoming calls will not interrupt a multiple directory number (MDN) multiple call arrangement (MCA) line that is busy with an SRA call.

Series completion (SCMP) An incoming call does not interrupt a SCMP line that is busy with an SRA call.

Teen Service The interaction between SRA and Teen Service varies depending on the type of Secondary Directory Number (SDN). SRA interacts with the different types of SDN lines as follows:

- SDN type `E' - An incoming call to either the primary DN or the secondary DN does not interrupt an ongoing SRA call established to a primary DN. An incoming call to the primary DN interrupts an ongoing SRA call to the secondary DN.
- SDN type `P' and `N' - An incoming call to an SDN of type E or N interrupts an ongoing SRA call established to the primary DN or to the secondary DN.

SRA call is entered as uninterruptible in table DNROUTE Incoming calls will behave as if the destination line is normally busy.

900 Fraud Prevention

900 Fraud Prevention prevents a type of 1-900 fraud. This type of fraud occurs when people dial a clients ten-digit directory number (DN) instead of the 900 number that corresponds with that DN. With 900 Fraud Prevention, fraudulent 1-900 calls do not terminate to the dialed DN. These calls receive a special treatment and generate a log.

SRA has precedence over 900 Fraud Prevention.

911 features

SRA calls cannot terminate on lines which have a variant of 911 features. An SRA call to 911 lines receives a Negative Acknowledgment (NACK) with intercept tone treatment.

SRA, USRA and DENYSRA are not compatible with the Line-ended Public Safety Answering Point (LINEPSAP) line option because this line option is part of the 911 service.

DENYSRA is not compatible with lines that have a variant of 911 features.

Universal Suppressed Ringing Access (continued)

AIN (Advanced Intelligent Network) 0.1

The following section describes SRA interaction with various AIN 0.1 features.

Public Office Dialing Plan (PODP) Trigger

The 3/6/10 digit PODP trigger type occurs between the INFOANAL and the Selecting Route points in call in the originating call model.

SRA controls translation and routing. SRA disables AIN triggers because the responses from the database query are not compatible with SRA functionality.

N11 Trigger

The N11 trigger type occurs between the INFOANAL and Selecting Route points in the call in the originating call model.

A server is able to request termination on an N11 number. SRA blocks AIN queries because their responses are not compatible with SRA.

Customized Dial Plan (CDP) Trigger

The CDP trigger type occurs at the INFOANAL Trigger Detection Point (TDP) that is between the INFOANAL and the Selecting Route points in call in the originating basic call model.

SRA controls translation and routing. SRA disables AIN triggers because the responses from the database query are not compatible with SRA functionality.

Automatic Flexible Routing (AFR) Trigger

The AFR trigger type occurs after the Selecting Route point in call in the originating call model. The AFR trigger is an entry in the routing list. The AFR trigger occurs when none of the previous routes in the list is available.

SRA controls translation and routing. SRA disables AIN triggers because the responses from the database query are not compatible with SRA functionality.

Termination Attempt (TERMATT) Trigger

The TERMATT trigger type occurs between the null and Authorizing Termination points in call in the terminating call model.

When AIN 0.1 supports the originating agent, any attempt to terminate on a DN that subscribes to the TERMATT trigger causes a query to the off-board processor.

SRA controls translation and routing. SRA disables AIN triggers because the responses from the database query are not compatible with SRA functionality.

Universal Suppressed Ringing Access (continued)

Attendant Console

During an ongoing SRA session, SRA calls do not terminate on an attendant console. An attendant console can not barge into SRA calls.

SRA call interrupt does not interrupt an ongoing SRA call when the originator of the incoming call is an attendant console.

Automatic Call Distribution (ACD) and Universal Call Distribution (UCD) features

SRA calls cannot terminate on an ACD or UCD directory number because these numbers are virtual DNs.

SRA calls to individual DNs that have the ACD or UCD options will terminate. When a line with the ACD or UCD option is involved in an SRA call, the SRA call will be interrupted in the following instances:

- A caller directly dials the DN that has the ACD or UCD options.
- The line that has the ACD or UCD options goes off-hook.

If an individual DN with the ACD or UCD line option is involved in an SRA call, the ACD and UCD features will treat that line as if it is busy. Incoming calls to the ACD or UCD virtual DNs will not terminate on a line that is busy.

DENYSRA is not compatible with ACD or UCD directory numbers. However, DENYSRA is compatible with lines with the ACD or the UCD line options.

The following features are ACD enhancements:

- Answer Emergency Key (ACDNR)
- Call Agent (CAG)
- Controlled Interflow (CIF)
- Call Supervisor (CLSUP)
- Display Agent Status (DASK)
- Display Queue Threshold (DQT)
- Emergency Key (EMK)
- Forced Agent Availability (FAA)
- Night Service (NGHTSRVCE)
- Observe Agent (OBS)
- Supervisor (SUPR)

The following features are UCD enhancements:

- Uniform Call Distribution Login (UCDLG)
- Uniform Call Distribution Signal Distributor (UCDSD)

Call Forward Fraud Prevention (CFFP)

The Call Forward Fraud Prevention (CFFP) feature enhances the fraud prevention capabilities of the residential programmable call forwarding types. CFFP allows operating companies to perform the following activities:

- To define calling dial plans which cannot be assigned as forward-to directory numbers (DNs).
- To override the restricted calling dial plans on a per-line basis.
- To set a limit to the number of times a forward-to DN in the list of overridden dial plans can be programmed.

There is no interaction between SRA, USRA, and CFFP. SRA calls terminate on the dialed line with the Call Forward option if the dialed line is IDLE. SRA treats busy lines that have the Call Forward Busy Line (CFBL) feature as a busy line.

Call Forwarding features

There are several scenarios in which SRA interacts with call forwarding features. The interaction between SRA and call forwarding differs depending on the scenario. The following sections define the interaction between:

- SRA calls and call forwarding features
- SRA call interrupt and call forwarding features
- SRA call interrupt and forwarding DNs

SRA calls and call forwarding features

Call Forwarding features do not forward SRA calls. If the dialed line is idle but forwarded, the SRA call terminates on the dialed line. When a line with the Call Forward Busy Line feature is busy, SRA treats that line as a busy line.

DENYSRA is compatible with call forwarding features.

Universal Suppressed Ringing Access (continued)

SRA call interrupt and call forwarding features

The different types of call forwarding features belong to the following three categories:

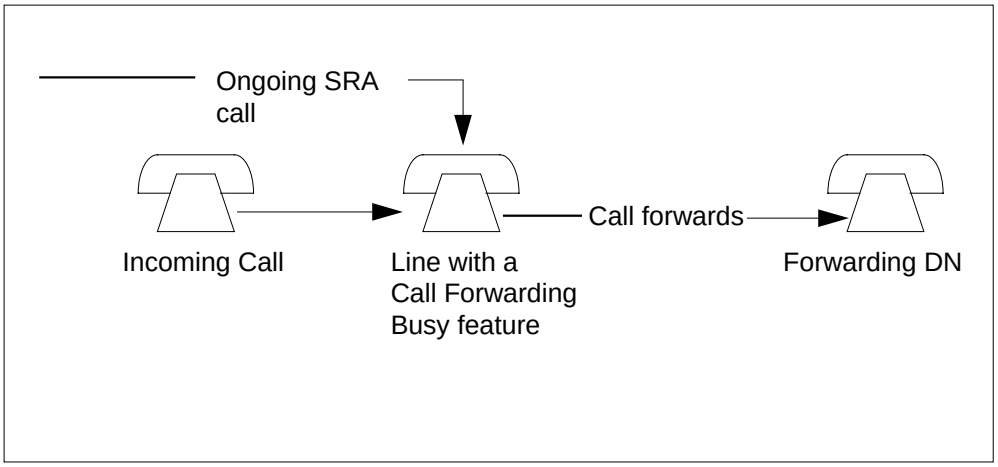
- Call forwarding busy features
- Call forwarding do not answer features
- Other call forwarding features

The following sections describe the interaction between SRA call interrupt when the CALLINTR field in table DNROUTE is set to `Y' and the three categories of call forwarding features.

Call Forwarding Busy (all variations) All call forwarding busy features have precedence over SRA call interruption. When a line with any call forwarding busy feature is busy with an SRA call incoming calls forward to the forwarding DN (Figure 1-1). Line features with call forwarding busy functionality are:

- Call Forwarding Busy Internal Calls Only (CBE)
- Call Forwarding Busy Unrestricted (CBU)
- Call Forwarding Busy (CFB)
- Call Forwarding Busy Line (CFBL)
- Internal/External Call Forwarding Busy (IECFB)

Call Forwarding Busy features and SRA call interrupt

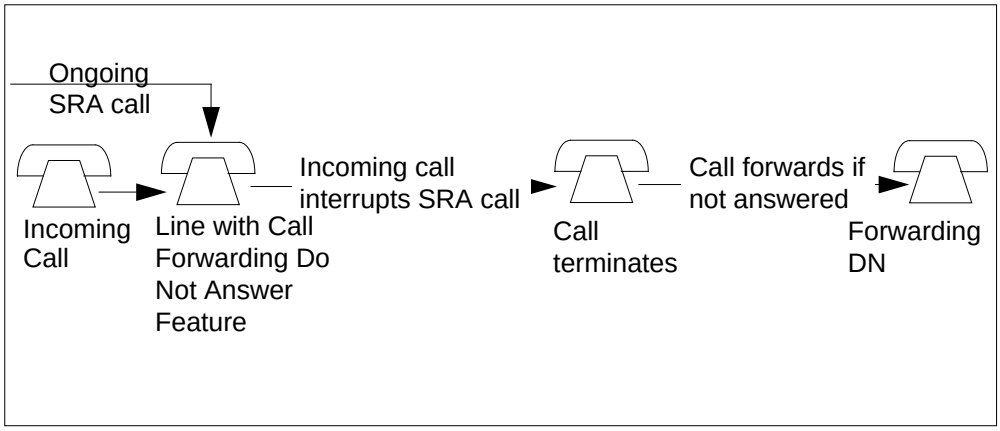


Call Forwarding Do Not Answer (all variations) The SRA call interrupt functionality has precedence over call forwarding do not answer features. When a line with a call forwarding do not answer feature is busy with an SRA call, incoming calls will interrupt the SRA call. If the subscriber does

not answer the call, it forwards as per normal call forward do not answer functionality (Figure 1-2). Line features that provide call forward do not answer functionality are:

- Call Forwarding Do Not Answer Unrestricted (CDU)
- Call Forwarding Do Not Answer (Business Sets) (CFD)
- Call Forwarding Do Not Answer (Residential) (CFDA)
- Call Forwarding Do Not Answer Variable Timer (CFDVT)
- Call Forwarding Group Do Not Answer (CFGDA)
- Internal/External Call Forwarding Do Not Answer (IECFD)
- Subscriber Programmable Ringing (SPRING)

Call Forwarding Busy Do Not Answer and SRA call interrupt

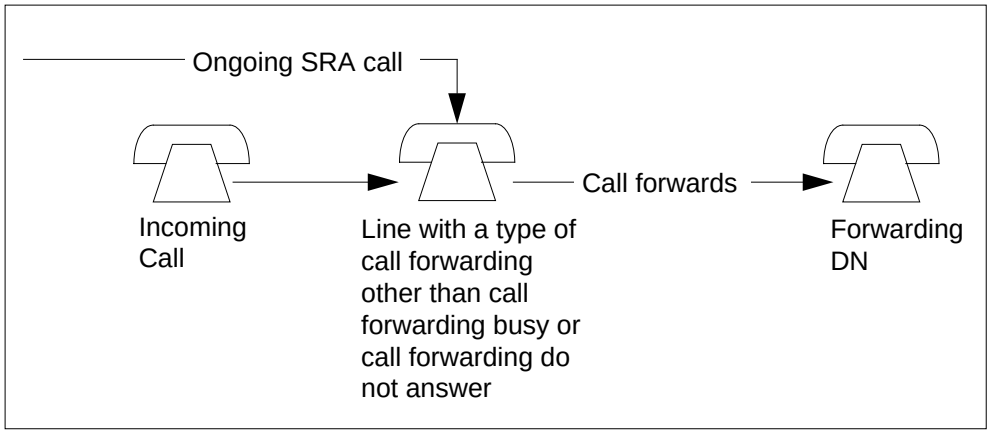


Other types of call forwarding features When a line with a type of call forwarding other than call forwarding busy or call forwarding do not answer is busy with an SRA call, all incoming calls forward (Figure 1-3). The following types of call forwarding have precedence over SRA call interruption:

- Exclude External Calls from Call Forwarding (CDE)
- Exclude Intragroup Calls from Call Forwarding (CDI)
- Call Forwarding Fixed (CFF)
- Call Forwarding Do Not Answer for Hunt Group (CFGD)
- Call Forwarding on a Per Key Basis (CFK)
- Call Forwarding MADN Secondary Member (CFMDN)
- Call Forwarding Remote Access (CFRA)

Universal Suppressed Ringing Access (continued)

Other types of call forwarding and SRA call interrupt



SRA call interrupt and forwarding DNs

There are also second order interactions between call forwarding features and SRA. When a call forwards to a line that is busy with an SRA call and the CALLINTR field in table DNROUTE is set to `Y', SRA call interrupt does not function normally. The following tables describe the behavior of SRA call interrupt in this situation.

SRA call interrupt and IBN call forwarding features

Type of call forward	A call from a POTS/RES line to an IBN line forwards to an IBN line that is involved in an ongoing SRA call	A call from an IBN line to another IBN line forwards to a POTS/RES line that is involved in an ongoing SRA call	A call from a POTS/RES line to an IBN line forwards over a trunk to another IBN line that is involved in an ongoing SRA call
CFU	Interrupted	Interrupted	Interrupted
CFD	Not Interrupted	Not Interrupted	Interrupted
CFB	Interrupted	Interrupted	Interrupted

Universal Suppressed Ringing Access (continued)

SRA call interrupt and POTS/RES call forwarding features

Type of call forward	A call from a IBN line to a POTS/RES line forwards to another POTS/RES line	A call from a POTS/RES line to another POTS/RES line forwards to an IBN line	A call from an IBN line to a POTS/RES line forwards over a trunk to an IBN line
CFW	Interrupted	Interrupted	Interrupted
CFDA	Not Interrupted	Not Interrupted	Interrupted
CFBL	Interrupted	Interrupted	Interrupted

Call Pickup Features

Lines which have Call Pickup options can not pickup another line if that line is involved in an SRA call.

DENYSRA is compatible with lines that have Call Pickup options.

Line features with Call Pickup options are as follows:

- Call Pickup (CPU)
- Directed Call Pickup Barge-In (DCBI)
- Directed Call Pickup (DCPU)

Call Screening, Monitoring and Intercept (CSMI)

When a line with CSMI is involved in an SRA call, incoming calls forward to the voice mail system if the CALLINTR field in DNROUTE is set to `N'. At the end of the SRA call, a ring burst notifies the subscriber that there is a call in the voice mail system.

DENYSRA is compatible with CSMI.

Call Waiting (CWT)

An SRA call does not wait on a busy line which has Call Waiting (CWT). The SRA call receives BUSY tone. The called party does not receive a call waiting tone.

Universal Suppressed Ringing Access (continued)

When a line with the CWT option is busy with an SRA call, an incoming call to that line can encounter two situations.

- A line with CWT is busy with an SRA call and the SRA Routing DN has the CALLINTR option enabled:
  - — In this case the incoming call interrupts the SRA call.
- A line with CWT is busy with an SRA call and the SRA Routing DN has the CALLINTR option disabled:
  - — In this case the incoming call does not interrupt the SRA call. The call receives BUSY treatment.

DENYSRA is compatible with lines which have Call Waiting functionality.

Line features with the Call Waiting functionality are listed below:

- Dial Call Waiting (CWD)
- Call Waiting Intragroup (CWI)
- Call Waiting Originating (CWO)
- Call Waiting Ringback (CWR)
- Call Waiting (CWT)
- Distinctive Ringing/Call Waiting (DRCW)
- Deluxe Spontaneous Call Waiting Identification (DSCWID)
- Spontaneous Call Waiting Identification (SCWID)

Call Waiting Auto Suppression (CWAS)

The Call Waiting Auto Suppression (CWAS) feature allows subscribers to receive data calls on a Secondary Directory Number (SDN) without the call being interrupted by call waiting alerting. When a line with the CWAS option is busy with a call, incoming SRA calls receive a busy treatment.

DENYSRA is compatible with CWAS.

Calling Line Identification (CLI)

SRA calls that terminate on a line with the CLI option generate a CLI log, similar to normal calls.

DENYSRA is compatible with lines that have the CLI option.

Universal Suppressed Ringing Access (continued)

Calling Memory Features

Incoming SRA calls will not update the call memory. Features which use call memory will not have the SRA call as part of the call memory. SRA calls cannot erase or override previous call memory on a line.

During an Automatic Call Back (ACB) or Automatic Recall (AR) to a line that is busy with a SRA call, call interrupt will not be activated. Instead, the users will be asked whether they want to be recalled when the busy line is free. This scenario is similar to when the called back line or the recalled line is busy with a normal call.

DENYSRA is compatible with lines which have calling memory features.

Line features which use call memory features are listed below:

- Automatic Call Back (ACB)
- Automatic Recall (AR)
- Automatic Recall Dialable Directory Number (ARDDN)
- Customer Originated Trace (COT)
- Selective Call Rejection (SCRJ)

CLASS Screening Features

CLASS Screening features will not screen incoming SRA calls. Termination to the called line is done if the line is in the appropriate state. For example, no attempt will be made to forward the SRA call when the line has the feature Selective Call Forwarding.

DENYSRA is compatible with CLASS screening features.

Line features of this type are listed below:

- Anonymous Caller Rejection (ACRJ)
- Selective Call Acceptance (SCA)
- Selective Call Forwarding (SCF)
- Selective Call Rejection (SCRJ)

Cutoff on Disconnect (COD)

The COD software does not send an open battery signal to the line for SRA calls.

Universal Suppressed Ringing Access (continued)

However it is possible for an SRA call to send an open battery signal depending on the value of OSIDISC in table DNROUTE.

- If OSIDISC is set to a value in the range of 1 to 255 (units of 10 milliseconds) in table DNROUTE
  - — SRA calls send an open battery signal in the range of 10 to 2550 milliseconds to the line upon disconnect once, regardless of the fact that the line being terminated to has the COD option.
- If OSIDISC is set to DISABLED in table DNROUTE
  - — SRA calls will not send any open battery signal to the line upon disconnect, even when the line where SRA terminates has the COD option.

There is no interaction between DENYSRA and lines with COD.

Denied Termination/Suspend Service

SRA calls are able to terminate on lines with Deny Termination or Restrictive Service provided the lines are idle.

DENYSRA is compatible with lines with Denied Termination and Restrictive Service.

Line features of this type are listed below:

- Denied Incoming Calls (DIN)
- Denied Termination (DTM)
- Requested Suspension (RSUS)
- Suspended Service (SUS)

Display Features

SRA calls will not send display data to the terminating line for any display features. Incoming calls will interrupt ongoing SRA calls. The incoming calls will connect to the line and will deliver the calling number or calling name.

DENYSRA is compatible with display features.

Line features with display call data are listed below:

- Bulk Calling Line Identification (BCLID)
- Calling Name Delivery (CNAMD)
- Calling Number Delivery (CND)

- Calling Number Delivery Blocking (CNDB)
- Dialable Directory Number (DDN)

Distinctive Ringing (DRING)

SRA calls can apply ringing through RING access, therefore the DRING option does not affect the ring pattern for SRA call terminations.

The DENYSRA line option is compatible with lines which have the DRING option.

Emergency Service Line (ESL)

An SRA call is not allowed to terminate on an emergency service line. An attempt to do so results in feature action NACK treatment with intercept tone.

The SRA line option cannot be added to an ESL line.

The DENYSRA line option cannot be added to an ESL line.

Essential Line (ELN)

The SRA office option, the SRA line option, and the DENYSRA line option are compatible with the Essential Line (ELN) option.

Executive Busy Override (EBO)

If a user attempts to barge in on an SRA call using the EBO option, the user will receive NACK treatment with intercept tone. EBO cannot barge in on an SRA call.

There is no interaction between DENYSRA and EBO.

Feature groups (FTRGRP)

Lines equipped with the FTRGRP option are treated as if the individual options associated with the FTRGRP were assigned to the line.

Flash activated features

Flash features are not supported on the terminating line while a connection is established from the server to the line. The CPE and other extensions should not be off-hook simultaneously. It is the function of the CPE to detect this condition. If the server tries to reach a line without a CPE (by mistake) or reaches a line with a defective CPE, SRA prevents the activation of flash features by ignoring flashes that may occur on the line. SRA ignores flashes that may occur on the line, whether or not there are flash activated features on that line.

Universal Suppressed Ringing Access (continued)

The DENYSRA line option can be assigned to lines with flash activated features.

Line features of this type are listed below:

- Call Hold (CHD)
- Calling Line Identification with Flash (CLF)
- Called Party Hold (CPH)
- Directed Call Park (DCPK)
- Permanent Hold (HLD)
- Call Park (PRK)
- Residential Call Hold (RCHD)

Hunt Group features

SRA calls can terminate on any member of a Directory Number Hunt (DNH) group. SRA calls will not perform hunting. If the line is busy, busy treatment is returned even if the hunt group has the Line Overflow to Directory Number option (LOD) or the Line Overflow to Route (LOR) option. The LOD and LOR options forward to another DN an incoming call that attempts to terminate on a hunt group with all the members busy.

If a call attempts to terminate on the Pilot of a hunt group which is already busy with an SRA call, the SRA call interruption portion of this activity will not be activated and the call will hunt, as for normal calls. Hunt processing currently has priority over the SRA call interruption functionality.

When a call attempts to terminate on an SRA busy line provisioned with a hunt group line feature and the Stop Hunt (SHU) line feature, the incoming call will receive a busy tone. Hunt group software has priority over the SRA call interruption software, therefore busy treatment is returned to the incoming call.

The SRA and DENYSRA line options can not be added to a secondary member of a Multiline Hunt (MLH) or Distributed Line Hunt (DLH) hunt group.

The following features are hunt group line options:

- Bridged Night Number (BNN)
- Circular Hunt (CIR)
- Directory Line Hunt (DLH)
- Line Overflow to Directory Number (LOD)

- Line Overflow to Route (LOR)
- Preferential Hunting (PRH)
- Random Make busy (RMB)
- Stop Hunt (SHU)

Inhibit Line Busy (ILB)

SRA calls to a busy line receive busy treatment, even when the line has CFB and/or ILB.

The SRA call interrupt has a special interaction with lines that have the CFB MBK, and the ILB options available and active. These options are described below. The behavior as described below is only true when the MBK and ILB options are active.

1. A call to a busy line with CFB, MBK and ILB routes to busy treatment.
2. A call to an idle line with CFB, MBK and ILB forwards.

An incoming call to a line with an ongoing SRA call and the CFB, MBK and ILB options, interrupts the SRA call. Since the interrupted line now becomes idle, the call forwards. This call scenario is equivalent to case number 2 above.

The DENYSRA line option is compatible with lines that have the CFB, and ILB options.

Local Number Portability (LNP)

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

SRA and USRA require that an SRA DN and a subscriber's DN reside in the same switch. This restriction affects the interaction between SRA, USRA and LNP as follows:

- If a subscriber's DN is ported due to LNP, then an Enhanced Service Provider (ESP) can only access that subscriber's DN by using an SRA DN that resides on the new switch.
- If an SRA DN is ported due to LNP, then an ESP can use that SRA DN only to access subscribers that reside on the new switch.

Universal Suppressed Ringing Access (continued)

Long Distance Signalling (LDS)

A long distance SRA call with one-cycle ringing access should not apply the LDS distinctive ringing. An incoming long distance call should not wait on a line that has an SRA call in progress. When the CALLINTR boolean is set to `Y', the incoming call will cancel the SRA call. The called line will receive distinctive ringing. When the Call Interrupt parameter is disabled, the incoming call will get a busy tone.

DENYSRA is compatible with LDS.

Make Busy Key (MBK)

SRA calls can terminate on lines that have the MBK option active. SRA calls can also terminate on lines that have MBK and IMB options active. An incoming call to a line busy with an SRA call receives BUSY tone.

The DENYSRA line option is compatible with lines which have MBK options.

Line features of this type are listed below:

- Inhibit Make Busy (IMB)
- Make Busy Key (MBK)

Make Set Busy (MSB)

An SRA call can terminate on a line which has the MSB option if this line is idle and on-hook. Incoming calls to lines busy with an SRA call will get BUSY tone, regardless of the state of the CALLINTR boolean.

The DENYSRA line option is compatible with lines which have the MSB option.

Multiparty Bridging (MPB)

An SRA call can terminate on an MPB line. If a member of the MPB group goes off hook during an ongoing SRA session, the member receives dial tone. The member will not bridge to the SRA call. If a third member goes off hook during an ongoing SRA session and establishes a normal call, the member bridges to the normal call, not the SRA call.

The DENYSRA line option is compatible with MPB lines.

Multiparty Lines

Incoming SRA calls can terminate to party lines. The control of multiple CPEs on the same cable pair will be handled by the server.

The DENYSRA line option is compatible with party lines.

Universal Suppressed Ringing Access (continued)

Multiple Appearance Directory Number (MADN)

During an ongoing SRA session, calls terminate on MADN lines. For all types of MADN, the SRA call terminates on the primary Line Equipment Number (LEN) of the MADN group.

The SRA and DENYSRA line options cannot be added to a secondary member of a MADN.

The following sections describe the interaction between SRA and the different types of MADN.

MADN SCA

If an attempt is made to terminate an SRA call on a MADN SCA group where a secondary member is busy, the SRA call receives busy treatment.

If a secondary member goes off-hook while an SRA call is active, the secondary member will receive the same treatment as when the primary member is normally busy.

Incoming calls will interrupt an ongoing SRA call on a MADN SCA primary member.

MADN SBA & EXB

If an attempt is made to terminate an SRA call on an MADN SBA (or EXB) group where a secondary member is busy, the SRA call receives busy treatment

If a secondary member goes off hook while the primary member is in an SRA session, the secondary member receives the same treatment as when a member of the MADN group goes off hook and the number of MADN members in the conference call is already at its maximum. In that scenario, the SRA call will be taken down.

Incoming calls will interrupt an ongoing SRA call on a MADN SBA or EXB primary member.

MADN MCA

A secondary member can place an outgoing call while the primary member is busy with an SRA session. An incoming call to a secondary member of the MADN MCA group will connect to that member, even if there is an ongoing SRA session on the primary member.

SRA calls established on MADN MCA lines cannot be interrupted. Incoming calls will terminate to other members of the MADN MCA group.

Universal Suppressed Ringing Access (continued)

Multiple Appearance Directory Number (MADN) ringing options

When an SRA call terminates on a line it never rings the line, even if the line is an MADN line with a MADN ringing option.

The DENYSRA line option is compatible with MADN lines. Only the primary DN of a MADN group can have the DENYSRA line option. The MADN ringing option features are as follows:

- MADN Ring Forward (MRF)
- MADN Ring Forwarding Manual (MRFM)

Plug-up (PLP)

SRA calls do not terminate on PLP lines. An SRA call to PLP lines receives NACK treatment with intercept tone treatment.

The DENYSRA line option cannot be added to a line with the PLP option.

Private Virtual Network (PVN) Priority Line (PPL)

SRA calls will not terminate on PPL lines. An SRA call to a PPL line receives NACK treatment with intercept tone.

The DENYSRA line option cannot be added to a line with the PPL option.

CLID from PX trunks with blocking option (PXCLID)

SRA does not deliver the CLID of the server.

Query busy station (QBS)

A station with the QBS option can monitor the busy status of a line involved in an SRA call.

There is no interaction between DENYSRA and QBS.

Remote Message Indicator (RMI)

SRA has precedence over RMI both when there are messages waiting in the voice mailbox and when there are not.

DENYSRA is compatible with RMI.

Ring Again (RAG)

If a line with the RAG option attempts to terminate on a line busy with an uninterruptible SRA call, the user can activate the RAG feature. The user will be notified when the SRA call is over.

Universal Suppressed Ringing Access (continued)

When a line with the RAG option calls an interruptible SRA busy line, the SRA call is interrupted. The originator cannot activate the RAG option because he or she does not encounter a busy condition.

If a line with the RAG option attempts to terminate on a line busy with an uninterruptible SRA call, busy treatment is returned. The user can activate the RAG feature and be notified when the SRA call is over.

There is no interaction between DENYSRA and RAG.

Series completion (SCMP)

An SRA call will terminate on a SCMP line only when the line is idle. If the line is busy, the SRA call does not forward and receives busy treatment.

Hunt processing has priority over the SRA call interruption functionality. A call to an SCMP line busy with an SRA call will activate SRA call interruption. The call will hunt as for normal calls.

The DENYSRA line option is compatible with SCMP lines.

Single-Line Variety package (SLVP)

Subscribers cannot transfer or put SRA calls on hold. An SRA call receives busy tone if the line is busy with the intercom feature. Line features of this type are:

- Single-line variety package (SLVP)
- Group Intercom (GIC)

The DENYSRA is compatible with the SLVP and GIC features.

Spontaneous Call Waiting Identification (SCWID) / Deluxe Spontaneous Call Waiting Identification (DSCWID)

An SRA call does not wait on a busy line which has Spontaneous Call Waiting Identification (SCWID) or Deluxe Spontaneous Call Waiting Identification (DSCWID). The SRA call receives busy tone. The called party does not receive a call waiting tone.

Universal Suppressed Ringing Access (continued)

When a line with the SCWID/DSCWID option is busy with an SRA call, an incoming call to that line can encounter two situations.

- A line with SCWID/DSCWID is busy with an SRA call and the SRA Routing DN has the CALLINTR option enabled:
  - — In this case the incoming call interrupts the SRA call.
- A line with SCWID/DSCWID is busy with an SRA call and the SRA Routing DN has the CALLINTR option disabled:
  - — In this case the incoming call does not interrupt the SRA call. The call receives busy tone.

DENYSRA is compatible SCWID and DSCWID.

Subscriber Line Usage (SLU)

The Subscriber Line Usage (SLU) feature counts the originating and terminating calls on a line.

SRA calls peg the SLU termination count.

SRA, USRA, and DENYSRA are compatible with SLU.

Teen Service

Teen Service allows multiple directory numbers (DN) to be assigned to a line without the expense of additional line equipment. In the case of the SRA line option, only the primary DN can have SRA. When the primary DN has the SRA line option, an SRA call can terminate on either the primary DN or the secondary DN.

The interaction between SRA and Teen Service varies depending on the type of SDN. SRA interacts with the different types of SDN lines as follows:

- SDN type `E' - An incoming call to either the primary DN or the secondary DN does not interrupt an ongoing SRA call established to a primary DN. An incoming call to the primary DN interrupts an ongoing SRA call to the secondary DN.
- SDN type `P' and `N' - An incoming call to an SDN of type E or N interrupts an ongoing SRA call established to the primary DN or to the secondary DN.

Only the primary DN can have the DENYSRA line option. When the primary DN has DENYSRA, the primary DN and the secondary DN cannot receive SRA calls.

Universal Suppressed Ringing Access (continued)

Three Way Calling (3WC) / Usage Sensitive Three Way Calling (U3WC)

The following situation describes the interaction between Three Way Calling (3WC) / Usage Sensitive Three Way Calling (U3WC) and SRA, USRA, and DENYSRA. A line with 3WC / U3WC is involved in a call with another party. The first party tries to establish a 3-way call with a third party. The third party's line is involved in an SRA call. If call interrupt (CALLINTR) is enabled, the 3-way call cancels the SRA call. If CALLINTR is disabled, the first party receives busy tone.

DENYSRA is compatible with 3WC and U3WC.

Virtual Facility Group (VFG)

SRA calls do not bypass VFG if they are routed through a VFG defined in table VIRTGRPS. Telemetry calls are subject to the same constraint imposed by VFG as normal calls. Telemetry calls are blocked by VFG if the size limit defined for that VFG is exceeded. Generalized No Circuit (GNCT) treatment is returned and the reorder tone is applied in this case.

SRA interacts with VFG differently for the first and the second translations. For the first translation between the incoming trunk and the Routing DN, the VFGs are checked and allocated. Before the second translation which is between the incoming trunk and the Original Called Number (OCN), the VFG's members reserved for the first translation are released. The second translation handles the VFG normally. This restriction implies that a VFG specific for the Routing DN will not be reserved during the SRA call. A VFG attributed against the incoming trunk or the OCN will be handled normally.

At the second translation, up to three consecutive re-translations with VFGs are supported for a SRA call. That is, SRA will only re-translate up to three times when it stops at a VFG route while trying to reach the OCN. If this limit is exceeded, Negative Acknowledgment (NACK) treatment is returned and the intercept tone is applied.

Voice Mail Easy Access (VMEA)

The Voice Mail Easy Access (VMEA) feature provides access to messaging services by routing calls to a Voice Mail System (VMS) using an access code.

SRA, USRA, and DENYSRA are compatible with VMEA.

Activation/deactivation by the end user

Universal Suppressed Ringing Access requires no activation by the end user.

Billing

The USRA feature does not introduce any new structure code or call code.

Universal Suppressed Ringing Access (continued)

USRA and SRA Billing is optional. Operating companies enter SRA billing datafill in table DNROUTE in order to control SRA billing. One of the conditions which causes SRA to generate a billing record occurs when SRA is disabled on a line. USRA modifies this event. The USRA feature generates a billing record when the line has the DENYSRA line option.

Station Message Detail Recording

Universal Suppressed Ringing Access does not affect Station Message Detail Recording.

Universal Suppressed Ringing Access (continued)

Datafilling office parameters

The following table shows the office parameters used by Universal Suppressed Ringing Access. For more information about office parameters, refer to *Office Parameters Reference Manual.*

Universal Suppressed Ringing Access (continued)

Office parameters used by Universal Suppressed Ringing Access (Sheet 1 of 2)

Table name	Parameter name	Explanation and action
OFCENG	SRA_BILLING	SRA_BILLING contains the Service Feature Codes (SFC) that SRA Billing records include (structure code 500 - call type code 550). These codes are as follows: SFC_LOPT - billing records include this service feature code when an SRA call attempts to terminate to a line with the DENYSRA line option. SFC_BUSY - billing records include this service feature code when an SRA call attempts to terminate to a busy line. SFC_CTHR - billing records include this service feature code when an SRA call successfully reaches cut-through. SFC_INTR - billing records include this service feature code when an SRA call is successfully interrupted by an incoming call. The range for these Service Feature Codes is 0 to 999. The default value is 0.

Universal Suppressed Ringing Access (continued)

Office parameters used by Universal Suppressed Ringing Access (Sheet 2 of 2)

Table name	Parameter name	Explanation and action
OFCENG	SRA_TIMERS	SRA_TIMERS contains the timer values for SRA. This parameter contains the following three fields: OSISETUP -the duration of Open Switch Interval (OSI) applied at call setup. The range of values for this field is 15 to 35 (in units of 10 milliseconds). The default value is 30 (in units of 10 milliseconds). OHTIME - the expiration value for CPE on-hook time call at call setup. The range of values for this field is 1 to 99 seconds. The default value is 5 seconds. INTRTIME - expiration value for CPE on-hook timer at call interruption. The range of values for this field is 1 to 5 seconds. The default value is 2 seconds.
OFCENG	SRA_TREATMENT	SRA_TREATMENT determines whether the switch provides STANDARD DMS treatment or a specific tone treatment. This parameter contains two fields: TRMTTYPE - determines the actual SRA treatment type that the switch applies. This field has two values, Standard and SRATONE. The default value is Standard. TONETIME - if the switch provides tones, then this field specifies the duration that the switch applies the tone. The range of values for this field is 1 to 99 seconds. There is no default value.

Universal Suppressed Ringing Access (continued)

Datafill sequence

The following table lists the tables that require datafill to implement Universal Suppressed Ringing Access. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Universal Suppressed Ringing Access

Table	Purpose of table
DNROUTE	Lists information for writable directory numbers (DN) in the DMS switch, such as a DN that identifies a route.
BCCODES	Is used in Bellcore switching offices for automatic message accounting (AMA).
AMAOPTS	Is used to control the activation and scheduling of the recording options for automatic message accounting (AMA).
LTDATA	Stores service-related data associated with the logical terminal identifier (LTID).

Datafilling table DNROUTE

The following table shows the datafill specific to Universal Suppressed Ringing Access for table DNROUTE. Only those fields that apply directly to

Universal Suppressed Ringing Access (continued)

Universal Suppressed Ringing Access are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table DNROUTE (Sheet 1 of 8)

Field	Subfield or refinement	Entry	Explanation and action
AREACODE		0 to 999 (1 to 3 digits)	*Area code* The area code identifies a major geographical area served by the switch. If office parameter ACTIVE_DN_SYSTEM in table OFCENG is set to North American, the area code must be three digits long.
OFCCODE		0 to 9999999 (0 to 7 digits)	*Office code digit register* The office code is a subregion of the area code. If office parameter ACTIVE_DN_SYSTEM in table OFCENG is set to North American, the area code must be three digits in length. The office code must be specified in table TOFCNAME. Tuples can be added if the value of field OFCCODE is $ as specified in table TOFCNAME. They cannot contain STNCODEs whose leading digits are an OFCCODE in the same area code. ***Note:*** If SECUMAST is equal to ON and Security List is empty, no SRA calls will be allowed for this Routing DN.

Universal Suppressed Ringing Access (continued)

Datafilling table DNROUTE (Sheet 2 of 8)

Field	Subfield or refinement	Entry	Explanation and action
STNCODE		0 to 99999999 (up to 8 digits)	*Station Code* The station code identifies a unique station within the terminating office (TOFC). If office parameter ACTIVE_DN_SYSTEM in table OFCENG is set to North American, the station code must be one or four digits in length. If one digit is entered, it is treated as a D-digit, where the D-digit represents the fourth digit in the format ABC-DEFG. A D-digit is then given the appropriate DN result. For example, if area code 613 and office code 226 are entered, and if 5 is entered as the station code, any calls to a number beginning with 613 2265 are automatically routed to the specified treatment. If 5 is the D-digit, and DNROUTE is datafilled as 613 226 5 D OPRT, any numbers for 6132265 are routed to the operator treatment as set in table TMTCNTL. Ambiguity within the STNCODEs of one TOFC is not permitted. For example, 8594 and 859 cannot be specified as STNCODEs within one TOFC. ***Note:*** STNCODE is in DEFG format.
DN_SEL		FEAT	*DN selector*
FEATURE		SRA	*Feature selector* In NA009, the maximum number of tuples with the FEAT selector SRA is 1023.

Universal Suppressed Ringing Access (continued)

Datafilling table DNROUTE (Sheet 3 of 8)

Field	Subfield or refinement	Entry	Explanation and action
ACCESS		NORING, OSI, RING	*Access Type* SRA supports three types of access: NORING - suppressed ringingOSI - suppressed ringing with OSI setupRING - one-cycle-ringing The default is NORING. ***Note:*** A change to the entry in this field, from RING to one of the other two access types, clears the fields in the tuple of inputs. These fields clear, due to the ACCESS field being a normal field as opposed to a selector field. This method fulfills the need to maximize the amount of information that SRA requires in the tuple.
RPATTERN		0 - 15	*Ring Pattern* This field only appears when ACCESS = RING. A ringing cycle must be applied. The ringing pattern used depends on the value found in this field.The default is 6
DURATION		1 -255 (units: 0.1 seconds)	*Duration* Duration applies for SRA calls that have ACCESS = RING. This field determines the length of time for which ringing is applied. The default is 60 (in units of 0.1 seconds is 6 seconds).
BILLMAST		ON, OFF	*Master Billing* BILLMAST turns off all SRA AMA generation. This option disables SRA billing without having to change the settings for the individual billable events. The default is OFF.

Universal Suppressed Ringing Access (continued)

Datafilling table DNROUTE (Sheet 4 of 8)

Field	Subfield or refinement	Entry	Explanation and action
BILLOPT		Y, N	*Line Option Billing* An AMA record generates when all of the following conditions are met: - The master billing option BILLMAST is set to ON. -The BILLOPT option is set to Y. - An SRA attempt is made to a line that has the DENYSRA line option. The default is N.
BILLBUSY		Y, N	*Busy Billing Option* An AMA record generates when all of the following conditions are met: - The master billing option BILLMAST is set to ON. - BILLBUSY is set to `Y'. - An SRA call reaches a busy end-user's line. The default is N.
BILLCTHR		Y, N	*Cut Through Billing* An AMA record is generated when the following conditions are met: - If the BILLMAST is set to ON. - If BILLCTHR is set to Y. - If an SRA call has successfully reached cut-through. The default is N.

Universal Suppressed Ringing Access (continued)

Datafilling table DNROUTE (Sheet 5 of 8)

Field	Subfield or refinement	Entry	Explanation and action
BILLINTR		Y, N	*Incoming Call Interrupt Billing* An AMA record is generated when the following conditions are met: - If the BILLMAST is set to ON. - If BILLINTR is Y. - If BILLCTHR is Y. - If an incoming call interrupts an ongoing SRA call. The default is N. ***Note:*** Interrupt billing can be set Y only when cut-through billing is set to Y.
TCALL		1 - 999 (sea) or DISABLED	*Maximum Call Duration Timer* TCALL is the maximum call duration timer from PAM/IINF message until call disconnect. The default is 150 seconds.
CALLINTR		Y, N	*Incoming Call Interrupt* The incoming call interrupt is used to enable or disable incoming call interruption.The default is Y.
OSIDISC		1-255 (units of 10 milliseconds) or DISABLED	*Open Switch Interval (OSI) upon Disconnect (OSIdisc)* Some CPEs require the application of an OSI to indicate call disconnection. The setting of OSIDISC determines if OSIdisc is applied. The default is 80. ***Note:*** In streams prior to NA006, the duration of OSIdisc was fixed at 800 milliseconds and field OSIDISC had two possible values, YES or NO. During and ONP from loads <NA006, field OSIDISC is reformatted. The OSIDISC field will be set to DISABLED if it was set to N in the old load. OSIDISC will be set to 200 if it was set to Y and the patch was active in the old load. OSIDISC will be set to 80 if it was set to Y and the patch was not active in the old load.

Universal Suppressed Ringing Access (continued)

Datafilling table DNROUTE (Sheet 6 of 8)

Field	Subfield or refinement	Entry	Explanation and action
LCASCREEN		Y or N	*Local Calling Area Screening* When LCASCREEN is set to Y, SRA performs standard LCA screening from the SRA routing DN to the terminating DN. LCA screening ensures that the routing DN and the terminating DN are within the same LCA. When the two DNs are in different LCAs, the LCA screening ensures proper billing. There is no default value for this field. ***Note:*** In loads prior to NA011, LCA screening was enabled through the LINEATTR field in tablel DNROUTE. In NA011 LINEATTR is replaced by LCASCREEN and its refinements. During an ONP to NA011, the LINEATTR field is reformatted. LCASCREEN will be set to N when there is no value entered for LINEATTR. Similarly, LCASCREEN will be set to Y and LCANAME and HSTS will be properly initialized when LINEATTR is datafilled on the old side.
	LCANAME	alphanumeric	*Local Calling Area Name* This refinement only applies for SRA calls that have LCANAME set to Y. The LCA screening between the SRA DNROUTE DN and the terminating DN requires the LCA name.
	HSTS	alphanumeric	*Home Service Translation Scheme* This refinement only applies for SRA calls that have LCANAME set to Y. The LCA screening between the SRA DNROUTE DN and the terminating DN requires the HSTS. There is no default value for this field.

Universal Suppressed Ringing Access (continued)

Datafilling table DNROUTE (Sheet 7 of 8)

Field	Subfield or refinement	Entry	Explanation and action
SECUMAST		OFF, ON	*Master Security* IF SECUMAST is enabled the server must pass SRA security to gain access to the suppressed ringing functionality. If it is set to OFF, SRA security is not performed. For example, the security information mentioned in the SRA security fields (SECURITY and security list) will be ignored. The default is ON.

Universal Suppressed Ringing Access (continued)

Datafilling table DNROUTE (Sheet 8 of 8)

Field	Subfield or refinement	Entry	Explanation and action
SCRNTBL		DNROUTE, SRASCRN	SCRNTBL specifies the name of the table which holds the screening list. If the SCRNTBL field has a value of SRASCRN, the screening list is found in the SCREENING LIST field of table SRASCRN. In this case the SECURITY LIST field of table DNROUTE will contain a list of indices to table SRASCRN. The default is DNROUTE.
SECURITY		DN, BG, CG	*Security Type* This field identifies the kind of security that the switch uses for a routing DN. The SRA feature provides three different security mechanisms; they are DN, BG, and CG. If this field specifies DN, then the security list field stores a list of up to 5 DNs or 10 indices to table SRASCRN. If this field specifies BG, then the security list field stores a list of up to 5 BGids or 10 indices to table SRASCRN. If this field specifies CG, then the security list field stores a list of up to 5 customer group names or 10 indices to table SRASCRN. The default is DN. The information found in the security list depends on the values the SCRNTBL and SECURITY fields specify. Refer to the following section, Supplementary Information. If SECUMAST is ON and Security List is empty, no SRA calls will be allowed for this Routing DN.

Datafill example for table DNROUTE

The following example shows sample datafill for table DNROUTE.

MAP display example for table DNROUTE

```
AREACODE  OFCODE                    DN_RESULT
--------------------------------------------------------

613 765 1234 FEAT SRA NORING OFF Y Y Y Y 999 N 80 N ON
DNROUTE DN $
```

Error messages for table DNROUTE

The following error messages apply to table DNROUTE.

Error messages for table DNROUTE (Sheet 1 of 2)

Error message	Explanation and action
`BILLCTHR=N and BILLINTR=Y to set BILLINTR to Y, BILLCTHR must also be set to Y.`	There are two options. Either set BILLCTHR to Y or set BILLINTR to N.
`This office does not use Bellcore AMA format. BILLMAST must also be set to Y.`	There are two options. Either set BILLMAST to OFF or access table CRSFMT, and change the AMA tuple from FORMAT to BCFMT.
`This office does not have the LAMA feature, BILLMAST must be equal to OFF.`	There are two options. Either set BILLMAST to OFF or access table OFCOPT and set LAMA_OFFICE to Y.
`DN (1234BCDEF) found x times in the screening list.`	The DN was repeated in the list. Remove the duplication.
`Invalid DN 1234BCDEF.`	Enter digits only.
`BG (LOCAL 1234) found x times in the screening list.`	The BG was repeated in the list. Remove the duplication.
`CG (COMKODAK) found x times in the screening list.`	The CG was repeated in the list. Remove the duplication.
`Index (INDEX NAME) found x times in the screening list.`	The INDEX NAME was repeated in the list. Remove the duplication.
`Screening type mismatch, bad reference to SRASCRN index.`	Field SECURITY in DNROUTE and SRASCRN must match.

Universal Suppressed Ringing Access (continued)

Error messages for table DNROUTE (Sheet 2 of 2)

Error message	Explanation and action
`Maximum number of SRA tuples has been reached.`	Maximum capacity of the table has been reached.
`BILLCATHR=N and BILLINTR=Y, TO set BILLCATHR to Y, BILLINTR must also be set to Y.`	There are two options. Either set BILLCATHR to Y or set BILLINTER to N.

Datafilling table BCCODES

The following table lists the USRA datafill for table BCCODES. The tables shows only the fields that USRA modifies or uses.

Datafilling table BCCODES

Field	Subfield or refinement	Entry	Explanation and action
CALLYPE		AIN, HIGHREV, LOCAL, TOLL, or TOPS	*Bellcore call type* Enter either LOCAL (local) or TOLL (toll).
CODES		numeric (up to 46 call codes)	*Bellcore call codes* Enter call code 550 (automatic meter reading call). The call codes must be separated from each other by a blank space. Enter $ to indicate the end of the vector.
Note: Equal access calls, answered and unanswered, generate AMA records regardless of the datafill in tables AMAOPTS and BCCODES. In addition, if EA calls have line usage studies applied, the study indicator of the record generated reflects the type of study assigned to the line.			

Datafill example for table BCCODES

The following example shows sample datafill for table BCCODES.

MAP display example for table BCCODES

```
CALLTYPE
                                                        CODES
-------------------------------------------------------------
   LOCAL
             (005) (048) (067) (271) (961) (963) (550) $
   TOLL
          (006) (008) (021) (042) (068) (072) (090) (092)
(110)
  (117) (119) (134) (135) (142) (950) (960) (999) (550) $
```

Datafilling table AMAOPTS

The following table lists the USRA datafill for table AMAOPTS. The tables shows only the fields that USRA modifies or uses.

Datafilling table AMAOPTS (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
OPTION		see subfield	*Option* This field consists of subfield AMAOPT.
	AMAOPT	alphanumeric	*AMA option* LOGAMA - controls the generation of AMAB117 log reports. It this option is set to ON, AMAB117 log reports are generated for each record that is put on the AMA tape. (This billing option is used instead of office parameter SPECIAL_AMA_REPORT in table OFVCAR). The default value is OFF.
Note: Equal access calls, answered and unanswered, generate AMA records regardless of the datafill in tables AMAOPTS and BCCODES.			

Universal Suppressed Ringing Access (continued)

Datafilling table AMAOPTS (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
			UNANS_LOCAL - controls the recording of unanswered local calls. Only those local calls that generate AMA reocrds are recorded. The call is defined as toll, local, high revenue, or Traffic Operator Position System (TOPS) in table BCCODES. The unanswered call must have the associated call code datafilled in table BCCODES. If option UNANS_LOCAL is set to ON, answered and unaswered calls are recorded. Equal access calls are unaffected. The default value is OFF. Equal access calls are unaffected; see note.
	AMAOPT (continued)		UNANS_TOLL - controls the recording of unanswered toll calls. Only those toll calls that generate AMA records are recorded. The unaswered calls must have the assoicated call code datafilled in table BCCODES. If option UNANS_TOLL is set to ON, answered and unaswered toll calls are recorded. Option UNANS_TOLL is used instead of office parameter, NO_ANS_CALLS_ONTAPE in table OFCENG. The default value is OFF. Equal access calls are unaffected; see note.
Note: Equal access calls, answered and unanswered, generate AMA records regardless of the datafill in tables AMAOPTS and BCCODES.			

Datafill example for table AMAOPTS

The following example shows sample datafill for table AMAOPTS.

MAP display example for table AMAOPTS

```
LOGAMA                                                    ON

UNANS_LOCAL                                               ON

UNANS_TOLL                                                ON
```

Datafilling table LTDATA

The following table lists the USRA datafill for table LTDATA. The tables shows only the fields that USRA modifies or uses.

Datafilling table LTDATA (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
LTDKEY		see subfields	*Logical terminal datakey* This field consists of subfields LTGRP, LTNUM, and DATATYPE.
	LTGRP	alphanumeric (up to 8 characters)	*Logical terminal group* Enter the logical terminal group name.
	LTNUM	1 to 1022	*Logical terminal number* Enter the logical terminal number within the group. The quantity of group numbers is restricted. A maximum of 31 entries are allowed.
	DATATYPE	CLI, DN, or SERV	*Logical terminal data type* Enter the logical terminal data type as follows: • Enter DN for directory number. • Enter SERV for service-related data associated with a logical terminal identifier (LTID) or PRA interface.
LTDSRLT		see subfields	*Logical terminal result* This field consists of subfield DATATYPE.

Universal Suppressed Ringing Access (continued)

Datafilling table LTDATA (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	DATATYPE	CLI, DN, or SERV	*Logical terminal data type* Enter the logical terminal data type. Any entries outside this range are invalid.
	DFLTCGN	see subfields	*Default calling party number* The default calling party number is a ten-digit directoy number (DN) to which the call defaults if no CGN is supplied on originations. If CGN screening is enabled, this DN is the only DN that can originate calls on this interface. The default CGN consists of the values entered in subfields SNPA, NXX, and STATION.
	SNPA	numeric (up to 3 digits)	*Serving numbering plan area* Enter the area code.
	NXX	0 to 9, N, B, C, D, E, or F	*NXX* Enter the first three characters of the DN.
	STATION	0 to 9, N, B, C, D, E, or F	*Station* Enter the last four characters of the DN.
	OPTION	CUSTGRP, DFLTPI, EDITCLI, NOSCRN or $	*Option* For USRA and SRA, enter $.

Datafill example for table LTDATA

The following example shows sample datafill for table LTDATA.

MAP display example for table LTDATA

```
ISDN  1  DN  DN  613 331 3000
```

Translation verification tools

Universal Suppressed Ringing Access does not use translation verification tools.

SERVORD

This section describes the SERVORD information for the USRA feature.

SERVORD limitations and restrictions

Universal Suppressed Ringing Access has no SERVORD limitations and restrictions.

SERVORD prompts

The following table provides the system prompts for the DENYSRA line option.

SERVORD prompts for Universal Suppressed Ringing Access

Prompt	Valid input	Explanation
ADO	DENYSRA	Add option
DEO	DENYSRA	Delete option

SERVORD example

The following example shows the MAP display when SRA is added to a line.

Universal Suppressed Ringing Access (end)

SERVORD example for Universal Suppressed Ringing Access in prompt mode

```
>servord
SO:
> ado
SONUMBER: nOW 97 7 3 PM
> $
DN_OR_LEN:
> 6211090
OPTION:
> DENYSRA
OPTION:
> $
COMMAND AS ENTERED:
ADO NOW 96 11 13 PM 6211090 (DENYSRA) $
ENTER YY TO CONFIRM, N TO REJECT OR E TO EDIT
> y
```

SERVORD example for Universal Suppressed Ringing Access in no-prompt mode

```
> ado   $   6211090   denysra   $
```

Usage Sensitive Three-way Calling (U3WC)

Ordering codes

Functional group ordering code: RES00001

Functionality ordering code: RES00012

Release applicability

DMSCNA04 and up

The Usage Sensitive Three-way Calling (U3WC) feature was created in NA04.

Prerequisites

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

Description

The U3WC feature supports RES and POTS lines. This feature is the Three-way Calling (3WC) feature plus the following changes:

- optional access code (*71 or 1171) is entered for U3WC activation
- billing record is generated each time the U3WC feature is activated
- separate U3WC register group was created for Operational Measurement data

Operation

The U3WC feature operates in the same manner as the 3WC feature. The end user must be in a stable two-party call to activate the U3WC feature. The end user flashes a first time to receive a special dial tone. If required, the end user enters an access code and again receives a special dial tone. Next, the end user dials the directory number (DN) of the add-on party and a second switchhook flash establishes the three-way call.

The following changes were made to data schema tables for the U3WC feature:

- Option DENYU3WC can be filled under field COMPAT in table LCCOPT (Line Class Code Compatible Options).
- U3WC can be filled under field FEATURE in table IBNXLA (IBN Translations).
- U3WC can be filled under field OPTION in table AMAOPTS (Automatic Message Accounting Options).

Usage Sensitive Three-way Calling (U3WC) (continued)

- Parameters U3WC_FLASH_ONLY and U3WC_ELAPSED_TIME were added to table OFCENG (Office Engineering).
- The values of table OFCENG parameters NO_OF_LARGE_FTR_DATA_BLKS, NO_OF_FTR_CONTROL_BLKS, NO_OF_FTR_XLA_BLKS, and CRS_PRU_POOL2_SIZE must be increased if U3WC is introduced.

The U3WC feature is available to RES and POTS lines when the following is true:

- option SOC is set to ON
- option DENYU3WC is not on the line
- the 3WC feature is not on the line
- no option that is incompatible with 3WC is on the line

When option SOC is set to ON, the U3WC feature becomes available to all lines with the RES option, and POTS lines with LCC 1FR, 1MR, CFD, ZMD, or ZMZPA. The U3WC feature also allows access to the 3WC feature without subscription to all lines with a line class code of RES.

To invoke the U3WC feature after a flash, the flash privilege is given to RES and POTS lines that do not already have it by autoprovisioning. Autoprovisioning means that each time an end user on a line without flash privilege goes off-hook, the conditions of the U3WC feature are evaluated to determine if a flash privilege should be provided for the line.

The flash privilege can be removed from lines with no other flashable feature assigned by setting the SOC option to IDLE and by using the MTCSWACT (Maintenance SWACT) command. If the MTCSWACT command is not performed, the U3WC feature can be removed but the line retains the flash privilege.

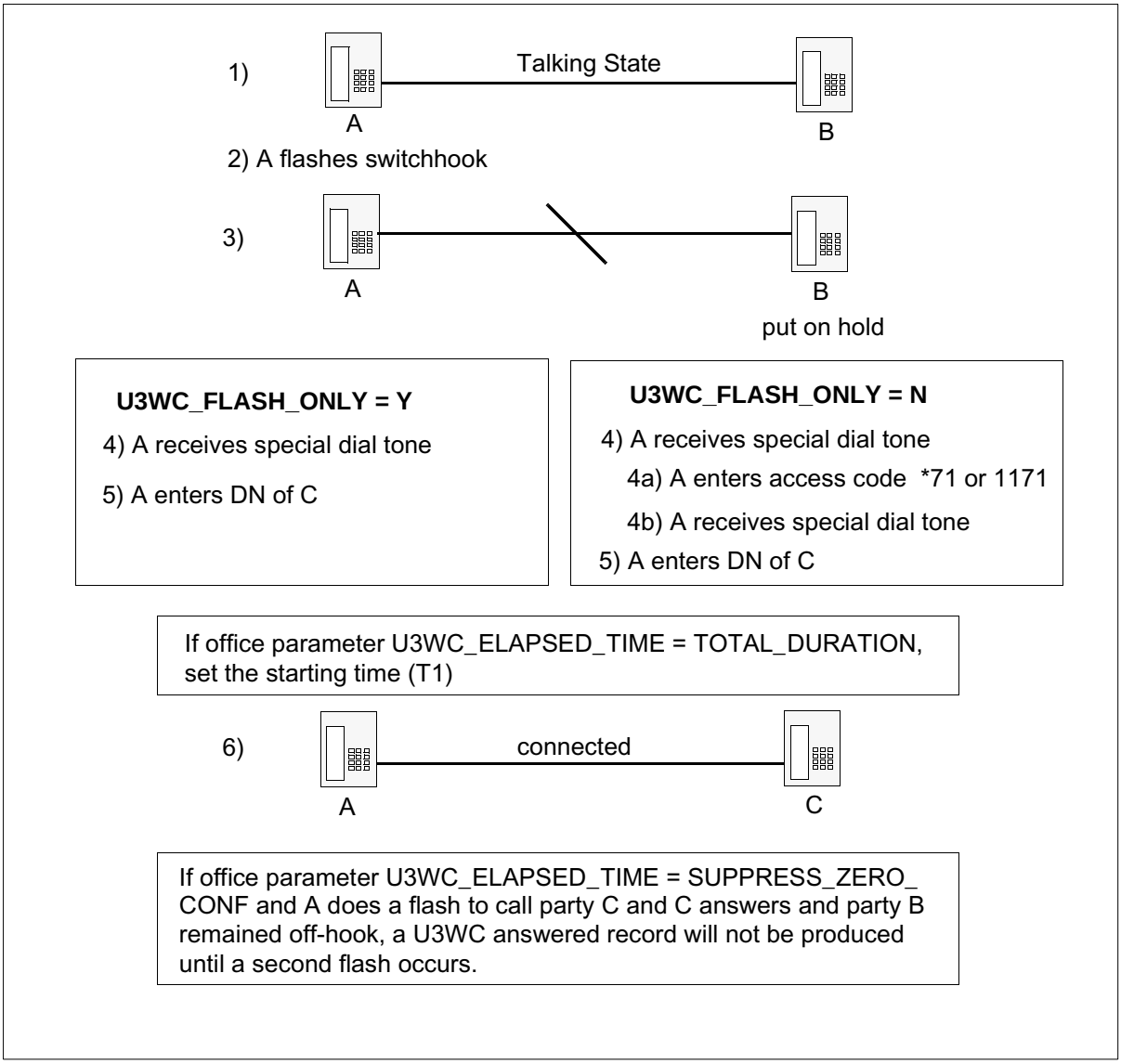
When the U3WC SOC option is subsequently set to IDLE, the 3WC feature is accessible only by subscription.

Office Parameters

Office parameters U3WC_FLASH_ONLY and U3WC_ELAPSED_TIME are added to table OFCENG in this feature. The following figure shows the effect of these parameters on the U3WC feature call setup and billing times.

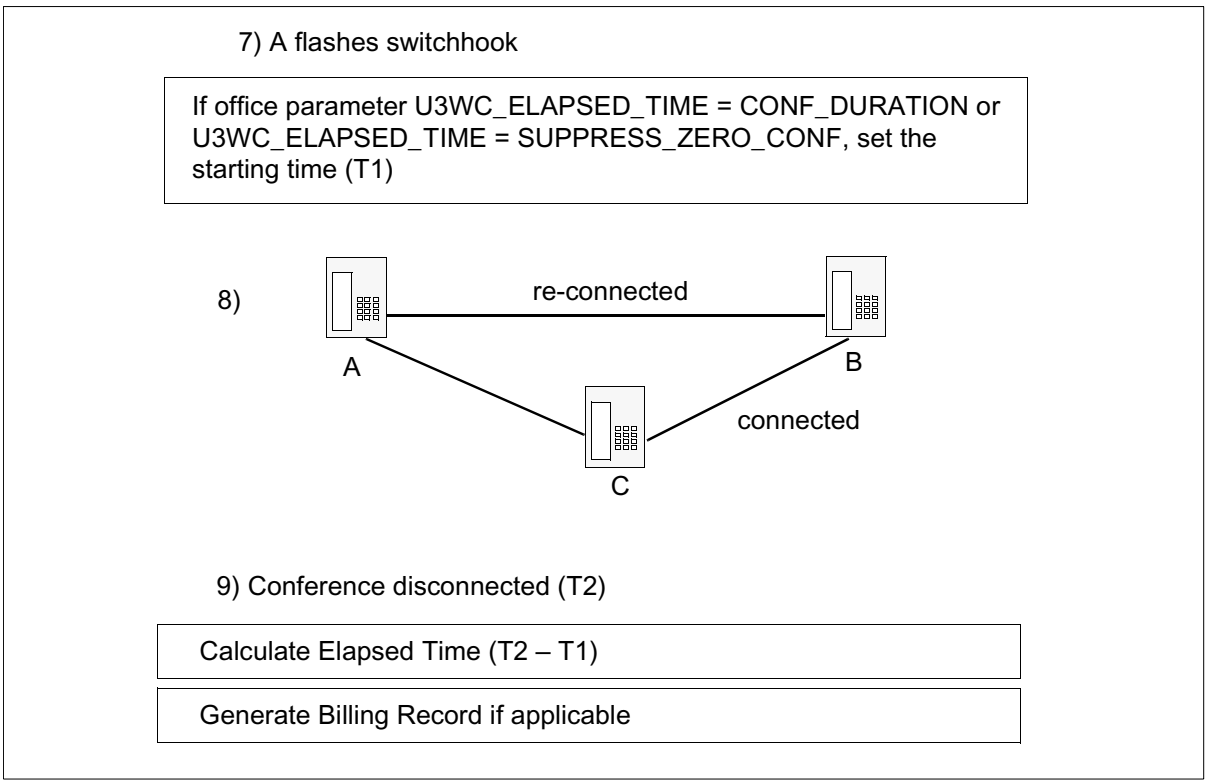
Usage Sensitive Three-way Calling (U3WC) (continued)

U3WC access and billing methods



Usage Sensitive Three-way Calling (U3WC) (continued)

U3WC access and billing methods (continued)



A conference can be established even if the third party has not answered. Once the conference is established and the conference initiator flashes the switchhook again, the third party is removed from the conference. When the conference initiator disconnects, the other parties are disconnected.

Hardware requirements

Use the following formula to calculate the number of conference circuits busy hour CCS.

$$\text{Conference circuits busy hour CCS} = \frac{A \cdot B \cdot (1 \mid C) \cdot D \cdot E}{100}$$

where

A
is the average holding time in seconds for a U3WC call.

Usage Sensitive Three-way Calling (U3WC) (continued)

B
is the average number of monthly U3WC calls for each RES and POTS line.

C
is the number of relevant days per month.

D
is the number of RES and POTS lines in the office.

E
is the portion of U3WC calls during the busy hour.

Translations table flow

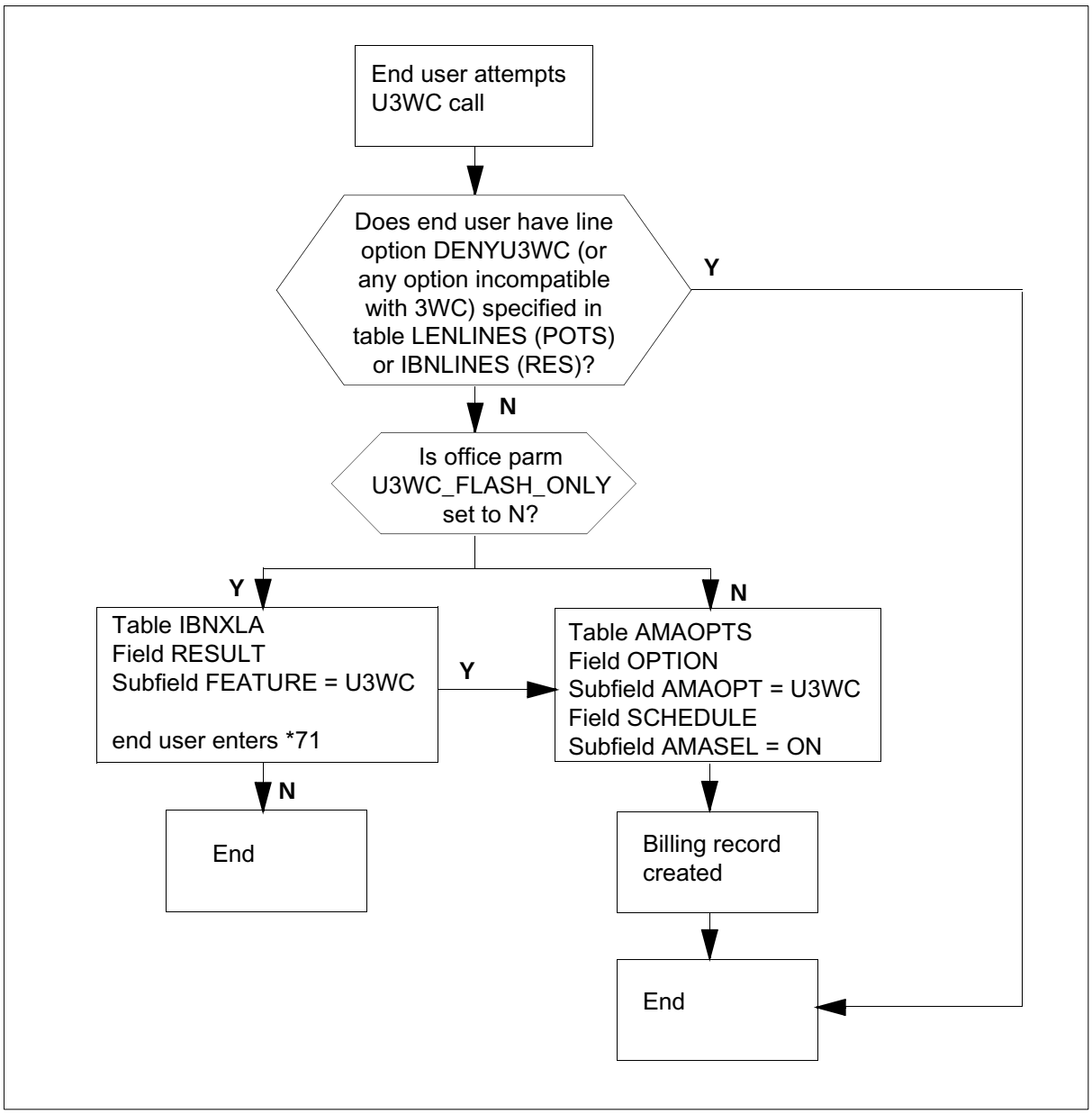
The Usage Sensitive Three-way Calling (U3WC) translations tables are described in the following list:

- Table LENLINES (Line Assignment) lists the line data for each datafilled POTS line. Specify line option DENYU3WC in this table.
- Table IBNLINES (IBN Line Assignment) lists the line assignments for each 500/2500 set assigned an MDC or RES station number. Specify line option DENYU3WC in this table.
- Table IBNXLA (IBN Translation) stores the data for the digit translation of calls from an MDC station, an attendant console, an incoming trunk, or an incoming side of a two-way MDC trunk group. This table also stores data for feature translations on RES lines. Enter the access code in this table.
- Table AMAOPTS (Automatic Message Accounting Options) controls the activation and scheduling of recording options for automatic message accounting (AMA). Set the U3WC feature to ON in this table.

The Usage Sensitive Three-way Calling (U3WC) translation process is shown in the flowchart that follows.

Usage Sensitive Three-way Calling (U3WC) (continued)

Table flow for the Usage Sensitive Three-way Calling (U3WC) feature



Usage Sensitive Three-way Calling (U3WC) (continued)

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

Datafill example for the Usage Sensitive Three-way Calling (U3WC)

Datafill table	Example data
LENLINES	01 1 04 06 S 0 7251688 DP 6 (DENYU3WC) $
IBNLINES	00 1 01 08 0 DT STN RES 6256057 275 (CWT) (CWI) $
IBNXLA	RXCFNXXX 71 N N N U3WC
AMAOPTS	U3WC ON

Limitations and restrictions

The following limitations and restrictions apply to the Usage Sensitive Three-way Calling (U3WC) feature:

- U3WC is valid only on DMS-100 SuperNode, DMS-100/200 SuperNode, and BRISC offices.
- Only RES lines with an LCC (Line Class Code) of RES and POTS/RES lines with 3WC-compatible line class codes (1FR, 1MR, CFD, ZMD, or ZMZPA) have access to the U3WC feature.
- Option DENYU3WC, when applied to a DN or LEN (line equipment number), prevents the usage of the U3WC feature.

Interactions

The U3WC feature has the same interactions as the 3WC feature. U3WC is incompatible with line options LDTPSAP (Line Appearance on Digital Trunk Public Safety Answering Point), MAN (MANual line), MPB (Multi-Party Bridging), NDC (No Double Connect), NOH (No receiver Off-Hook tone), FIG (Flash Ignore), CSDO (Circuit Switched Digital Data Service), and BC (Bearer Capability). These line options are specified in Table OPTOPT under the 3WC feature.

The following paragraphs describe the interactions between the Usage Sensitive Three-way Calling (U3WC) feature and other functionalities.

Access-code features initiated from the second leg of the U3WC feature

If office parameter U3WC_FLASH_ONLY is set to Y, other access-code features can be initiated from the second leg of a call in the same manner as the regular 3WC feature (flash and enter the appropriate code).

Usage Sensitive Three-way Calling (U3WC) (continued)

If office parameter U3WC_FLASH_ONLY is set to N, the U3WC feature access code must be entered before the other feature access codes (see the following table).

Interaction between the U3WC feature and other access-code features

U3WC feature interactions with table OFCENG parameter U3WC_FLASH_ONLY = N	
Feature	**Codes to be entered**
CNDB (called number delivery blocking)	*71 *67 DN
AR (automatic recall)	*71 *69
ACB (automatic call back)	*71 *66
Note: The U3WC feature access code is *71.	

AIN (advanced intelligent network) 0.1 - Off-Hook Delay trigger

The U3WC feature is compatible with the AIN Off-Hook Delay trigger.

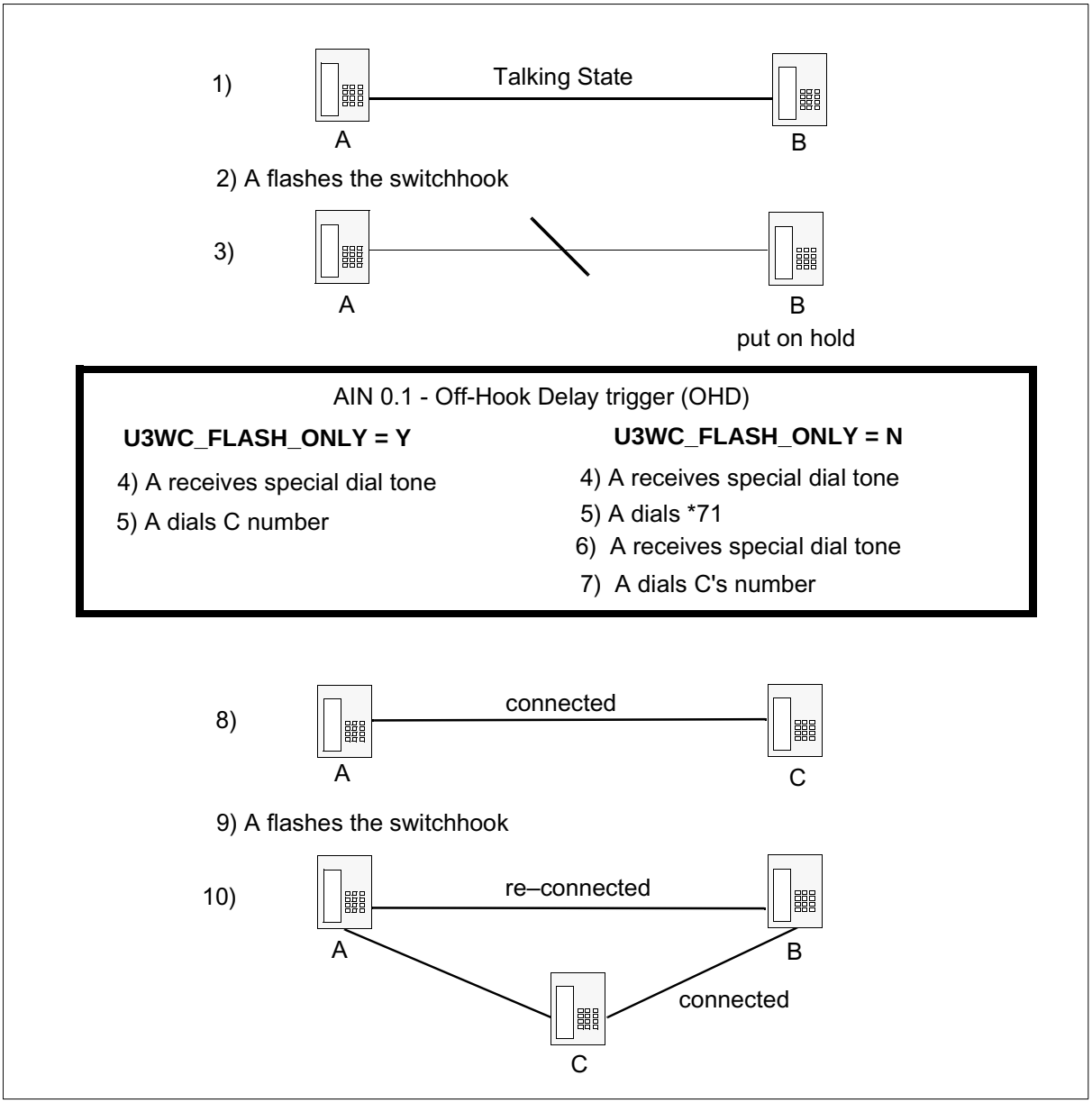
If office parameter U3WC_FLASH_ONLY is set to Y after a switchhook flash, the AIN Off-Hook Delay trigger is activated when the end user finishes dialing a DN. A second call leg is then established for conferencing.

If office parameter U3WC_FLASH_ONLY is set to N after a flash, the end user can enter the U3WC feature access code followed by a DN. When the end user finishes dialing the DN, the Off-Hook Delay trigger is activated and a second call leg is established for conferencing.

The following figure shows a typical AIN OHD U3WC feature call setup.

Usage Sensitive Three-way Calling (U3WC) (continued)

U3WC access methods (AIN offices)



AIN 0.1 - Off-Hook Immediate (OHI)

When a line has access to the U3WC feature, the AIN OHI trigger is activated immediately after a flash whether or not the end user wants to establish a conference.

Usage Sensitive Three-way Calling (U3WC) (continued)

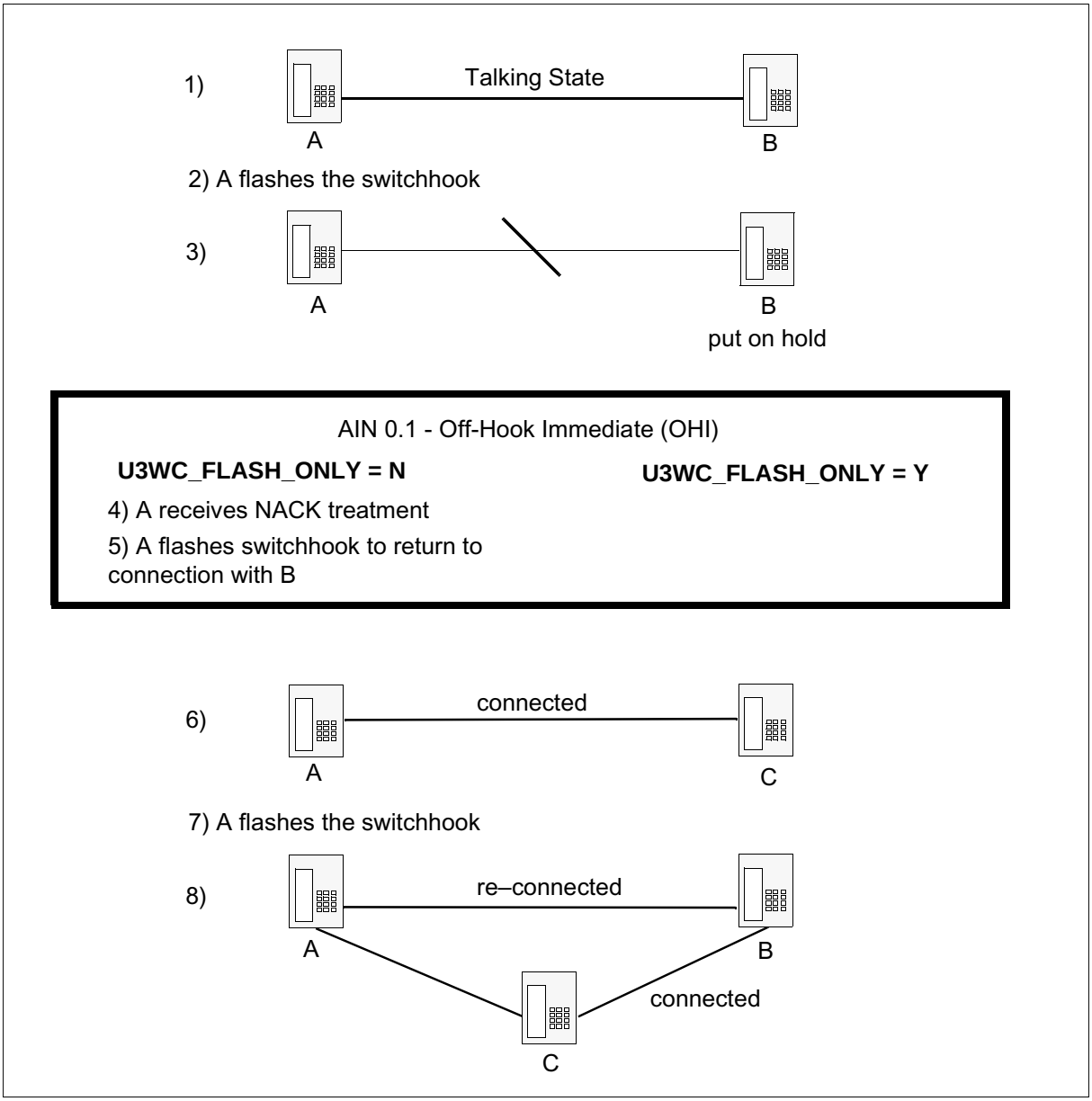
If office parameter U3WC_FLASH_ONLY is set to Y after a switchhook flash, the AIN OHI trigger is activated and a second call leg is established for conferencing.

If office parameter U3WC_FLASH_ONLY is set to N after a switchhook flash, the AIN OHI trigger is activated, resulting in a negative acknowledgement (NACK) treatment being applied to the end user. To avoid this condition, assign line option DENYU3WC to the line. By denying the U3WC feature access, the AIN OHI trigger is activated only after a flash if the line has a conference feature assigned.

The following figure shows a typical AIN OHI U3WC call setup.

Usage Sensitive Three-way Calling (U3WC) (continued)

U3WC access methods (AIN offices)



Call transfer

The Call Transfer (CXR) feature is not compatible with the U3WC or 3WC features. A U3WC LAMA (local automatic record accounting) record will not be generated if an end user with option CXR attempts to use the conferencing capabilities of the CXR feature. An end user with option CXR who dials a U3WC feature access code will be routed to treatment.

Usage Sensitive Three-way Calling (U3WC) (continued)

Speech Activated Intelligent Dialing (SAID) or Network Facility Access (NFA)

The U3WC feature can be activated on the second leg of a call using the Network Facility Access (NFA) trunk.

Implicit Access

If table OFCENG parameter U3WC_FLASH_ONLY is set to Y after a flash, the add-on party number is received over the NFA trunk. The second leg of the U3WC call is then established, and a second flash sets up the conference.

If table OFCENG parameter U3WC_FLASH_ONLY is set to N, one of the following scenarios occurs:

- If feature *NFA: Stringing of Digits* is available, it is used by the Intelligent Peripheral (IP) to dial the access code over the NFA trunk. After a switchhook flash, the U3WC access code and the add-on party number are received over the NFA trunk. After the U3WC access code is validated, the second leg of the U3WC call is created and a conference can be established.
- If feature *NFA: Stringing of Digits* is not available, the U3WC feature cannot be activated because only one incoming digit string on the NFA trunk is recognized.

Explicit Access

If table OFCENG parameter U3WC_FLASH_ONLY is set to Y after a switchhook flash, the NFA trunk is accessed as soon as the NFA explicit feature access code is entered. The second leg of the U3WC call is then created using the DN received over the NFA trunk.

If table OFCENG parameter U3WC_FLASH_ONLY is set to N, one of the following scenarios occurs:

- After a flash, the end user enters the U3WC feature access code followed by the NFA explicit access code. As soon as the NFA explicit access code is entered, the NFA trunk is accessed. The second leg of the U3WC feature call is created with the DN received over the NFA trunk, and a conference can be established.

  Note: The U3WC feature access code and the DN can be received over the NFA trunk (when the feature *NFA: Stringing of Digits* is activated) even if the U3WC feature access code was entered before the NFA

explicit feature access code. This arrangement is allowed because the U3WC feature access code can be entered more than once.

- After a flash, the end user enters the NFA explicit feature access code. The U3WC feature access code and the add-on party DN are received over the NFA trunk. Once the U3WC feature access code is validated, the second leg of the call is created and a conference can be established.

NFA X.25 Datalink Interface

When an X.25 datalink is associated with an NFA trunk, the X.25 message indicates that the U3WC feature is available on that line by setting the 3WC feature access field to universal access (U).

Three-way call chaining

Chaining of three-way calls is allowed with the U3WC feature. As a result, the other call participants (parties B and C) can initiate a conferencing feature (3WC or U3WC) to add other parties to the original conference call.

If office parameter U3WC_FLASH_ONLY is set to N, enter the U3WC feature access code before the other feature access codes.

U3WC and 3WC

An end user who is assigned the 3WC feature does not have access to the U3WC feature. A flash during a stable two-party call invokes the 3WC feature. A U3WC feature access code entered by a 3WC end user is ignored but a regular 3WC feature access code is still invoked. The TWC option in table AMAOPTS generates a conference circuit usage AMA record every time the 3WC feature is invoked. This option works with the 3WC feature (subscription-based conferencing) and therefore does not conflict with the U3WC feature or vice-versa.

Activation/deactivation by the end user

When U3WC_FLASH_ONLY is set to N

At your telephone:

1 While in a stable two-way call, flash the switchhook.

Response:

Receive a special dial tone.

2 Enter the U3WC access code *71 (or 1171).

Response: Receive a special dial tone.

3 Enter the DN of the party to be conferenced.

Response:

Usage Sensitive Three-way Calling (U3WC) (continued)

4 Flash the switchhook to conference all three parties.

Response:

5 Hang up to terminate the call.

When U3WC_FLASH_ONLY is set to Y

At your telephone:

1 While in a stable two-way call, flash the switchhook.

Response:

Receive a special dial tone.

2 Enter the DN of the party to be conferenced.

Response: Receive a special dial tone.

3 Flash the switchhook to conference all three parties.

Response:

4 Hang up to terminate the call.

Billing

An end user is charged each time the U3WC feature is requested. The U3WC feature generates a Bellcore format LAMA record based on Structure Code 00001. An AMA record is not generated when the second party hangs up before a conference is established only if office parameter U3WC_FLASH_ONLY is set to Y. The following fields are set by the U3WC feature:

- CALL CODE (048) indicates that the record is for a pay-per-use service.
- SERVICE FEATURE (018) specifies that the record is for the U3WC service.
- CLD PTY OFF-HK indicates whether or not the add-on party answers.
- CONNECT TIME represents the moment when the conference port is reserved or in use (the time when the three parties connect).
- ELAPSED TIME (depending on the setting) represents the total duration of the consultation plus the conference or represents only the duration of the conference itself.

The following figure is an example of an AMA record generated for call code 048. This example illustrates the content of an AMA record for a U3WC feature call where the add-on party answers the call and a successful three-way conference is achieved.

Usage Sensitive Three-way Calling (U3WC) (continued)

Call code 48

```
*HEX ID:AA STRUCTURE CODE:00001C CALL CODE:048C SENSOR TYPE:036C
SESNOR ID:0200200C REC OFFICE:036C REC OFFICE ID:0200200C DATE :40818C
TIMING IND:00000C STUDY IND:0000000C CLD PTY OFF-HK:0C SERVICE
OBSERVED:0C OPER ACTION:0C SERVICE FEATURE:018C ORIG NPA:613C ORIG
NUMBER:6216080C OVERSEAS IND:1C TERM NPA:00613C TERM NUMBER:7227142C
CONNECT TIME:152081C ELAPSED TIME:000000093C
```

Station Message Detail Recording

The Usage Sensitive Three-way Calling (U3WC) feature does not affect Station Message Detail Recording.

Datafilling office parameters

The following table shows the office parameters used by the Usage Sensitive Three-way Calling (U3WC) feature. For more information about office parameters, refer to *Office Parameters Reference Manual.*

Office parameters used by the Usage Sensitive Three-way Calling (U3WC) feature

Table name	Parameter name	Explanation and action
OFCENG	U3WC_FLASH_ONLY	Specifies the feature access method. When this parameter is set to Y, the U3WC feature is accessed by switchhook flash only (the same as the access to the 3WC feature). When this parameter is set to N, an access code (*71 or 1171) must be entered after the switchhook flash to activate the U3WC feature.
	U3WC_ELAPSED_TIME	Specifies the value of the Elapsed Time field in the LAMA record. When this parameter is set to TOTAL_DURATION, the contents of the Elapsed Time field only represent the time of the conference duration (after the feature originator flashes the switchhook for the second time to connect all call participants). When this parameter is set to TOTAL_DURATION, the consultation time is included in the record time for the call.

Usage Sensitive Three-way Calling (U3WC) (continued)

Office parameters used by the Usage Sensitive Three-way Calling (U3WC) feature

Table name	Parameter name	Explanation and action
	NO_OF_LARGE_FTR_DATA_BLKS	Specifies the number of large feature data blocks (FDB) required. This parameter must be increased by three times the number of conference circuits added for the U3WC feature.
	NO_OF_FTR_CONTROL_BLKS	Specifies the number of feature control blocks required. This parameter must be increased by three times the number of conference circuits added for the U3WC feature.
	NO_OF_FTR_XLA_BLKS	Specifies the quantity of feature translation data extension blocks required. This parameter must be increased by the number of conference circuits added for the U3WC feature.
	CRS_PRU_POOL2_SIZE	Controls the provisioning for the CRS_PRU_POOL2 extension block pool. This parameter must be increased by a number obtained using a formula for calculating multi-leg calls. Refer to *Office Parameters Reference Manual* for this formula.

Datafill sequence

The following table lists the tables that require datafill to implement the Usage Sensitive Three-way Calling (U3WC) feature. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for the Usage Sensitive Three-way Calling (U3WC) feature

Table	Purpose of table
OFCENG	Office Engineering. This table contains data on engineering parameters for the office. Refer to “Datafilling office parameters" for how the U3WC feature affects office parameters.
LCCOPT	Line Class Code Compatible Options Table. This table is read-only and cannot be modified by the end user; therefore, no datafill procedure or example is provided.
Note: Tables LENLINES and IBNLINES are datafilled through 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.	

Usage Sensitive Three-way Calling (U3WC) (continued)

Datafill tables required for the Usage Sensitive Three-way Calling (U3WC) feature

Table	Purpose of table
LENLINES (See note)	Line Assignment. This table contains data for each datafilled POTS line.
IBNLINES (See note)	IBN Line Assignments. This table contains data for each datafilled RES line.
IBNXLA	IBN Translations. This table contains the data for the digit translations of calls from an MDC station, attendant console, incoming trunk group, or incoming side of a two-way MDC trunk group. It also stores data for feature translations on RES lines.
AMAOPTS	Automatic Message Accounting Options Table. This table controls the activation and scheduling of the recording options for automatic message accounting (AMA).
Note: Tables LENLINES and IBNLINES are datafilled through 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.	

Note: In table LCCOPT, line option DENYU3WC is added to the compatibility list field (COMPAT) for the POTS and RES LCC tuples: 1FR, 1MR, CFD, ZMD, and ZMZPA.

Datafilling table IBNXLA

The following table shows the datafill specific to the Usage Sensitive Three-way Calling (U3WC) feature for table IBNXLA. Only those fields that apply directly to the Usage Sensitive Three-way Calling (U3WC) feature are shown. 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
RESULT		see subfields	Result. This field consists of subfields TRSEL, ACR, SMDR, VCDR, and FEATURE.
	TRSEL	FEAT	Translation selector. Enter translation selector FEAT.

Usage Sensitive Three-way Calling (U3WC) (continued)

Datafilling table IBNXLA

Field	Subfield or refinement	Entry	Explanation and action
	ACR	Y or N	Account code entry. Enter Y (yes) if an account code entry is required for all calls to the special feature access code. Otherwise, enter N (no). Enter N when the feature is equal to SCPL (Speed Call Program Long) or SCPS (Speed Call Program Short) (see field FEATURE).
	SMDR	Y or N	Station message detail recording. Enter Y if all calls from a customer group station or attendant console to any station in the block of station numbers are recorded. Enter N if no recording is 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 calls, this field has no effect and no SMDR record is produced. For dump and restore purposes, enter N if field TRSEL is datafilled NET, ROUTE, TTTR, AMBI, EXTN, CUTTD, or FEAT. Datafill N for field VCDR. The Station Message Detail Recording fields [SMDR and SMDRB (TRKSEL = NET)] can be set to Y only if the switching unit has the option SMDR_OFFICE set to Y in table OFCOPT. SMDR bills each leg of the call. The option must be turned on in table IBNXLA to generate SMDR billing. Turning on the option for one leg of the call does not carry over to another leg of the call. For example, when using virtual facility groups (VFG) for routing, SMDR must be turned on for the leg of the call that requires billing and must be routed through IBNXLA. Neither SMDR nor SMDRB can be turned on for calls originating from POTS VFGs.
	VCDR	Y or N	Variable call detail recording. N is the only valid entry for translation selector FEAT.
	FEATURE	U3WC	Feature. Enter U3WC.

Usage Sensitive Three-way Calling (U3WC) (continued)

Datafill example for table IBNXLA

The following example shows sample datafill for table IBNXLA.

MAP display example for table IBNXLA

```
            KEY
                                                RESULT
-------------------------------------------------------
     NTIXLA     71                  FEAT N Y N U3WC
```

Datafilling table AMAOPTS

The following table shows datafill specific to the Usage Sensitive Three-way Calling (U3WC) feature for table AMAOPTS. Only those fields that apply directly to the Usage Sensitive Three-way Calling (U3WC) feature are shown. For a description of other fields, refer to the data schema section of this document.

Datafilling table AMAOPTS

Field	Subfield or refinement	Entry	Explanation and action
OPTION		see subfield	Option. This field consists of subfield AMAOPT.
	AMAOPT	U3WC	AMA option. Enter U3WC

Usage Sensitive Three-way Calling (U3WC) (continued)

Datafilling table AMAOPTS

Field	Subfield or refinement	Entry	Explanation and action
SCHEDULE		see subfield	Schedule. This field consists of subfields AMASEL, ONDATE, OFFDATE, SCHED, ONTIME, and OFFTIME. Only subfield AMASEL applies to this feature.
	AMASEL	ON, OFF, DEFAULT, TIMED	AMA selector. Enter one of the following: • ON: Activate the option immediately. • OFF: Deactivate the option immediately. • DEFAULT: Use the default schedule for the option. The value DEFAULT never appears in table AMAOPTS, since table control replaces it with the actual default value. The DEFAULT selector can be used at any time and the switch recalculates the default value if the default AMASEL value is PERIODIC. • TIMED: Activate the option between the specified dates and times. Datafill refinements ONDATE and ONTIME to activate the option and refinements OFFDATE and OFFTIME to deactivate the option.

Datafill example for table AMAOPTS

The following example shows sample datafill for table AMAOPTS.

MAP display example for table AMAOPTS

```
   OPTION     SCHEDULE
_____________________________________________________________

   U3WC       ON
```

Translation verification tools

The Usage Sensitive Three-way Calling (U3WC) feature does not use translation verification tools.

Usage Sensitive Three-way Calling (U3WC) (continued)

SERVORD

The SERVORD commands QDN (Query Directory Number) and QLEN (Query Line Equipment Number) indicate, as part of their displays, if a POTS or RES line has access to the U3WC feature.

If the U3WC feature is not activated in an office, the output display for QDN and QLEN commands will not list the U3WC feature under the heading OFFICE OPTIONS.

If the U3WC feature is activated in an office and not available to a line, the DENYU3WC option is assigned to a line and the output display for QDN and QLEN commands will list DENYU3WC under the heading OPTIONS. Refer to the “Operations" section for a list of conditions that must be met for U3WC to be on a line.

Line option DENYU3WC can be assigned to a RES line or POTS line with an LCC of 1FR, 1MR, CFD, ZMD, or ZMZPA.

SERVORD limitations and restrictions

The Usage Sensitive Three-way Calling (U3WC) feature has no SERVORD limitations and restrictions.

SERVORD prompts

The following table shows the SERVORD prompts used to add the Usage Sensitive Three-way Calling (U3WC) feature to a line.

SERVORD prompts for the Usage Sensitive Three-way Calling (U3WC)

Prompt	Valid input	Explanation
DN_OR_LEN	7-digit DN or LEN	Specifies the 7-digit DN or LEN of the line to be changed.
OPTION	1 to 69	Indicates the option.

SERVORD example for adding option DENYU3WC

The following SERVORD example shows how option DENYU3WC is added to a RES line using the ADO command.

Usage Sensitive Three-way Calling (U3WC) (end)

SERVORD example for DENYU3WC in prompt mode

```
>ADO
SONUMBER:  NOW  94  08  15 AM
>
DN_OR_LEN
>5468133
OPTION:
>DENYU3WC
OPTION:
>$
COMMAND AS ENTERED:
ADO NOW 94 08 15 AM 5468133 (DENYU3WC) $
Enter Y to confirm, N to reject or E to edit
>Y
```

SERVORD example for DENYU3WC in no-prompt mode

```
> ADO $ 5468133 DENYU3WC $
```

History

SN06 (DMS)

Added amendments to figure U3WC access and billing methods for Q00703423-03.

3 Datafilling RES Advanced Custom Calling

The following chapter describes the RES Advanced Custom Calling, RES00002, functionality.

900 Fraud Prevention (900FP)

Ordering codes

Functional group ordering code: RES00002

Functionality ordering code: RES00074, CSTC0101

Release applicability

NA008 and up

Prerequisites

The 900 Fraud Prevention (900FP) feature requires CCS7 network connectivity. The 900 Fraud Prevention (900FP) feature relies on the following package to function.

- NTX167AB Base ISUP, ISP70001 NA005 and above

Description

The 900FP service prevents the termination of fraudulent calls on 900 client numbers. Directly dialing the local number associated with the 900 client is an example of a fraudulent 900 call. This application makes use of the information the ISDN user part (ISUP) protocol supplies. The information validates the correct dialing of the 900 number. Fraudulent direct calls to 900 client numbers route to a treatment.

In the Canadian network, 900 numbers translate to 800/8NN numbers before the numbers translate to a real ten-digit directory number (DN). Correct 8NN numbers are 822, 833, 844, 855, 866, 877 and 888. Originating office datafill prevents the end user from directly dialing the 800/8NN number associated with the 900 number.

Operation

The system activates the 900FP feature each time a call terminates on a supported agent. The feature works in two steps.

In the first step, the feature checks the called DN against the DN list that the DNFEAT table contains. Enter all the terminating 900 client DNs in this table with the new CLNT900 option. When the new CLNT900 option finds the called DN in table DNFEAT, the feature goes to the second step. If the feature does not find the called DN in table DNFEAT with the CLNT900 option, the call terminates normally. The call terminates normally because the called DN does not associate with a 900 number.

In the second step, the feature checks that the called DN associated with a 900 number the end user dials correctly. The correct sequence to dial a 900 number

900 Fraud Prevention (900FP) (continued)

is 1-900-XXX-XXXX. The caller does not directly dial the 10-digit DN. The feature analyzes the information carried in the ISUP initial address message (IAM) to perform this check.

The feature checks the generic address parameter (GAP). All 800/8NN calls that terminate in the Canadian network over ISUP facilities include a GAP in the outgoing IAM message. The Signaling Service Point (SSP) sends this message. In the GAP, the type_of_address field has the 800 Service Indicator value. The value identifies the call as an 800 or 8NN call. The 8NN values are 822, 833, 844, 855, 866, 877 and 888.

The feature performs a second check when the following conditions are present:

- an 800 service indicator is not set
- a separate data base is in use and the system does not translate the 900 numbers to 800 or 8NN numbers

The check extracts the original called number (OCN) field from the IAM. The check makes sure the number dialed is 1-900-XXX-XXXX or 1-8NN-XXX-XXXX. The last two 800 and 8NN number ranges are only in use for 900 originated calls. These 900-originated calls translate to 800 or 8NN calls when the 800 Service Indicator is not present. This feature blocks fraudulent 800 or 8NN call at origination.

The 900 calls can terminate directly on the querying SSP. An example of the querying SSP are DMS-100/200 combined offices. The important call information comes from an internal register. The import and call information does not come from the IAM message.

When the 900FP feature denies call termination, the new TFRB900 register increases. The caller routes to the new Blocked 900 (B900) treatment. If you enter table TMTCNTL for log generation, the system generates a LINE138 or TRK138 log.

Translations table flow

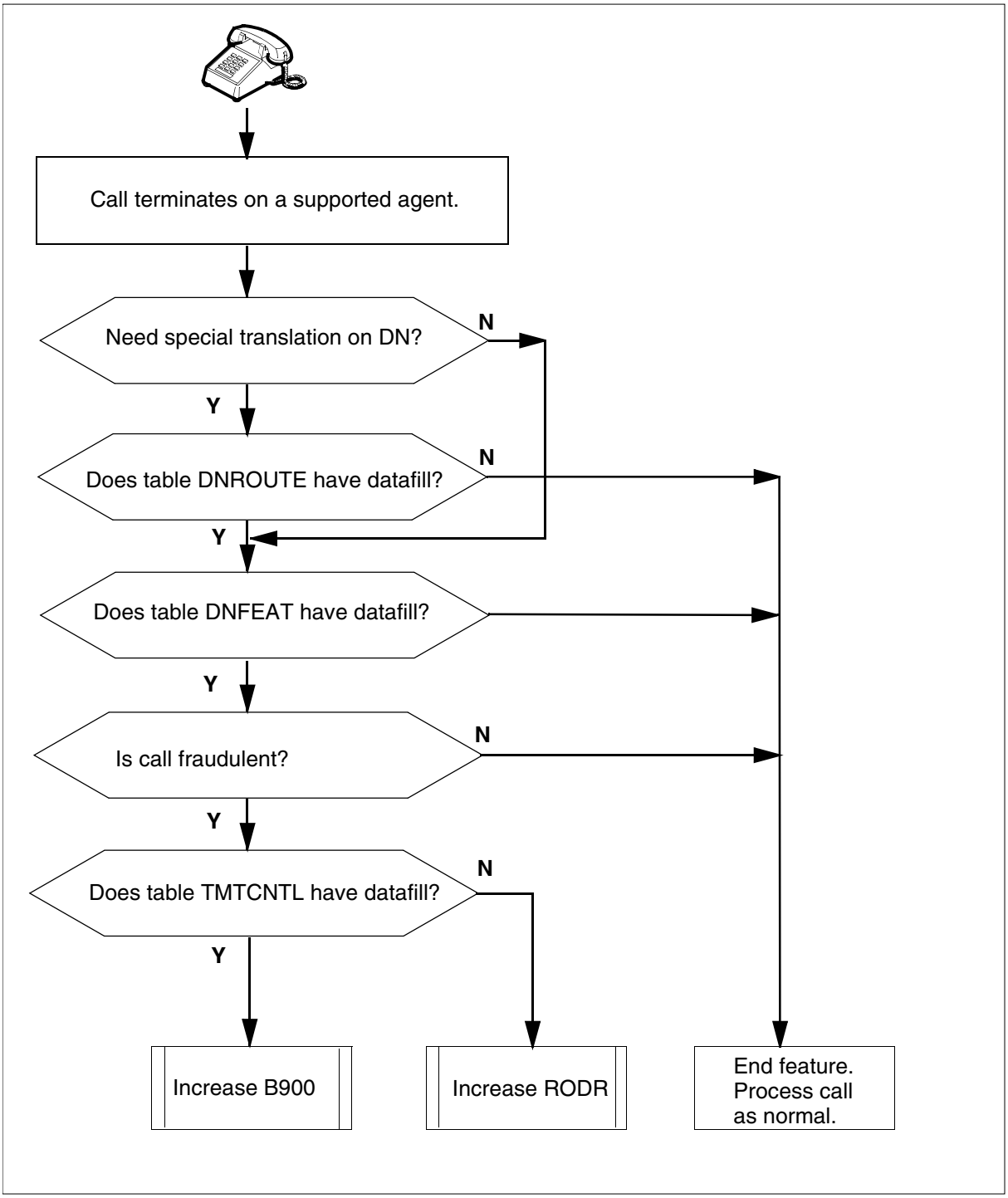
The 900 Fraud Prevention (900FP) translations tables appear in the following list:

- Table DNROUTE
- Table DNFEAT

The 900 Fraud Prevention (900FP) translation process appears in the following flowchart.

900 Fraud Prevention (900FP) (continued)

Table flow for 900 Fraud Prevention (900FP)



900 Fraud Prevention (900FP) (continued)

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

Datafill example for 900 Fraud Prevention (900FP)

Datafill table	Example data
OFRT	676 (N D TRKLPBK 0 $ N) $
DNROUTE	819 441 0001 T OFRT 676
DNFEAT	514 765 1234 (CLNT900) $

Limits

The following limits apply to 900 Fraud Prevention (900FP):

- The 900FP supports calls that use the 800+ software package. The feature does not support E800 calls.
- The feature cannot distinguish between the following calls. The operating company must make sure the end user does not dial these 800 or 8NN numbers directly. The calls are:
  - — a 900 call
  - — a call that goes directly to the 800/8NN number to which the system translates the 900 number
- The 900FP feature assumes that the network has full CCS7 connectivity between the querying SSP and the terminating office.
- The operating company must enter the 900 client DNs in table DNFEAT.
- You must use SERVORD to assign the CLNT900 option to a 900 client DN for LCC 1FR/1MR.
- You must enter special translation DNs associated with trunks in table DNROUTE for 900FP support.
- A separate 900 database provides the OCN in the IAM if the following condition is present. The 800 Service Indicator setting is not in the type_of_address field in the GAP parameter.
- The Directory Number Hunt (DNH) hunt group type requires CLNT900 DN option provisioning for each DN member. This requirement makes sure the entire group does not receive fraudulent calls.
- The SERVORD does not support the provisioning of the CLNT900 option to virtual DNs. Examples of virtual DNs are ACD/UCD virtual DNs and

special translation DNs for trunk office routing. For these agents, the operating company enters the CLNT900 option directly in table DNFEAT.

- For the ACD/UCD group type, assign the CLNT900 to the primary DN and to each DN member. The assignment makes sure the complete group does not receive fraudulent calls.

Interactions

The interactions between 900 Fraud Prevention (900FP) and other functionalities appear in the following paragraphs.

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

The AIN improves the switch call processing abilities to use centralized service logic programs that the operating company provides. The operating company places the centralized service logic programs at the service control point (SCP). The service logic determines how AIN calls proceed for additional call processing.

All AIN terminating triggers that apply to the call before the Authorize_Termination point in call take priority over the 900FP feature.

Anonymous Caller Rejection (ACRJ)

The Anonymous Caller Rejection (ACRJ) feature allows a subscriber to reject calls from some callers. These callers suppress the display of the name or DN of the caller. Anonymous calls route to an announcement. Anonymous calls do not reach the subscriber.

The 900FP feature takes precedence over the ACRJ feature. The ACRJ option assigned to the terminating party does not affect the 900FP activation. If 900FP does not screen a call and the 900 client DN station has the ACRJ option, the following action occurs. The calls for which the caller blocks the display of the telephone number route to the ACRJ announcement.

Automatic Call Distribution/Uniform Call Distribution (ACD/UCD)

The ACD/UCD features allow the even distribution of calls to a number of set stations. The stations are ACD/UCD stations. These features queue incoming calls to a message desk. When calling a UCD or ACD group, the caller in the queue hears the treatment that the ACD/UCD group provides. Examples of treatments include audible ringing, music or an announcement.

The 900FP feature blocks direct calls to ACD/UCD groups when the ACD/UCD DN has an assigned CLNT900.

900 Fraud Prevention (900FP) (continued)

Coin line originating calls

The 900FP feature blocks fraudulent 900 calls that originate from coin lines. The feature blocks fraudulent 900 calls if a full CCS7 connectivity is present. The connectivity is from the querying SSP down to the DMS-100 terminating end office is present. The 900FP feature performs fraud detection when the following conditions occur:

- The operating company has the correct billing system in place for pay telephones.
- The operating company allows origination of 900 calls from coin lines.
- The 900FP feature allows the call to go through or routes the call to the B900 treatment.

Call Forwarding (CFW, CFF, CFU, CFD, CFDA, CFB, CFBL, CFGD, CFGDA)

The 900FP feature screens all calls terminating on a 900 client DN because of call forward. The 900FP feature screens all calls that terminate on a 900 client DN that has call forwarding active. The feature screens the call before call forward takes place if fraud detection permits. A maximum of five call forwards can occur.

You can assign call forwarding options to a 900 client DN to overflow to another 900 client DN. Reasons for this assignment include a no-answer condition, busy conditions, or forward unconditional. The 900FP feature screens a call that terminate on a 900 client DN1. The call has CFW activation to forward to 900 client DN2. The screening occurs before the call terminates on the 900 client DN1. The screening occurs again before the call terminates on the 900 client DN2.

If a non-900 client DN has CFDA or CFBL and forwards directly to a 900 client DN, the functionality is different. The difference depends on if the forwarding is intra-switch or inter-switch. For inter-switch forwarding, the system forwards the call. The system blocks the call before the call terminates on the 900 client DN. For intraswitch forwarding, call forwarding does not occur. The call continues to ring at the originally dialed DN. In these events, a fraudulent call does not terminate.

If a non-900 client DN has CFDA or CFBL and forwards directly to a 900 client DN, the functionality is different. The difference depends on if the forwarding is intra-switch or inter-switch. For inter-switch forwarding with CFBL case, the system forwards the call. The system blocks the call before the call terminates at the 900 client DN. For intra-switch forwarding with CFDA case, the system does not forward the call. The call continues to ring at the originally dialed DN. In these events, a fraudulent call does not terminate.

900 Fraud Prevention (900FP) (continued)

Denied Termination (DTM)

The DTM option prevents a line from receiving calls. Calls that attempt to terminate to a line with the DTM option receive denied terminating (DNTR) treatment.

The 900FP feature takes priority over the DTM option. A call that the 900FP feature screens out routes to the B900 treatment. This action occurs if the terminating party has an assigned DTM option.

Directed Call Pick-Up with Barge-In (DCBI)

This feature does not support DCBI.

Group Intercom (GIC)

A user can use the GIC feature for abbreviated dialing to terminate a call on a member of a set intercom group. To access group members, use abbreviated dialing. Group size determines abbreviated dialing. For example, one digit represent maximum of ten members. Two digits represent a maximum of 100 members. Three digits represent a maximum of 1000 members. Four digits represent a maximum of 10 000 members.

The 900FP feature blocks calls to GIC group members through the abbreviated GIC dialing. Northern Telecom does not recommend to offer GIC option on a 900 service provider subscriber.

Hunt Groups (DNH, MLH, DLH, CIR, KSH)

A hunt group allows the system to offer a terminating call next to all members of the group. The call rings until answered.

The 900FP feature supports all hunt group configurations. Only calls that the 900FP does not screen out terminate on the DN associated with the hunt group.

For a DNH hunt group, each member of the group has an assigned DN. Each member of the group is reached separately from the pilot DN. For correct 900 fraud protection for the complete DNH hunt group, each member DN must have the CLNT900 DN option provisioned.

Intercom (INT)

The INT feature allows the subscriber to dial an access code and ring all the extensions of the DN. The subscriber can speak to all callers that picks up an extension.

The 900FP feature blocks calls started through the INT access code. Northern Telecom does not recommend to assign the 900CLNT option with the INT option.

900 Fraud Prevention (900FP) (continued)

Local Number Portability (LNP)

The LNP is not currently available to 900 client DN numbers.

Remote Call Forwarding (RFC)

This feature does not support the RFC.

Screening List Editing (SLE) features (SCA, SCRJ, SCF, DRCW)

The SLE feature provides call screening lists. Use a set of SLE audio announcements for all instructions and prompts. To select actions to perform, the subscriber enters a one-digit or two-digit command sequence. Screening lists include validated DNs.

The 900FP feature takes priority over SLE-based features. Only calls that the 900FP does not screen out can activate the SLE-based features assigned to the 900 client DN.

Series Completion (SCMP)

The SCMP feature allows calls to redirect from a busy DN to another specified DN that the same office serves. The 900FP feature does not block calls when the DN to which busy calls redirect is a 900 client DN. The operating company must not provision SCMP to forward to a 900 client DN.

Suppressed Ringing Access (SRA)

The SRA feature can access the customer loops of a telephone company without audibly ringing the telephone sets on customer premises. Multiple service providers can use this capability. For example, the telephone company can download telephony-related service scripts to an Analog Display Services Interface (ADSI) set. Third-party service providers can download targeted advertising to an ADSI set. Third-party service providers can communicate with a device on the customer premises like a utility meter. An SRA subscriber line can have an provisioned CLNT900 option. This condition allows a 900 Service Provider to receive SRA and 900 fraudulent-free calls.

Teen Service/Secondary Directory Number (SDN/ESDN)

Teen service allows the assignment of multiple directory numbers to the same line. Different ringing patterns identify the called number.

The SDN and ESDN numbers do not support the 900FP feature.

Activation/deactivation by the end user

The 900 Fraud Prevention (900FP) does not require activation/deactivation by the end user.

900 Fraud Prevention (900FP) (continued)

Billing

The 900 Fraud Prevention (900FP) does not affect billing.

Station Message Detail Recording

The 900 Fraud Prevention (900FP) does not affect Station Message Detail Recording.

Datafilling office parameters

The 900 Fraud Prevention (900FP) does not affect office parameters.

Datafill sequence

The tables that require datafill to implement 900 Fraud Prevention (900FP) appears in the following table. The tables appear in the correct entry order.

Datafill requirements for 900 Fraud Prevention (900FP)

Table	Purpose of table
OFRT	Office Route. Virtual DNs use this table.
DNROUTE	Directory Number Route. This table contains special translation DNs that use an office route selector for 900 client DNs that route to trunks.
DNFEAT	Directory Number Feature. This table contains the 900 client DNs.
TMTCNTL	Treatment Control. This table identifies the treatment to which a call that 900FP routes screens out. The operating company can define the treatment as a tone or an announcement.

Datafilling table OFRT

Datafill for 900 Fraud Prevention (900FP) for table OFRT appears in the following table. Enter this table for virtual DNs. The fields that apply to 900

900 Fraud Prevention (900FP) (continued)

Fraud Prevention (900FP) appear in this table. See the data schema section of this document for a description of the other fields.

Datafilling table OFRT

Field	Subfield or refinement	Entry	Explanation and action
RTE		1 to 1023	Route. Enter the route reference number to assign to the route list.
	rtesel	N	Route selector. Enter N to specify use of route selector N. ***Note:*** Other values are correct for this field. An N is the only entry in the entry column.
	conntype	D	Connection type. System logic does not use this field. Enter D to satisfy table control.
	clli	alphanumeric (1 to 16 characters)	Common Language location identifier. Enter the code from table CLLI to which the translation routes.

Datafill example for table OFRT

Sample datafill for table OFRT appears in the following example.

MAP example for table OFRT

```
>OFRT

RTE                                                    RTELIST
-------------------------------------------------------------
   676  (   N   D   TRKLPBK  0         $ N) $
```

Datafilling table DNROUTE

For 900 client DNs that route to trunks, the following condition applies. You must use an office route selector to enter the DNROUTE table with a special translation DN. Datafill for 900 Fraud Prevention (900FP) for table DNROUTE appear in this table. The fields that apply to 900 Fraud Prevention

900 Fraud Prevention (900FP) (continued)

(900FP) appear in this table. See the data schema section of this document for a description of the other fields.

Datafilling table DNROUTE

Field	Subfield or refinement	Entry	Explanation and action
AREACODE		0 to 9 (3 digits)	Area code. The service numbering plan area (SNPA) associated with the 900 client DN.
OFCCODE		0 to 9 (a maximum of 7 digits)	Office code. The office code associated with the 900 client DN.
STNCODE		0 to 9 (a maximum of 8 digits)	Station code. The station code associated with the 900 client DN.
DNRESULT	DNOPT	OFRT	The DNOPT subfield has a client DN setting. Validation is a requirement.

Datafill example for table DNROUTE

Sample datafill for table DNROUTE appears in the following example.

MAP example for table DNROUTE

```
>DNROUTE

AREACODE  OFCCODE  STNCODE                    DNRESULT
-------------------------------------------------------
     819      441     0001               T  OFRT    676
```

900 Fraud Prevention (900FP) (continued)

Datafilling table DNFEAT

Datafill for 900 Fraud Prevention (900FP) for table DNFEAT. The fields that apply to 900 Fraud Prevention (900FP) appear in this table. See the data schema section of this document for a description of the other fields.

How to enter data into table DNFEAT

Field	Subfield or refinement	Entry	Explanation and action
AREACODE		0 to 9 (3 digits)	Area code. The SNPA associated with the 900 client DN.
OFCCODE		0 to 9 (a maximum of 7 digits)	Office code. The office code associated with the 900 client DN.
STNCODE		0 to 9 (a maximum of 8 digits)	Station code. The station code associated with the 900 client DN.
OPTLIST	DNOPT	AINDN or CLNT900	The DNOPT subfield has a new CLNT900 setting. The setting identifies a 900 client DN that requires validation.

Datafill example for table DNFEAT

Sample datafill for table DNFEAT appears in the following example.

MAP example for table DNFEAT

```
>DNFEAT

AREACODE  OFCCODE  STNCODE                        OPLIST
------------------------------------------------------------
514 765 1234       (CLNT900) $
```

Datafilling table TMTCNTL.TREAT

Table TMTCNTL.TREAT defines tones or announcements that return to the originator of a call. The tones or announcements return to the originator of a call if a specified treatment code appears during call translations. Datafill for 900 Fraud Prevention (900FP) for table TMTCNTL.TREAT appears in the following table. The fields that apply to 900 Fraud Prevention (900FP) appear

in this table. See the data schema section of this document for a description of the other fields.

Note: If the user does not enter data in table TMTCNTL.TREAT, the operational measurement (OM) register B900 does not increase. The OM register RODR increases as a default.

Datafilling table TMTCNTL.TREAT

Field	Subfield or refinement	Entry	Explanation and action
TREATMT		B900	Treatment name. Enter B900.
LOG		Y or N	Log. Enter Y or N to specify if the system generates log LINE138 or TRK138. The system generates this log when a call routes to the treatment that field TREATMT specifies.
FSTRTE		S or T	First Route. Enter the first route selector.

Datafill example for table TMTCNTL.TREAT

Sample datafill for table TMTCNTL.TREAT appears in the following example.

MAP example for table TMTCNTL.TREAT

```
>TMTCNTL.TREAT

TREATMT LOG      FSTRTE
-------------------------------------------------------------
B900    Y    S   BLDN
```

Translation verification tools

The 900 Fraud Prevention (900FP) tools for verifying translations changes show how a call goes through the 900FP screening. When the caller places a call to a 900 client DN with datafill in table DNFEAT with the new CLNT900 option, the following occurs. The TRAVER output shows the corresponding entry in the table. The system prints a message that states the call is a 900 call.

To support trunks associated with 900 numbers, a modification of the translation associated with these trunks must occur. Examples of trunks are PRI, PX and P2. You must enter a special translation DN in table DNROUTE.

900 Fraud Prevention (900FP) (continued)

Do not directly route the DN in an office route table. Examples of an office route table are OFRT, OFR2, OFR3 and OFR4. The data entry indexes the office route associated with the trunk. When the created special translation DN is in table DNROUTE, perform the following action. Enter the new CLNT900 option in table DNFEAT for 900 fraud detection.

This configuration has an advantage. This configuration supports all types of trunks. The DN created in table DNROUTE is the basis for fraud detection. Dedicated trunks are not a requirement to carry 900 calls.

When in use to verify 900 Fraud Prevention (900FP), the output from TRAVER appears in the following example.

900 Fraud Prevention (900FP) (continued)

TRAVER output example for 900 Fraud Prevention (900FP)

```
traver 1 3310323 3310026 b
TABLE LINEATTR
0 1FR NONE NT OTWA 0 613 P613 OTWA NONE 10 NIL NILSFC LATA1 0 NIL NIL 00
Y S1CMS 613 0 0 ( LDSV ACT) $
LCABILL OFF - BILLING DONE ON BASIS OF CALLTYPE
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
TUPLE NOT FOUND
TABLE LENFEAT
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
AIN Orig Attempt TDP: no subscribed trigger.
TABLE STDPRTCT
P613 ( 1) (65021) 1
 . SUBTABLE STDPRT
WARNING: CHANGES IN TABLE STDPRT MAY ALTER OFFICE
BILLING. CALL TYPE DEFAULT IS NP. PLEASE REFER TO
DOCUMENTATION
 . KEY NOT FOUND
 . DEFAULT VALUE IS:  N NP 0 NA
 . SUBTABLE AMAPRT
 . KEY NOT FOUND
 . DEFAULT VALUE IS:  NONE OVRNONE N
TABLE HNPACONT
613 Y 721 0 ( 13) ( 1) ( 0) ( 0) 0
 . SUBTABLE HNPACODE
 . 331 331 DN 613 331
AIN Info Collected TDP: no
subscribed trigger.
```

900 Fraud Prevention (900FP) (continued)

TRAVER output example for 900 Fraud Prevention (900FP)(continued)

```
TABLE FNPA7DIG
EMPTY TABLE: TUPLE NOT FOUND
AIN Info Analyzed TDP: no subscribed trigger.
TABLE TOFCNAME
613 331 $
TABLE DNINV
613 331 0026 L RSCL 03 1 05 23
AIN Term Attempt TDP: no subscribed trigger.
TABLE DNFEAT
TABLE DNFEAT
613 331 0026 (CLNT900 ) $
Call will be blocked if not dialed as 900
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
TUPLE NOT FOUND
LNP Info: Called DN is resident.
LNP Info: Called DN has native NPANXX.
LNP Info: HNPA results are used.
TABLE LCASCRCN
613 0TWA ( 3) MAND N N
 . SUBTABLE LCASCR
 . 331 334
TABLE PFXTREAT
MAND NP Y NP UND
TABLE CLSVSCRC
+++ TRAVER: SUCCESSFUL CALL TRACE +++
DIGIT TRANSLATION ROUTES
1 LINE   6133310026    ST
TREATMENT ROUTES.  TREATMENT IS: GNCT
1 LINE120T
2 LKOUT
```

SERVORD

The 900FP feature uses service orders to add the CLNT900 option to a line. The 900FP feature uses service orders to remove the CLNT900 option from a line. Use SERVORD to add or remove the CLNT900 option for lines.

SERVORD limits

The SERVORD does not support the CLNT900 option provisioning. The SERVORD does not support CLNT900 option to virtual DNs. Examples of virtual DNs are ACD/UCD virtual DNs and special translation DNs for trunk

office routing. For these agents, you must enter the CLNT900 option directly in table DNFEAT.

SERVORD prompts

The 900FP does not add new prompts to the SERVORD utility.

SERVORD prompts for 900 Fraud Prevention (900FP)

Prompt	Correct input	Explanation
OPTION	CLNT900	Indicates that the DN is a 900 client DN.

SERVORD example for how to add 900 Fraud Prevention (900FP)

How to add 900 Fraud Prevention (900FP) to a line that uses the add option (ado) command appears in the following SERVORD example.

SERVORD example for 900 Fraud Prevention (900FP) in prompt mode

```
>SERVORD
SO:
> ADO
SONUMBER:         NOW 97  2  27  AM
> 8304583
OPTION:
> CLNT900
OPTION:
> $
COMMAND AS ENTERED:
ADO NOW 97 2 22 AM 8304583  (CLNT900)  $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
> Y
```

900 Fraud Prevention (900FP) (end)

SERVORD example for 900 Fraud Prevention (900FP) in no-prompt mode

```
> ADO $ 8304583 CLNT900 $
```

History

SN07 (DMS)

Functionality ordering code CSTC0101 added according to Q00834222.

Release history section added.

Access to Messaging

Ordering codes

Functional group ordering code: RES00002

Functionality ordering code: RES00077

Release applicability

NA011 and up

Prerequisites

To operate, Access to Messaging has the following prerequisites:

- BAS00001, Base
- BAS00003, BAS Generic
- MDC00001, MDC Minimum
- MDC0003, MDC Standard
- RES00006, RES Service Enablers

For end-to-end ISDN user part (ISUP) connectivity, the following packages are also required:

- ISP70001, Base ISUP
- TEL00008, TEL CCS7 Base
- TEL00001, TEL Telecom Layer Function

For ISUP-Simplified Message Desk Interface (SMDI) interworking, the following packages are required:

- RES00004, RES I/F Functionality
- MDC00006, MDC MBG Std

Description

Access to Messaging and a voice messaging system (VMS) allows the operating company or an alternate service provider (ASP) to make available a voice messaging service if someone does not answer the call within a specified length of time or the line is busy.

Operation

The following subsections provide a detailed description of the operation of Access to Messaging from call screening to call termination.

Access to Messaging (continued)

Stages of operation

The operation of Access to Messaging has the following stages:

- Screening: common offering screening and service-specific screening
- Busy and ringing detection
- Service invocation
- Offer of the service
- Caller acceptance or rejection
- Routing to the VMS
- Termination

The following sections describe each stage of the operation of Access to Messaging.

Screening

To minimize the chance that a caller will be denied Access to Messaging service after having accepted its offer of service, Access to Messaging performs screening. Screening ensures that various criteria required for Access to Messaging to operate are satisfied before Access to Messaging service is offered to the caller.

This section describes the screening criteria that must be met before Access to Messaging service (and Enhanced Busy Call Return [EBCR] service, if applicable) can be offered.

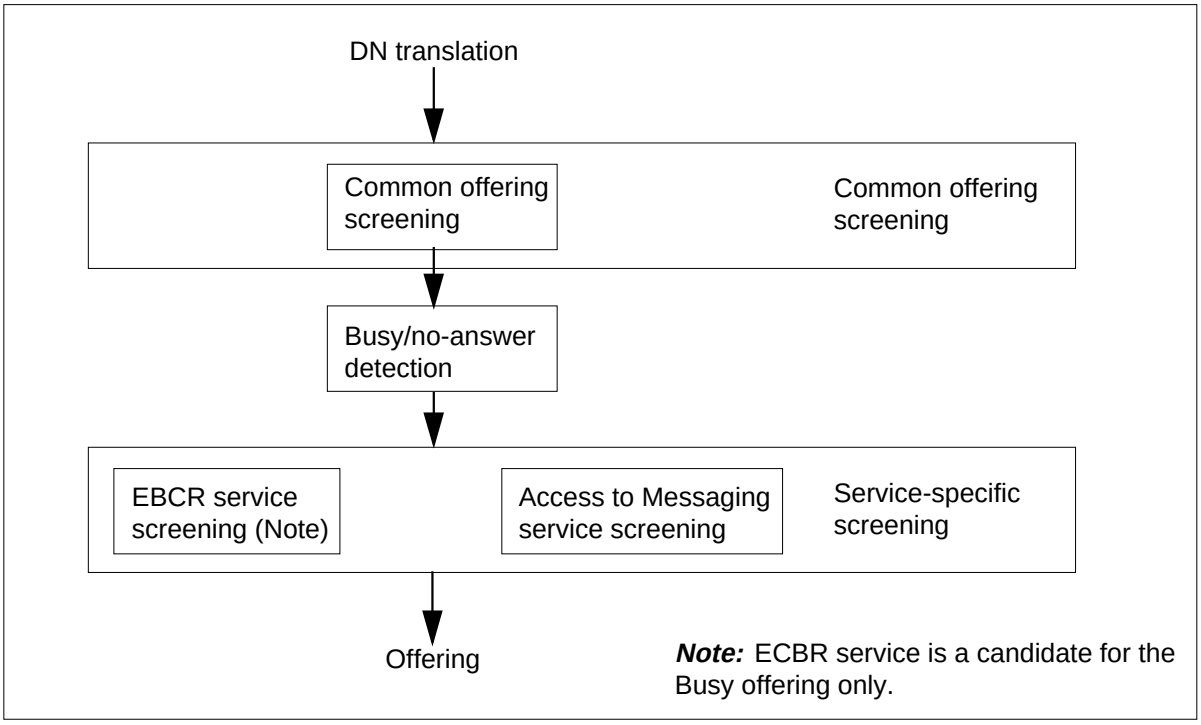
Screening is divided into two levels:

- common offering screening
- service-specific screening

Figure 1-1 illustrates where the two screening levels are performed in the progress of a call.

Access to Messaging (continued)

1-1Screening levels



Common offering screening

Common offering screening is performed immediately after the terminating directory number (DN) has been successfully translated. This screening is performed when Access to Messaging service, EBCR service, or a choice of either service is intended to be provided to the caller. The screening criteria are the same irrespective of which service or services are intended to be offered. Consequently, if common offering screening fails, neither service can be offered to the caller.

Common offering screening checks for criteria relating to the originating end office, the calling party, the translated dialed digits, and the terminating agent. These screening criteria are described in the following sections. Common offering screening is passed only if all criteria described in the following sections are satisfied.

Originating end office characteristics The following criteria relate to the originating end office:

- Office parameter SDS_ENABLED in table OFCENG is set to Y. This office parameter enables and disables Access to Messaging (and EBCR, if

applicable) on an office wide basis. For an Alternate Service Provider (ASP), field ENABLED is set to Y in table SPINFO.

- The central processing unit occupancy of the end office is not in an overload condition. The end office is considered to be in an overload condition if it has been doing central processing work constantly for the last 5 seconds.

Calling party characteristics The following criteria relate to the calling party:

- Neither per-call denial nor sustained deactivation is active on the calling party's line.
- One of the following occurs if field AMSGSUBS in table SDSINFO is in subscription mode (SUBSCR):
  - — The switch assigns line option AMSG to the line.
  - — The switch assigns the ASP with line option AMSG to the line.
  - — The switch assigns customer group option AMSG to the customer group, of which the calling party's line is a member. The switch does not assign line option AMSGDENY to the line. The customer group option AMSG supports the line type.
  - — The switch assigns the ASP with customer group option AMSG to the customer group, of which the calling party's line is a member. The switch does not assign line option AMSGDENY to the line. The ASP with customer group option AMSG supports the line type.
- If service is distributed in universal mode (field AMSGSUBS in table SDSINFO is set to UNIVER), the AMSGDENY line option is not assigned to the line, the AMSGDENY customer group option is not assigned to the customer group of which the line is a member, the RSP option is not assigned to the line, and the line type is supported in universal mode.
- If the service is distributed in Universal mode (field SDSSUBS in table SDSINFO set to UNIVER) and the line is a member of a hunt group, then table SDSINFO tuple SDSOFC field HUNTORIG is set to Y.
- If the service is distributed in Universal mode (field SDSSUBS in table SDSINFO set to UNIVER) and the line is an IBN, PSET, or ISDNKSET agent, then table SDSINFO tuple SDSOFC field CTXORIG is set to Y.
- If the calling party's set uses dial pulse signaling, then table SDSINFO tuple SDSOFC field DPORIG is set to Y.

Access to Messaging (continued)

Translated dialed digits The following criteria relate to the translated dialed digits:

- The call's translated dialed digits are not in the range of digits datafilled in field DNSCRN in table SDSINFO. This field lists the digit ranges that are used to screen the translated dialed digits. A range contains either three digits or six digits. The three-digit range is used to screen the NPA. The six-digit range is used to screen the NPA and office code (NXX).
- If the call is local and terminates on a NPA that is different from the NPA of the calling party, field REVXLA in table SDSINFO is set to Y, tables DNREVXLA and DNREGION are correctly datafilled, and reverse translations are successful.
- The translated dialed digits do not belong to any of the following groups of translated dialed digits:
  - N11, for example, 411, 611, 911
  - 900, 976 numbers
  - directory assistance: 555-1212 and 1+NPA-555-1212
  - domestic or international (inside world zone 1) operator assistance: 0+, 0-
  - international (outside world zone 1) operator assistance: 01+
  - interexchange carrier (IEC) operator assistance: 00-
  - international (outside world zone 1) carrier operator assistance: 00+
  - international direct dial: 011+
  - NSC calls, for example, 800, 888
  - feature group A and feature group B equal access calls: 950-0/1XXX

Terminating agents The trunk that is used for the call from the caller to the called party is one of the following terminating trunk types:

- outgoing end office (TO)
- two-way end office (T2)
- outgoing IBN (IBNTO)
- two-way IBN (IBNT2)
- toll connecting (IT)
- access tandem to carrier (ATC)

Access to Messaging (continued)

Service-specific screening

Service-specific screening is performed as soon as a busy or ringing condition is detected. This screening is composed of a screening specific to Access to Messaging and a screening specific to EBCR.

Whether one, both, or neither type of screening is performed depends on whether the call encounters a busy or ringing condition and on the service or services that the operating company intends to offer on that condition. The services to be offered on the busy and ringing condition are defined by the values the operating company datafills in fields BSYMODE and RNAMODE in table SDSINFO.

If the call encounters a busy condition and field BSYMODE is set to:

- NONE (no service offering), no service-specific screening is performed.
- MSG (Access to Messaging service only), only service-specific screening for Access to Messaging is performed.
- ACB (EBCR service only), only service-specific screening for EBCR is performed.
- ACBMSG (both EBCR service and Access to Messaging service), service-specific screening for EBCR is performed followed by service-specific screening for Access to Messaging. The caller is offered only the services that pass their service-specific screening. If neither passes, no service is offered and the call proceeds as if neither service were active on the line.

If the call encounters a ringing/no-answer condition and field RNAMODE is set to:

- NONE (no service offering), no service-specific screening is performed.
- MSG (Access to Messaging service only), only service-specific screening for Access to Messaging is performed.

Service-specific screening for Access to Messaging

To pass service-specific screening for Access to Messaging service, the following criteria relating to feature compatibility, equal access calls, and privilege calls must be satisfied.

Access to Messaging (continued)

Equal access The following criteria must be met if the call is an equal access call:

- If the call is an equal access inter-LATA call, or if the call is an equal access call carried by an operating telephone company (OTC) carrier, both of the following criteria must be met:
  - — Field INTERLAT in table SDSINFO is set to Y. This field enables and disables Access to Messaging on inter-LATA calls depending on how it is datafilled.
  - — Field INCASA in table OCCINFO is datafilled with this carrier. This field lists the codes of carriers for which Access to Messaging service can be offered.
- If the call is an equal access intra-LATA call, field INCASA in table OCCINFO is set to Y for the carrier specified for this call.

Privilege calls The following criterion must be met if the call is an inter-LATA Privilege call:

- If the call is an inter-LATA Privilege call, the entry in field INTERLAT in table SDSINFO or in table SPINFO for an ASP is Y.

Note 1: A Privilege call is an interexchange call that is dialed without a 10XXX prefix (that is, a call that would normally be handled by the primary inter-LATA carrier but that is instead completed by the local exchange carrier). A Privilege call is translated as a non-equal-access local exchange call.

Note 2: There are no screening criteria specific to intra-LATA Privilege calls.

Note 3: For both intra-LATA and inter-LATA Privilege calls, if the caller accepts the service, the call is routed to an intra-LATA SDS messaging routing DN defined in field INTRARNA or INTRABSY in table SDSINFO.

Service-specific screening for EBCR service

Service-specific screening for EBCR is composed of standard screening for Automatic Call Back (ACB) service, screening relating to inter-LATA calls, and screening to ensure that the ACB feature is available to the line. For more information on these criteria, consult documentation for the EBCR feature, RES00076, and the ACB feature.

Access to Messaging (continued)

Busy and ringing detection

Busy and ringing detection occurs after common offering screening and before service-specific screening. The following sections describe how busy and ringing conditions are detected.

Ringing detection

The called party's ringing condition is detected in the following manner:

- On an intraoffice call, the called party is in one of the following states:
  - — idle and provided with power ringing
  - — busy pending (for example, a Call Waiting [CWT] feature has been activated on the line)
- On an interoffice call, the received address complete message (ACM) has an indicator of “ISUP used all the way” and the called party status is one of the following:
  - — “Subscriber free”
  - — “Connect when free” (for example, when CWT has been activated at the far end)

Busy detection

The called party's busy condition is detected in the following manner:

- On an intraoffice call, the called party line is in the off-hook state and it is not possible for the call to complete.
- On an interoffice call, a “Release With Cause” message is received in response to the initial address message (IAM). The cause value must indicate “User Busy.”

Service invocation

When both common offering screening and service-specific screening have been passed and a busy or ringing/no-answer condition has been detected, Access to Messaging is considered to be activated, or started. Invocation of Access to Messaging corresponds to different events depending on whether the call is detected to be in a busy or ringing/no-answer condition.

Busy condition

When a busy condition is detected and both screenings have passed, Access to Messaging service is immediately offered to the caller by means of the offer of service announcement for the busy condition. This offer of service constitutes invocation of Access to Messaging on the busy condition. Note that Access to Messaging is not activated in cases where the call cannot be completed because the called party's line is out of service or an interoffice facility is busy or out of service.

Access to Messaging (continued)

Ringing/no-answer condition

Once the ringing condition is detected, if service-specific screening for Access to Messaging has passed, the ringing/no-answer timer for Access to Messaging is started. Field RNATIMER specifies the value of the timer in table SDSINFO or in table SPINFO for an ASP. The starting of the ringing/no-answer timer constitutes invocation of the Access to Messaging feature on the ringing/no-answer condition. Once the timer is started, either of the following can occur:

- If the ringing/no-answer timer expires (no-answer condition detected), the offer of service announcement for the no-answer condition offers Access to Messaging service to the caller.
- If the called party answers before the ringing/no-answer timer expires, the two parties are connected. Access to Messaging service is not offered.

Offer of service

During this stage, the caller is presented with an announcement offering Access to Messaging service and is given an opportunity to accept the service through digit collection.

Offer of service announcements

The following are separate announcements that can offer Access to Messaging service to the caller. One of two announcements are for the busy condition. The other announcement is for the ringing/no-answer condition.

- The common language location identifier (CLLI) for standard announcements, and the ANNCLLI and ANNID for custom announcements, identify the ringing/no-answer announcement that offers the caller Access to Messaging. The switch datafills field MSGANNC in table SDSINFO tuple SDSRNA selector MSG or datafills table SPINFO for an ASP.
- The CLLI for standard announcements, and the ANNCLLI and ANNID for custom announcements, identify an announcement offering the caller Access to Messaging service or EBCR service (on the busy condition). The switch datafills field ACBMSGAN in table SDSINFO tuple SDSBSY selector ACBMSG or in table SPINFO for an ASP.
- The CLLI for standard announcements, and the ANNCLLI and ANNID for custom announcements, identify the busy announcement offering the caller Access to Messaging. The switch datafills field BSYANNC in table SDSINFO tuple SDSBSY selector MSG or in table SPINFO for an ASP.

If the applicable announcement is unavailable, the service is not offered to the caller, and the call proceeds as if Access to Messaging service were not active on the line.

Access to Messaging (continued)

Digit collection

Normal digit collection lasts either the duration of the offer of service announcement (including announcement repetition) or the duration of the offer of service announcement (including announcement repetition) followed by the help announcement. Using extended digit collection, the operating company can increase the duration of the digit collection period from 1 s to 10 s beyond the normal digit collection period. To give the caller a chance to press a key after hearing the instructions, a period of silence can be included at the end as part of the offer of service announcement.

For digit collection, a universal tone receiver (UTR) is attached to the call. If a circuit is not available for the UTR, Access to Messaging service is not offered, and the call proceeds as if Access to Messaging were not active on the line.

Caller acceptance or rejection

When presented with an offer of service announcement, the caller accepts Access to Messaging service by pressing the acceptance key for Access to Messaging service.

Access to Messaging service is rejected if the caller does any of the following during the digit collection period:

- presses a key that is not one of following:
  - — the acceptance key for Access to Messaging service
  - — the help key
  - — the repeat key
  - — #

    Note: The # key is ignored by Access to Messaging.
- does not press a key
- presses only the help key, the repeat key, #, or any combination of these keys any number of times

Acceptance

If the caller presses the acceptance key during the digit collection period, the active call is disconnected (in the case of no-answer calls), the announcement stops (if it is still playing), digit collection stops, the announcement and UTR circuits are released, and the call is routed to the VMS using a message routing DN.

Access to Messaging (continued)

Rejection

If the caller presses a key during the digit collection period that causes Access to Messaging service to be rejected, the announcement offering Access to Messaging service stops (if it is still playing), digit collection stops, and the UTR circuit is released. With no-answer calls, the call proceeds with ringback tone resumed as if Access to Messaging service had not been offered. With busy calls, the call is either disconnected or provided with busy treatment depending on how the operating company has set up the rejection treatment on busy.

If the caller has not pressed a key that causes Access to Messaging service to be rejected by the end of the digit collection period, the announcement and UTR circuits are released. With no-answer calls, the call proceeds with ringback tone resumed as if Access to Messaging service had not been offered. With busy calls, the call is either disconnected or provided with busy treatment depending on how the operating company has set up the rejection treatment on busy.

Routing to the Voice Messaging System (VMS)

Once the caller accepts Access to Messaging service, the call is routed to a message routing DN that corresponds to the VMS location.

There are two varieties of SDS messaging routing DNs: office wide and customer group. Office wide SDS messaging routing DNs can route any call in the office to the VMS. Customer group SDS messaging routing DNs can only route calls from a particular customer group to the VMS. If the operating company has not set up separate SDS messaging routing DNs for the customer group, all lines within the customer group are routed to the office wide SDS messaging routing DNs.

The following is a list of the fields used to set up office wide SDS messaging routing DNs:

- If the call to the called party is an intra-LATA no-answer call, the SDS messaging routing DN is taken from field INTRARNA in table SDSINFO.
- If the call to the called party is an inter-LATA no-answer call, the SDS messaging routing DN is taken from field INTERRNA in table SDSINFO.

Access to Messaging (continued)

- If the call to the called party is an intra-LATA busy call, the SDS messaging routing DN is taken from field INTRABSY in table SDSINFO.
- If the call to the called party is an inter-LATA busy call, the SDS messaging routing DN is taken from field INTERBSY in table SDSINFO.

Note 1: The INTRABSY and INTRARNA fields are used for all intra-LATA calls, whether the call is an equal access call or not.

Note 2: For an ASP, these fields are in table SPINFO.

The following is a list of the fields used to set up SDS messaging routing DNs for a customer group:

- If the call to the called party is an intra-LATA no-answer call, the SDS messaging routing DN for the customer group is taken from field INTRARNA in table SDSCUST.
- If the call to the called party is an inter-LATA no-answer call, the SDS messaging routing DN for the customer group is taken from field INTERRNA in table SDSCUST.
- If the call to the called party is an intra-LATA busy call, the SDS messaging routing DN for the customer group is taken from field INTRABSY in table SDSCUST.
- If the call to the called party is an inter-LATA busy call, the SDS messaging routing DN for the customer group is taken from field INTERBSY in table SDSCUST.

Standard translations based on the calling party attributes are used to route the call to an SDS messaging routing DN. If routing to the SDS messaging routing DN is successful, the caller is connected to the VMS. Otherwise, standard routing failure treatment is provided.

Either an SMDI or a primary rate interface (PRI) link is required between the originating end office and the VMS. If connectivity between the originating end office and the VMS is through a VMS host switch, an ISUP link is required between the originating end office and the VMS host switch, and either an SMDI or a PRI link is required between the VMS host switch and the VMS.

The following sections describe the different cases when routing a call to an SDS messaging routing DN.

Access to Messaging (continued)

Connecting to a VMS over SMDI

An end office initiates a call attempt to a VMS by sending a call detail message (CDM). The CDM optional parameters are set by Access to Messaging as follows:

- The Forwarding From DN (fwdfrom parameter, 7 or 10 digits) is set to the original called station DN.
- The Type of Forwarding (call type parameter) is set to “B” for busy or “N” for no reply.
- The Calling DN (calling station parameter, 7 or 10 digits) is set to the CLID or charge number.

Unlike the ISUP protocol, the SMDI protocol does not provide any means to indicate that the DN of a party is restricted. Access to Messaging sends the information, even when the calling DN is restricted.

Connecting to a VMS over PRI

An end office initiates a call attempt to a PRI trunk by sending a SETUP message. The SETUP parameters are set by Access to Messaging as follows:

- The calling party number (CGN) field contains the calling party DN.
- The called party number (CDN) field contains the SDS messaging routing DN.
- The original call number (OCN) field contains the called party number.
- The original redirection reason in the OCN (ORR) is set to “Call forwarding busy” in the busy case or to “Call forwarding no reply” in the ringing/no-answer case.

Connecting to a VMS over ISUP

On an ISUP link, the original called DN is placed in the optional part of the IAM. The following ISUP parameters are updated by Access to Messaging:

- calling DN (CLG DN) contains the calling DN
- called DN (CLD DN) contains an SDS messaging routing DN
- redirection indicator (RI)
- original call number (OCN)

Access to Messaging (continued)

The following table shows the IAM optional parts (RI and OCN) that are set by Access to Messaging. The Address Presentation Restricted Indicator is always set to presentation allowed.

Optional part of the IAM message sent to the VMS host switch

IAM optional parameter	Subfield	Content
Redirection Indicator (RI)	Redirection indicator	Redirection call rerouted
	Call forward indicator	False
	Original redirecting reason	Busy or no reply
	Redirecting counter	1
	Redirecting reason	Busy or no reply
Original Call Number (OCN)	Even-odd indicator	Even
	Nature of address	Unique national number
	Address presentation restricted indicator	Presentation allowed
	Numbering plan	ISDN telephony numbering plan
	Screening indicator	User provided not screened
	Address information	10-digit called DN

Termination

This section is a summary of the most common ways that Access to Messaging service can terminate, namely, normal termination, interrupt cases, and error and failure conditions.

Normal termination

Normal termination occurs when the call is successfully routed to an SDS messaging routing DN. From this point, the Access to Messaging service is no longer active.

Access to Messaging (continued)

Interrupt

Interrupt events cause Access to Messaging service to be aborted or not offered at all. The following table lists these events and their results in no-answer and busy cases.

Events that cause Access to Messaging to be aborted or not offered (Sheet 1 of 2)

Event	No-answer case	Busy case
The screening criteria are not met.	Access to Messaging service is not offered. The call proceeds normally.	Access to Messaging service is not offered. The call is sent to busy treatment.
The called party answers before the ringing/no-answer timer expires.	Access to Messaging service is not offered. The call proceeds normally.	Not applicable.
The caller hangs up before the ringing/no-answer timer expires.	Access to Messaging service is not offered. The call terminates.	Not applicable.
The digit collection period ends and the caller has not pressed a key.	Access to Messaging service is aborted. The call is reconnected to audible ringback as if Access to Messaging service had not been offered.	Access to Messaging service is aborted. The call is either disconnected or provided with busy treatment depending on how the operating company has set up the rejection treatment on busy.
The digit collection period ends and the caller has pressed only the help key, the repeat key, #, or any combination of these keys any number of times.	Access to Messaging service is aborted. The call is reconnected to audible ringback as if Access to Messaging service had not been offered.	Access to Messaging service is aborted. The call is either disconnected or provided with busy treatment depending on how the operating company has set up the rejection treatment on busy.
The caller presses a key during digit collection that is not one of the following:- the acceptance key- the help key- the repeat key- #	Access to Messaging service is aborted. The call is reconnected to audible ringback as if Access to Messaging service had not been offered.	Access to Messaging service is aborted. The call is either disconnected or provided with busy treatment depending on how the operating company has set up the rejection treatment on busy.

Access to Messaging (continued)

Events that cause Access to Messaging to be aborted or not offered (Sheet 2 of 2)

Event	No-answer case	Busy case
The called party answers during the digit collection period.	Access to Messaging service is aborted. The call proceeds as if Access to Messaging service had not been offered	Not applicable.
The caller hangs up during the digit collection period.	Access to Messaging service is aborted. The call terminates.	Access to Messaging service is aborted. The call terminates.

Error and failure conditions

Error conditions are unexpected events that could result in Access to Messaging service not being offered. The following table shows one possible error condition.

Unexpected event and result

Error	Results
The call is sent to a treatment different from the one provided when the called party is busy.	Access to Messaging service is not offered. Normal error treatment applies.

Failure conditions result in Access to Messaging service aborting or not being offered. The following table lists possible failure conditions and subsequent actions.

List of call failures and results (Sheet 1 of 2)

Failure condition	Results
Called line or interoffice facility is out of service or manually busied.	Access to Messaging service is not offered. Treatment is provided.
Switch announcement fails.	Access to Messaging service is not offered. Switch provides a log message.
Reverse translations fail.	Access to Messaging service is not offered. The call proceeds normally.

Access to Messaging (continued)

List of call failures and results (Sheet 2 of 2)

Failure condition	Results
Remote is in emergency stand-alone (ESA) mode.	Access to Messaging service is not offered. The call proceeds normally.
UTRs are not available.	Access to Messaging service is not offered. The call proceeds normally.
The call has not been successfully routed to an SDS messaging routing DN.	Access to Messaging service is aborted. The standard routing failure treatment is provided.
Lack of software resources (for example, extension blocks, feature data blocks, feature control blocks, feature translations blocks).	Access to Messaging service is not offered. The call proceeds normally.

Decreasing ACB activation failures

When the Access to Messaging feature is active in an end office, the number of activations of the ACB feature increases. As a consequence, the number of ACB activation failures also increases. This increase in activation failures is in absolute numbers. The percentage of ACB activation failures when the ACB feature is activated through the Access to Messaging feature is the same as the percentage of activation failures when ACB is activated directly.

The operating company can take measures to reduce the percentage of ACB activation failures to a level below that of pre-Access to Messaging deployment. These measures are presented in the context of explaining and reducing the number of short-term denial tones (STDT), short-term denial announcements (STDA), and long-term denial announcements (LTDA) that are played when an ACB activation attempt fails.

Short-term denial tones

The majority of STDTs that are encountered on calls using the Access to Messaging feature are caused by failures of the announcements used by the ACB feature. The following sections explain how to identify the number of STDTs that are caused by ACB announcement failures and how to reduce this type of STDT.

A small number of STDTs are caused by a variety of minor problems. The Access to Messaging feature cannot prevent these minor problems from occurring, nor can they be prevented by changing datafill.

An STDT is played to the caller after the Access to Messaging feature's offer of service announcement plays and after the caller accepts Access to Messaging service.

Identifying announcement failure STDTs

Each STDT that plays during ACB operation increases OM register ACBSTDT (OM group ACB). When the playing of an STDT causes register ACBSTDT to be increased without one of OM registers ACBFDEN, ACBOVFL, or ACBABT also increasing, the cause of the STDT, in most cases, is an ACB announcement failure. Therefore, the number of announcement failure STDTs for the ACB feature can be approximated as follows: STDT - {ACBFDEN + ACBOVFL + ACBABT}.

As additional information, registers ACBFDEN, ACBOVFL, and ACBABT are described in the following list:

- The ACBFDEN register is increased when a caller, who is not an ACB subscriber, attempts to activate the ACB feature using the ACB star code.
- The ACBOVFL register is increased when a resource problem (for example, a lack of feature queues [FTRQ], feature data blocks [FDB], or timers) or an overload condition (switch call processing capacity) is encountered.

  To further refine the information provided by register ACBOVFL, OM group EXT (index: medium_feature_data) can be used to detect an overflow condition for medium feature data blocks and OM group FTRQ (index: ftrq32wareas) can be used to detect an overflow condition for feature queues.

  FTRQs and FDBs are internal structures that allow features such as ACB to store information related to calls or services for a particular agent. In short, FTRQs and FDBs are preallocated memory. The operating company controls the number of FTRQs and FDBs that exist in an end office using office parameters. If the number of FTRQs or FDBs is not sufficient, an overflow register is pegged. The overflow register for FTRQ can be found in OM group FTRQ (using index: ftrq32wareas), while the overflow register for FDBs can be found in OM group EXT (using index: medium_feature_data).
- The ACBABT register is increased when a request for the ACB feature is abnormally terminated. The operating company cannot prevent the abnormal terminations that cause this register to be increased.

Reducing the number of announcement failure STDTs

To decrease the number of STDTs caused by failures of ACB announcements, the operating company can do the following:

- Monitor announcement overflow using OM group ANN.
- Ensure that the total number of announcement members accommodates the increased use of the announcements. Guidelines for calculating the number of announcement members based on the announcement use can be

Access to Messaging (continued)

found in NTPs 297-1001-304, *Capacity Administration Manual*, and 297-1001-527, *Digital Recorded Announcement Machine DRAM and EDRAM Guide*.

- Ensure that the announcements are in shared-mode configuration. In other words, one CLLI is shared by all of the announcements. Information on shared-mode configuration can be found in PLN-899-102, Vol. 2, Provisioning Manual.
- Ensure that the CLASS announcement numbers are datafilled in table DRMUSERS as follows: Class 6 (pty_busy), Class 14 (conf), 15 (stda), 16 (ltda) and 17 (deact). Information on CLASS announcements can be found in PLN-899-102, Vol. 2, *Provisioning Manual*.

Short-term denial announcements

STDAs are encountered on calls using the Access to Messaging feature when the called party is forwarding calls using the Call Forwarding (CFW) feature. The Access to Messaging feature cannot screen out STDAs, and there are no guidelines available to reduce the number of STDAs. The percentage of calls that encounter STDAs is low, and consequently the occurrence of STDAs is not a major concern for the operation of the Access to Messaging feature. The occurrence of STDAs caused by ACB activation failures can be monitored using OM register ACBSTDA (OM group ACB).

An STDA is played to the caller after the Access to Messaging feature's offer of service announcement plays and after the caller accepts Access to Messaging service.

Access to Messaging (continued)

Long-term denial announcements

LTDAs are encountered on calls using the Access to Messaging feature when the called party fails one or more screening criteria for the ACB feature due to one or more of the following problems:

- One or more of the following features is active on the called party's line:
  - — Make Set Busy (MSB)
  - — Do Not Disturb (DND)
  - — Additional Functional Calls (AFC)
  - — Suspended Service (SUS)
  - — Plug Up (PLP)
  - — Denied Termination (DTM)
  - — Requested Suspended Line (RSUS)

  When Make Set Busy (MSB), Denied Termination (DTM), or Additional Functional Calls (AFC) is on the called party's line, the Access to Messaging feature plays its offer of service announcement to the caller before the LTDA is played, since only these features in the preceding list generate a USER_BUSY treatment. For the remaining features in the preceding list, the Access to Messaging offer of service announcement is not played.
- The called party's DN is unassigned. In this scenario the Access to Messaging feature does not play its offer of service announcement.
- A signaling transfer point (STP) screening failure occurs. In this scenario the Access to Messaging feature plays its offer of service announcement to the caller before the LTDA is played.
- Reverse translations failure occurs. In this scenario the Access to Messaging feature plays its offer of service announcement to the caller before the LTDA is played.

The occurrence of LTDAs caused by activation failures of the ACB feature can be monitored using OM register ACBLDTA (OM group ACB). This register also captures LTDAs that result from attempts to activate the ACB feature directly (that is, scenarios in which the Access to Messaging feature is not involved).

Reducing the number of LTDAs

The Access to Messaging feature cannot screen out any conditions described in the preceding section. Instead, the following actions can be taken to reduce

Access to Messaging (continued)

the number of LTDAs that are encountered on calls using Access to Messaging service:

- A TCAP101 log is generated whenever a translation problem occurs in the STP when ACBAR launches a TCAP message. From the TCAP101 logs, the operating company can extract a list of the called numbers that the STP fails to route. (The operating company should extract the TCAP101 log from an office that reflects the typical operation of the Access to Messaging feature in an office.) The called numbers that the STP fails to route can then be monitored. Once this is done the solution is then to do one of the following:
  - — fix the translations in the STP
  - — stop Access to Messaging service from being offered to a given NPA-NXX using field DNSCRN in table SDSINFO
- Ensure that the USER_BUSY treatment is not used when the GNCT (Generalized No Circuit) treatment is required. For example, the route list for a DID trunk group might use the USER_BUSY treatment as its last entry instead of the GNCT treatment. If this happens, whenever the trunk group routes to the USER_BUSY treatment, screening for Access to Messaging service will be performed, will then fail, and an LTDA will be played.
- All switches in the operating company's network should datafill the following interactions with the ACB feature in the same way:
  - — Multi-line Hunt Group (MLHG)
  - — Coin line (COIN)
  - — PBX line (PBX)

  In other words, every switch in the operating company's network should datafill fields HUNTLINE, PBXLINE, and COINLINE in table RESOFC tuple ACB with the same values. Preferably, these interactions will be enabled.

Provisioning announcements

Access to Messaging service uses standard or custom announcements. Standard announcements are datafilled as type standard (STND) in field ANTYPE in table ANNS. Custom announcements are datafilled as type MENU in field ANTYPE in table ANNS. These announcements can be prerecorded by Nortel or recorded on-site using the DRAMREC utility.

Announcements for Access to Messaging service can be recorded on RAM or EEPROM cards (which are speech cards in a DRAM) or on an EDRAM card. DRAM cards should be used for single-track announcements. EDRAMs can be used for either single-track or multi-track announcements.

Access to Messaging (continued)

There are three types of arrangements that the operating company can use for setting up Access to Messaging service announcements:

- single-track announcements (single occurrence)
- single-track announcements (multiple occurrence)
- multi-track announcements

Though all three arrangements are possible, the use of multi-track announcements is strongly recommended, since multi-track announcements have an acceptable maximum waiting time for callers to access the announcement and an acceptable hardware cost (that is, number of physical connections to the EDRAM). The following paragraphs explain this recommendation by examining each of the possible arrangements.

Single-track announcements (single occurrence)

A single-track announcement with only one occurrence has a low hardware cost, since only one connection to the DRAM or EDRAM is required. Unfortunately, this type of arrangement leads to situations in which callers wait an unacceptably long time to hear an announcement. Furthermore, during this waiting time, on busy calls, callers hear only silence. The following paragraphs explain the causes of these problems.

With the DMS DRAM and EDRAM broadcast feature, up to 255 lines can connect to an announcement (that is, an announcement occurrence or track of an announcement when multi-track announcements are being used) at the same time. However, once the announcement has started to play, no lines can connect to it until the announcement recycles to the beginning. In the case of an 8-s occurrence, a caller may have to wait almost 8 s before the announcement starts playing again.

In many cases, a delay before the playing of an announcement is not a problem because the subscriber hears something, for example, a ringing tone, while waiting for the announcement to begin. For Access to Messaging service on the busy condition, however, a significant delay before the playing of an announcement is a problem, since no busy tone is played while the caller waits for the announcement to begin. No busy tone is played since Access to Messaging service takes over the call from call processing as soon as the busy condition is detected; call processing would normally provide busy tone. In a worst case scenario, if a single-track announcement (single occurrence) has just begun to play, the subscriber could hear nothing but dead air for nearly the whole length of the announcement. Leaving the subscriber with silence for this length of time is unacceptable.

Access to Messaging (continued)

Single-track announcements (multiple occurrence)

Operating companies commonly solve the problem of unacceptably long waiting times by provisioning many occurrences of the single-track announcement. In this scenario, every caller is immediately connected to an occurrence of the announcement that is just beginning. This arrangement eliminates the waiting time for the caller, but involves a high hardware cost, since each announcement occurrence requires one physical connection to the DRAM or EDRAM (also known as a channel).

To calculate the number of occurrences (and therefore DRAM or EDRAM connections) that are required, the operating company determines the maximum number of simultaneous connections that could be required to the announcement. This is the number of announcement occurrences that are required and also the required number of connections to the EDRAM. Since the announcements for EBCR service have high volume use, the number of occurrences that are required will be high, typically over 20.

Multi-track announcements

The use of multi-track announcements allows the operating company to reduce waiting times for callers to access an announcement to a maximum waiting time that is significantly shorter than that of the single-track single occurrence scenario. This reduction in waiting time is accomplished by dividing the announcement into a number of short equal-length tracks that are played in sequence. Dividing the announcement up reduces the maximum time a subscriber could wait to hear an announcement to the cycle time of one track. For example, if an 8-s announcement is divided into four 2-s tracks, the maximum dead air time becomes slightly less than 2 s. The hardware requirement is one physical connection to the EDRAM (or channel) for each track.

Multi-track announcements have a higher maximum waiting time than single-track announcements (multiple occurrence), since single-track (multiple occurrence) announcements have no waiting time for callers. However, multi-track announcements have a much lower hardware cost than single-track announcements (multiple occurrence). The following paragraph explains the reasons behind this lower hardware cost.

Since one connection to the EDRAM is required for each track of an announcement, and since a maximum of eight tracks is required for a multi-track announcement, any multi-track announcement can require a maximum of eight connections to the EDRAM. This is significantly lower than the number of connections that are required for single-track (multiple occurrence) announcements, which typically require more than 20 connections for Access to Messaging service announcements.

Consequently, multi-track announcements are strongly recommended for Access to Messaging service, since they involve acceptable maximum waiting times for callers to hear the announcement, while using fewer connections to the EDRAM than single-track (multiple occurrence) announcements.

Guidelines for recording multi-track announcements

When calls are made by equipment such as faxes, modems, alarm systems, and Vista 350 phones, from lines that have Access to Messaging service to lines that are busy, these types of equipment must be able to detect the busy condition to function properly. To allow this equipment to detect the busy condition, the start of the announcement offering Access to Messaging service must contain at least 2 s of busy tone. This constrains the first 2 s of the first track of the announcement to pure busy tone. To further increase the ability of this equipment to detect the busy condition, the operating company can use extended digit collection during which time busy tone is played. Extended digit collection is defined in table SDSINFO, tuple SDSOFC, field EXDIGCOL.

One five-track announcement is required for the busy condition and one announcement on up to eight tracks is required for the ringing/no-answer condition for Access to Messaging service. If both EBCR service and Access to Messaging service are offered, three five-track announcements are required for the busy condition and one announcement on up to eight tracks is required for the ringing/no-answer condition.

Translations table flow

The Access to Messaging translations tables are described in the following list:

- Table OFCENG
- Table LENLINES
- Table IBNLINES
- Table KSETLINE
- Table SDSINFO
- Table CUSTSTN
- Table OCCINFO
- Table SDSCUST

The Access to Messaging translation process is shown in the flowchart that follows.

Access to Messaging (continued)

Table flow for an Access to Messaging ringing/no-answer call

The subscriber goes off-hook and dials a DN.

SOC

Is the SOC option for Access to Messaging on?

Table OFCENG
SDS_ENABLED

Is Access to Messaging enabled in this office?

One of these tables:
LENLINES
IBNLINES
KSETLINE

Is option AMSG present on the line?

One of these tables:
IBNFEAT
KSETFEAT

Is option ASP with AMSG present on the line?

Table SDSINFO
Field AMSGSUBS

Is Access to Messaging offered in universal mode or subscription mode?

Table CUSTSTN
Field OPTION

Is AMSG, ASP with AMSG, or AMSGDENY assigned to the customer group?

Table SDSINFO
Fields REVXLA
DNSCRN,
INTERLAT
SDSOFC
(Note)

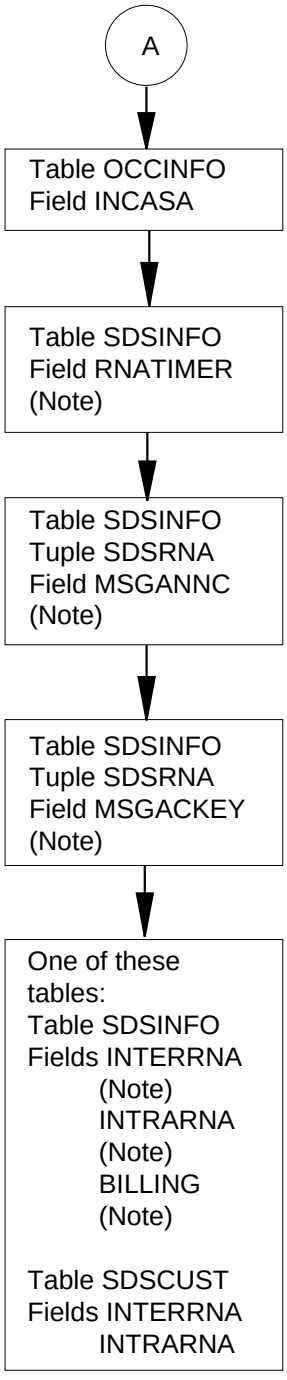
Does the call pass the screening performed by fields REVXLA, DNSCRN, INTERLAT and SDSOFC?

A

Note: Table SPINFO for an ASP.

Access to Messaging (continued)

Table flow for an Access to Messaging ringing/no-answer call (continued)



Does the call pass the screening performed by field INCASA?

The timer starts.

When the timer expires before the called party answers, the announcement plays.

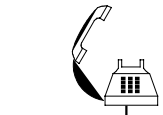
The subscriber presses the acceptance key for Access to Messaging service.

The call is routed to the appropriate destination. Billing is suppressed if field BILLING is set to N, unless the call to the message routing DN is an equal access toll call.

Note: Table SPINFO for an ASP.

Access to Messaging (continued)

Table flow for an Access to Messaging busy call


The subscriber goes off-hook and dials a DN.

SOC

Is the SOC option for Access to Messaging on?

Table OFCENG
SDS_ENABLED

Is Access to Messaging enabled in this office?

One of these tables:
LENLINES
IBNLINES
KSETLINE

Is Option AMSG present on the line?

One of these tables:
IBNFEAT
KSETFEAT

Is option ASP with AMSG present on the line?

Table SDSINFO
Field AMSGSUBS

Is Access to Messaging offered in universal mode or subscription mode?

Table CUSTSTN
Field OPTION

Is AMSG, ASP with AMSG, or AMSGDENY assigned to the customer group?

Table SDSINFO
Fields REVXLA
DNSCRN
INTERLA
(Note)

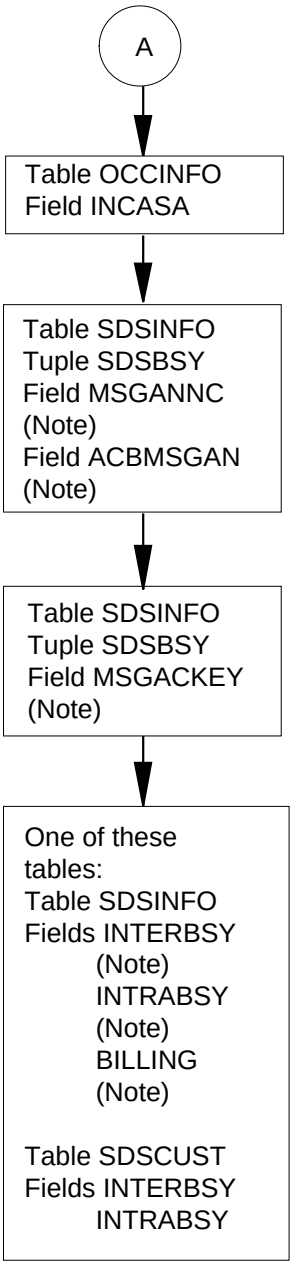
Does the call pass the screening performed by fields REVXLA, DNSCRN, and INTERLAT?

A

Note: Table SPINFO for an ASP.

Access to Messaging (continued)

Table flow for an Access to Messaging busy call (continued)



Does the call pass the screening performed by field INCASA?

The announcement plays. If only Access to Messaging is offered on the busy condition, field MSGANNC (tuple SDSBSY) is used. If a choice of Access to Messaging or EBCR is offered, field ACBMSGAN is used.

The subscriber presses the acceptance key for Access to Messaging service.

The call is routed to the appropriate destination. Billing is suppressed if field BILLING is set to N, unless the call to the message routing DN is an equal access toll call.

Note: Table SPINFO for an ASP.

Access to Messaging (continued)

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

Datafill example for Access to Messaging

Datafill table	Example data
OFCENG	SDS_ENABLED Y
LENLINES	HOST 01 1 04 05 S 0 7251688 DT 6 AMSG $
IBNLINES	HOST 00 0 03 03 0 DT STN RES 6246112 274 AMSG
KSETLINE	HOST 00 1 03 1 DN Y 2265235 COMKODAK 0 0 613 AMSG $
SDSINFO	OFFICE OFFICE N N N (514845) (454) $ Y Y N BUSY
	SDSOFC SDSOFC 9 8 CUSTOM SDSCUSTANNC 1 STND BSYHELPANNC UNIVER SUBSCR 10 N N N
	SDSBSY SDSBSY ACBMSG 4 CUSTOM SDSCUSTANNC 3 5155551234 7771234 5 Y Y STND ACBANNC STND ACBMSGANNC
	SDSRNA SDSRNA NONE
CUSTSTN	COMKODAK AMSG AMSG
OCCINFO	UNT2 0202 TRANS Y Y Y N Y N N Y Y Y N LONG 61 FGRPD N N Y N N N N N N N N N Y N Y
SDSCUST	COMKODAK 15143451001 3451002 3451003 16133451004
SPINFO	JOE AMSG AMSG Y ACARRIER 5197774321 Y N Y 4 STND JOEBSYANNC 5197771234 5551234 STND JOEACBMSGAN

Limitations and restrictions

The following restrictions and limitations apply to Access to Messaging:

- Only one help announcement is available for the busy condition service offering regardless of whether only Access to Messaging service is offered on the busy condition or whether a choice of Access to Messaging service or EBCR service is offered.
- Per-call denial and sustained deactivation are not available on POTS and PBX lines.
- Call forwarding detection may fail in the case where other switches involved in the call path do not send call forwarding information to the originating DMS switch. When this information is not received by the originating DMS switch, Access to Messaging service is offered on the call even when field CFW in table SDSINFO tuple OFFICE is set to N.

Access to Messaging (continued)

- On interswitch calls, Access to Messaging is only available if the interswitch call is end-to-end ISUP
- For Access to Messaging, the SMDI link datafilled in table SLLNKDEV should not have the LASTFWDN option enabled. If the LASTFWDN option is enabled, the forwarding_from_digit in the SMDI link may be overwritten by other features that change the field.
- If the DNSUPPR option is specified for the "Forwarding-From DN" on the SMDI link, the option should be set to NEVER. Otherwise, Access to Messaging cannot guarantee the delivery of the "Forwarding-From DN" to the VMS.
- On interoffice calls to the VMS an AIN 0.1 trigger may be hit in a non-originating switch before the call terminates to the VMS. When this happens, the Charge Number field in the TCAP query message is populated with the Original Called Party Digits.
- Though connecting a PRI trunk directly to the VMS is supported for Access to Messaging, bear in mind that PRI connections do not support stuttered dial tone and message waiting indicator, which are required for other messaging features.
- The # and * digits cannot be detected by Access to Messaging if the originating station is a dial pulse (DP) line.
- Access to Messaging is not activated on hotel/motel calls and credit card calls.
- A message routing DN cannot be forwarded to another DN.
- Access to Messaging is not supported on interoffice busy calls where the busy treatment is not applied by the originating end office.
- Since Access to Messaging uses UTRs for digit collection, subscriber lines must be hosted by Series 2 peripherals (XPM).
- During an intraswitch call, the called party may hear a break in power ringing when the calling party is provided with the Access to Messaging offer of service announcement.
- The calling party may hear a break in audible ringback before the Access to Messaging offer of service announcement is played.
- If a warm or cold restart is performed while the Access to Messaging announcement is playing, the announcement will play over and over. The caller must hang up and then go off-hook to receive dial tone. This announcement behavior is not caused by Access to Messaging service and is not restricted to Access to Messaging service announcements.

Access to Messaging (continued)

- If a call is forwarded more than five times, the system provides busy treatment to the caller and Access to Messaging service is offered on the call.
- When a call from an ISDN set is re-routed through ISUP or PRI to the VMS, the Display option on the ISDN set is not available.
- The Access to Messaging acceptance key is not displayed when entered on a KSET line with called number/name display.
- When in table STDPRTCT.STDPRT or the REPL selector in IBNXLA is used, the dialed digits are replaced by new digits. If these selectors are used on calls where Access to Messaging service is active, Access to Messaging only performs screening on the new digits. Therefore, in the case of N11 calls, for example, Access to Messaging service may be offered if the N11 digits are replaced by digits acceptable to screening for Access to Messaging service.
- Access to Messaging calls that originate from MDC customer groups may inadvertently exceed the limit on the number of digits allowed for a message routing DN, if the MDC customer group requires a prefix to be dialed in order to access the public network. The limit is exceeded when the length of the message routing DN, datafilled in table SDSINFO, SPINFO, or SDSCUST, plus the IBN prefix is greater than 30 digits. When the limit of 30 digits is exceeded, an SDS601 log is generated indicating that the call could not be routed to the message routing DN. The associated OM, ROUTFAIL, is pegged and the call is routed to the reorder treatment.
- Access to Messaging service may be offered on the second leg of a three-way call or on the consultation leg of a station-controlled conference call. While the offer of service announcement or help announcement is playing, the hook flash is ignored. To return to conference mode, the user must first accept the offer of service, reject the offer of service by pressing any key other than the acceptance key, or wait for the offer of service announcement to complete. After service is accepted or rejected, or the offer of service announcement is over, Access to Messaging service is no longer on the call and the user can use the hook flash to return to the first party on the call. In the case of a busy offering, when the service is rejected or the announcement ends, the user does not have to flash and is automatically reconnected to the first party called.

Interactions

The following paragraphs describe the interactions between Access to Messaging and other functionalities.

Access to Messaging (continued)

Account code

Calls made on stations with the account code option can encounter Access to Messaging. However, the account code is not included in the Automatic Message Accounting (AMA) record generated as a result of the Access to Messaging routing. The billing record associated with the original call attempt is not affected by Access to Messaging.

Advanced intelligent network (AIN 0.1)

Access to Messaging supports all AIN 0.1 triggers on the call from the caller to the called party (the first leg of the call).

On the second leg of the call, that is, the call to the SDS messaging routing DN, only the following AIN 0.1 triggers are supported in the originating end office: 3/6/10 digit Public Office Dialing Plan (PODP) and Termination Attempt Trigger (TAT). All AIN 0.1 triggers are supported in non-originating offices for the second leg of the call.

On the second leg of the call, AIN 0.1 operates with Access to Messaging as follows: After the offer of Access to Messaging service is accepted by the caller, the call to the called party is dropped and Access to Messaging re-enters the Originating Basic Call Model at the Analyzing Information Point in Call, thereby conforming to AIN standards. Calling party and charge number information that was overwritten by the service control point (SCP) on the first leg of the call is preserved for the second leg of the call.

This calling party and charge number information is composed of the following:

- the DN
- the numbering plan
- the ISUP nature of the party's address
- other additional information

The following restriction affects the interaction with AIN 0.1: On calls that are made to the VMS through the VMS host switch, an AIN 0.1 trigger may be hit in a non-originating switch before the call terminates on the VMS. When this happens, the Charge Number field in the TCAP query message is populated with the Original Called Party Digits.

Automatic Call Back (ACB)

The ACB feature enables a subscriber to call the last station called from the subscriber's station. The number of the called party is stored in outgoing call memory (OCM). Table 1-6 describes how ACB interacts with Access to Messaging.

Access to Messaging (continued)

When a call encounters Access to Messaging service and the service is accepted, Access to Messaging does not overwrite the OCM. Thus, if the subscriber subsequently activates ACB (on the next origination), ACB will route the call to the original called party number and not to the SDS messaging routing DN.

Automatic Recall (AR)

The AR feature is very similar to ACB, except that it allows the subscriber to "recall" the last station that called the subscriber. The number to recall is obtained from the incoming call memory (ICM). The following table describes how AR interacts with Access to Messaging.

1-6Access to Messaging interaction with ACB and AR

Event	ACB or AR action	Access to Messaging offering
ACB or AR is activated and the calling party is idle.	ACB or AR completes the call.	Yes
ACB or AR is activated, but the called party is busy.	ACB or AR monitors the called line until it is free.	No
The called party is finally free.	ACB or AR provides special recall ringing to the ACB or AR subscriber to indicate that the called party is free.	Not applicable
The ACB or AR subscriber answers the special recall ringing and the called party is still free.	ACB or AR completes the call.	Yes

Call blocking

Access to Messaging is not activated when call blocking occurs.

Call forwarding

Call forwarding features enable stations to forward calls to subscriber defined locations.

Access to Messaging lets the operating company decide whether to offer Access to Messaging service on calls to called parties that have one or more

call forwarding features assigned to them. For this functionality, “call forwarding features” refers to all types of call forwarding including AIN FORWARD_CALL response.

Setting field CFW in table SDSINFO tuple OFFICE to Y allows Access to Messaging service to be offered on calls that have one or more call forwarding features, while setting this field to N prevents the offering of Access to Messaging service on calls that have one or more call forwarding features.

Interworking with other equipment can affect call forwarding detection on the originating switch. When an interoffice call is forwarded, Nortel's implementation of call forwarding sends a forwarding indicator back to the originating switch as part of the ISUP pass-along message (PAM). If one or more switches in the call path does not send the call forwarding indicator back to the originating switch, the originating switch will be unable to detect the call forwarding interaction and will offer Access to Messaging service on the call even if field CFW is set to N.

The values of fields CFW and HNTGRP (see interaction with hunt groups) only determine whether Access to Messaging service is offered when the called party has either one or more call forwarding features or the Hunt Group feature. Therefore, in a call forwarding scenario, if the forwarded-to party has the hunt group feature or call forwarding features, this is irrelevant to fields CFW and HNTGRP. Take the following scenario as an example: A (who has Access to Messaging) calls B, who is busy and has the Call Forward Busy (CFB) feature. The call is then forwarded to C, who is a member of a hunt group. In this scenario, Access to Messaging service will be offered if field CFW is set to Y even if field HNTGRP is set to N, since the Hunt Group feature is on the forwarded-to party and not on the called party.

When the called party has both one or more call forwarding features and the Hunt Group feature, Access to Messaging service is not offered if either field CFW or field HNTGRP is set to N or if both fields are set to N.

If the operating company chooses to offer Access to Messaging on calls where the called party has one or more call forwarding features, see the following sections for information on how Access to Messaging interacts with call forwarding features.

Call Forwarding Do Not Answer (CFD/CFDA)

Call Forwarding Do Not Answer - Business Sets (CFD) is a business set feature that allows incoming calls not answered within a specified period of time to be forwarded.

Access to Messaging (continued)

Call Forwarding Do Not Answer - Residential (CFDA) is a residential feature that allows incoming calls not answered within a specified period of time to be forwarded.

Access to Messaging interacts with Call Forwarding Do Not Answer (CFD/CFDA) differently depending on whether the called party is in the same office as the caller (intraoffice) or in a different office (interoffice). The following sections describe these interactions.

Call Forwarding Do Not Answer (CFD/CFDA) intraoffice

This interaction occurs when the following three conditions are met:

- A call is made to a station that has the Call Forwarding Do Not Answer feature, either CFD or CFDA.
- The called party (B in Figure 1-4) is forwarded to another party (C in Figure 1-4) without the call being answered.
- The caller (A in Figure 1-4) and the called party (B in Figure 1-4) are in the same end office.

The following applies when a call encounters party B in the ringing/no-answer state:

If the CFD/CFDA timer is greater than the ringing/no-answer timer for Access to Messaging, the ringing/no-answer timer for Access to Messaging is automatically set to two seconds longer than the CFD/CFDA timer on an individual-call basis.

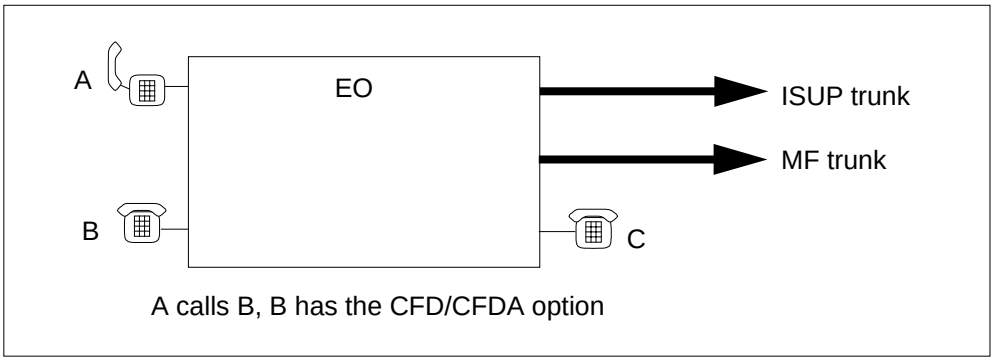
When the forwarded-to party (C) is in an end office that is different from the end office of the caller (A) and the called party (B), Access to Messaging operates as follows:

- If the called party (B) is forwarded to C through an ISUP trunk, Access to Messaging service is offered. The ringing/no-answer announcement for Access to Messaging is played since the called party (B) was in a ringing/no-answer state prior to the forwarding of the call. The state of C (busy or ringing/no-answer) is irrelevant to the offering of Access to Messaging service to the caller.
- If the called party (B) is forwarded to C through a MF trunk, Access to Messaging service is not offered.

When the forwarded-to party (C) is in the same end office as the caller (A) and the called party (B), Access to Messaging is offered. The ringing/no-answer announcement for Access to Messaging service is played since the called party (B) was in a ringing/no-answer state prior to the forwarding of the call. The

state of C (busy or ringing/no-answer) is irrelevant to the offering of Access to Messaging service to the caller. The following figure illustrates the CFD/CFDA intraoffice interaction.

CFD/CFDA intraoffice

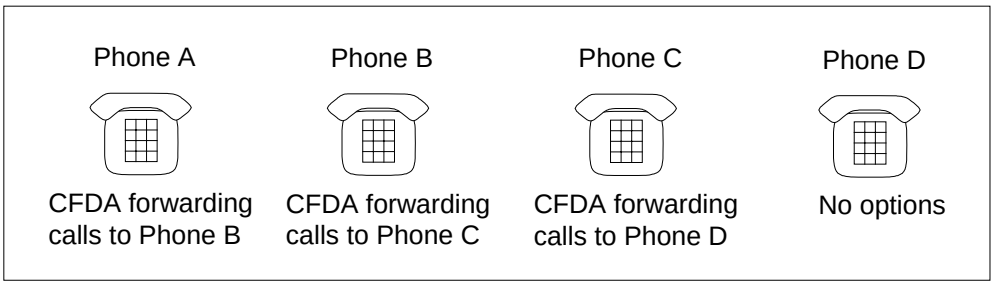


Call Forwarding Do Not Answer (CFD/CFDA) chaining intraoffice

CFD/CFDA chaining refers to the following scenario: A call is forwarded to a station that has either the CFD or CFDA feature. This station in turn forwards the call to a station that also has either the CFD or CFDA feature, causing the call to be forwarded yet again, and so on. The chain ends when the call is forwarded to a station that does not have the CFD or CFDA feature. All stations in this scenario are located in the same end office.

When a line that subscribes to Access to Messaging terminates a call (intraoffice) to the first member of a CFD/CFDA chain (phone A in Figure 1-5), Access to Messaging service is only offered when the last member of the call forwarding chain has been reached (phone D in the following figure). The following figure illustrates the CFD/CFDA chaining intraoffice interaction.

CFD/CFDA chaining intraoffice



Access to Messaging (continued)

Call Forwarding Do Not Answer (CFD/CFDA) interoffice

This interaction occurs when the following three conditions are met:

- A call is made to a station that has the Call Forwarding Do Not Answer feature, either CFD or CFDA.
- The called party (B in the following figure) is forwarded to another party (C in the following figure) without the call being answered.
- The caller (A in the following figure) and the called party (B in the following figure) are in different end offices.

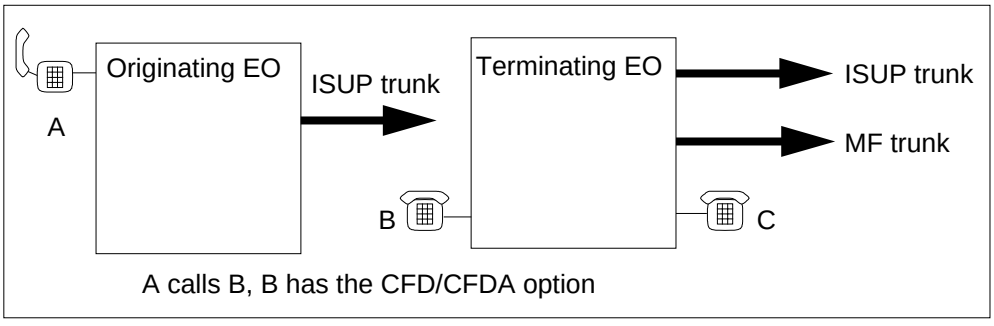
The following applies to cases where party B is in the ringing/no-answer state:

On interoffice calls, unlike intraoffice calls, the ringing/no-answer timer for Access to Messaging is not automatically set to two seconds longer than the CFD/CFDA timer (if the CFD/CFDA timer was initially greater than the ringing/no-answer timer for Access to Messaging).

Therefore, if the ringing/no-answer timer for Access to Messaging is greater than the CFD/CFDA timer, the call will be forwarded before Access to Messaging service can be offered. Conversely, if the CFD/CFDA timer is greater than the ringing/no-answer timer for Access to Messaging, Access to Messaging service will be offered before the call is forwarded.

For interoffice calls, where the called party (B) has option CFD or CFDA, Access to Messaging service is offered irrespective of whether the forwarded-to party is in the same office as B or in a different office. The ringing/no-answer announcement for Access to Messaging service is played since the called party (B) was in the ringing state when the call terminated on it. The state of C (busy or ringing/no-answer) is irrelevant to the offering of Access to Messaging service to the caller. The following figure illustrates the CFD/CFDA interoffice interaction.

CFD/CFDA interoffice



Call forwarding validation

This option validates the DN entered as the forwarding DN. The following validation options are offered on a customer group basis only:

- no validation of the DN to which calls are forwarded (default option)
- validation of the DN as a routable number (routing option)
- validation by attempting to complete the call to the target station upon feature activation (terminating option)

If the terminating option is selected, an attempt is made to call the forwarding DN. Access to Messaging is not activated when the validation call attempt encounters a busy or no-answer condition.

Calling name and number delivery blocking

Calling Name Delivery Blocking (CNAB) and Calling Number Delivery Blocking (CNDB) are outgoing call services that operate on an individual-call basis. They allow subscribers to control the delivery of their name and number to a called party by toggling the default name and number suppression of the line. If the information delivery is suppressed by default, the services allow subscribers to enable the delivery of their name and number before dialing the called DN. If the information delivery is allowed by default, subscribers can block their name and number delivery.

Calling Number Blocking (CNB) is an outgoing call service. CNB enables subscribers to block the display of their number on the subscriber set of the called party. CNB is used on an individual-call basis and is available to subscribers who have the CNAB or CNDB line option.

Calling Name and Number Delivery Blocking (CNNB) is an outgoing call service. CNNB enables a subscriber to block the display of number and name information on the subscriber set of the person being called. CNNB is used on an individual-call basis and is available to subscribers who have the CNAB or CNDB line option.

The Calling Name and Number Delivery (CNND) feature is available to subscribers who have the CNAB or CNDB line option. CNND allows subscribers to deliver both name and number information to the called party, regardless of the permanent name and number suppression status of the line. CNND works on an individual-call basis.

A subscriber to any of these features will encounter Access to Messaging service, and Access to Messaging will not interfere with these features.

Access to Messaging (continued)

Called name and number display

The called name and number displayed on the caller's station is not overwritten when the call is routed to the SDS messaging routing DN. The acceptance key for Access to Messaging service is also displayed except on keyset lines.

Call Pickup (CPU)

The CPU feature enables a station to answer calls incoming to another station within the same pickup group.

Access to Messaging is not activated if a CPU request is denied.

Call Waiting (CWT)

The CWT feature notifies a subscriber in a stable call when another call arrives. The subscriber can place the current party on hold and answer the call that is waiting.

When an Access to Messaging service subscriber calls a DN with CWT, the called DN receives the CWT tone, and the called party can answer the call. From the caller's perspective, it is equivalent to the detection of a ringing condition. The ringing/no-answer timer for Access to Messaging is started. If the timer expires, Access to Messaging service is offered.

Conferencing

Access to Messaging allows the operating company to decide whether to offer Access to Messaging service on the consultation leg of conference calls. For this functionality, “conference calls” refers only to the operation of conferencing features that make use of consultation legs, for example, Three-Way Calling (3WC), Station Controlled Conference, Flexible Calling, and Call Transfer.

Setting field CONF in table SDSINFO tuple OFFICE to Y allows Access to Messaging to be offered on calls using one of these types of conferencing features. Setting field CONF to N prevents the offering of Access to Messaging service on calls using one of these types of conferencing features.

Customized dialing

Access to Messaging is not activated on calls originated with a customized dial plan (on-net calls). However, Access to Messaging is activated on off-net calls that qualify for Access to Messaging service activation. Access to Messaging ensures that the original translated dialed digits (public DN) are present in the proper ISUP message where applicable.

Access to Messaging (continued)

Distinctive Ringing/Call Waiting (DRCW)

When a line has DRCW, incoming calls from DNs that are on the DRCW list are identified by a distinctive ring or, if the line is busy, a distinctive call waiting tone. The caller receives standard audible ringback tone.

The interaction of Access to Messaging with DRCW is the same as with CWT.

Enhanced Secondary DN (ESDN)

Note: This feature is also called Enhanced Teen Service.

The Teen Service feature allows multiple DNs (up to six) to be assigned to a single line without the expense of additional equipment. The ESDN feature is an enhancement to the Teen Service feature.

Access to Messaging is offered on calls made by an ESDN provided that the ESDN subscribes to Access to Messaging service. An ESDN can subscribe to Access to Messaging service even if its primary DN does not.

Hook flash

Access to Messaging ignores hook flashes while an offer of service announcement for Access to Messaging service is playing and while a help announcement is playing. The user must accept or reject the offer of service before hook flash can be used again (for example, to return to the first party on a three-way call or on the consultation leg of a station-controlled conference call). After the offer of service announcement is over, Access to Messaging service is no longer on the call and the user can use the hook flash.

Hunt groups

A hunt group is an end-user defined group of lines. When attempting to terminate a call to a busy line within a hunt group's group of lines, the switch scans the group of lines sequentially and searches for an idle line on which to terminate the call.

When the Access to messaging service is deployed on an office-wide basis, the operating company can deny the service offering to calls that originate from members of a hunt group. The operating company must set field HUNTORIG of tuple SDSOFC in table SDSINFO to N (no) in order to deny the service offering to calls that originate from a hunt group member. In order to allow the service offering to calls that originate from hunt group members, the operating company must set this field to Y (yes).

Access to Messaging (continued)

Access to Messaging interacts with hunt groups differently depending on whether the call that terminates on the hunt group is intraoffice or interoffice.

General intraoffice interaction

Access to Messaging allows the operating company to decide whether to offer Access to Messaging service on intraoffice calls that terminate on a hunt group. Setting field HNTGRP in table SDSINFO tuple OFFICE to Y allows the offering of Access to Messaging service on intraoffice calls that terminate on a hunt group, while setting this field to N prevents the offering of Access to Messaging service on intraoffice calls that terminate on a hunt group.

Note that the values of fields HNTGRP and CFW (see "Call forwarding" earlier in this section) only determine whether Access to Messaging service is offered on calls where the called party has either call forwarding features or the Hunt Group feature. Therefore, if in a call forwarding scenario, the forwarded-to party has the hunt group feature or call forwarding features, this is irrelevant to fields CFW and HNTGRP. Take the following scenario as an example: A (who has Access to Messaging service) calls B, who is busy and has the Call Forward Busy (CFB) feature. The call is then forwarded to C, who is a member of a hunt group. In this scenario, Access to Messaging service is offered if field CFW is set to Y even if field HNTGRP is set to N, since the Hunt Group feature is on the forwarded-to party and not on the called party.

When the called party has the Hunt Group feature and one or more call forwarding features, Access to Messaging service is not offered if either field CFW or field HNTGRP is set to N or if both fields are set to N.

Intraoffice interaction with CFGD/CFGDA

When an intraoffice call terminates on a hunt group that has option CFGD/CFGDA datafilled to perform internal hunting (as opposed to forwarding the call outside the hunt group), Access to Messaging service is only offered once the incoming call has been offered to all hunt group members.

Intraoffice interaction with LOR

When an intraoffice call terminates on a hunt group that has a route overflow option (option LOR) datafilled to play tones, Access to Messaging service is not offered when calls are routed to the overflow.

When an intraoffice (or interoffice) call terminates on a hunt group that has a route overflow option (option LOR) datafilled to route the call to a busy DN, Access to Messaging service is offered.

General interoffice interaction

On interoffice calls that terminate on a hunt group, Access to Messaging service is offered in ringing/no-answer cases only.

Interoffice interaction with LOR

When an interoffice (or intraoffice) call terminates on a hunt group that has a route overflow option (option LOR) datafilled to route the call to a busy DN, Access to Messaging service is offered.

Long Distance Alerting (LDA/LDS)

The Long Distance Alerting feature notifies its subscribers that they have an incoming long distance call by means of LDS distinctive call waiting tones. If the subscriber does not respond to the distinctive call waiting tones within a predefined period of time, the call is routed to the no terminal responding treatment.

Access to Messaging service is offered on calls with the Long Distance Alerting feature. The ringing/no-answer offer of service for Access to Messaging service is offered to the caller before the no terminal responding treatment has a chance to play. If the caller rejects Access to Messaging service, the no terminal responding treatment is then played.

Meet-Me Conference

The Meet-Me Conference feature allows conferees to dial a specific DN at a predetermined time to access a bridge and hold the conference.

Access to Messaging service is offered when a caller tries to join a Meet-Me Conference by dialing a specific DN and that DN is either busy or not answered within a specified length of time.

Network Facility Access (NFA)

The Network Facility Access (NFA) feature provides a direct connection between a subscriber line and an intelligent processor (IP) by means of the DMS switch. Through this connection, the subscriber has direct access to services provided by the IP.

The subscriber is provided with access to the IP in two manners: implicit and explicit. With implicit access, the subscriber is directly connected to the IP simply by going off-hook; the subscriber can interact with the IP or revert to regular call processing by dialing as normal. With explicit access, the subscriber dials an NFA explicit access code to connect to the IP; then the subscriber can interact with the IP.

Access to Messaging (continued)

When the IP redirects the caller to a new DN, Access to Messaging service is offered when the new DN is busy or not answered within a specified length of time.

Speed calling

The speed calling features (SC1, SC2, SC3, SCS, and SCL) enable subscribers to create a list of frequently dialed numbers, which the subscriber can call by dialing a 1- or 2-digit calling code instead of the complete number. Once the DN is retrieved from the speed calling list, the call is made as if the caller had dialed the DN manually.

Access to Messaging can be encountered on calls originated with speed calling. The retrieved DN, and not the 1- or 2-digit calling code, is sent to the VMS.

Spontaneous Call Waiting Identification with Disposition (DSCWID)

The DSCWID feature allows subscribers to receive calling party information during call waiting and provides subscribers with a set of disposition options to handle incoming calls.

Intraoffice

When a subscriber to Access to Messaging service calls a DSCWID subscriber who is already involved in a call and is on the same switch as the subscriber to Access to Messaging service, Access to Messaging interacts with DSCWID in the same way as for Call Waiting (CWT). Namely, from the caller's perspective the situation is equivalent to the detection of a ringing condition and an SDS ringing/no-answer timer is started.

However, the interaction with DSCWID differs from the interaction with CWT in that whenever one of the DSCWID softkeys is pressed, Access to Messaging service is removed from the call. The removal of Access to Messaging service from the call prevents the announcement offering Access to Messaging service from playing (if the timer has not yet expired) or stops the playing of the announcement if the announcement has already started to play.

Interoffice

When a subscriber to Access to Messaging service calls a DSCWID subscriber who is already involved in a call and is on a different switch than the subscriber

to Access to Messaging service, the interaction between the two features is as follows:

- If the DSCWID subscriber presses the ANSWER or DROP softkey, Access to Messaging service is removed from the call and the two parties are connected.

  The removal of Access to Messaging service from the call prevents the announcement offering Access to Messaging service from playing (if the timer has not yet expired) or stops the playing of the announcement if the announcement has already started to play.

- If the DSCWID subscriber presses the HOLD or BUSY softkey and the answer supervision for the HOLD or BUSY announcement is sent (see note), Access to Messaging service is removed from the call, and the DSCWID announcement is played for the Access to Messaging subscriber.

  The removal of Access to Messaging service from the call prevents the announcement offering Access to Messaging service from playing (if the timer has not yet expired) or stops the playing of the announcement if the announcement has already started to play.

  Note: The HOLD and BUSY announcement answer supervision is configurable through fields HOLDSUPV and BUSYSUPV in table RESOFC (tuple DSCWID).

- If the DSCWID subscriber presses the HOLD or BUSY softkey and the answer supervision for the HOLD or BUSY announcement is *not* sent, the announcement offering Access to Messaging service is played when the SDS ringing/no-answer timer expires; if the announcement is already playing, it continues to play. If Access to Messaging service is rejected, DSCWID behavior resumes. If the DSCWID announcement is still playing, it is heard by the Access to Messaging subscriber.

  In the case where the DSCWID subscriber presses the HOLD or BUSY softkey and the answer supervision of the HOLD or BUSY announcement is not sent, no ISUP_ANM message is received by the originating switch when the HOLD or BUSY softkey is pressed. Access to Messaging is unaware that a DSCWID announcement has started. The announcement offering Access to Messaging service takes precedence over the DSCWID announcement.

- If the DSCWID subscriber presses the CONFERENCE softkey, Access to Messaging service is removed from the call and the Access to Messaging service subscriber is connected to the two parties already involved in the call.

- If the DSCWID subscriber presses the FORWARD softkey, the subscriber to Access to Messaging service is forwarded to voice mail or to another

Access to Messaging (continued)

party. The interaction is identical to the interaction of Access to Messaging with the Call Forwarding Don't Answer feature.

Station Specific Authorization Code (SSAC)

The SSAC option allows a set of numbers of 2 to 10 digits to be dialed from a specific station to record billing information and override the station network class of service (NCOS) restriction.

The billing record associated with the original call attempt is not affected by Access to Messaging. The authorization code is not included in the AMA record generated as a result of Access to Messaging routing.

Station Message Detail Recording (SMDR)

The SMDR option allows the recording of both billable and non-billable calls on an individual-call leg basis.

Subscribers of SMDR are offered Access to Messaging service, but call information for Access to Messaging service is not included in SMDR records. The original call attempt information such as busy or no-answer is reflected in the SMDR record.

Toll Diversion (TDV)

The TDV feature diverts originators' toll calls to an attendant console, thus preventing the completion of toll calls or calls to a toll operator without the assistance of an attendant.

Access to Messaging is not activated after a call attempt is blocked by TDV.

Uniform Call Distribution and Automatic Call Distribution

Uniform Call Distribution (UCD) allows calls to be evenly distributed to a number of predesignated stations known as UCD stations or UCD positions. This feature is used to queue incoming calls to a message desk.

Automatic Call Distribution (ACD) is a set of MDC features that assigns answering machine priority to incoming calls and then queues and distributes them to a predetermined group of telephone sets designated as answering positions.

For intraoffice calls to an ACD or UCD group, Access to Messaging service is not offered. For interoffice calls to an ACD or UCD group, Access to Messaging service is only offered in ringing/no-answer cases.

Whenever an incoming call to a UCD or ACD group is routed to Night Service or to an overflow route and is retranslated to a DN outside the UCD or ACD

group that is either busy or not answered within a specified length of time, Access to Messaging service is offered on the call.

Virtual Facility Group (VFG)

A Virtual Facility Group (VFG) is a software structure that emulates a trunk. For example, a VFG can be used to limit the number of calls originating from a customer group or to simulate a looparound trunk without using physical resources.

If no redirection has occurred before a VFG is encountered, screening for Access to Messaging is performed after the call has gone through the VFG. When this happens, Access to Messaging service is offered if screening for Access to Messaging is passed.

Activation/deactivation by the end user

End users can deactivate the Access to Messaging offer of service for the duration of a call using an access code. Before dialing a DN, the end user dials the access code to deactivate Access to Messaging for one call. The user hears a confirmation tone followed by standard dial tone. After the call has completed, the offer of service is restored to the end user's line. The access code is datafilled by the operating company. It is recommended to use *03 for this functionality as it is pending standardization by Bellcore. The sequence 1103 is also supported in order to activate this functionality on DP RES lines. This functionality is provided by the Cancel In-Call Service Access (CISA) feature.

End users can also deactivate the Access to Messaging offer of service for as long as they wish, or reactivate the Access to Messaging offer of service using an access code. If the Access to Messaging offer of service is active, use of the access code deactivates the offer of service; that is, Access to Messaging service is no longer offered to the end user. If the Access to Messaging offer of service is not active, use of the access code reactivates the offer of service. For example, *04 is the access code datafilled by the operating company. The sequence 11XX is also supported in order to activate this functionality on DP RES lines. This functionality is provided by the Messaging Control (MSGCTRL) feature.

Access to Messaging (continued)

Billing

Access to Messaging has no impact on billing for the first leg of the call. The caller's acceptance of Access to Messaging depends on the value of field BILLING in table SDSINFO tuple OFFICE.

- If field BILLING is set to N, the AMA record for the call to the message routing DN is deleted.
- If field BILLING is set to Y, the AMA record for the call to the message routing DN is not deleted.

However, when the call to the message routing DN is an equal access toll call, the AMA record of the call is not deleted even if field BILLING is set to N.

For an ASP, any toll or network access charges are billed to the billing DN specified in table SPINFO. When a billing DN is not specified in table SPINFO, the caller is billed.

Datafilling office parameters

The following table shows the office parameters used by Access to Messaging.

Office parameters used by Access to Messaging (Sheet 1 of 4)

Table name	Parameter name	Explanation and action
OFCENG	SDS_ENABLED	This parameter controls the activation and deactivation of Access to Messaging on an office wide basis. When this parameter is set to Y, Access to Messaging is enabled. When this parameter is set to N, which is the default value, Access to Messaging cannot operate, even if table SDSINFO is datafilled and the Access to Messaging Software Optionality Control (SOC) is in the ON state. ***Note:*** This parameter can also activate and deactivate EBCR if SDSINFO has been datafilled for EBCR and if the Software Optionality Control (SOC) for EBCR is in the ON state.
OFCAUT	NO_OF_SDS_EXT_ BLKS	This parameter determines the number of SDS extension blocks that exist in the office upon setting this parameter. To determine the value of this parameter, begin by performing the following calculation: U = A X B / 100, where • A is the number of calls that pass screening (both common offering screening and service-specific screening) during the busy hour (BCHA). The value of register ACTIVATE from OM group SDS during the busy hour can be used as a lower estimation of this value. • B is the average length of time that this extension block is used for each call in seconds. Use 10 s for the value of B. U is then converted using the Erlang B table with a probability of blockage or delay to be determined by the operating company. Set the office parameter to this converted U value. This converted value is the maximum SDS extension block requirement for Access to Messaging.

Access to Messaging (continued)

Office parameters used by Access to Messaging (Sheet 2 of 4)

Table name	Parameter name	Explanation and action
OFCENG	NUMCPWAKE	This parameter sets the number of call process wake-ups that are available in the office. To determine the number of call process wake-ups required for Access to Messaging, use the following calculation, and then add the converted result to the value already datafilled for this parameter. U = A X B / 100, where • A is the number of calls that pass screening (both common offering screening and service-specific screening) during the busy hour (BCHA) and that encounter a ringing/no-answer condition. This value can be calculated using the values of registers RNGCOND and RNGCOND2 from OM group SDS during the busy hour. • B is the average length of time that the ringing/no-answer timer runs on a call. Another way of describing this value is as the average length of time a caller waits from the time the ringing/no-answer condition is detected by the switch to the time that the caller hangs up or the ringing/no-answer timer expires. U is then converted using the Erlang B table with a probability of blockage or delay to be determined by the operating company. This converted value is the maximum call process wake-ups requirement for Access to Messaging.

Access to Messaging (continued)

Office parameters used by Access to Messaging (Sheet 3 of 4)

Table name	Parameter name	Explanation and action
OFCENG	NO_MEDIUM_FTR_ DATA_BLKS	This parameter sets the number of medium feature data blocks that are available in the office. To determine the number of medium feature data blocks required for Access to Messaging, use the following calculation, and then add the converted result to the value already datafilled for this parameter. U = A X B / 100, where • A is the number of calls that pass screening (both common offering screening and service-specific screening) during the busy hour (BCHA). This value corresponds to the value of register ACTIVATE from OM group SDS for the busy hour. • B is the average length of time in seconds that a medium feature data block is used on a call. A medium feature data block is used on a call from the beginning of the call until the caller either hangs up or rejects the service or the call is routed to the VMS. U is then converted using the Erlang B table with a probability of blockage or delay to be determined by the operating company. This converted value is the maximum medium feature data block requirement for Access to Messaging.

Access to Messaging (continued)

Office parameters used by Access to Messaging (Sheet 4 of 4)

Table name	Parameter name	Explanation and action
OFCENG	NO_OF_HIS_DATA_BLKS	This parameter sets the number of regular history data blocks that are available in the office. To determine the number of regular history data blocks required for Access to Messaging, use the following calculation, and then add the converted result to the value already datafilled for this parameter: U = A X B / 100, where • A is the number of calls that are offered Access to Messaging service and that have Access to Messaging service accepted during the busy hour (BCHA). This value is equivalent to the value of the sum of registers BSYACTIV and RNAACTIV from OM group SDS for the busy hour. • B is the average length of time that a regular history data block is used on each call in seconds. A regular history data block is used from the time the service is accepted by the caller until the end of connection to the VMS (when the caller hangs up). U is then converted using the Erlang B table with a probability of blockage or delay to be determined by the operating company. This converted value is the maximum history data block requirement for Access to Messaging.
OFCENG	NO_OF_ORIG_INFO_EXT_BLKS	This parameter controls the number of existing AIN_ORIG_INFO extension blocks allocated for ACM on the switch. AIN_ORIG_INFO extension blocks are used to store the charge number and calling number information to preserve AIN 0.1 calling and charge information for redirected calls.

Access to Messaging (continued)

Datafill sequence

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

Datafill tables required for Access to Messaging (Sheet 1 of 3)

Table	Purpose in table
Announcement tables	Tables TMINV, EDRAMINV, CLLI, DRAMS, ANNS, ANNMEMS, DRAMTRK, and DRMUSERS must be datafilled for each announcement used for Access to Messaging service. Tables CLLI, ANNS, ANNMEMS, DRAMTRK, and DRMUSERS are provided in this section as they relate to multi-track announcements. The remaining tables are not provided as they are standard for all announcements. The following announcements may be required for Access to Messaging service, depending on the functionality the operating company wishes to provide to subscribers: • offer of Access to Messaging service for the ringing/no-answer condition • offer of Access to Messaging service for the busy condition • offer of a choice of Access to Messaging service or EBCR service for the busy condition • help announcement for the ringing/no-answer condition • help announcement for the busy condition Digital multi-track announcements are strongly recommended for Access to Messaging.
OCCINFO	*Equal Access Other Common Carrier Information* This table defines the attributes for carriers serving the DMS switch and screens calls for carrier compatibility. Field INCASA in table OCCINFO determines whether Access to Messaging service is offered on calls handled by the carrier being defined.
OFRT	*Office Route.* This table defines the route reference index that can be used to define treatments ICSD or ICSA in table TMTCNTL. If you do not wish to define either treatment ICSD or ICSA using a route reference index, you do not need to datafill this table. ***Note:*** Table OFR2, OFR3, or OFR4 can also be used to define route reference indices.
TMTCNTL	*Treatment Control* This table defines treatments. Access to Messaging requires that treatments ICSA and ICSD be datafilled in table TMTCNTL.

Access to Messaging (continued)

Datafill tables required for Access to Messaging (Sheet 2 of 3)

Table	Purpose in table
SDSINFO	*Special Delivery Service Information* This table defines the behavior of Access to Messaging on an office wide basis. Tuples OFFICE, SDSOFC, SDSBSY, and SDSRNA must be datafilled for this service to operate.
CUSTSTN	*Customer Group Station Option* This table contains information that defines Centrex customer group options. The AMSG customer group option and the AMSGDENY customer group option are assigned to customer groups using this table. Customer group options AMSG and AMSGDENY assign and deny Access to Messaging service to a customer group. If you do not require the AMSG customer group option or the AMSGDENY customer group option, you do not need to provide datafill for this table. ***Note:*** Before assigning option AMSG or AMSGDENY to a customer group using table CUSTSTN, the customer group must already be defined in table CUSTENG.
SDSCUST	*SDS Customer Group Information* This table specifies the message routing DNs (a DN corresponding to a VMS location) for each customer group. If you wish to assign a particular customer group its own message routing DNs, you need to datafill this table. If you wish customer groups to use the office wide message routing DNs, do not datafill this table.
IBNXLA	*IBN Translations* This table contains the information used to translate the digits for calls from MDC and RES stations. Datafill is required for this table in order to map access codes to the sustained deactivation and per-call denial functionality provided by Access to Messaging.
IBNLINES	*IBN Line Assignment* 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.

Access to Messaging (continued)

Datafill tables required for Access to Messaging (Sheet 3 of 3)

Table	Purpose in table
KSETLINE	*Business Set and Data Unit Line Assignment* 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.
LENLINES	*Line Assignment* 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.

Access to Messaging (continued)

Datafilling table CLLI

The following table shows the datafill required in table CLLI for messaging service announcements.

Datafilling table CLLI (Sheet 1 of 2)

Field	Subfield	Entry	Explanation and action
CLLI		alphanumeric (vector of up to 16 characters)	*Common language location identifier.* Enter a CLLI code to uniquely identify the announcement. ***Note:*** Only alphabetic characters, numeric characters, and underscore characters (_) can be used to datafill this field. The use of other special characters such as @,#,$,%,^,&,*, (,),-,+,=,/,',;,:,?,}, and {can cause errors in the data in this field. For optimum use, a CLLI code must not contain more than 12 characters, as only the first 12 characters are displayed on the MAP (maintenance and administration position). However, when a CLLI code is displayed in a log report, the entire 16-character CLLI code appears.
ADNUM		numeric (0 to 8191)	*Administrative trunk group number.* Enter a number in the range from 51 to one less than the current size of table CLLI datafilled in field SIZE in table DATASIZE. (ADNUMs for operating company defined CLLI codes must be in the range from 51 to the size of table CLLI defined in table DATASIZE minus one.) The value of field ADNUM must be unique. Attempts to add a CLLI code with an ADNUM already in use are rejected. The operating company can modify the ADNUM value only if its CLLI code is not referred to by any other tables in the switch. An ADNUM value cannot be changed without deleting the tuple containing the ADNUM to be modified. The tuple must be deleted, the ADNUM value modified, and the tuple re-entered in table CLLI.

Datafilling table CLLI (Sheet 2 of 2)

Field	Subfield	Entry	Explanation and action
TRKGRSIZ		numeric (0 to 2047)	*Trunk group size.* Enter a number that is equal to or larger than the number of announcement members for your announcement. This number is used to allocate storage. Consequently, it can be greater than the total number of announcement members. An announcement member is defined as either an occurrence of a single-track announcement or an occurrence of a multi-track announcement. For example, if the announcement is a single-track announcement with 4 occurrences, datafill 4 or a number larger than 4. If the announcement consists of a single occurrence of a multi-track announcement composed of 5 tracks, enter 1 or a number larger than 1. The only change that can be made dynamically to this quantity is to increase the size. An attempt to decrease TRKGRSIZ results in an error message. The only size reduction permitted is to decrease the quantity entered in field TRKGRSIZ to 0 (zero). In this case, all announcement members using this CLLI code must be deleted before decreasing the quantity to 0.
ADMININF		alphanumeric (vector of up to 32 characters)	*Administrative information.* Enter operating company administrative information. The information in this field is not used by the switch. ***Note:*** Only alphabetic characters, numeric characters, and underscore characters (_) can be used to datafill this field. The use of other special characters such as @,#,$,%,^,&,*, (,),-,+,=,/,',;,:,?,}, and {can cause errors in the data in this field.

Datafill example for table CLLI

The following example shows sample datafill for table CLLI.

Access to Messaging (continued)

MAP display example for table CLLI

```
          CLLI ADNUM TRKGRSIZ                  ADMININF

-------------------------------------------------------
SDS_BUSY_HELP   187       1                     SDS_ANNC
```

Datafilling table ANNS

The following table shows the datafill required in table ANNS for Access to Messaging service announcements.

Datafilling table ANNS (Sheet 1 of 2)

Field	Subfield	Entry	Explanation and action
CLLI		alphanumeric (1 to 16 characters)	*Announcement CLLI keys.* Enter the CLLI code that was entered in table CLLI to identify this announcement.
ANTYPE		ACTSAINAIS AOSSVRCFR ACLASSCNA LCNALTCNA TCSMIDMCT MCCSMDSM ENUNFRANT CRCTLSACB SLEENGSLE FRESPPSTN DorTOPSVR	*Announcement type.* Enter STND to specify Standard or MENU for custom type.

Access to Messaging (continued)

Datafilling table ANNS (Sheet 2 of 2)

Field	Subfield	Entry	Explanation and action
TRAFSNO		0 to 127	*Traffic separation numbers.* Enter 0 (zero) to specify that traffic separation numbers are not required. Traffic separation numbers allow the operating company to monitor the traffic on an announcement through the traffic separation system (OM group TFCANA). Since OM group SDS pegs the relevant events pertaining to SDS messaging service announcements, the use of traffic separation numbers with Access to Messaging service announcements is not recommended. For more information on this field, consult table ANNS, field TRAFSNO in *DMS-100 Family NA100 Data Schema Part 2 of 10 Translations Guide Volume 19 of 27.*
MAXCONN		1 to 255	*Maximum connections.* Enter the maximum number of lines that you will allow to be simultaneously connected to the announcement member.
CYTIME		0 to 18	*Cycle times.* Enter the time in seconds for one track of the announcement to play. A value of 0 (zero) should never be used for SDS messaging service announcements. ***Note:*** A value of 0 (zero) should never be entered in field CYTIME for Access to Messaging service announcements, since entering 0 (zero) in this field allows for flexible announcement timing. Flexible announcement timing does not support digit collection and therefore cannot be used with Access to Messaging service.
MAXCYC		1 to 255	*Maximum cycles.* Enter the maximum number of times the complete announcement will play.

Datafill example for table ANNS

The following example shows sample datafill for table ANNS.

Access to Messaging (continued)

MAP display example for table ANNS

```
          CLLI ANTYPE TRAFSNO MAXCONN CYTIME MAXCYC
_____________________________________________________
SDS_BUSY_HELP    SND       0      15      2      1
```

Datafilling table ANNMEMS

The following table shows the datafill required in table ANNMEMS for messaging service announcements.

Datafilling table ANNMEMS (Sheet 1 of 4)

Field	Subfield	Entry	Explanation and action
ANNMEM		see subfields	*Announcement member key.* This field consists of subfields ANN and MEMBER.
	ANN	alphanumeric	*Announcement.* Enter the CLLI code that represents the announcement group in table CLLI.
	MEMBER	0 to 255	*Member.* Enter the number assigned to this announcement member
HDWTYPE		AUDICHRON DRAM or blank	*Hardware type.* Enter DRAM. DRAM is the HDWTYPE entry for digital announcements. ***Note:*** Only digital announcements can be used with Access to Messaging service.
CARD		2X72AA 2X72AB 2X72AC 2X88AADRA or blank	*Card code.* Enter DRA. DRA is the card code entry for digital announcements.

Access to Messaging (continued)

Datafilling table ANNMEMS (Sheet 2 of 4)

Field	Subfield	Entry	Explanation and action
MEMINFO		see subfields	*Memory information.* This field consists of subfield TRCKLIST. Digital multi-track announcements are strongly recommended for Access to Messaging service announcements. A digital announcement member can be assigned up to 8 tracks. The order in which the tracks are heard is determined by the sequence in which the tracks are listed in field MEMINFO. That is, if an announcement member has three tracks listed in the following sequence: 1, 5, and 3, then track 1 is heard first, followed by track 5, and then track 3. The track numbers given in field TRACK are used to index into table DRAMTRK for DRAM and EDRAM announcements. If a track number is used in field TRACK, but there is no corresponding entry in table DRAMTRK, an entire track will be missing from the playback of the announcement. Only EDRAMs support digital multi-track announcements.
	TRCKLIST	see subfields	*Track list.* This field consists of subfields TRACK, PMTYPE, TMNO, and TMCKT.
	TRACK	0 to 31	*Track number.* Enter the track number you wish to assign to the track.

Access to Messaging (continued)

Datafilling table ANNMEMS (Sheet 3 of 4)

Field	Subfield	Entry	Explanation and action
	PMTYPE	ATMCTMDT MMTMMTMA OAUPTMRM MRSMSTMT ANTMATM2T M4TM8T8A	*Peripheral module type.* Enter the type of peripheral module to which the track is assigned. If the announcement member is connected to a DRAM, enter MTM (maintenance trunk module) or STM (service trunk module). If the announcement member is connected to an EDRAM (1X80), enter DTM. ***Note:*** Only EDRAMs support digital multi-track announcements. Digital multi-track announcements are strongly recommended for Access to Messaging service announcements.

Access to Messaging (continued)

Datafilling table ANNMEMS (Sheet 4 of 4)

Field	Subfield	Entry	Explanation and action
	TMNO	0 to 2047	*Trunk module number.* Enter the trunk module number of the trunk module to which the track is assigned. If the trunk module type is MTM, the range is 0 to 255. If the trunk module type is STM or DTM, the range is 0 to 2047. ***Note:*** All tracks and channels assigned to an announcement member must be located on the same trunk module.
	TMCKT	0 to 29	*Trunk module circuit number.* Enter the channel number on the trunk module to which the track is assigned. A channel cannot be assigned the number 0 (zero) when using a DRAM or EDRAM. Channel 0 (zero) is reserved for the DRAM controller. For MTMs, the DRAM can be configured to function as an 8-, 16-, 24- or 30-channel interface depending on the dip switch settings on the DRAM controller card. There are four dip switches on the controller card, which enable the number of channels below: Switch setting — Enabled channels None — 1 to 73 — 8 to 152 — 16 to 234 — 24 to 29 Channels 1 to 7 are permanently enabled and have no switch setting. For STMs, only 15 channels can be enabled. The DRAM controller switch setting and associated channel number assignments for STMs are shown below. Switch setting — Enabled channels None — 1 to 73 — 8 to 15 For DTMs, all channels can be used and there are no dip switch settings. One channel is required for each announcement track assigned to the announcement member.

Access to Messaging (continued)

Datafill example for table ANNMEMS

The following example shows sample datafill for table ANNMEMS.

MAP display example for table ANNMEMS

```
          ANNMEM      HDWTYPE      CARD
                                                MEMINFO

-------------------------------------------------------------
SDS_BUSY_HELP 0       DRAM        DRA
                                  (0 DTM 4 1) (1 DTM 4 2)
                                  (2 DTM 4 3) (3 DTM 4 4) $
```

Datafilling table DRAMTRK

The following table shows the datafill required in table DRAMTRK for messaging service announcements.

Datafilling table DRAMTRK (Sheet 1 of 2)

Field	Subfield	Entry	Explanation and action
ANNTRACK		see subfields	*Announcement key.* This field consists of subfields ANN and TRACK.
	ANN	alphanumeric or blank	Enter the code that represents the announcement in table CLLI.

Datafilling table DRAMTRK (Sheet 2 of 2)

Field	Subfield	Entry	Explanation and action
	TRACK	0 to 31 or blank	Enter the track number assigned to the announcement. ***Note:*** The track numbers given in table ANNMEMS are used to index into table DRAMTRK for DRAM and EDRAM announcements. If a track number is used in table ANNMEMS, but there is no corresponding entry in table DRAMTRK, an entire track will be missing from the playback of the announcement.
PHSLIST		alphanumeric (up to 16 names)	Enter the name(s) assigned to the phrase(s) you wish to be associated with this track. Separate each phrase from the next by a blank space. If fewer than 16 names are required, end the list with a $(dollar sign). ***Note:*** The phrase NIL is no longer supported. If an announcement is not used or is in the process of being re-recorded, field PHSLIST must be set to SILENCE for each track of the announcement.

Datafill example for table DRAMTRK

The following example shows sample datafill for table DRAMTRK.

MAP display example for table DRAMTRK

```
ANNTRACK                                              PHSLIST
------------------------------------------------------------
SDS_BUSY_HELP 0          (BSY_TRK0)  (BSY_TRK1)
                         (BSY_TRK2)  (BSY_TRK3) $
```

Access to Messaging (continued)

Datafilling table DRMUSERS

The following table shows the datafill required in table DRMUSERS for messaging service announcements.

Datafilling table DRMUSERS

Field	Subfield	Entry	Explanation and action
USERANN		see subfields	User announcement. This field contains subfields common language location identifier (CLLI) and ANNUM.
	CLLI	alphanumeric a maximum of 16 characters	Common Language Location Identifier. Enter the name associated with the announcement group as table ANNS provides.
	ANNUM	1 to 63	Announcement number. Enter the number of the announcement.
PHSLIST		see subfield	Phrases list. This field contains subfield PHRASES.
	PHRASES	alphanumeric	Phrases. Enter vector of a maximum of 32 phrases associated with an announcement. If the requirement is less than 32 phrases, end the list with a $.

Datafill example for table DRMUSERS

The following example shows sample datafill for table DRMUSERS.

MAP display example for table DRMUSERS

```
USERANN                                              PHSLIST
------------------------------------------------------------
CLASSANN 1
          (   LANGUAGE1) (   CLASSENG3) (   LANGUAGE2) $
```

Datafilling table OCCINFO

The following table shows the datafill required to define a carrier in table OCCINFO. Field INCASA determines whether Access to Messaging service can be provided on calls that are handled by the carrier being defined.

Datafilling table OCCINFO (Sheet 1 of 6)

Field	Subfield	Entry	Explanation and action
CARRNAME		1 through 16 alphanumeric characters	*Carrier name* Enter the carrier name or an abbreviation of the carrier 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 through 9999	*Carrier number* Enter the carrier access code (CAC). The CAC is equal to the XXXX digits in the equal access (EA) prefixes (10XXXX or 950YXXXX).
ACCESS		EAP, FGC, INTERIM, OTC, TRANS, or NONE	*Access arrangement* Enter one of the following access types accepted by the carrier to handle the call: • EAP (equal access plan 10XXXX calls using feature group D [FGD] signaling) • FGC (10XXXX calls using feature group C [FGC] signaling) • INTERIM (950YXXXX calls using FGD signaling) • OTC (10XXXX calls using FGD signaling) • TRANS (both 950YXXXX and 10XXXX calls using FGD signaling) • NONE (no access)

Access to Messaging (continued)

Datafilling table OCCINFO (Sheet 2 of 6)

Field	Subfield	Entry	Explanation and action
ORIGCARR		Y or N	*Original carrier* Enter Y to define this carrier name as the original carrier; otherwise, enter N. ***Note:*** One carrier name must be defined as the original carrier for each unique carrier number. If two or more carrier names are datafilled with the same carrier number, only one carrier must be defined as the original carrier by entering Y in this field.
INTER		Y or N	*InterLATA* Enter Y if the carrier can handle traffic between local access and transport areas (LATA); otherwise, enter N.
INTNTL		Y or N	*International* Enter Y if the carrier can handle international traffic; otherwise, enter N.
INTRA		Y or N	*IntraLATA* Enter Y if the carrier can handle traffic within the same LATA; otherwise, enter N.
ANI		Y or N	*Automatic number identification* Enter Y if the carrier requires that ANI digits be sent with the called number; otherwise, enter N.
FANI		Y or N	*Flexible automatic number identification* Enter Y if the carrier can receive FANI information digits in the place of ANI information digits; otherwise, enter N.
ONISCRN		Y or N	*Operator number identification screening* Enter Y if ONI traffic requires screening by an operator or centralized automatic message accounting (CAMA) position before outpulsing to the carrier; otherwise, enter N.
AD1		Y or N	*Abbreviated dialing number one* Enter Y if the carrier can be accessed using abbreviated dialing; otherwise, enter N.

Access to Messaging (continued)

Datafilling table OCCINFO (Sheet 3 of 6)

Field	Subfield	Entry	Explanation and action
OVERLAP		Y or N	*Overlap* Enter Y if the carrier receives digits from the access tandem (AT) or the equal access end office (EAEO) using overlap outpulsing; otherwise, enter N.
INTERS		Y or N	*Interstate* Enter Y if the carrier can handle traffic between states; otherwise, enter N.
INTRAS		Y or N	*Intrastate* Enter Y if the carrier can handle traffic within the same state; otherwise, enter N.
TERMREC		LONG or SHORT	*Terminating access record* Enter the length of the terminating access record produced for the carrier.
OCCSEPNO		0 through 127	*Other common carrier separation number* Enter the OCC separation number used for the carrier in the traffic separation measurement system (TSMS).
OPSIG		FGRPC, FGRPD, or NONE	*Operator signaling* Enter the type of operator signaling provided by the carrier. ***Note:*** The availability of this field eliminates the need to establish two carriers with the same access code in table OCCINFO in order to enable transitional or EAP carriers for FGC operator signaling.
PICIND		Y or N	*Presubscription indicator* Enter Y if the carrier receives the presubscription indicator; otherwise, enter N. ***Note:*** This field must be datafilled for every entry in table OCCINFO.

Access to Messaging (continued)

Datafilling table OCCINFO (Sheet 4 of 6)

Field	Subfield	Entry	Explanation and action
NOA950		Y or N	*Nature of address indicator* Enter Y to specify that the nature of address indicator in the calling party number parameter is set to a binary value of 11111110 (network specific: 950+call from public station, hotel/motel line, or non-equal access end office). The default value is N.
INCCPN		Y or N	*Include calling party number* Enter Y if no change in the existing operation of the switch is required. Enter N to indicate that the calling party number parameter be removed from any IAM sent to this carrier. The default value is Y.
DTMFIND		Y or N	*Dual tone multifrequency (DTMF) indicator* Enter Y if the carrier receives the DTMF indicator on operator services calls routed directly to the carrier; otherwise, enter N.
OPSERV		Y or N	*Operator services* Enter Y if the carrier accepts EAOSS and does not require the operating company to process 10XXX+0 and 00 calls to the carrier; otherwise, enter N.
CACBLOCK		Y or N	*Carrier access code blocking* Enter Y if the carrier blocks all calls dialed with a CAC; otherwise, enter N.
CTDOA		Y or N	*Carrier toll deny operator assisted* Enter Y to block operator assisted (OA) calls to this carrier if the end user has the carrier toll denied (CTD) line option enabled for this particular carrier. The default value is N.
CMCMON		Y or N	*Cellular mobile carrier (CMC) monitor* Enter Y to monitor the connection between the CMC and the inter-LATA or international carrier (IC/INC), and to place the called DN in the originating IC/INC and terminating CMC billing records; otherwise, enter N.

Access to Messaging (continued)

Datafilling table OCCINFO (Sheet 5 of 6)

Field	Subfield	Entry	Explanation and action
SCRNWATS		Y or N	*Enhanced wide area telephone service (WATS) screening* Enter Y if the carrier requires band screening on digits dialed from an enhanced WATS line; otherwise, enter N.
CRMCRA		Y or N	*Circuit reservation and acknowledgment messages* Enter Y if a circuit reservation message (CRM) is sent out from an access tandem (AT) to an interexchange (IXC) on FGD calls outgoing over CCS7 access to carrier (ATC) trunks, and if subsequent circuit reservation acknowledgment (CRA) message is received at the AT from the IXC on FGD calls incoming to the AT on either multifrequency (MF), intertoll (IT) or superCAMA (SC) trunks.
ATPINCL		Y or N	*Access transport parameter (ATP) included* Enter Y if the ATP is included in the outgoing ISUP IAM. Enter N if the ATP is discarded. ***Note:*** This field is only applicable to TR444 calls (basic rate access [BRA] to ISUP calls).
INTRAOPR		Y or N	*IntraLATA operator* Enter Y if the carrier is capable of handling 0-intra-LATA operator calls. The default value is N.
INCASA		Y or N	*In-call service access* Enter Y to allow Access to Messaging service to be offered on calls handled by the carrier. Enter N to prevent Access to Messaging service from being offered on calls handled by the carrier.

Access to Messaging (continued)

Datafilling table OCCINFO (Sheet 6 of 6)

Field	Subfield	Entry	Explanation and action
INTRCOIN		Y or N	*IntraLATA toll coin* This field specifies whether a carrier is able to handle intra-LATA toll coin traffic.
ARBLKPVT		Y or N	*Automatic Recall blocking of private calls* This field indicates whether a carrier is allowed to complete AR calls to private numbers. When this field is set to Y, and the applicable office parameter (AR_BLOCK_PRIVATE_RES or AR_BLOCK_PRIVATE_CTX) is set to CARSCRN, AR activation attempts routed by the carrier are blocked and sent to treatment. When this field is set to N, the CASOP feature allows AR activation attempts to complete. ***Note:*** When the ACCESS field in this table is set to OTC (operating telephone company), all AR activation attempts to a private DN are allowed to complete regardless of the entry specified in field ARBLKPVT.

Datafill example for table OCCINFO

The following example shows sample datafill for table OCCINFO.

MAP display example for table OCCINFO

```
CARRNAME CARRNUM ACCESS ORIGCARR INTER INTNTL INTRA ANI FANI ONISCRN
AD1 OVERLAP INTERS INTRAS TERMREC OCCSEPNO OPSIG PICIND NOA950 INCCPN
DTMFIND OPSERV CACBLOCK CTDOA CMCMON SCRNWATS CRMCRA ATPINCL INTRAOPR
INCASA INTRCOIN ARBLKPVT
------------------------------------------------------------------------
UNT2 0202 TRANS Y Y Y N Y N N Y  Y Y N LONG 61 FGRPD N N Y N N N N N N
N N N Y N Y
```

Datafilling table OFRT

The following table shows the datafill required in table OFRT to define a route reference index that can later be used to define treatment ICSD or ICSA in table TMTCNTL.

Datafilling table OFRT

Field	Subfield	Entry	Explanation and action
RTE		1 to 1023	*Route reference index.* Enter the route reference number that you wish to assign to the route list.
RTELIST		see subfields	*Route list.* This field consists of subfields RTESEL, CONNTYPE, and CLLI.
	RTESEL	S	*Route selector.* Enter S to specify that route selector S will be used. Route selector S is used to route calls to tones, announcements, or states that are identified by their CLLI code from table CLLI. ***Note:*** Although other entries are valid for this field, for clarity, only the S entry is shown in the Entry column.
	CONNTYPE	D	*Connection type.* This field is not used by system logic. Enter D to satisfy table control.
	CLLI	alphanumeric (1 to 16 characters)	*Common language location identifier.* Enter the code from table CLLI that identifies the tone, announcement, or state.

Datafill example for table OFRT

The following example shows sample datafill for table OFRT.

MAP display example for table OFRT

```
RTE                                                RTELIST
-------------------------------------------------------
900                             (S D T120)  (S D LKOUT) $
```

Access to Messaging (continued)

Datafilling table TMTCNTL

The following table shows the datafill required in table TMTCNTL for messaging service treatments. Messaging service requires that the following treatments be datafilled in table TMTCNTL: ICSD and ICSA.

Datafilling table TMTCNTL

Field	Subfield	Entry	Explanation and action
EXTTMTNM		OFFTREAT ITTRKGRP LNT TITRKGRP PXTRKGR TOPS INT101TT PRIVLNTT FEATANNS	*Extended treatment name.* Enter LNT to specify subtable LNT. Subtable LNT is used in all local and combined local/toll switches to specify routing treatments associated with lines.
TREATMT		alphanumeric (1 to 4 characters)	*Treatment name.* Enter either ICSD or ICSA.
LOG		Y or N	*Log.* Enter Y if you wish a log to be generated whenever a call is routed to the treatment specified in field TREATMT. Enter N if you do not wish a log to be generated whenever a call is routed to the treatment specified in field TREATMT.
FSTRTE		see subfields	*First route.* This field consists of subfield FSTRTSEL and additional fields and subfields that depend on the value entered in subfield FSTRTSEL.
	FSTRTSEL	S or T	*First route selector.* Enter the first route selector S or T. S indicates that the treatment associated with the treatment name is the playing of a tone. T indicates that the treatment associated with the treatment name involves going to a routing table. You will be prompted for different fields and subfields depending on whether you enter S or T as the first route selector. Information on the fields and subfields associated with each selector follows.

Access to Messaging (continued)

Datafilling table TMTCNTL subtable TREAT tuple LNT (first route selector S)

The following table shows the datafill for table TMTCNTL subtable TREAT tuple LNT where the treatment datafill consists of a CLLI from one of the tones in table TONES.

Datafilling table TMTCNTL subtable TREAT tuple LNT (first route selector S)

Field	Subfield	Entry	Explanation and action
	CLLI	alphanumeric (1 to16 characters)	*Common language location identifier.* Enter the CLLI code of the tone that is the treatment assigned to the treatment name. ***Note:*** The CLLI used by the treatment must be datafilled in table CLLI.

Datafill example for table TMTCNTL subtable TREAT tuple LNT (first route selector S)

The following example shows sample datafill for table TMTCNTL subtable TREAT tuple LNT in which the first route selector has been datafilled as S.

MAP display example for table TMTCNTL subtable TREAT tuple LNT (first route selector S)

```
  TREATMT LOG                                        FSTRTE
-------------------------------------------------------------
     ICSD   N              T                   OFRT    900
```

Datafilling table TMTCNTL subtable TREAT tuple LNT (first route selector T)

The following table shows the datafill for table TMTCNTL subtable TREAT tuple LNT where the treatment datafill points to a route list in either table OFRT, OFR2, OFR3, or OFR4.

Datafilling table TMTCNTL subtable TREAT tuple LNT (first route selector T) (Sheet 1 of 2)

Field	Subfield	Entry	Explanation and action
EXTRTEID		see subfields	*External route ID.*

Access to Messaging (continued)

Datafilling table TMTCNTL subtable TREAT tuple LNT (first route selector T) (Sheet 2 of 2)

Field	Subfield	Entry	Explanation and action
	TABID	OFRTOFR2OFR3 orOFR4	*Table name.* Enter the office route table name.
	KEY	1 to 1023	*Key.* Enter the index into the office route table that defines the route list for the treatment. The entry zero (0) cannot be datafilled by the operating company. ***Note:*** Each CLLI specified in the route list for a treatment must be datafilled in table CLLI.

Datafill example for table TMTCNTL subtable TREAT tuple LNT (first route selector T)

The following example shows sample datafill for table TMTCNTL subtable TREAT tuple LNT.

MAP display example for table TMTCNTL subtable TREAT tuple LNT (first route selector T)

```
  TREATMT LOG                                    FSTRTE
-------------------------------------------------------
     ICSD   N             T                 OFRT    900
```

Datafilling table SDSINFO

The following table shows the datafill required in table SDSINFO for Access to Messaging service.

Access to Messaging (continued)

Datafilling table SDSINFO (Sheet 1 of 2)

Field	Subfield	Entry	Explanation and action
SDSKEY		OFFICESDS OFCSDSRNA SDSBSY, or FTS	*Special Delivery Service key* This field, in combination with field SERVICE, provides access to the different tuples of table SDSINFO, which contain the datafill information required for Access to Messaging, EBCR, and Fax-Thru service. ***Note:*** The use of EBCR requires that RES00076 be active in the end office. The use of Fax-Thru service requires that RES00078 be active in the end office. For Access to Messaging to operate, tuples OFFICE, SDSOFC, SDSRNA, and SDSBSY must be datafilled. Enter OFFICE to access the OFFICE tuple. Enter SDSOFC to access the SDSOFC tuple. Enter SDSRNA to access the SDSRNA tuple. Enter SDSBSY to access the SDSBSY tuple. ***Note:*** Entering FTS provides access to the FTS tuple, which contains the information fields specific to Fax-Thru service. The FTS tuple does not need to be datafilled for Access to Messaging to operate.

Access to Messaging (continued)

Datafilling table SDSINFO (Sheet 2 of 2)

Field	Subfield	Entry	Explanation and action
SERVICE		OFFICESDS OFCSDSRNA SDSBSY, or FTS	*Service selector* This field, in combination with field SDSKEY, provides access to the different tuples of table SDSINFO. Enter OFFICE to access the OFFICE tuple. Enter SDSOFC to access the SDSOFC tuple. Enter SDSRNA to access the SDSRNA tuple. Enter SDSBSY to access the SDSBSY tuple. ***Note 1:*** Entering FTS provides access to the FTS tuple, which contains the information fields specific to Fax-Thru service. The FTS tuple does not need to be datafilled for Access to Messaging to operate. ***Note 2:*** You must enter the same value in the SERVICE and SDSKEY fields. ***Note 3:*** Once you have specified the tuple you wish to datafill by entering values for the SDSKEY and SERVICE fields, refer to the table that describes the datafill information specific to the tuple you are datafilling. Tuple-specific datafill information is provided later in this chapter.

Error messages for table SDSINFO fields SDSKEY and SERVICE

The following error message applies to the SDSKEY and SERVICE fields in table SDSINFO.

Error message for table SDSINFO

Error message	Explanation and action
`Error: The fields SDSKEY and SERVICE must have the same value.`	The entries in fields SDSKEY and SERVICE do not match.

Access to Messaging (continued)

General error messages for table SDSINFO

The following error messages may appear when datafilling table SDSINFO.

Error messages for table SDSINFO

Error message	Explanation and action
`Warning: Changing or deleting a tuple in table SDSINFO can affect SDS or FTS.`	This message appears if an attempt is made to modify table SDSINFO with either the DEL or CHA command.
`One or more of the SDSINFO tuples is not present. Change not allowed.`	You have attempted to change the value of office parameter SDS_ENABLED in table OFCENG to Y, but at least one of tuples OFFICE, SDSOFC, SDSRNA, or SDSBSY has not been datafilled. You must datafill all of these tuples before setting the value of office parameter SDS_ENABLED in table OFCENG to Y.
`Error: SDS_ENABLED is Y in table OFCENG. Disable before deleting tuple.`	You cannot delete tuple OFFICE, SDSOFC, SDSRNA, or SDSBSY while office parameter SDS_ENABLED in table OFCENG is set to Y. Set SDS_ENABLED to N before deleting the tuple.
`Internal error: unable to access table SDSINFO due to out of range index.`	Refer to your next level of technical assistance.
`Internal error: Data is invalid in table SDSINFO.`	Refer to your next level of technical assistance.
`Internal error: cannot allocate digilator or digilator not allocated.`	Refer to your next level of technical assistance.
`Internal error: cannot write to a digilator in table SDSINFO.`	Refer to your next level of technical assistance.
`Internal error: no digilator pool allocated for table SDSINFO.`	Refer to your next level of technical assistance.

Datafilling table SDSINFO tuple OFFICE

The following table shows the datafill required in table SDSINFO tuple OFFICE for Access to Messaging.

Datafilling table SDSINFO tuple OFFICE (Sheet 1 of 4)

Field	Subfield	Entry	Explanation and action
BILLING		Y or N	*Billing* Enter Y to allow billing on the call to the message routing DN. If you enter N, billing is suppressed on the call to the SDS messaging routing DN, and the AMA record is deleted, even if the second leg is billable according to translations. ***Note 1:*** If the call to the message routing DN is an equal access call, or a number service code (NSC) call (for example, an 800 number), the AMA record for the call is generated, even if field BILLING is set to N. ***Note 2:*** Entering Y also allows billing on calls to FTS routing DNs, which are used for Fax-Thru service, while entering N also suppresses billing on calls to FTS routing DNs. ***Note 3:*** This field has no effect on billing if an ASP provides Access to Messaging service.
REVXLA		Y or N	*Reverse translation* Enter Y if reverse translations are needed to determine the NPA of the called party (when it is not dialed) for Access to Messaging service. Enter N if reverse translations are not required. ***Note:*** Entering Y also specifies that reverse translations are required for EBCR service and Fax-Thru service. Entering N also specifies that reverse translations are not required for EBCR service and Fax-Thru service.

Access to Messaging (continued)

Datafilling table SDSINFO tuple OFFICE (Sheet 2 of 4)

Field	Subfield	Entry	Explanation and action
INTERLAT		Y or N	*InterLATA calls.* Enter Y to allow Access to Messaging service on inter-LATA calls. Enter N to disallow Access to Messaging service on inter-LATA calls. ***Note 1:*** Entering Y also allows Fax-Thru service on inter-LATA calls, while entering N also prevents Fax-Thru service from being offered on inter-LATA calls. ***Note 2:*** If an ASP provides the service, then INTERLAT has no effect on allowing Access to Messaging on inter_LATA calls.
DNSCRN		list of 3-digit NPAs or 6-digit NPA-NXXs (maximum 51 entries)	*Directory number screening.* Enter the range of digits for which you do not wish Access to Messaging service to be provided. End the list with $. ***Note:*** EBCR service and Fax-Thru service are also not provided for digit ranges entered in this field.
CFW		Y or N	*Call forwarding interaction* Enter Y to allow Access to Messaging service to be offered on calls to parties that have one or more call forwarding features. For this functionality, “call forwarding” refers to all types of call forwarding, including AIN FORWARD_CALL response. ***Note:*** Entering Y also allows EBCR service and Fax-Thru service to be offered on calls to parties that have one or more call forwarding features. Entering N also prevents EBCR service and Fax-Thru service from being offered on calls to parties that have one or more call forwarding features.

Access to Messaging (continued)

Datafilling table SDSINFO tuple OFFICE (Sheet 3 of 4)

Field	Subfield	Entry	Explanation and action
CONF		Y or N	*Conferencing interaction.* Enter Y to allow Access to Messaging service to be offered on the consultation leg of conference calls. Enter N to prevent Access to Messaging service from being offered on the consultation leg of conference calls. For this functionality, “conference calls” refers only to the operation of conferencing features that make use of consultation legs, for example, Three-Way Calling (3WC), Station Controlled Conference, Flexible Calling, and Call Transfer. ***Note:*** Entering Y also allows EBCR service to be offered on the consultation leg of conference calls. Entering N also prevents EBCR service from being offered on the consultation leg of conference calls.

Access to Messaging (continued)

Datafilling table SDSINFO tuple OFFICE (Sheet 4 of 4)

Field	Subfield	Entry	Explanation and action
HNTGRP		Y or N	*Hunt group interaction (intraoffice).* Enter Y to allow Access to Messaging service to be offered on intraoffice calls that terminate on a hunt group. Enter N to prevent Access to Messaging service from being offered on intraoffice calls that terminate on a hunt group. ***Note:*** Entering Y also allows EBCR service and Fax-Thru service to be offered on intraoffice calls that terminate on a hunt group. Entering N also prevents EBCR service and Fax-Thru service from being offered on intraoffice calls that terminate on a hunt group.
REJECTMT		BUSY or DISC	*Rejection treatment.* Enter BUSY to provide the caller with busy treatment should the caller reject the offer of Access to Messaging service. Enter DISC to disconnect the call should the caller reject the offer of Access to Messaging service. The rejection treatment entered in field REJECTMT applies to the busy case only. ***Note:*** Entering BUSY also provides the caller with busy treatment should the caller reject the offer of EBCR service on busy calls. Entering DISC also disconnects the call should the caller reject the offer of EBCR service on busy calls.

Datafill example for table SDSINFO tuple OFFICE

The following example shows sample datafill for table SDSINFO tuple OFFICE.

MAP display example for table SDSINFO tuple OFFICE

```
SDSKEY      SERVICE
------------------------------------------------------------------------
OFFICE      OFFICE Y N N (514845) (454) $ Y Y N BUSY
```

Error messages for table SDSINFO tuple OFFICE

The following error messages may appear when datafilling table SDSINFO tuple OFFICE.

Error messages for table SDSINFO tuple OFFICE

Error message	Explanation and action
`Field DNSCRN: Must be 3 or 6 digits.`	Each item in field DNSCRN must be 3 digits (screens the NPA) or 6 digits (screens the NPA-NXX). Make sure each item is either 3 or 6 digits.
`Field DNSCRN: two or more digit ranges are overlapping.`	NPA screening and NPA-NXX screening overlap. Remove the redundancy.
`Vector of 3 or 6 digits {0 TO 9}`	This message appears when one or more non-numeric characters is entered in field DNSCRN. Re-enter the field with a list of 3-digit NPAs or 6-digit NPA-NXXs

Datafilling table SDSINFO tuple SDSOFC

The following table shows the datafill required in table SDSINFO tuple SDSOFC for Access to Messaging.

Datafilling table SDSINFO tuple SDSOFC (Sheet 1 of 4)

Field	Subfield	Entry	Explanation and action
	RPTKEY	0 to 9, NIL, or STAR	Repeat announcement key. Enter the key that subscribers should press to replay an offer of service announcement. ***Note:*** Enter STAR when subscribers should press the * key on the telephone set. ***Note:*** This field is also used to define the repeat key for EBCR service.

Access to Messaging (continued)

Datafilling table SDSINFO tuple SDSOFC (Sheet 2 of 4)

Field	Subfield	Entry	Explanation and action
	HELP_KEY	0 to 9, NIL, or STAR	*Help announcement key* Enter the key that subscribers should press to play a help announcement. If this field is set to NIL, there will be no prompts for subfields RNAHELP and BSYHELP. ***Note 1:*** Enter STAR when subscribers should press the * key on the telephone set. ***Note 2:*** This field is also used to define the help announcement for EBCR service.
	RNAHELP	see refinements	*Ringing/no-answer help announcement* Enter the CLLI code that is used to identify the ringing/no-answer help announcement in table CLLI. ***Note:*** This field requires an entry only if field HELP_KEY is a value other than NIL.
	STND	CLLI	This refinement specifies the CLLI for standard announcements. Datafill CLLI in table ANNMEMS.
	CUSTOM	ANNCLLI	This refinement specifies the CLLI for custom announcements. Datafill CLLI in table DRMUSERS.
		ANNID	This refinement specifies which custom announcement to play corresponding to CLLI.

Access to Messaging (continued)

Datafilling table SDSINFO tuple SDSOFC (Sheet 3 of 4)

Field	Subfield	Entry	Explanation and action
	BSYHELP	see refinements	*Busy help announcement* Enter the CLLI code that is used to identify the busy help announcement in table CLLI. ***Note 1:*** This field requires an entry only if field HELP_KEY is a value other than NIL. ***Note 2:*** This field is also used to identify the busy help announcement that is used by EBCR service. ***Note 3:*** Only one help announcement can be provided on the busy condition, even when callers are offered a choice of either Access to Messaging service or EBCR service on busy calls.
	STND	CLLI	This refinement specifies the CLLI for standard announcements. Datafill CLLI in table ANNMEMS.
	CUSTOM	ANNCLLI	This refinement specifies the CLLI for custom announcements. Datafill CLLI in table DRMUSERS.
		ANNID	This refinement specifies which custom announcement to play corresponding to CLLI.
	SDSSUBS	SUBSCR or UNIVER	Special Delivery Service mode. This field specifies subscription mode or universal mode service. Field SDSMODE pertains to Access to Messaging subscription mode and Enhanced Busy Call Return.
	AMSGSUBS	SUBSCR or UNIVER	Access to Messaging subscription. Enter SUBSCR to offer Access to Messaging in subscription mode. Enter UNIVER to offer Access to Messaging in universal mode.

Access to Messaging (continued)

Datafilling table SDSINFO tuple SDSOFC (Sheet 4 of 4)

Field	Subfield	Entry	Explanation and action
	EXDIGCOL	0 to 10 (integer values only)	*Extended digit collection period* Enter the number of seconds by which you wish to extend the digit collection period beyond the normal digit collection period. Field EXDIGCOL is also used to extend the digit collection period used by EBCR.
	HUNTORIG	Y or N	*Hunt originator* When the operating company offers Access to Messaging on an office-wide basis, this field determines whether the service is offered on calls that originate from members of hunt groups.
	CTXORIG	Y or N	*Centrex originator* When the operating company offers Access to Messaging on an office-wide basis, this field determines whether the service is offered on calls that originate from IBN, ISDNKSET and PSET agents.
DPORIG		Y or N	*Dial Pulse Originator* This field determines whether Access to Messaging and EBCR are offered on calls that originate from sets that use dial pulse signaling.

Datafill example for table SDSINFO tuple SDSOFC

The following example shows sample datafill for table SDSINFO tuple SDSOFC.

MAP display example for table SDSINFO tuple SDSOFC

```
SDSKEY SERVICE
-------------------------------------------------------------
SDSOFC SDSOFC 5 0 STND HELPANN01 STND HELPANN02 UNIVER UNIVER 10 N N N
```

Error messages for table SDSINFO tuple SDSOFC

The following error messages may appear when datafilling table SDSINFO tuple SDSOFC.

Error messages for table SDSINFO tuple SDSOFC

Error message	Explanation and action
`Field value must be {0-9} digit, STAR or NIL`	An incorrect value has been entered in field RPTKEY or field HELP_KEY. Re-enter the field with a valid entry.
`Fields MSGACKEY and RPTKEY must have different values.`	Use different values for fields MSGACKEY and RPTKEY.
`Fields MSGACKEY and HELP_KEY must have different values.`	Use different values for fields MSGACKEY and HELP_KEY.
`Fields RPTKEY and HELP_KEY must have different values.`	Use different values for fields RPTKEY and HELP_KEY.
`Warning: The RNAHELP and BSYHELP CLLIs will be deleted from table SDSINFO.`	When the value of field HELP_KEY is changed from a non-nil value to NIL, the RNAHELP and BSYHELP CLLIs are deleted from table SDSINFO.
`Fields ACBKEY and RPTKEY must have different values.`	This error message applies to EBCR only. You have used the same key for the repeat key and the acceptance key for EBCR service. Re-enter either field ACBKEY or field RPTKEY with a different value.
`Fields ACBKEY and HELP_KEY must have different values.`	This error message applies to EBCR only. You have used the same key for the help key and the acceptance key for EBCR service. Re-enter either field ACBKEY or field HELP_KEY with a different value.
`Fields HELP_KEY and RPTKEY cannot have STAR as a valid key if ACCEPT66 is on.`	This error message applies to EBCR only. This message appears when an attempt is made to datafill STAR as either a help key or a repeat key in the case where *66 has already been datafilled as a valid acceptance sequence for in-call EBCR service (table SDSINFO, tuple SDSBSY, field ACCEPT66 set to Y). Set field ACCEPT66 to N or choose another key for the help or repeat key.

Access to Messaging (continued)

Datafilling table SDSINFO tuple SDSRNA

The following table shows the datafill required in table SDSINFO tuple SDSRNA for Access to Messaging.

Datafilling table SDSINFO tuple SDSRNA

Field	Subfield	Entry	Explanation and action
RNAMODE		MSG or NONE	*Ringing/no-answer selector.* This field specifies whether Access to Messaging service will be offered on the ringing/no-answer condition. Enter MSG to offer Access to Messaging service on the ringing/no-answer condition. Enter NONE to offer no service on the ringing/no-answer condition. ***Note:*** If MSG is selected, refer to "Datafill for table SDSINFO tuple SDSRNA selector MSG". If NONE is entered in this field, no further datafill is required.

Datafill example for table SDSINFO tuple SDSRNA selector NONE

The following example shows sample datafill for table SDSINFO tuple SDSRNA selector NONE.

MAP display example for table SDSINFO tuple SDSRNA selector NONE

```
SDSKEY      SERVICE
------------------------------------------------------------------------
SDSRNA      SDSRNA NONE
```

Datafilling table SDSINFO tuple SDSRNA selector MSG

The following table shows the datafill required in table SDSINFO tuple SDSRNA selector MSG for Access to Messaging.

Datafilling table SDSINFO tuple SDSRNA selector MSG (Sheet 1 of 2)

Field	Subfield	Entry	Explanation and action
	MSGACKEY	1 to 9	Acceptance key for messaging. Enter the key that subscribers should press to accept Access to Messaging service on the ringing/no-answer condition.
	RNATIMER	0 to 127	*Ringing/no-answer timer.* Enter the value in seconds for the timer to run before the announcement offering Access to Messaging service is played on ringing/no-answer calls. ***Note 1:*** For Access to Messaging service to be offered, the value in field RNATIMER must be less than the value for office parameter RNG_TMEOUT_NO_OF_SECS datafilled in table OFCENG. If the value of RNATIMER is greater than the value in office parameter RNG_TMEOUT_NO_OF_SECS, the switch will time out before Access to Messaging service can be offered. It is not recommended to make the values in the two fields identical, as having identical values in both fields will cause a racing condition between the two features. ***Note 2:*** If field RNATIMER is set to 0, Access to Messaging service will never be activated on the ringing condition.
	MSGANNC	see refinements	*Announcement for messaging offer.* Enter the CLLI code that identifies the ringing/no-answer offer of service announcement for Access to Messaging in table CLLI.
	STND	CLLI	This refinement specifies the CLLI for standard announcements. Datafill CLLI in table ANNMEMS.
	CUSTOM	ANNCLLI	This refinement specifies the CLLI for custom announcements. Datafill CLLI in table DRMUSERS.

Access to Messaging (continued)

Datafilling table SDSINFO tuple SDSRNA selector MSG (Sheet 2 of 2)

Field	Subfield	Entry	Explanation and action
		ANNID	This refinement specifies which custom announcement to play corresponding to CLLI.
	INTERRNA	A DN with 7, 10 or more (up to 30) digits	Message routing DN for inter-LATA calls. Enter the message routing DN for inter-LATA ringing/no-answer calls.
	INTRARNA	A DN with 7, 10 or more (up to 30) digits	Message routing DN for intra-LATA calls. Enter the message routing DN for inter-LATA ringing/no-answer calls.

Datafill example for table SDSINFO tuple SDSRNA selector MSG

The following example shows sample datafill for table SDSINFO tuple SDSRNA selector MSG.

MAP display example for table SDSINFO tuple SDSRNA selector MSG

```
SDSKEY      SERVICE
------------------------------------------------------------------
SDSRNA      SDSRNA MSG 1 30 STND ANN_RNA 7211234 16137231235
```

Error messages for table SDSINFO tuple SDSRNA

The following error messages may appear when datafilling table SDSINFO tuple SDSRNA.

Error messages for table SDSINFO tuple SDSRNA (Sheet 1 of 2)

Error message	Explanation and action
`Vector of 7 or more than 9 digits {0 TO 9} up to 30 digits.`	This message appears when one or more non-numeric characters is entered in one of the following fields: INTERBSY, INTERRNA, INTRABSY, or INTRARNA. Re-enter the field with a 7- or 10- to 30-digit DN.
`Field INTERRNA: Must be 7 or more than 9 digits (up to 30 digits).`	The SDS messaging routing DN for inter-LATA ringing/no-answer calls must be either 7 digits or more than 9 digits (up to a maximum of 30 digits). Re-enter the field with a 7- or 10- to 30-digit DN.

Error messages for table SDSINFO tuple SDSRNA (Sheet 2 of 2)

Error message	Explanation and action
`Field INTRARNA: Must be 7 or more than 9 digits (up to 30 digits).`	The SDS messaging routing DN for intra-LATA ringing/no-answer calls must be either 7 digits or more than 9 digits (up to a maximum of 30 digits). Re-enter the field with a 7- or 10- to 30-digit DN.
Fields MSGACKEY and RPTKEY must have different values.	Use different values for fields MSGACKEY (tuple SDSRNA) and RPTKEY.
Fields MSGACKEY and HELP_KEY must have different values.	Use different values for fields MSGACKEY (tuple SDSRNA) and HELP_KEY.

Datafilling table SDSINFO tuple SDSBSY

The following table shows the datafill required in table SDSINFO tuple SDSBSY for Access to Messaging.

Datafilling table SDSINFO tuple SDSBSY

Field	Subfield	Entry	Explanation and action
BSYMODE		MSG, ACB, ACBMSG, or NONE	*Busy mode selector.* This field specifies the service or services that will be offered on the busy condition. Enter MSG if only Access to Messaging service is to be offered. If you enter MSG, see "Datafilling table SDSINFO tuple SDSBSY selector MSG." Enter ACBMSG if the caller is to be offered a choice of either Access to Messaging service or EBCR service. If you enter ACBMSG, see "Datafilling table SDSINFO tuple SDSBSY selector ACBMSG." ***Note:*** ACBMSG is a valid entry only if EBCR will also be active in the end office. Entering NONE prevents the offering of any service on the busy condition. If you enter NONE, no further datafill is required for tuple SDSBSY. Entry ACB is not used by Access to Messaging.

Access to Messaging (continued)

Datafilling table SDSINFO tuple SDSBSY selector MSG

The following table shows the datafill required in table SDSINFO tuple SDSBSY selector MSG for Access to Messaging.

Datafilling table SDSINFO tuple SDSBSY selector MSG (BSYMODE = MSG)

Field	Subfield	Entry	Explanation and action
	MSGACKEY	1 to 9	*Acceptance key for messaging.* Enter the key that subscribers should press to accept Access to Messaging service on the busy condition.
	MSGANNC	see refinements	*Announcement for messaging offer.* Enter the CLLI code that identifies the busy condition offer of service announcement for Access to Messaging in table CLLI.
	STND	CLLI	This refinement specifies the CLLI for standard announcements. Datafill CLLI in table ANNMEMS.
	CUSTOM	ANNCLLI	This refinement specifies the CLLI for custom announcements. Datafill CLLI in table DRMUSERS.
		ANNID	Specifies which custom announcement to play corresponding to CLLI.
	INTERBSY	A DN with 7, 10, or more (up to 30) digits	*Message routing DN for inter-LATA calls.* Enter the message routing DN for inter-LATA busy calls.
	INTRABSY	A DN with 7, 10, or more (up to 30) digits	*Message routing DN for intra-LATA calls.* Enter the message routing DN for intra-LATA busy calls.

Datafill example for table SDSINFO tuple SDSBSY selector MSG

The following example shows sample datafill for table SDSINFO tuple SDSBSY selector MSG.

Access to Messaging (continued)

MAP display example for table SDSINFO tuple SDSBSY selector MSG

```
SDSKEY    SERVICE
------------------------------------------------------------------
SDSBSY    SDSBSY MSG 1 STND ANNMSGBSY 6271234 18196261234
```

Datafilling table SDSINFO tuple SDSBSY selector ACBMSG

The following table shows the datafill required for table SDSINFO tuple SDSBSY selector ACBMSG for Access to Messaging.

Datafilling table SDSINFO tuple SDSBSY selector ACBMSG (BSYMODE = ACBMSG) (Sheet 1 of 3)

Field	Subfield	Entry	Explanation and action
	MSGACKEY	1 to 9	*Acceptance key for messaging.* Enter the key that subscribers should press to accept Access to Messaging service on the busy condition. ***Note:*** The entry in this field must not be the same as the entry in field ACBKEY.
	MSGANNC	see refinements	*Announcement for messaging offer.* Enter the CLLI code that identifies the busy condition offer of service announcement for Access to Messaging in table CLLI. ***Note:*** This field is included in selector ACBMSG to cover the case where EBCR service fails to pass screening. Should EBCR service fail screening, only Access to Messaging service will be offered.
	STND	CLLI	This refinement specifies the CLLI for standard announcements. Datafill CLLI in table DRMUSERS.
		ANNID	Specifies which custom announcement to play corresponding to CLLI.
	INTERBSY	A DN with 7, 10 or more (up to 30) digits	*Message routing DN for inter-LATA calls.* Enter the message routing DN for inter-LATA busy calls.

Access to Messaging (continued)

Datafilling table SDSINFO tuple SDSBSY selector ACBMSG (BSYMODE = ACBMSG) (Sheet 2 of 3)

Field	Subfield	Entry	Explanation and action
	INTRABSY	A DN with 7, 10 or more (up to 30) digits	*Message routing DN for intra-LATA calls.* Enter the message routing DN for intra-LATA busy calls.
	ACBKEY	1 to 9 or NIL	*Acceptance key for ACB.* This field is used for EBCR, RES00076. Field ACBKEY specifies the key that subscribers should press to accept EBCR service. ***Note 1:*** The entry in this field must not be the same as the entries in fields MSGACKEY tuple SDSBSY selector ACBMSG, field HELP_KEY tuple SDSOFC, or field RPTKEY tuple SDSOFC. ***Note 2:*** Field ACBKEY cannot take the NIL value unless field ACCEPT66 is set to Y.
	ACCEPT66	Y or N	**66 acceptance sequence.* This field is used for EBCR, RES00076. Field ACCEPT66 specifies whether *66 will be allowed as an acceptance sequence for EBCR service. ***Note:*** Field ACCEPT66 cannot be set to Y if the * (star) is a valid help key (field HELP_KEY tuple SDSOFC) or repeat key (field RPTKEY tuple SDSOFC).
	ACBINTER	Y or N	*ACB offer on inter-LATA calls.* This field is used for EBCR, RES00076. Field ACBINTER specifies whether EBCR service will be allowed on inter-LATA calls.

Access to Messaging (continued)

Datafilling table SDSINFO tuple SDSBSY selector ACBMSG (BSYMODE = ACBMSG) (Sheet 3 of 3)

Field	Subfield	Entry	Explanation and action
	ACBANNC	see refinements	*Announcement for ACB offer.* This field is used for EBCR, RES00076. Field ACBANNC identifies the announcement that offers EBCR service using the announcement's CLLI code from table CLLI. ***Note:*** This field is included in selector ACBMSG to cover the case where Access to Messaging service fails to pass screening. Should Access to Messaging service fail screening, only EBCR service will be offered.
	STND	CLLI	This refinement specifies the CLLI for standard announcements. Datafill CLLI in table ANNMEMS.
	CUSTOM	ANNCLLI	This refinement specifies the CLLI for custom announcements. Datafill CLLI in table DRMUSERS.
		ANNID	This refinement specifies which custom announcement to play corresponding to CLLI.
	ACBMSGAN	see refinements	*Announcement for ACB and messaging offer* Enter the CLLI code that identifies the announcement that offers a choice of either EBCR service or Access to Messaging service on the busy condition.
	STND	CLLI	This refinement specifies the CLLI for standard announcements. Datafill CLLI in table ANNMEMS.
	CUSTOM	ANNCLLI	This refinement specifies the CLLI for custom announcements. Datafill CLLI in table DRMUSERS.
		ANNID	This refinement specifies which custom announcement to play corresponding to CLLI.

Datafill example for table SDSINFO tuple SDSBSY selector ACBMSG

The following example shows sample datafill for table SDSINFO tuple SDSBSY selector ACBMSG.

Access to Messaging (continued)

MAP display example for table SDSINFO tuple SDSBSY selector ACBMSG

```
SDSKEY    SERVICE
------------------------------------------------------------------
SDSBSY    SDSBSY ACBMSG 1 STND ANNMSGBSY 6271234 18196261234 2 N N
STND ANN_ACB ANN_ACBMSG
```

Error messages for table SDSINFO tuple SDSBSY

The following error messages may appear when datafilling table SDSINFO tuple SDSBSY.

Error messages for table SDSINFO tuple SDSBSY (Sheet 1 of 2)

Error message	Explanation and action
`Field INTERBSY: Must be 7 or more than 9 digits (up to 30 digits.`	The SDS messaging routing DN for inter-LATA busy calls must be either 7 digits or more than 9 digits (up to a maximum of 30 digits). Re-enter the field with a 7- or 10- to 30-digit DN.
`Field INTRABSY: Must be 7 or more than 9 digits (up to 30 digits).`	The SDS messaging routing DN for intra-LATA busy calls must be either 7 digits or more than 9 digits (up to a maximum of 30 digits). Re-enter the field with a 7- or 10- to 30-digit DN.
`Vector of 7 or more than 9 digits {0 TO 9} up to 30 digits.`	This message appears when one or more non-numeric characters is entered in one of the following fields: INTERBSY, INTERRNA, INTRABSY, or INTRARNA. Re-enter the field with a 7- or 10- to 30-digit DN.
Fields MSGACKEY and RPTKEY must have different values.	Use different values for fields MSGACKEY (tuple SDSBSY) and RPTKEY.
Fields MSGACKEY and HELP_KEY must have different values.	Use different values for fields MSGACKEY (tuple SDSBSY) and HELP_KEY.
Fields MSGACKEY and ACBKEY must have different values in the SDSBSY tuple.	You have datafilled field BSYMODE as ACBMSG (offering the caller a choice of Access to Messaging service or EBCR service) and you have used the same key for the Access to Messaging acceptance key on the busy condition and for the acceptance key for EBCR service. Re-enter either field MSGACKEY or field ACBKEY with a different value.

Access to Messaging (continued)

Error messages for table SDSINFO tuple SDSBSY (Sheet 2 of 2)

Error message	Explanation and action
Fields ACBKEY and RPTKEY must have different values.	This error message applies to EBCR only. You have used the same key for the repeat key and the acceptance key for EBCR service. Re-enter either field ACBKEY or field RPTKEY with a different value.
Fields ACBKEY and HELP_KEY must have different values.	This error message applies to EBCR only. You have used the same key for the help key and the acceptance key for EBCR service. Re-enter either field ACBKEY or field HELP_KEY with a different value.
Field ACBKEY cannot take the NIL value unless the ACCEPT66 is set to Y.	This error message applies to EBCR only. You must provide a key or a key sequence for accepting EBCR service. Either re-enter field ACBKEY with a non-nil value or re-enter field ACCEPT66 with N.
Field ACCEPT66 cannot be set if the STAR is a valid help or repeat key.	This error message applies to EBCR only. Field ACCEPT66 cannot be set to Y if STAR is a valid help or repeat key since field ACCEPT66 set to Y uses the STAR key as part of *66 a valid acceptance sequence for EBCR service. Either re-enter field ACCEPT66 with value N or change the datafill for the help or repeat keys (fields HELP_KEY and RPTKEY) to a value other than STAR.
Field value must be {1-9} digit or NIL.	This error message applies to EBCR only. Field ACBKEY must be datafilled with one digit in the range from 1 to 9 or with value NIL. Re-enter this field with a valid entry.

Access to Messaging (continued)

Datafilling table CUSTSTN

The following table shows the datafill required in table CUSTSTN to provide or deny Access to Messaging on a customer group basis.

Datafilling table CUSTSTN

Field	Subfield	Entry	Explanation and action
CUSTNAME		alphanumeric (1 to 16 characters)	*Customer group name.* Enter the customer group name.
OPTNAME		AMSG, AMSGDENY, or ASP	*Option name.* This field is part of the key of table CUSTSTN. Enter either AMSG or AMSGDENY. The AMSG customer group option assigns Access to Messaging service to a customer group. The AMSGDENY customer group option denies Access to Messaging service to a customer group. The ASP with AMSG customer group option assign Access to Messaging service to a customer group. ***Note 1:*** The AMSGDENY customer group option cannot be assigned to a customer group that already has customer group option AMSG assigned to it. Similarly, the AMSG customer group option cannot be assigned to a customer group that already has customer group option AMSGDENY assigned to it. ***Note 2:*** Although other entries besides AMSG, AMSGDENY, and ASP are valid for this field, for clarity, only entries AMSG and AMSGDENY are shown in the Entry column.
OPTION		AMSG, AMSGDENY, or ASP	*Option.* Enter the same value as entered in field OPTNAME. ***Note:*** Although other entries besides AMSG and AMSGDENY are valid for this field, for clarity, only entries AMSG and AMSGDENY are shown in the Entry column.

Access to Messaging (continued)

Datafill example for table CUSTSTN

The following example shows sample datafill for table CUSTSTN.

MAP display example for table CUSTSTN

```
CUSTNAME                 OPTNAME                 OPTION
-----------------------------------------------------------------------
COMKODAK                 AMSGDENY                AMSGDENY
```

Error messages for table CUSTSTN

The following error messages apply to customer group options AMSG and AMSGDENY in table CUSTSTN.

Error messages for table CUSTSTN

Error message	Explanation and action
`Cannot add AMSGDENY option: AMSG is assigned to the customer group.`	An attempt has been made to add option AMSGDENY to a customer group that already has option AMSG. Delete option AMSG from that customer group before assigning option AMSGDENY to it.
`Cannot add AMSG option: AMSGDENY is assigned to the customer group.`	An attempt has been made to add option AMSG to a customer group that already has option AMSGDENY. Delete option AMSGDENY from the customer group before assigning option AMSG to it.
Note: Deleting option AMSG from a customer group only removes the service specified in fields BSYMODE and RNAMODE from the customer group when field AMSGSUBS in table SDSINFO is set to SUBSCR. When field AMSGSUBS in table SDSINFO is set to UNIVER, AMSGDENY must be assigned to the customer group to remove its service.	

Access to Messaging (continued)

Datafilling table SDSCUST

The following table shows the datafill required in table SDSCUST to provide unique SDS messaging routing DNs for a customer group.

Datafilling table SDSCUST

Field	Subfield	Entry	Explanation and action
CUSTNAME		alphanumeric (1 to 16 characters)	*Customer name.* Enter the customer group name as defined in table CUSTENG.
INTERBSY		A DN with 7, 10 or more (up to 30) digits	*Message routing DN for inter-LATA busy calls for a customer group.* Enter the message routing DN for inter-LATA busy calls that you wish to be used for the customer group specified in field CUSTNAME.
INTERRNA		A DN with 7, 10 or more (up to 30) digits	*Message routing DN for inter-LATA ringing/no-answer calls for a customer group.* Enter the message routing DN for inter-LATA ringing/no-answer calls that you wish to be used for the customer group specified in field CUSTNAME.
INTRABSY		A DN with 7, 10 or more (up to 30) digits	*Message routing DN for intra-LATA busy calls for a customer group.* Enter the message routing DN for intra-LATA busy calls that you wish to be used for the customer group specified in field CUSTNAME.
INTRARNA		A DN with 7, 10 or more (up to 30) digits	*Message routing DN for intra-LATA ringing/no-answer calls for a customer group.* Enter the message routing DN for intra-LATA ringing/no-answer calls that you wish to be used for the customer group specified in field CUSTNAME.

Datafill example for table SDSCUST

The following example shows sample datafill for table SDSCUST.

Access to Messaging (continued)

MAP display example for table SDSCUST

```
CUSTNAME    INTERBSY    INTERRNA    INTRABSY    INTRARNA
-------------------------------------------------------------------
COMKODAK     15143451001 3451002    3451003      16133451004
```

Error messages for table SDSCUST

The following error messages apply to table SDSCUST.

Error messages for table SDSCUST

Error message	Explanation and action
`Field INTERBSY must be a DN of either 7, 10, or up to 30 digits.`	Re-enter field with a DN of 7, 10 or more (up to 30) digits.
`Field INTERRNA must be a DN of either 7, 10, or up to 30 digits.`	Re-enter field with a DN of 7, 10 or more (up to 30) digits.
`Field INTRABSY must be a DN of either 7, 10, or up to 30 digits.`	Re-enter field with a DN of 7, 10 or more (up to 30) digits.
`Field INTRARNA must be a DN of either 7, 10, or up to 30 digits.`	Re-enter field with a DN of 7, 10 or more (up to 30) digits.
`Vector of 10 digits (0 TO 9)`	This message appears when one or more non-numeric characters is entered in one of the following fields: INTERBSY, INTERRNA, INTRABSY, or INTRARNA. Re-enter field with a DN of 7, 10 or more (up to 30) digits.

Access to Messaging (continued)

Datafilling table IBNXLA

The following table shows the datafill required in table IBNXLA to map access codes to sustained deactivation (feature MSGCTRL) and per-call denial (feature CISA) functionality for Access to Messaging.

Datafilling table IBNXLA (Sheet 1 of 2)

Field	Subfield	Entry	Explanation and action
KEY		see subfields	*Key* This field consists of subfields XLANAME and DGLIDX.
	XLANAME	1 through 8 alphanumeric characters	*Translator name* Enter the feature translator name assigned to the customer group.
	DGLIDX	vector of up to 18 digits	*Digilator index* Enter the digit or digits assigned as an ambiguous code. The range of this field depends on field MAXDIG in table XLANAME. The DGLIDX can accept overdecadic digits. The allowable values for the digilator portion of DGLIDX in table IBNXLA are as follows: 9 digits 0 through 9C digits 0 through 9 and B and CF digits 0 through 9 and B through F The allowable digit range for table IBNXLA digilator values is determined for each translator.
RESULT		see subfields	*Result* This field consists of subfields TRSEL, ACR, SMDR, and FEATURE.
	TRSEL	FEAT	*Translator selector* Enter the translation selector 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.

Access to Messaging (continued)

Datafilling table IBNXLA (Sheet 2 of 2)

Field	Subfield	Entry	Explanation and action
	SMDR	Y or N	*Station message detail recording* Enter Y if all calls from a customer group station or attendant console to any station in the block of station numbers are recorded. Enter N if recording is not required.
	FEATURE	CISA, MSGCTRL	*Feature* Enter CISA to allow the end user to deactivate the offer of service provided by Access to Messaging for the duration of a call using an access code. After the call has completed, the offer of service is restored to the end user's line. Enter MSGCTRL to allow the end user to either deactivate or reactivate the offer of Access to Messaging using an access code. If the offer of service is active, use of the MSGCTRL feature deactivates the offer of service; that is, Access to Messaging is no longer offered to the end user. If the offer of service is not active, use of the MSGCTRL feature reactivates the offer of service; that is, Access to Messaging is once again offered. ***Note:*** Although other entries besides CISA and MSGCTRL are valid for this field, for clarity, only entries CISA and MSGCTRL are shown in the Entry column.

Datafill example for table IBNXLA

The following example shows sample datafill for table IBNXLA.

MAP display example for table IBNXLA

```
            KEY                                                RESULT
-----------------------------------------------------------------------
CUSTFEAT     02                              FEAT N N N MSGCTRL
CUSTFEAT     03                              FEAT N N N CISA
```

Access to Messaging (continued)

Datafilling table SPINFO

Table SPINFO contains information on each service provider. The AMSG service uses table SPINFO to support alternate messaging service providers for the ASP option.

Field descriptions for AMSG in table SPINFO (Sheet 1 of 2)

Field	Subfield	Entry	Explanation and action
SPINFKEY		see subfields	Service provider key. This field consists of subfields PROVNAME and SERVNAME.
	PROVNAME	1-16 alphanumeric characters, PRIMARY, or NIL_PROV	Provider name. This field specifies the name of the service provider. A maximum of 255 service providers is allowed. PRIMARY represents the usual provider for the office.
	SERVNAME	AMSG	Service name. This field specifies the name of the service offered by the service provider. The AMSG service supports alternate messaging service providers.
DATA		see subfields	Data. This field consists of subfields SERVSEL, ENABLED, CARRIER, and BILLINGDN.
	SERVSEL	1-8 alphanumeric characters	Service selector. This field specifies the name of the service. Datafill fields BILLING, INTERLAT, SDSRNA, and SDSBUSY.
	ENABLED	Y or N	Enabled. This field indicates whether the service is enabled for the service provider specified in field PROVNAME.
	CARRIER	1-16 alphanumeric characters, or NILC	Carrier. This field specifies the service provider's preferred carrier for toll calls.
	BILLNGDN	10-digit directory number, or NILDN	Billing directory number. This field specifies the directory number to charge the call.
	INTERLAT	Y or N	Inter Local Access and Transport Area. This field allows service on InterLATA calls.

Access to Messaging (continued)

Field descriptions for AMSG in table SPINFO (Sheet 2 of 2)

Field	Subfield	Entry	Explanation and action
	SDSRNA	Y or N	Special Delivery Service (SDS) ring/no-answer. This field indicates if the service provider has access to messaging for ring/no answer.
	SDSBUSY	Y or N	Special Delivery Service (SDS) busy. This field indicates if the service provider has access to messaging for busy condition.

Datafill for table SPINFO-SDSRNA enabled

Datafill subfields if subfield SDSRNA entry is “Y”.

Field descriptions for SDSRNA enabled in table SPINFO (Sheet 1 of 2)

Field	Subfield	Entry	Explanation and action
	MSGACKEY	1-9	Message acceptance key. This field specifies the key that end users press to accept access to messaging service on the ring/no answer condition. ***Note:*** If an end user selects a value of “1", a warning message indicates that this value accepts service offering when using a hookswitch to hang up a call.
	RNATIMER	0-127	Ring/no answer timer. This subfield specifies the number of seconds before ringing/no answer calls receive the announcement, offering access to messaging service.
	MSGANNC	see refinements	Message announcement. This subfield identifies the announcement that offers access to messaging service using the announcement's CLLI code from table CLLI.
	STDN	CLLI	This refinement specifies the CLLI for custom announcements. Datafill CLLI in table ANNMEMS.
	CUSTOM	ANNCLLI	This refinement specifies the CLLI for custom announcements. Datafill CLLI in table DRMUSERS.

Access to Messaging (continued)

Field descriptions for SDSRNA enabled in table SPINFO (Sheet 2 of 2)

Field	Subfield	Entry	Explanation and action
		ANNID	This refinement specifies which custom announcement to play corresponding to CLLI.
	INTERRNA	A DN with 7, 10 or up to 30 digits	InterLATA ring/no answer. This subfield specifies the SDS messaging routing DN for interLATA ring/no answer calls.
	INTRARNA	A DN with 7, 10 or up to 30 digits	IntraLATA ring/no answer. This subfield specifies the SDS messaging routing DN for intraLATA ringing/no answer calls.

Datafill for table SPINFO-SDSBSY enabled

Datafill subfields if subfield SDSBSY is "Y".

Field descriptions for SDSBSY enabled in table SPINFO (Sheet 1 of 2)

Field	Subfield	Entry	Explanation and action
	MSGACKEY	1-9	Message announcement key. This field specifies the key that end users press to accept access to messaging service on the ring/no answer condition. ***Note:*** This field only appears when the value in either RNALOCAL or RNATOLL is other than NILMENU.
	MSGANNC	see subfields	Message announcement. This subfield identifies the announcement that offers access to messaging service using the announcement's CLLI code from table CLLI.
	STND	CLLI	Standard. This subfield specifies the CLLI for standard announcements. Datafill CLLI in table ANNMEMS.
	CUSTOM	ANNCLLI	Custom. This subfield specifies the CLLI for custom announcements. Datafill CLLI in table DRMUSERS.
		ANNID	This subfield specifies which custom announcement to play corresponding to CLLI.
	INTERBUSY	A DN with 7, 10, or up to 30 digits	InterLATA busy. This subfield specifies the SDS messaging routing DN for interLATA busy calls.

Field descriptions for SDSBSY enabled in table SPINFO (Sheet 2 of 2)

Field	Subfield	Entry	Explanation and action
	INTRABUSY	A DN with 7, 10, or up to 30 digits	IntraLATA busy. This subfield specifies the SDS messaging routing DN for intraLATA busy calls.
	ACBMSGAN	STND, CUSTOM, or NIL	Automatic Call Back message announcement. This subfield identifies the announcement that offers a choice of access to messaging service or access to ACB service using the announcement's CLLI code from table CLLI.

Datafill example for table SPINFO

The following example shows sample datafill for table SPINFO.

MAP display example for table Access to Messaging

```
SPINFKEY      DATA
_____________________________________________________________
JOE AMSG      AMSG  Y  ACARRIER  5197774321  Y  N  Y
4 STDN JOEBSYANNC 5197771234 STDN JOEACBMSGAN
```

Translation verification tools

Access to Messaging does not use translation verification tools.

SERVORD

The AMSG, AMSGDENY, ASP with AMSG, and MSGDEACT line options can be added to or removed from a line using the Service Order System (SERVORD).

The AMSG and AMSGDENY line options can be added to lines with the following LCCs: 1FR, 1MR, RES, IBN, PSET, M5XXX, PBX, PBM, and ISDNKSET.

The MSGDEACT and ASP with AMSG line options can be added to lines with the following LCCs: RES, IBN, PSET, M5XXX, and ISDNKSET.

SERVORD limitations and restrictions

The AMSGDENY line option cannot be assigned to a line that already has the AMSG line option assigned to it. Similarly, the AMSG line option cannot be assigned to a line that already has the AMSGDENY line option assigned to it.

Access to Messaging (continued)

SERVORD prompts

The following table shows the SERVORD prompts used to assign line options AMSG, AMSGDENY, and MSGDEACT to lines.

SERVORD prompts for Access to Messaging

Prompt	Valid input	Explanation
OPTION	AMSG	Enter AMSG to assign Access to Messaging to a line. ***Note:*** The AMSG option assigns the service(s) specified in fields BSYMODE and RNAMODE in table SDSINFO to a line.
	AMSGDENY	Enter AMSGDENY to prevent Access to Messaging from being offered to a line. ***Note:*** The AMSGDENY option prevents the service(s) specified in fields BSYMODE and RNAMODE in table SDSINFO from being offered to a line.
	MSGDEACT	Enter MSGDEACT to prevent Access to Messaging from being offered to a line. Typically, this line option is added and removed by the end user. ***Note:*** The MSGDEACT option prevents the service(s) specified in fields BSYMODE and RNAMODE in table SDSINFO from being offered to a line.

SERVORD example for adding the AMSGDENY option to a line

The following SERVORD example shows how the AMSGDENY option is added to a line using the ADO (add option) command. To assign option AMSG or MSGDEACT to a line, follow the same procedure, but replace AMSGDENY with AMSG or MSGDEACT.

SERVORD example for Access to Messaging in prompt mode

```
> ADO
SONUMBER:                NOW 98 04 10 PM
> $
DN_OR_LEN:
> 6211088
OPTION:
> AMSGDENY     (or AMSG, or MSGDEACT)
OPTION:
> $
```

SERVORD example for Access to Messaging in no-prompt mode

```
> ADO $ 6211088 AMSGDENY $
```

SERVORD example for adding the AMSGDENY option to a line

The following SERVORD example shows how the ASP option with AMSG service is added to a line using the ADO command.

SERVORD example for ASP with AMSG in prompt mode

```
> ADO
SONUMBER:                NOW 98 04 10 PM
> $
DN_OR_LEN:
> 5551212
OPTION:
> ASP
PROVNAME:
> JOE
SERVICE:
> AMSG
PROVNAME:
> $
OPTION:
> $
```

Access to Messaging (end)

SERVORD example for ASP with AMSG in no-prompt mode

```
> ADO $ 5551212 ASP JOE AMSG $ $
```

Adding Options on a Secondary Number (ESDN)

Ordering codes

Functional group ordering code: RES00002

Functionality ordering code: not applicable

Release applicability

BCS33 and up

Prerequisites

To operate, Adding Options on a Secondary Number (ESDN) has the following prerequisites:

- BAS Generic, BAS00003
- MDC Standard, MDC00003
- MDC Minimum, MDC00001
- RES Service Enablers, RES00006

Description

Adding Options on a Secondary Number (ESDN) provides the following capabilities for secondary directory numbers (SDN):

- Add a separate set of options to each SDN associated with a primary directory number (PDN).
- Allow users to originate calls from an SDN. Tolls for SDN calls can then be separated from PDN calls for billing purposes.
- Allow up to six SDNs for each PDN, rather than the three SDNs previously allowed. The six SDNs can be a combination of enhanced and unenhanced SDNs.

Operation

The options that can be assigned to an SDN are as follows:

- AINDN (Advanced Intelligent Network DN)
- CFW (Call Forwarding)
- INTPIC (International PIC)
- IRR (Inhibit Ring Reminder)
- LPIC (LATA PIC)
- PIC (Primary InterLATA Carrier)

Adding Options on a Secondary Number (ESDN) (continued)

- PORT (LNP Trigger) —10 digit, unconditional
- SCMP (Series Completion)

AINDN allows assignment of trigger behavior by DN.

CFW allows SDN users to forward their calls to a number they choose or to a fixed destination, depending on the type of forwarding assigned to their SDN.

INTPIC allows users to choose their international carrier.

IRR allows the users to turn off the ring reminder (a half-second ring) on a line where call forwarding is invoked.

LPIC allows users to choose their local access and transport area (LATA) carrier.

PIC allows users to choose their primary interLATA carrier.

PORT allows users to trigger local number portablility.

SCMP allows calls to a busy SDN to be forwarded. The forwarded-to DN is datafilled with option SCMP

ESDN is based on feature NC0019, Teen Service. Refer to “Teen Service (SDN)."

A caller can terminate on a line with Teen Service by dialing either the SDN or the PDN. Distinctive ringing is applied to the line, depending on which DN was dialed. The options assigned to the PDN are available on the SDN as well. Through option SDN, assigned with a service order, calls to the SDN can be forwarded the same as the PDN (option P) or calls to the SDN can never be forwarded (option N). The SDN user, however, cannot activate or deactivate call forwarding.

ESDN is implemented with a third SDN option, E. An SDN with this option is called an enhanced SDN, or ESDN. Calls to an ESDN are forwarded only if the line from which the call was made was assigned option CFW and the ESDN user has activated the option.

Normal ringing and three distinctive ringing patterns can be assigned to the six ESDNs. The distinctive ringing patterns are summarized in the following

table. The ringing patterns are used for each DN associated with a Teen Service on MDC line and are applied in a normal 6-s ringing cycle.

Distinctive ringing patterns for ESDNs

Ringing code	Pattern
0	Normal ringing (approximately 2 s on, 4 s off)
1	2 long rings
2	2 short rings, 1 long ring
3	1 short ring, 1 long ring, 1 short ring

Translations table flow

The ESDN translation process is shown in the flowchart that follows. Specifically, the flowchart shows the tables that are accessed for originating a call from an enhanced SDN. A subscriber activates the feature by going off-hook, dialing an access code, and dialing an SDN.

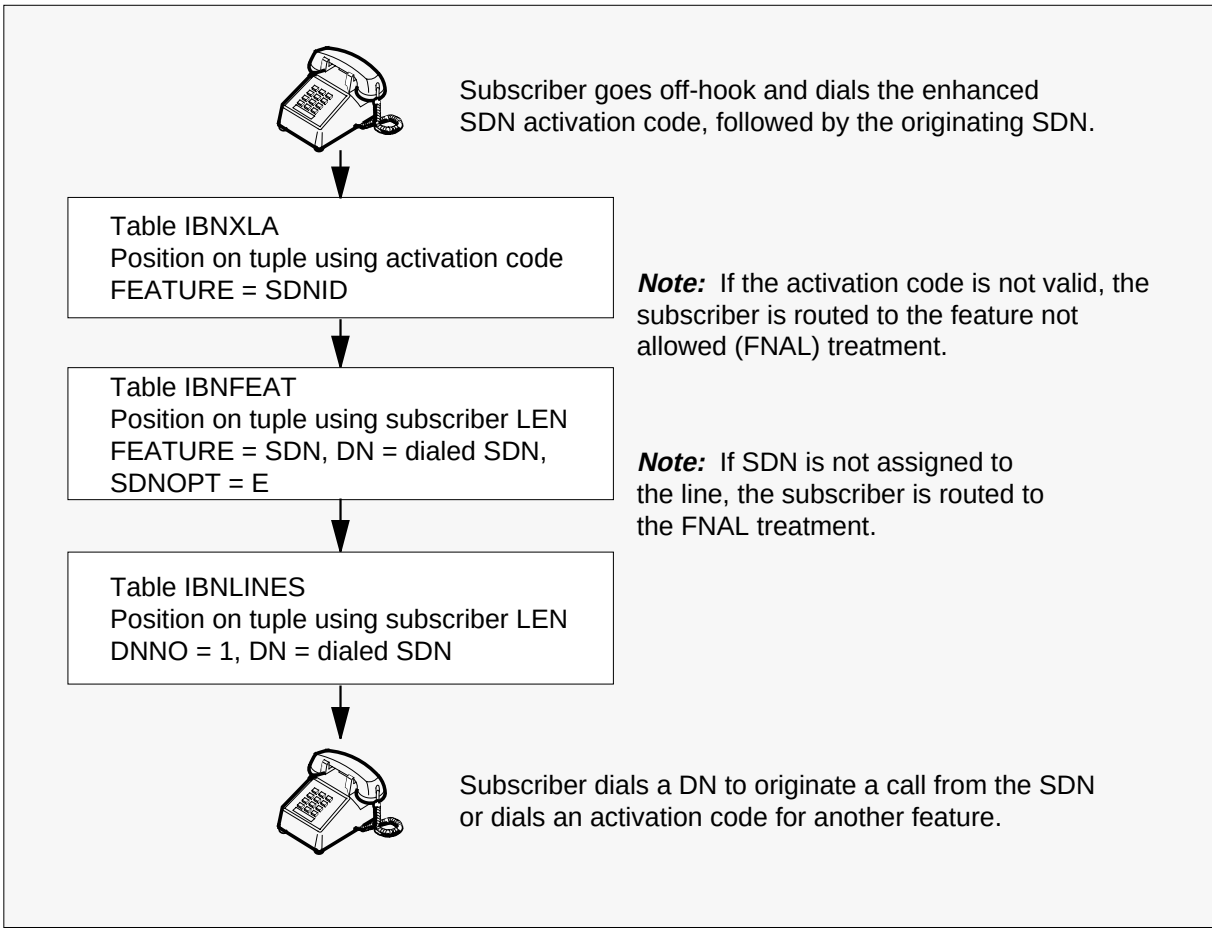
The Adding Options on a Secondary Number (ESDN) translations tables are described in the following list:

- Table IBNXLA provides the name of the feature associated with the access code dialed by the subscriber. The subscriber line equipment number (LEN) is used to access Table IBNFEAT.
- Table IBNFEAT indicates whether an SDN with suboption E is assigned to the subscriber LEN. Table IBNFEAT also provides the SDN itself.
- Table IBNLINES associates a LEN and DN number (DNNO) with the SDN.

The Adding Options on a Secondary Number (ESDN) translation process is shown in the flowchart that follows.

Adding Options on a Secondary Number (ESDN) (continued)

Table flow for Adding Options on a Secondary Number (ESDN)



The following list and table show the datafill content used in the flowchart.

- Subscriber LEN = HOST 00 0 09 20
- SDN access code = 79
- SDN = 6210001

Datafill example for Adding Options on a Secondary Number (ESDN)

Datafill table	Example data
IBNXLA	RXCFN 79 FEAT N N N SDNID
IBNFEAT	HOST 00 0 09 20 0 SDN SDN 6210001 1 E $ 0 N $ 0 N $ 0 N $ 0 N $ 0 N
IBNLINES	HOST 00 0 09 20 1 DT STN RES 6210001 0 $

Adding Options on a Secondary Number (ESDN) (continued)

Limitations and restrictions

The following limitations and restrictions apply to Adding Options on a Secondary Number (ESDN):

- Only the following options are supported on ESDNs: AINDN, CFW, INTPIC, IRR, LPIC, PIC, PORT, and SCMP.
- Option ESDN cannot be assigned to two lines for which the last four digits are identical. The switch uses the last four digits of an ESDN for origination and billing purposes. See “Billing" for information on billing PDNs and ESDNs separately.
- In Table IBNFEAT, tuples for ESDNs with options cannot be deleted until the features are deleted from each ESDN.
- In Table IBNLINES, tuples for PDNs with assigned ESDNs cannot be deleted because ESDNs have separate tuples in the table.
- In Table IBNLINES, tuples for ESDNs cannot be modified, because the data in these tuples must match the data in the corresponding PDN tuple. However, the PDN tuple can be modified, causing the matching data in ESDN tuples to be updated as well.

Interactions

The following paragraphs describe the interactions between Adding Options on a Secondary Number (ESDN) and other functionalities.

Call Forwarding

Two types of call forwarding can be assigned to enhanced SDNs: Call Forwarding Universal (CFU) and Call Forwarding Fixed (CFF). If these options are assigned to an enhanced SDN, calls to that SDN are forwarded, but calls to other DNs on the same line are unaffected.

Note: The service order system (SERVORD) prompt for CFU is CFW C; the SERVORD prompt for CFF is CFW F.

Unenhanced SDNs have limited forwarding capabilities. If the PDN has call fowarding and has activated the option, calls to SDNs may be forwarded (if option SDN P has been assigned). On the other hand, calls to SDNs are never forwarded if the SDN option N has been assigned.

Call Waiting

Since enhanced SDNs do not support Call Waiting (CWT), calls to an ESDN are not call waited. Calls to a PDN, however, are call waited if the PDN has option CWT. Calls to unenhanced SDNs are call waited if the PDN has the option CWT.

Adding Options on a Secondary Number (ESDN) (continued)

Series Completion

SCMP can be assigned to enhanced SDNs. With SCMP, calls to a busy ESDN are forwarded to the DN specified when the option is added to the ESDN. SCMP is described in this document.

Activation/deactivation by the end user

ESDN is activated and deactivated through datafill. However, users must enter an access code to originate calls from an SDN. Also, the CFW options assigned to the ESDN require special activation.

Activation of ESDN call origination

The following activation procedure illustrates originating a call from an ESDN.

At your telephone:

1. Go off-hook.

   Response:

   The default originating DN is the PDN.

2. Dial an access code assigned in Table IBNXLA.

   Response:

   Receive confirmation tone followed by a dial tone. The PDN is still the originator.

3. Dial a 4-digit number that identifies the ESDN originating the call.

   Response:

   The originating DN is established. Confirmation tone is given, followed by dial tone.

4. Dial the number.

   Response:

   The call is routed as if the ESDN originated the call.

Activation of Call Forwarding Universal from an SDN

The next procedure shows how to activate Call Forwarding Universal.

Adding Options on a Secondary Number (ESDN) (continued)

At your telephone:

1. Go off-hook.

   Response:

   The default originating DN is the PDN.

2. Dial an access code, such as 59, assigned in Table IBNXLA.

   Response:

   Receive confirmation tone followed by dial tone.

3. Dial a 4-digit number that identifies the ESDN originating the call.

   Response:

   The ESDN is established as the originating DN. Confirmation tone is given, followed by dial tone.

4. Dial an access code, such as 72, assigned in Table IBNXLA.

   Response:

   The access code is accepted.

5. Dial the forward-to DN.

   Response:

   The DN is verified, then dial tone is given.

6. Go on-hook.

   Response:

   Calls to the DN specified in step 3 are forwarded as directed. Calls to the PDN or other SDNs on the same line terminate as usual.

Call Forwarding Fixed is activated in the same way as Call Forwarding Universal, except that the access code is different, and a forward-to DN is not specified.

Billing

ESDN changes billing such that an enhanced SDN can be the CALLING_DN if an SDN identifies itself for call origination. If an ESDN user originates a billable call, the billing record shows the ESDN as the originator rather than the PDN. However, special billing numbers, datafilled in Table TRKGRP, override ESDN billing. For example, calls made over primary rate access (PRA) trunks, and for which a billing number is datafilled in Table TRKGRP, are billed against the Table TRKGRP billing number.

Adding Options on a Secondary Number (ESDN) (continued)

ESDN also affects automatic number identification (ANI). The enhanced SDN is used in an ANI spill for applications such as call forwarding and number display. For example, if an ESDN user originates a call over an Integrated Services Digital Network user part (ISUP) trunk to a line with the CND feature, the SDN displayed is the ESDN rather than the PDN.

Station Message Detail Recording

Adding Options on a Secondary Number (ESDN) does not affect Station Message Detail Recording.

Datafilling office parameters

ESDN does not change office parameters. However, field RES_AS_POTS in Table OFCVAR must be set to Y in order for option ESDN to be assigned to a POTS line.

The following table shows the office parameters used by Adding Options on a Secondary Number (ESDN). For more information about office parameters, refer to *Office Parameters Reference Manual.*

Office parameters used by Subscriber Services RES Base

Table name	Parameter name	Explanation and action
OFCVAR	RES_SO_SIMPLIFICATION	This parameter provides the ability to consider RES lines as POTS lines from within service orders. When RES_AS_POTS is set to Y, during execution of service order commands ADO, DEO, and CHF, a line can automatically be changed from a POTS line to a RES line or vice versa. When ENHANCED_POTS_OPTIONS is set to N, additional call forwarding prompts do not appear. The default setting is N.

Adding Options on a Secondary Number (ESDN) (continued)

Datafill sequence

The following table lists the tables that require datafill to implement Adding Options on a Secondary Number (ESDN). The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Adding Options on a Secondary Number (ESDN)

Table	Purpose of table
OFCVAR	Variable office parameter. This table contains data on variable parameters for the office. Refer to “Datafilling office parameters" for how ESDN affects office parameters.
IBNLINES (Note)	IBN line assignment. This table contains the line assignments for Subscriber Services station numbers.
IBNFEAT (Note)	IBN line feature. This table defines the features assigned to each Subscriber Services line.
IBNXLA	IBN translations. This table contains the data for the digit translations of calls from an MDC station, attendant console, incoming trunk group, or incoming side of a two-way MDC trunk group. Specifically, this table stores an access code for SDN, allowing users to originate calls from SDNs.
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 (IBN Translations) contains the data for the digit translations of calls from an MDC station, attendant console, incoming trunk group, or incoming side of a two-way MDC trunk group. Specifically, this table stores an access code for SDN, allowing users to originate calls from SDNs.

Adding Options on a Secondary Number (ESDN) (continued)

The following table shows the datafill specific to Adding Options on a Secondary Number (ESDN) for table IBNXLA. Only those fields that apply directly to Adding Options on a Secondary Number (ESDN) are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table IBNXLA

Field	Subfield	Entry	Explanation and action
KEY		see subfields	Key. This field consists of the subfields XLANAME and DGLIDX. These subfields are described below and must be entered in succession.
	XLANAME	RXCFN	Translator name. This subfield specifies the 1- to 8-character name assigned to the translator. Enter RXCFN.
	DGLIDX	see explanation	Digilator index. This subfield specifies the digit or digits assigned to the index as the access code. Enter the access code assigned to the digilator index.
RESULT		see subfields	Result. This field consists of the subfields TRSEL, ACR, SMDR, and FEATURE. These subfields are described below.
	TRSEL	FEAT	Translation selector. This subfield specifies the translation selector. Enter FEAT.
	ACR	Y or N	Account code entry. This subfield specifies whether or not an account code entry is required for all calls to the special feature access code. Enter Y or N.
	SMDR	N	Station message detail recording. This subfield specifies whether or not SMDR is required for calls originated by a customer group station or an attendant console. Enter N.
	FEATURE	SDNID	Feature. This subfield specifies the name of the feature to which the code is assigned. Enter SDNID.

Datafill example for table IBNXLA

The following example shows sample datafill for table IBNXLA.

Adding Options on a Secondary Number (ESDN) (continued)

MAP display example for table IBNXLA

```
KEY                          RESULT
_____________________________________________________________
RXCFN            79          FEAT N  N  N SDNID
```

Translation verification tools

The following example shows the output from TRAVER when it is used to verify Adding Options on a Secondary Number (ESDN).

In the example, the primary DN is 6215004, the ESDN is 6210001, the access code for originating from an ESDN is 79, and the number dialed by the ESDN subscriber is 6215913.

Adding Options on a Secondary Number (ESDN) (continued)

TRAVER output example for Adding Options on a Secondary Number (ESDN)

```
TRAVER  L  6215004  B7962100016215913  B
TABLE IBNLINES
HOST 00 0 09 20 0 DT STN RES 6215004 0 $
TABLE LINEATTR
0 1FR NONE NT FR01 0 613 P621 L613 TSPS 10 NIL NILSFC LATA1 0 NIL
NIL 00 Y RESGRP 0 2
LCABILL OFF – BILLING DONE ON BASIS OF CALLTYPE
TABLE DNATTRS
613 621 5004
   ( PUBLIC ( NONUNIQUE ) $ ) $ $
TABLE DNGRPS
TUPLE NOT FOUND
TABLE NCOS
RESGRP NXLA RESXLA RXCFN 0 RES
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND
DIGCOL
RESGRP NXLA RESXLA RXCFN 0 RES
TABLE DIGCOL
RES SPECIFIED:  RES DIGIT COLLECTION
NCOS FEAT XLA NAME IS NIL.  GO TO NEXT XLA NAME.
TABLE IBNXLA:  XLANAME RXCFN
RXCFN 79 FEAT N N N SDNID

+++ TRAVER:  SUCCESSFUL CALL TRACE +++

FEATURE SDNID NOT SUPPORTED BY TRAVER

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

Note: TRAVER stops at Table IBNXLA because TRAVER does not support the SDNID.Translations for the call do not stop at Table IBNXLA.

SERVORD

SERVORD is used to add the options SDN and ESDN to lines. Similarly, options are added to ESDNs through SERVORD. This section describes the service order prompts added by ESDN.

SERVORD is used to datafill tables IBNLINES and IBNFEAT.

Table IBNLINES (IBN Line Assignment) contains the line assignments for Subscriber Services station numbers. This table is updated automatically when option ESDN is assigned to a line through a service order.

Adding Options on a Secondary Number (ESDN) (continued)

Table IBNFEAT (IBN Line Feature) defines the features assigned to each Subscriber Services line.

SERVORD limitations and restrictions

The following SERVORD limitations and restrictions apply to Adding Options on a Secondary Number (ESDN):

- Option SDN can be assigned to PDNs only.
- Option ESDN cannot be assigned to two lines for which the last four digits are identical. The switch uses the last four digits of an ESDN for origination and billing purposes. See “Billing" for information on billing PDNs and ESDNs separately.

SERVORD prompts

The following table shows the SERVORD prompts used to add options on a secondary number.

SERVORD prompts for Adding Options on a Secondary Number (ESDN) (Sheet 1 of 2)

Prompt	Valid input	Explanation
OPTION	SDN	Specifies the option. Enter SDN to assign a second directory number to the line.
SDN	up to 15 digits	Specifies the secondary DN (Note).
Note: If the SDN is assigned option E (making it an ESDN), the last 4 digits of the DN must be unique among all ESDNs assigned to the same line.		

Adding Options on a Secondary Number (ESDN) (continued)

SERVORD prompts for Adding Options on a Secondary Number (ESDN) (Sheet 2 of 2)

Prompt	Valid input	Explanation
SDNRING	0 - 3	Specifies the ringing cadence of the SDN. Enter 0 for the same cadence as the associated PDN. Enter 1, 2, or 3 for distinctive cadences.
SDNOPT	N, P, or E	Specifies the type of SDN. Enter N to indicate that no calls to the SDN are forwarded. Enter P to indicate that calls to the SDN are forwarded only if the PDN has activated CFW. Enter E to indicate that the SDN is enhanced and can have its own set of options.
Note: If the SDN is assigned option E (making it an ESDN), the last 4 digits of the DN must be unique among all ESDNs assigned to the same line.		

SERVORD example for Adding Options on a Secondary Number (ESDN)

The following SERVORD example shows how the Adding Options on a Secondary Number (ESDN) feature is added to a new line using the NEW command.

Adding Options on a Secondary Number (ESDN) (continued)

SERVORD example for Setting up ESDN using NEW in prompt mode

```
>NEW
SONUMBER: NOW 99 8 8 AM
>
DN:
> 6210000
LCC:
> 1FR
LATANAME:
> LATA1
LTG:
> 0
LEN:
> HOST 0 0 0 1
OPTION:
> SDN
SDN:
> 6211111
SDNRING:
> 1
SDNOPT:
> E
OPTION:
> $
COMMAND AS ENTERED:
NEW NOW 91 8 8 AM 6210000 1FR LATA1 0 HOST 0 0 0 1
( SDN 6211111 1 E ) $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDITY
> Y
```

SERVORD example for Setting up ESDN using NEW in no-prompt mode

```
>NEW $ 6210000 1FR LATA1 0 HOST 0 0 0 1  SDN 6211111 1 E $ Y
```

The following example shows how to add SCMP and CFW C to the ESDN defined in the previous example.

Note: The service order option for Call Forwarding Universal (CFU) is CFW C.

Adding Options on a Secondary Number (ESDN) (continued)

SERVORD example for Adding SCMP and CFW C to an SDN using ADO in prompt mode

```
>ADO
SONUMBER: NOW 99 8 8 AM
>
DN_OR_LEN:
> 6211111
OPTION:
> SCMP
SCMP_DN:
> 6215005
OPTION:
> CFW
CFWTYPE:
> C
SCRNCL:
> OPTL
NUMCALLS:
> 2
OPTION:
> $
COMMAND AS ENTERED:
ADO NOW 91 8 8 AM 6211111 ( SCMP 6215005 ) ( CFW C OPTL
2 ) $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
> Y
```

SERVORD example for Adding SCMP and CFW C to an SDN using ADO in no-prompt mode

```
>ADO $ 6211111 SCMP 6215005 CFW C OPTL 2 $ Y
```

The following example shows how to add CFW F to the enhanced SDN defined in the first example.

Note: The service order option for Call Forwarding Fixed (CFF) is CFW F.

Adding Options on a Secondary Number (ESDN) (end)

SERVORD example for Adding CFW F to an SDN using ADO in prompt mode

```
>ADO
SONUMBER: NOW 99 8 8 AM
>
DN_OR_LEN:
> 6211111
OPTION:
> CFW
CFWTYPE:
> F
SCRNCL:
> OPTL
NUMCALLS:
> 2
STATE:
> I
FDN:
>0001
OPTION:
>$
COMMAND AS ENTERED:
ADO NOW 91 8 8 AM 6211111 ( CFW F OPTL 2 I 0001 ) $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDITY
> Y
```

SERVORD example for Adding CFW F to an SDN using ADO in no-prompt mode

```
>ADO $ 6211111 CFW F OPTL 2 I 0001 $ Y
```

Call Forward Fraud Prevention (CFFP)

Ordering codes

Functional group ordering code: RES00002

Functionality ordering code: RES00074

Release applicability

NA008 and up

Prerequisites

Call Forward Fraud Prevention (CFFP) has no prerequisites.

Description

Call Forward Fraud Prevention (CFFP) is an NA008 feature developed to help decrease incidents of fraudulent calls that involve certain types of call forwarding.

The call forwarding types to which CFFP applies are Residential Enhanced Services (RES) programmable call forwarding types, also referred to as RES programmable CFW types, and include the following:

- Call Forward All Calls/Customer (CFW/C)
- Universal Access to Call Forward (UCFW)
- Call Forward Busy Line (CFBL)
- Call Forward Don't Answer (CFDA)
- Call Forward Remote Access (CFRA)
- Selective Call Forwarding (SCF)

Note: The Call Forward Prevention Enhancements (CFPE) feature in NA009 extends CFFP functionality to POTS and centrex lines. See the CFPE translations module in NA009 for details about this CFFP enhancement.

Background

Many incidents of fraudulent calls that involve RES programmable CFW types, where the end user programs the forwarded-to DN into the forwarding memory of the call, have been reported.

An example of a call forwarding fraudulent call, is when an unauthorized person cuts in on an end user's telephone wire, calls the operating company to subscribe to one of the programmable call forwarding types, and proceeds to program long distance DNs into the forwarding memory of the call. This

Call Forward Fraud Prevention (CFFP) (continued)

prevents the end user from being reached since calls are always forwarded, and enables the person committing fraud, to access those long distance DNs on behalf of that particular end user.

With the introduction of the Usage Sensitive Call Forwarding feature (AQ1505) in NA006, every end user line on the switch has the potential to access programmable call forwarding on a usage basis without having to first contact the operating company to subscribe. This provides more opportunity for fraudulent use of RES programmable CFW types.

Call Forward Fraud Prevention functionality

To help reduce fraud on call forwarding, CFFP functionality allows the operating company to

- Define dial plans that cannot be assigned as forward-to DNs on an office-wide basis. All or a subset of these dial plans can be overridden on a per-line basis through a new line option called CFFPOVR (Call Forward Fraud Prevention Override).
- Set an upper limit on the number of times a forward-to DN, which has a restricted dial plan that is overridden through line option CFFPOVR, can be changed within a period of time specified by the operating company.

Dial plan restrictions

With the CFFP feature, the operating company can define which dial plans are restricted to end users who want to program forward-to DNs using any one of the RES programmable CFW types. The dial plans that are to be restricted are datafilled in two new tables introduced by the CFFP feature (tables CFFPDPLN and CFFPTYPE), and apply to the whole office. Restricted dial plans can be defined for each or for all of the RES programmable CFW types that apply to CFFP.

Call Forward Fraud Prevention (CFFP) (continued)

The following table provides the dial plan codes with their associated dial plans that the operating company can restrict on an office-wide basis.

Dial plan codes and their associated dial plans

Dial plan code	Dial plan
IDDD	international 011+
FGB	1+950_WXXX
INTERTOL	intraLATA toll calls
INTRATOL	intraLATA toll calls
COIN	any dial plans used in a forward-to DN that corresponds to a coin line on the same switch as the CFFP feature, with has any one of the following LCCs: CCF, CDF, CSP, CFD, ZMD or ZMZPA
I500	1+5XY-NXX-XXXX (for example, 500)
I700	1+7EY-NXX-XXXX (for example, 700)
I800	1+8XY-NXX-XXXX (for example, 800 and 888)
I900	1+9XY-NXX-XXXX (for example, 900)
N11	
NPANXX	

Note 1: Once the CFFP feature is activated through SOC, all programming attempts using dial plans that correspond to an operator assisted-type dial plan, are blocked, even for SCF, which currently does not block all operator-assisted calls.

Note 2: CFFP screening is performed on the NPA for dial plan codes I500, I700, I800, and I900.

Note 3: The NPANXX dial plan code allows the operating company to specify particular NPAs or NPANXX combinations. The NPA portion of NPANXX allows for a wild card value of XXX. When XXX is specified in place of the NPA, CFFP screens the calls based on the NXX value. For example, if XXX is entered for the NPA, and 555 is entered for the NXX, CFFP screens all DNs that contain an NXX of 555.

Note 4: CFFP validates DNs with dial plans entered in field NPANXX for toll and local calls. In the case of a 7-digit toll call, reverse translations is performed to determine the NPA.

An override option, CFFPOVR, is available on a per-line basis to allow individual tailoring of the office-wide list of dial plan restrictions. All or some of the restricted dial plans can be overridden through this line option, which is applicable to all of the RES programmable CFW types.

Call Forward Fraud Prevention (CFFP) (continued)

Limit on changing the forward-to DN

When the CFFPOVR option is assigned to an end user's line, a limit can be set on the number of times a forward-to DN, which has a restricted dial plan specified in the CFFP tables, can be changed. The limit value ranges between 0 and 30 changes within a set period of time, which has a range of 30 through 240 minutes. A limit of 0 indicates that the number of times a forward-to DN can be changed is unlimited.

Existing call forward restrictions

The RES programmable CFW types to which CFFP applies already have some restrictions on the types of DNs that can be programmed as forward-to DNs. There are also existing patches, GLS11, GLS12, and PTF40, that provide the functionality to block programming of international calls for certain types of call forwarding.

The following table provides the existing restrictions that apply to each RES programmable CFW type.

Existing call forward restrictions on the forward-to DN

CFW type	IDDD	N11	FGB	555	Operator assisted	End user's own number
CFW/C	GLS12 & GLS11	blocked	blocked (Note 2)	blocked (Note 2)	blocked	blocked
UCFW	GLS12 & GLS11	blocked	blocked (Note 2)	blocked (Note 2)	blocked	blocked
CFBL	GLS12	blocked	blocked (Note 2)	blocked (Note 2)	blocked	blocked
CFDA	GLS12	blocked	blocked (Note 2)	blocked (Note 2)	blocked	blocked
CFRA	GLS12 (Note 1)	blocked	blocked	blocked	blocked	blocked
SCF	PTF40	blocked	blocked	blocked	blocked (Note 3)	blocked

Note 1: The GLS12 patch includes the functionality of the CEN05 patch in the CCM06 patch stream. The CEN05 patch was used for CFRA in the NA005 patch stream.

Note 2: Calls are blocked provided that the call forward validation option CFWVAL is present and the terminating option TERMOPTN is set to N.

Note 3: SCF only blocks operator-assisted calls where the first digit following translations is a 0.

Call Forward Fraud Prevention (CFFP) (continued)

When the SOC for CFFP is ON, CFFP takes over the restrictions specified in the previous table, except for the restrictions that apply when the end user's own number is involved, which are still handled by the different call forwarding types. The CFFP feature also blocks operator-assisted calls that are not currently blocked by the different call forwarding types, such as those not blocked by SCF.

> ***Note:*** As indicated in the previous table, the call forwarding types currently restrict FGB-type call forwarding attempts. For some call forwarding types, the restriction applies when the call forward validation option, CFWVAL, is present and the TERMOPTN field is set to N. With CFFP, it is also recommended to restrict FGB-type call forwarding attempts, particularly if the CFWVAL option is present and the TERMOPTN field is set to Y. If the TERMOPTN field is set to Y, a courtesy call attempt is made to the forward-to DN. In normal circumstances, if the call is answered, the number is forwarded. If the line is busy, or the call is unanswered, a second attempt to forward the number must be made. However, due to a network limitation, FGB-type call forwarding attempts must be made twice regardless of whether the call is answered. This can confuse the end user.

The functionality provided by patches GLS11, GLS12, and PTF40, is included in the CFFP feature, and is available when the SOC for the CFFP feature is ON. Therefore, as of NA008, these patches are no longer available.

The GLS11 patch applies to Plain Ordinary Telephone Service (POTS) agents, while the GLS12 and PTF40 patches apply to RES and Meridian Digital Centrex (MDC) agents, which have an additional type of call forwarding, Call Forward Universal Per Key (CFK). Since there is POTS and MDC agent support, limited support of these agents is also included in the CFFP feature; only IDDD DNs (as with the patches) are automatically blocked for POTS and MDC when the SOC for the CFFP feature is ON.

When the SOC for the CFFP feature is idle, restrictions on IDDD do not apply. For POTS agents, when the call forward programming attempt is blocked, the CFPADENY OM register is pegged in order to comply with the existing POTS call forwarding behavior.

Operation

Call Forward Fraud Prevention is activated through the software optionality control (SOC) utility. Once CFFP is activated, any forward-to DNs programmed by the end user are validated by CFFP following the translation stage in call processing. That is, the translated digits are used to validate the

forward-to DN. The request to program the forward-to DN is accepted or rejected as described below.

- If the dial plan of the programmed forward-to DN is restricted, as specified in the CFFP tables, the request to program the forward-to DN is rejected.
- If the dial plan of the programmed forward-to DN is restricted, as specified in the CFFP tables, but is overridden through line option CFFPOVR, the request to program the forward-to DN is accepted.
- If the dial plan is not restricted, that is, is not specified in the CFFP tables, the request to program the forward-to DN is accepted.

Each time an attempt to program a forward-to DN is denied because either the dial plan of the DN is restricted, as specified in the CFFP tables, or the limit for changing the forward-to DN is exceeded, the call is routed to the NACK (negative acknowledgment) treatment when the RES programmable CFW type used to program the forward-to DN is CFW/C, UCFW, CFBL, or CFDA. When the RES programmable CFW type used to program the forward-to DN is CFRA or SCF, the call is routed to an announcement.

Note: The CFFP feature preserves the existing treatment provided by each call forwarding type. Therefore, depending on the type of call forwarding feature used by the end user to program the forward-to DN, either a NACK treatment or announcement is provided to the end user.

A log report (CFFP600) can be generated when an attempt to program a forward-to DN is denied because the dial plan is restricted, and another (CFFP601) can be generated when the limit for changing the forward-to DN is exceeded.

Translations table flow

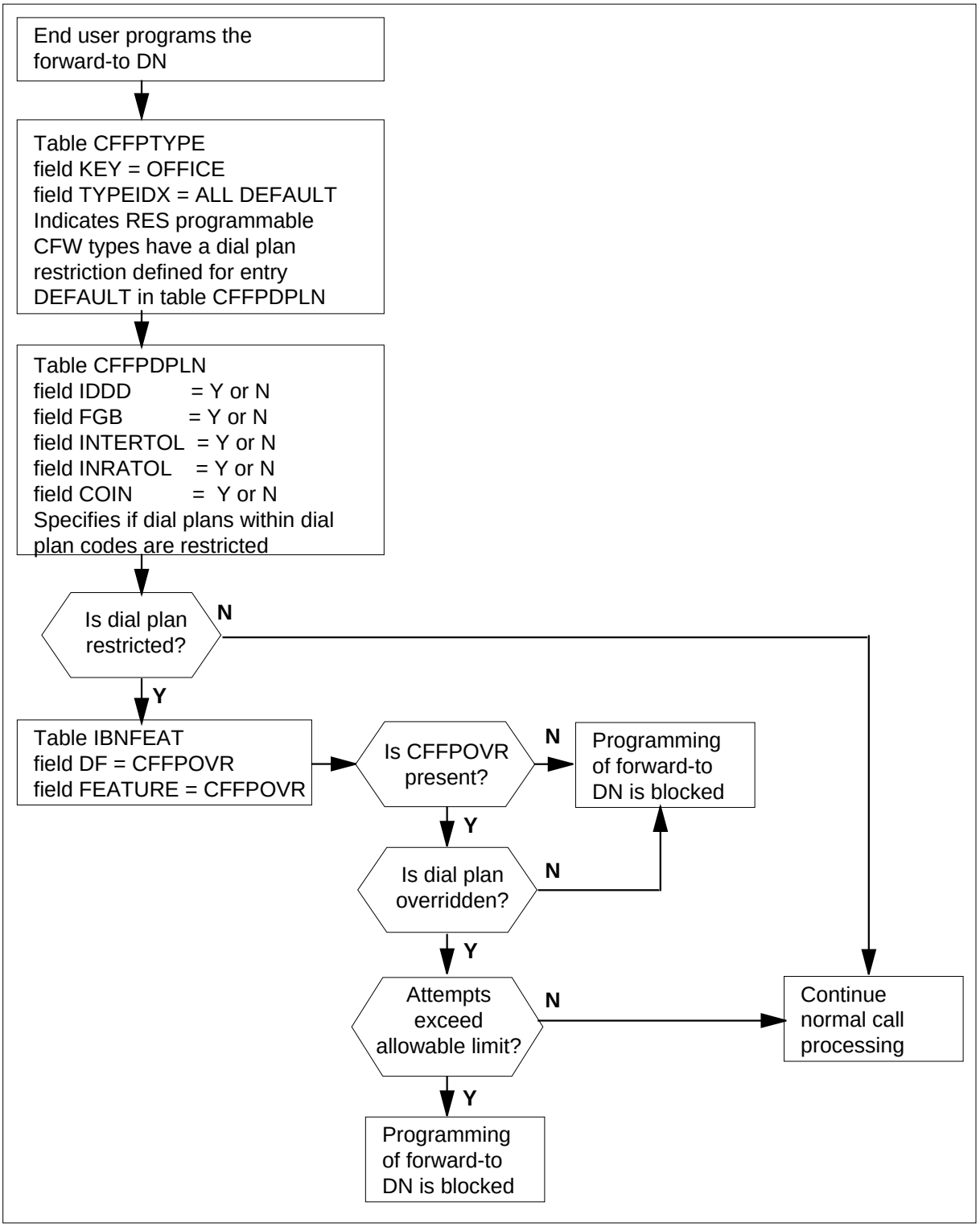
The Call Forward Fraud Prevention (CFFP) translations tables are described in the following list:

- Table CFFPTYPE
- Table CFFPDPLN
- Table IBNFEAT

The Call Forward Fraud Prevention (CFFP) translation process is shown in the flowchart that follows.

Call Forward Fraud Prevention (CFFP) (continued)

Table flow for Call Forward Fraud Prevention (CFFP)



Call Forward Fraud Prevention (CFFP) (continued)

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

Datafill example for Call Forward Fraud Prevention (CFFP)

Datafill table	Example data
CFFPTYPE	OFFICE (ALL 2) (CFW DEFAULT) (CFRA DEFAULT) $
CFFPDPLN	DEFAULT Y Y N N Y $ $ $ $ $ $
	2 Y Y N N Y (500) $ (700) $ (800) (888) $ (900) $ (911) (411) $ (613625) $
IBNFEAT	HOST 00 0 03 03 0 CFFPOVR CFFPOVR IDDD 20 15

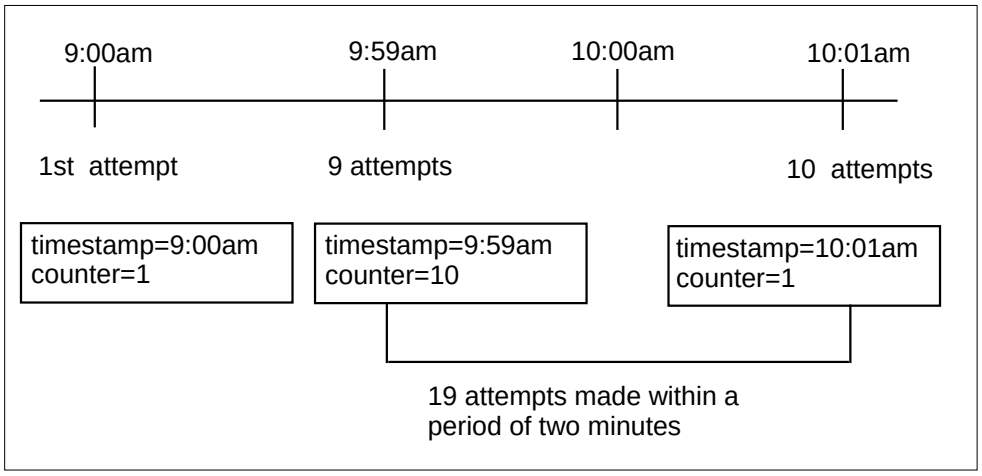
Limitations and restrictions

The following limitations and restrictions apply to CFFP:

- The CFFP feature is limited to the following line class codes (LCC):
  - RES
  - RES/1FR
  - RES/1MR
  - RES/ZMD
  - RES/ZMZPA
- The CFFP feature provides limited support for Plain Ordinary Telephone Service (POTS) agents, therefore, when the last RES option is removed from a RES line, and the line is converted to POTS, CFFP functionality is limited.
- CFFP screening is only performed on DNs that are programmed once the feature has been activated through the Software Optionality Control (SOC) utility. Any forward-to DNs programmed prior to CFFP being activated through SOC, are not subject to CFFP screening.
- The CFFP feature requires that lines terminating to a COIN station, be within the same switch in order to perform screening.
- The number of times the forward-to DN can be changed can reach at most two times the limit specified by the operating company less one, for a

Call Forward Fraud Prevention (CFFP) (continued)

particular line. The figure below illustrates this scenario, where a limit of 10 times within a period of 60 minutes has been specified.



Interactions

The following paragraphs describe the interactions between Call Forward Fraud Prevention (CFFP) and other functionalities.

Advanced Intelligent Network

The Advanced Intelligent Network (AIN) functionality enables end-office call processing to use centralized service logic programs located at the Service Control Point (SCP). These programs determine how AIN calls proceed for further call processing. Queries and responses are exchanged between the DMS SuperNode end office equipped with AIN functionality and the SCP using Common Channel Signaling No 7 (CCS7).

AIN 0.0

Once a call hits an AIN trigger, a query is sent to an off-board processor. The call is suspended until a response is sent back from the off-board processor. The off-board processor can respond with an order to redirect the call to another destination.

The CFFP feature can only screen the digits programmed by the end user. If call redirection occurs, a new call leg is created and the CFFP feature cannot block the new destination digits supplied by the off-board processor. Therefore, if the end user programs a forward-to DN that is defined in the switch as being an AIN 0.0 trigger, subsequent redirections of the call to a restricted DN resulting from this trigger being hit when an actual call is in progress, cannot be blocked by the CFFP feature.

Call Forward Fraud Prevention (CFFP) (continued)

AIN 0.1

The interaction between CFFP and AIN 0.1 is the same as the interaction between CFFP and AIN 0.0, which is described above.

Call forwarding

The basic functionality of call forwarding is to redirect the calling party to another line.

The CFFP feature is only invoked when an attempt to program a forward-to DN is made using one of the RES programmable CFW types supported by CFFP. That is, CFW/C, UCFW, CFBL, CFDA, CFRA, and SCF.

Call Forwarding Remote Access

The Call Forwarding Remote Access (CFRA) call forwarding option allows end users to program and activate or deactivate Call Forward Universal (CFU), Call Forward Intragroup (CFI), Call Forwarding Fixed (CFF), or Call Forward All Calls/Customer (CFW/C) from a line other that their own.

When CFFP is active on the switch where the end user is connected, and the end user's line is assigned both CFW/C and CFRA, any programming attempts made remotely through CFRA are validated by CFFP.

Carrier Toll Denied

The Carrier Toll Denied (CTD) feature enables the operating company to specify a maximum of 21 carriers from which an end user is denied access for direct dialed (DD) and 1+NPA+555 calls.

When the end user is assigned the CTD feature, the forward-to DN cannot be a toll number using a carrier specified in the list, regardless of the overrides defined by the CFFP feature through line option CFFPOVR. Therefore, the restrictions defined by the CTD option take over any restriction overrides defined by the CFFP feature through line option CFFPOVR. If the DN is blocked by CTD, it cannot be overridden by CFFP. However, if the DN is not blocked by CTD, it is subject to CFFP screening.

Equal Access and E800

The Equal Access (EA) software blocks all 800 and 8xx-type calls, where xx are two identical digits.

This existing restriction takes over any restriction overrides defined by the CFFP feature through line option CFFPOVR, but only when casual dialing (10XXX) is used.

Call Forward Fraud Prevention (CFFP) (continued)

Enhanced Secondary Directory Number

The Enhanced Secondary Directory Number (ESDN) option enables the operating company to add a separate set of options to each secondary directory number (SDN) associated with a primary directory number (PDN). This option also allows the end user to originate calls from an SDN.

Programmed forward-to DNs are subject to CFFP screening since CFW/C, CFBL, and CFDA can be assigned to an SDN. The CFFPOVR line option can also be assigned to an SDN, therefore, allows the operating company to override any restricted dial plans defined in the CFFP tables.

Full Carrier Toll Denied

The Full Carrier Toll Denied (FCTD) option enables the operating company to specify a maximum of 21 carriers from which an end user is allowed access for direct dialed (DD) and 1+NPA+555 calls.

When the end user is assigned the FCTD option, the forward-to DN cannot be a toll number using a carrier that is not specified in the list, regardless of the overrides defined by the CFFP feature through line option CFFPOVR. Therefore, the restrictions defined by the CTD option take over any restriction overrides defined by the CFFP feature through line option CFFPOVR. If the DN is blocked by CTD, it cannot be overridden by CFFP. However, if the DN is not blocked by CTD, it is subject to CFFP screening at which point it can be blocked by CFFP.

Hunt groups

A hunt group consists of several lines or members in an end user group. When a call terminates on a hunt group, the call passes from one member to another until one member in the group is free to answer the call. The number to access the hunt group is called the pilot DN. Several types of hunt groups exist; among them are:

- Directory Number Hunt (DNH)
- Hunt (PRH)
- Multiline Hunt (MLH)
- Distributed Line Hunt (DLH)

The CFFPOVR line option can be assigned to any member of a DNH or PRH type of hunt group, however, can only be assigned to the pilot DN of an MLH or DLH type of hunt group.

Call Forward Fraud Prevention (CFFP) (continued)

Multiple Appearance Directory Number

The Multiple Appearance Directory Number (MADN) feature allows a single directory number (DN) to be associated with multiple lines. The lines that are assigned this DN are referred to as the MADN group, and the line that corresponds to the DN, is called the primary member. MADN groups can be configured with either a single call arrangement (SCA), a multiple call arrangement (MCA), or an extension bridging (EXB) arrangement.

The CFFPOVR line option can only be assigned to the primary member of a MADN group configured with an EXB arrangement.

Account code required and override call forward on account code restrictions

The Account code required (ACR) feature requires that a user enter an access code and account code when originating calls. When an originator programs a DN that requires an account code using a call forwarding type, the programming attempt is blocked.

The OCFA option is a RES line option that overrides the need for account/authorization codes when forwarding to a number that would otherwise require an account/authorization code.

When the line is not assigned option OCFA (override call forward on account code restrictions), the DN cannot be programmed. When the line is assigned the OCFA and ACR options, the DN can be programmed, but is subject to CFFP screening.

Speed Calling

Speed calling (SC1, SC2, and SC3) enables the end user to define a speed call code (usually one digit) for a DN. The end user then dials the speed call code rather than the whole DN.

The digits that result from the translation of a speed call code that is programmed using any one of the RES Programmable CFW types, are subject to CFFP screening if the RES Programmable CFW type supports the speed calling feature.

Subscriber activated call blocking

The Subscriber activated call blocking (SACB) option provides end users with the capability to activate and deactivate call blocking, thereby, restricting or allowing certain types of calls.

A DN can be blocked by SACB, but only after it has been screened by CFFP. If the DN is restricted by both CFFP and SACB, it is blocked by CFFP. A DN

Call Forward Fraud Prevention (CFFP) (continued)

that is restricted by SACB cannot be overridden by CFFP through line option CFFPOVR.

Toll denied

Option TDN (toll denied) prevents an end user from originating toll calls.

When the end user's line is assigned the TDN option, the forward-to DN cannot be a toll number regardless of any restriction overrides defined by the CFFP feature through line otpion CFFPOVR. Therefore, the restrictions defined by the TDN feature take over any restriction overrides defined by CFFP. If the DN is blocked by TDN, it cannot be overridden by CFFP. However, if the DN is not blocked by TDN, it is subject to CFFP screening.

Virtual facility group

A virtual facility group (VFG) is a software structure that emulates a trunk. The translation for calls that route through VFGs is first done from the originating line or trunk to the incoming side of the VFG, and then from the outgoing side of the VFG to the terminating line or trunk.

If an end user programs a forward-to DN that subsequently results in the call being routed over a VFG, CFFP cannot screen the new set of digits that arise when the call passes through VFG routing.

Activation/deactivation by the end user

Call Forward Fraud Prevention (CFFP) requires no activation or deactivation by the end user.

Billing

Call Forward Fraud Prevention (CFFP) does not change billing.

Station Message Detail Recording

Call Forward Fraud Prevention (CFFP) does not change Station Message Detail Recording.

Call Forward Fraud Prevention (CFFP) (continued)

Datafilling office parameters

The following table shows the office parameter used by Call Forward Fraud Prevention (CFFP). For more information about office parameters, refer to *Office Parameters Reference Manual.*

Office parameter used by Call Forward Fraud Prevention (CFFP) (Sheet 1 of 2)

Table name	Parameter name	Explanation and action
OFCENG	CFFP_CONTROL	This office parameter is used to specify the office-wide default limit on the number of allowable call forward programming attempts, and the period of time within which the number of programming attempts should not exceed the applicable limit. It is also used to specify whether CFFP-specific log reports are to be generated. Enter a valid value in each of the four fields. DEFAULT_LIMIT. Enter the number of times a forward-to DN, which has a restricted dial plan that is overridden through line option CFFPOVR, can be changed within the specified time period (see TIME_PERIOD below). The range is 0 through 30, and the default value is 0, which indicates that the forward-to DN can be changed an unlimited number of times. TIME_PERIOD. Enter the period of time within which the number of changes a forward-to DN, which has a restricted dial plan that is overridden through line option CFFPOVR, cannot exceed the limit value specified for the line (see DEFAULT_LIMIT above). The range is 30 through 240 min, and the default value is 60 min.

Call Forward Fraud Prevention (CFFP) (continued)

Office parameter used by Call Forward Fraud Prevention (CFFP) (Sheet 2 of 2)

Table name	Parameter name	Explanation and action
		DENIED_LOG. Enter Y (yes) or N (no) to indicate whether log report CFFP600 is to be generated each time an attempt to program a forward-to DN is denied because the dial plan of the forward-to DN is restricted. The default value is Y. EXCEEDED_LOG. Enter Y (yes) or N (no) to indicate whether log report CFFP601 is to be generated each time the end user exceeds the allowable number of times a forward-to DN, which has a restricted dial plan that is overridden through line option CFFPOVR, can be programmed. The default value is Y.

Datafill sequence

The following table lists the tables that require datafill to implement Call Forward Fraud Prevention (CFFP). The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Call Forward Fraud Prevention (CFFP)

Table	Purpose of table
CFFPDPLN	Call Forward Fraud Prevention Dial Plan contains the dial plan restrictions.
CFFPTYPE	Call Forward Fraud Prevention Type contains the RES programmable CFW types that are to have restricted dial plans. Each RES programmable CFW type that is specified in this table, has an associated index entry that points to a tuple in table CFFPDPLN.
IBNFEAT	IBN Line Features contains the CFFPOVR option when it is assigned to a line. ***Note:*** Table IBNFEAT is a read-only table and cannot be changed through the table editor. The service order (SERVORD) utility is used to add or delete tuples to and from table IBNFEAT. The datafill is shown here for information purposes only.

Call Forward Fraud Prevention (CFFP) (continued)

Datafilling table CFFPDPLN

The following table shows the datafill specific to Call Forward Fraud Prevention (CFFP) for table CFFPDPLN.

Datafilling table CFFPDPLN (Sheet 1 of 4)

Field	Subfield or refinement	Entry	Explanation and action
DPLNIDX		1 through 12 alphanumeric characters	*Dial plan index* Enter the index entry that relates to the dial plan code restrictions. This entry is referenced by table CFFPTYPE to determine the dial plan code restrictions that apply to the CFW types specified in table CFFPTYPE. ***Note 1:*** When an attempt is made to delete a tuple in this table that is referenced by table CFFPTYPE, an error message is displayed that indicates the tuple is referenced by another table, and cannot be deleted. ***Note 2:*** Avoid using special characters such as !, @, #, $, %, &, and * for the dial plan index. Using special characters for the dial plan index may cause problems to position on a tuple, unless they are between single quotes.
IDDD		Y or N	*International Direct Distance Dialing* Enter Y or N to indicate whether international 011+ type dial plans are to be restricted. When N is entered, these dial plans are not restricted. The default value is Y, which indicates these dial plans are restricted and cannot be used as forward-to DNs.
FGB		Y or N	*Feature Group B* Enter Y or N to indicate whether 1+950+WXXX type dial plans are to be restricted. When N is entered, these dial plans are not restricted. The default value is Y, which indicates these dial plans are restricted and cannot be used as forward-to DNs.

Call Forward Fraud Prevention (CFFP) (continued)

Datafilling table CFFPDPLN (Sheet 2 of 4)

Field	Subfield or refinement	Entry	Explanation and action
INTERTOL		Y or N	*InterLATA toll* Enter Y or N to indicate whether interLATA toll type dial plans are to be restricted. When Y is entered, these dial plans are restricted, and cannot be used as forward-to DNs. The default value is N, which indicates these dial plans are not restricted.
INTRATOL		Y or N	*IntraLATA toll* Enter Y or N to indicate whether intraLATA toll type dial plans are to be restricted. When Y is entered, these dial plans are restricted, and cannot be used as forward-to DNs. The default value is N, which indicates these dial plans are not restricted.
COIN		Y or N	*Coin* Enter Y or N to indicate whether intraswitch calls terminating at coin lines with an LCC of CCF, CDF, CSP, CFD, ZMD, or ZMZPA are restricted. When N is entered, these calls are not restricted. The default value is Y, which indicates these calls are restricted.
I500		500 through 599	*Information 500* Enter the NPAs within the 500 range that are to be restricted. A maximum of 15 entries is allowed. The default value is $, which indicates an empty list.
I700		700 through 799	*Information 700* Enter the NPAs within the 700 range that are to be restricted. A maximum of 15 entries is allowed. The default value is $, which indicates an empty list.
I800		800 through 899	*Information 800* Enter the NPAs within the 800 range that are to be restricted. A maximum of 15 entries is allowed. The default value is $, which indicates an empty list.

Call Forward Fraud Prevention (CFFP) (continued)

Datafilling table CFFPDPLN (Sheet 3 of 4)

Field	Subfield or refinement	Entry	Explanation and action
I900		900 through 999	*Information 900* Enter the NPAs within the 900 range that are to be restricted. A maximum of 15 entries is allowed. The default value is $, which indicates an empty list.

Call Forward Fraud Prevention (CFFP) (continued)

Datafilling table CFFPDPLN (Sheet 4 of 4)

Field	Subfield or refinement	Entry	Explanation and action
N11		Vector of 3 digits with the last two digits as 11 (X11)	*N11* Enter the N11-type dial plans that are to be restricted. The default value is $, which indicates an empty list. ***Note:*** If the forward-to DN is a 3-digit N11 extention number that extends to a 7-digit DN, then the CFPE feature finds the selector in table IBNXLA. If the selector is extn_sel, bypass the N11 checking.
NPANXX		Vector of 3 or 6 digits; 000-999, 000000-999999, or XXX000, XXX999	*NPANXX* Enter particular NPAs or NPANXX combination dial plans that are to be restricted. A maximum of 15 entries is allowed. The default value is $, which indicates an empty list. The NPA portion of NPANXX allows for a wild card value of XXX. When XXX is specified, CFFP screens the calls based on the NXX value and ignores the NPA portion. For example, when XXX is entered for the NPA, and the value of NXX is 555, CFFP screens all DNs that have an NXX of 555 regardless of the NPA. (N11-type numbers cannot be used in the NXX portion of XXXNXX.) CFFP validates DNs with dial plans entered in field NPANXX for toll and local calls. In the case of a 7-digit toll call, reverse translations is performed to determine the NPA. ***Note 1:*** If the forward-to DN is an extension number and the selector in table IBNXLA is extn_sel, the CFPE feature does not perform NPANXX validation. ***Note 2:*** To block local calls, enter XXXNXX. This accounts for 7-digit local calls, as well as10-digit local calls. For example, by entering XXX624 in field NPANXX, local calls that are dialed using NPA-624-XXXX or 624-XXXX are blocked.

Datafill example for table CFFPDPLN

The following example shows sample datafill for table CFFPDPLN.

Call Forward Fraud Prevention (CFFP) (continued)

MAP display example for table CFFPDPLN

```
DPLNIDX IDDD FGB INTERTOL INTRATOL COIN
                                                    I500
                                                    I700
                                                    I800
                                                    1900
                                                     N11
                                                   NPANXX
-------------------------------------------------------
DEFAULT    Y  Y         N        N  Y                 $
                                                      $
                                                      $
                                                      $
                                                      $
                                                      $
2          Y  Y         N        N  Y
                                                (500) $
                                                (700) $
                                          (800) (888) $
                                                (900) $
                                          (911) (411) $
                                             (613625) $
```

Error messages for table CFFPDPLN

The following error messages apply to table CFFPDPLN.

Error messages for table CFFPDPLN (Sheet 1 of 2)

Error message	Explanation and action
MEMORY ALLOCATION PROBLEM	This message appears when an attempt is made to add or change a tuple, but there is not enough memory to complete the task.
TUPLE NOT UPDATED - MULTIPLY DEFINED DNS	This message appears when an attempt is made to enter the same value in a field, or the same value in two fields.
TUPLE NOT DELETED - INDEX IS REFERENCED BY TABLE CFFPTYPE	This message appears when an attempt is made to delete a tuple that is referenced by table CFFPTYPE.
VECTOR OF 3 OR 6 DIGITS: 000-999, 000000-999999, XXX000-XXX999	This message appears when an attempt is made to enter a value other than the acceptable values in field NPANXX.

Call Forward Fraud Prevention (CFFP) (continued)

Error messages for table CFFPDPLN (Sheet 2 of 2)

Error message	Explanation and action
TUPLE NOT FOUND - UNABLE TO ACCESS TABLE CFFPDPLN DUE TO UNDEFINED INDEX	This message appears when an attempt is made to position on a non-existing tuple.
TUPLE NOT UPDATED - FIELD NPANXX MUST BE 3 OR 6 DIGITS	This message appears when an attempt is made to enter a value other than the acceptable values in field NPANXX.
TUPLE NOT UPDATED - ILLEGAL DN IN NPANXX FIELD	This message appears when an attempt is made to enter a value other than the acceptable values in field NPANXX, such as an N11-type value.

Call Forward Fraud Prevention (CFFP) (continued)

Datafilling table CFFPTYPE

The following table shows the datafill specific to Call Forward Fraud Prevention (CFFP) for table CFFPTYPE.

Datafilling table CFFPTYPE

Field	Subfield or refinement	Entry	Explanation and action
KEY		OFFICE	*Key* This field is set to OFFICE since only office-wide dial plan restrictions can be defined. The OFFICE tuple cannot be deleted. When an attempt is made to delete this tuple, an error message is displayed.
TYPEIDX		List of call forward types and associated entry. The valid call forward types are CFW, UCFW, CFBL, CFDA, CFRA, and SCF. The value of the entry associated with the call forward type is dependent on the datafill in table CFFPDPLN.	*Type index* This field is used to specify one or more RES Programmable CFW types to which dial plan restrictions are to be applied, and their associated entry that points to a tuple in table CFFPDPLN, which defines the dial plan restrictions. The default value is (ALL DEFAULT). Value ALL cannot be deleted; when an attempt is made to delete this value, an error message is displayed. Entry (ALL DEFAULT) indicates that all RES Programmable CFW types have the dial plan restrictions defined for entry DEFAULT in table CFFPDPLN. ALL can be associated with any index entry that is specified in table CFFPDPLN. ***Note:*** CFW refers to option CFW/C (Call Forward all calls/Customer).

Datafill example for table CFFPTYPE

The following example shows sample datafill for table CFFPTYPE.

Call Forward Fraud Prevention (CFFP) (continued)

MAP display example for table CFFPTYPE

```
CFFPTYPE

KEY     TYPEIDX
_____________________________________________________________
OFFICE (ALL2) (CFW DEFAULT) (CFRA DEFAULT) $
```

Error messages for table CFFPTYPE

The following error messages apply to table CFFPTYPE.

Error messages for table CFFPTYPE

Error message	Explanation and action
TUPLE NOT UPDATED - MULTIPLY-DEFINED CFW TYPE	This message appears when an attempt is made to enter a CFW type more than once in the tuple.
CANNOT ADD TUPLE - NOT PERMITTED	This message appears when an attempt is made to add another tuple. Only one tuple is allowed in this table.
CANNOT PERFORM OPERATION	This message appears when an unrecognizable command is entered.
TUPLE NOT DELETED - OFFICE TUPLE IS MANDATORY	This message appears when an attempt is made to delete the OFFICE tuple.
TUPLE NOT UPDATED - DEFAULT TYPE ALL IS MANDATORY	This message appears when an attempt is made to delete entry ALL.

Datafilling table IBNFEAT

The following table shows the datafill specific to Call Forward Fraud Prevention (CFFP) for table IBNFEAT. Only those fields that apply directly to Call Forward Fraud Prevention (CFFP) are shown. For a description of the other fields, refer to the data schema section of this document.

Note 1: Table IBNFEAT is a read-only table and cannot be changed through the table editor. The service order (SERVORD) utility is used to add or delete tuples to and from table IBNFEAT. The table datafill is shown here for information purposes only.

Note 2: Fields DAY, HOUR, and MINUTE make up the timestamp, and are only used by the internal mechanism, therefore, are hidden fields. Internal

Call Forward Fraud Prevention (CFFP) (continued)

table CUSTAREA is modified to add tuples that contain the information to hide the timestamp.

Datafilling table IBNFEAT (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
DF		CFFPOVR	*Data feature* This field specifies the feature assigned to the line, which in this case is CFFPOVR for Call Forward Fraud Prevention Override. ***Note:*** Although other features are available, only the CFFPOVR feature is shown in the Entry column for clarity. The OFFICE tuple cannot be deleted. When an attempt is made to delete this tuple, an error message is displayed.
FEATURE		CFFPOVR	*Feature* This field specifies the feature assigned to the line, which in this case is CFFPOVR for Call Forward Fraud Prevention Override. ***Note:*** Although other features are available, only the CFFPOVR feature is shown in the Entry column for clarity.
DATA		*see subfields*	*Data* This field consists of subfields, DIAL_PLAN_CODE, LIMIT, ATTEMPTS, DAY_IN_YEAR, HOUR, and MINUTES for feature CFFPOVR, which are described below.
	DIAL_PLAN_ CODE	IDDD, FGB, INTERTOL, INTRATOL, COIN, I500, I700, I800, I900, N11, NPANXX	*Dial plan code* This subfield specifies the restricted dial plan codes that have been overridden through line option CFFPOVR.

Call Forward Fraud Prevention (CFFP) (continued)

Datafilling table IBNFEAT (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	LIMIT	0 through 30, or OFFICE_DEFAULT	*Limit* This subfield specifies the value of the maximum number of times a forward-to DN, which has a restricted dial plan that is overridden through line option CFFPOVR, can be changed.
	COUNT	0 through 1023	*Count* This subfield specifies the value for the number of times an end user has attempted to program a forward-to DN, which has a restricted dial plan that is overridden through line option CFFPOVR.
	DAY	0 through 366	*Day* This subfield specifies the day for the timestamp of when an attempt was made to program a forward-to DN, which has a restricted dial plan that is overridden through line option CFFPOVR. ***Note:*** This field is hidden. It is documented here for information purposes only.
	HOUR	0 through 24	*Hour* This subfield specifies the hour for the timestamp of when an attempt was made to program a forward-to DN, which has a restricted dial plan that is overridden through line option CFFPOVR. ***Note:*** This field is hidden. It is documented here for information purposes only.
	MINUTE	0 through 60	*Minute* This subfield specifies the minutes for the timestamp of when an attempt was made to program a forward-to DN, which has a restricted dial plan that is overridden through line option CFFPOVR. ***Note:*** This field is hidden. It is documented here for information purposes only.

Call Forward Fraud Prevention (CFFP) (continued)

Datafill example for table IBNFEAT

The following example shows sample datafill for table IBNFEAT.

MAP display example for table IBNFEAT

```
IBNFEAT

LEN              DNNO  DF       FEATURE              DATA
_______________________________________________________________
HOST 00 0 03 03  0    CFFPOVR  CFFPOVR      IDDD  20  15
```

Translation verification tools

The CFFP feature does not use TRAVER.

SERVORD

Call Forward Fraud Prevention (CFFP) introduces line option CFFPOVR (Call Forward Fraud Prevention Override), which enables the operating company to override all or a subset of the restricted dial plans specified in table CFFPDPLN for the following RES programmable CFW type on a per-line basis:

- Call Forward All Calls/Customer (CFW/C)
- Usage-Sensitive Call Forwarding (UCFW)
- Call Forward Busy Line (CFBL)
- Call Forward Don't Answer (CFDA)
- Call Forward Remote Access (CFRA)
- Selective Call Forwarding (SCF)

SERVORD limitations and restrictions

The CFFPOVR option cannot be added to a line using the ADD or EST commands.

Call Forward Fraud Prevention (CFFP) (continued)

SERVORD prompts

The following table shows the SERVORD prompts used to assign the CFFPOVR option to a RES line.

SERVORD prompts for CFFPOVR

Prompt	Valid input	Explanation
DIAL_PLAN_CODE	ALL, IDDD, FGB, INTERTOL, INTRATOL, COIN, I500, I700, I800, I900, N11, NPANXX	At this prompt, enter one or more dial plan codes, or ALL. The dial plan codes entered override the dial plan code restrictions specified in table CFFPDPLN. When ALL is entered, all restricted dial plan codes are overridden through line option CFFPOVR for the particular line.
LIMIT: OFFICE_DEFAULT	0 through 30 or OFFICE_DEFAULT	At this prompt, enter the number of times an end user can program a forward-to DN, which has a restricted dial plan that is overridden through line option CFFPOVR, within the time period specified in field TIME_PERIOD of office parameter CFFP_CONTROL. A value of 0 indicates that the number of times an end user can program a forward-to DN is unlimited. ***Note:*** To obtain the value OFFICE_DEFAULT, either press Enter at the prompt or type it in. When OFFICE_DEFAULT is specified, the office-wide value in field DEFAULT_LIMIT of office parameter CFFP_CONTROL is used.
Note: If universal access is turned off, that is, field RES_AS_POTS for office parameter RES_SO_SIMPLIFICATIONS is set to Y (yes), a POTS line becomes a RES line when adding the CFFPOVR option to a line, and reverts to POTS when removing the CFFPOVR option from a line, if it is the last RES option being removed.		

SERVORD example for adding CFFPOVR to a RES line

The following SERVORD example shows how CFFPOVR is added to a RES line using the ADO command.

Call Forward Fraud Prevention (CFFP) (end)

SERVORD example for CFFPOVR in prompt mode

```
>SERVORD
SO:
> ADO $ 6246112
OPTION:
> CFFPOVR
DIAL_PLAN_CODE:
> IDDD INTERTOL $
LIMIT: OFFICE_DEFAULT
> 15
OPTION:
> $
COMMAND AS ENTERED:
ADO NOW 97 03 1 AM 6246112 (CFFPOVR IDDD INTERTOL $ 15) $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
> Y
```

SERVORD example for CFFPOVR in no-prompt mode

```
> ADO $ 6246112 CFFPOVR IDDD INTERTOL $ 15 $
```

Call Forwarding Remote Activation

Ordering codes

Functional group ordering code: RES00002

Functionality ordering code: RES00019

Release applicability

BCS32 and up

Requirements

To operate, Call Forwarding Remote Activation requires the functional groups that follow:

- BAS Generic, BAS00003
- MDC Minimum, MDC00001
- MDC Standard, MDC00003
- RES Service Enablers, RES00006

Description

This functionality is provided by one of these features:

- Call Forwarding Remote Access (CFRA)
- Remote Call Forwarding Without Unique PIN

Both features allow an end user to activate or deactivate call forwarding from a remote telephone set on the same switch or a different switch.

With CFRA, the end user is assigned a security code (referred to throughout this document as PIN code) from the operating company which can only be changed by the operating company.

With Remote Call Forwarding Without Unique PIN, the end user is initially provided a PIN code by the operating company, but has the ability to change the PIN code from his own telephone set using a feature access code. The additional functionality provided by the feature is referred to as Subscriber Programmable PIN (SSP):

Note 1: Throughout this document, “base station” refers to the end user’s telephone set which has CFW assigned and is the target of the Call Forwarding activation/deactivation.

Note 2: Feature package NTXN75AA, Remote Call Forwarding without Unique PIN, and NTXA43AA, Call Forward Remote Activation, are mutually exclusive packages and ***cannot*** exist on the same load.

Call Forwarding Remote Activation (continued)

CFRA

The CFRA feature allows call forwarding (CFW) end users to activate, deactivate, and program CFW from stations other than their own. End users can only use the CFRA feature if, in addition to CFRA, they also subscribe to the CFW feature.

SPP

The Remote Call Forwarding without Unique PIN feature allows CFRA personal identification numbers (PIN) to be nonunique. Remote Call Forwarding without Unique PIN also allows end users to change their PINs from their own phone by entering a feature access code called an SPP.

Operation

CFRA

CFRA allows activation or deactivation of CFW on an end user's phone from a remote location. Three ways of using CFRA are:

- from a telephone resident on the same switch as the end user's set.
- from a set outside the end user's switch using a Direct Inward System Access (DISA) number.
- using a CFRA feature translator instead of a DISA number, if the telephone from which the end user is programming CFRA resides in the same customer group as the set on which the end user wants to activate/deactivate CFW.

Prerecorded announcements for CFRA

Prerecorded announcements are available on an NT1X76AM programmable read-only memory (PROM) card. Phrases are assigned to the digital recorded announcement machine (DRAM) using an assign file.

Announcements are provided in both a primary and a secondary language. Depending on datafill, the announcements can be either unilingual (primary language only) or bilingual (primary language first, followed by secondary language). The following announcement text is provided on the PROM card:

- "Please enter a code to remotely access a feature."
  - — This interruptible announcement is provided by the DISA feature to allow a common remote access interface for all remote access features. If the DISA directory number (DN) is dedicated to one remote access feature, this announcement is not given. (An interruptible

Call Forwarding Remote Activation (continued)

announcement replaces dial tone; thus, digits are accepted at any point during the announcement text.)

- "Please enter the n digit telephone number to forward, followed by your PIN number."

  — This interruptible announcement is specific to CFRA. It is composed of phrases that form the announcement. See "Datafill procedure for table DRMUSERS," (Digital Recorded Announcement Machine Users) where this announcement is datafilled as CFRAANN 1.

- "Please enter a code to activate or to deactivate call forwarding."

  — This interruptible announcement is specific to CFRA. It is composed of phrases that form the announcement. See "Datafill procedure for table DRMUSERS," where this announcement is datafilled as CFRAANN 2.

- "Calls to your number will be forwarded to another number. Please enter this number now."

  — This interruptible announcement is specific to CFRA. It is composed of phrases that form the announcement. See "Datafill procedure for table DRMUSERS," where this announcement is datafilled as CFRAANN 3.

- "Calls to your telephone will be forwarded to nnn-nnnn. To confirm this, press 1; to forward to a different number, press 2; to cancel this, hang up now."

  — This interruptible announcement is specific to CFRA. It is composed of phrases that form the announcement. See "Datafill procedure for table DRMUSERS," where this announcement is datafilled as CFRAANN 4.

- "Your calls cannot be forwarded to nnn-nnnn. Please enter another number now."

  — This interruptible announcement is specific to CFRA. It is composed of phrases that form the announcement. See "Datafill procedure for table DRMUSERS," where this announcement is datafilled as CFRAANN 5.

- "Your calls cannot be forwarded to nnn-nnnn."

  — Like the previous announcements, this announcement is specific to CRFA, but it cannot be interrupted. See "Datafill procedure for table

Call Forwarding Remote Activation (continued)

DRMUSERS," where this announcement is datafilled as CFRAANN 6.

To assign the phrases provided on the CFRA Announcement-English (NT1X76AM) PROM card, use the DRAM recording utility (DRAMREC) to create the following assign file.

```
       {beginning of assign file}
DRAMREC
        {put a blank line here}
ASSIGN <dram> CFRASILENCE        1 <block1> 0
ASSIGN <dram> CFRAEFWD1          4 <block1> 4
ASSIGN <dram> CFRAEFWD2          9 <block1> 5
ASSIGN <dram> CFRAEERR1          3 <block1> 6
ASSIGN <dram> CFRAEERR2          3 <block1> 7
ASSIGN <dram> CFRAEDNPIN3        5 <block1> 8
ASSIGN <dram> CFRAEFWDN          6 <block1> 9
ASSIGN <dram> DISAENG            4 <block1> 10
ASSIGN <dram> CFRAEFAC           5 <block2> 4
ASSIGN <dram> CFRAEDNPIN1        2 <block2> 5
ASSIGN <dram> CFRAETENDIG        1 <block2> 6
ASSIGN <dram> CFRAEDNPIN2        4 <block2> 7
ASSIGN <dram> CFRAEONEDIG        1 <block2> 8
ASSIGN <dram> CFRAETWODIG        1 <block2> 9
ASSIGN <dram> CFRAETHREEDIG      1 <block2> 10
ASSIGN <dram> CFRAEFOURDIG       1 <block2> 11
ASSIGN <dram> CFRAEFIVEDIG       1 <block2> 12
ASSIGN <dram> CFRAESIXDIG        1 <block2> 13
ASSIGN <dram> CFRAESEVENDIG      1 <block2> 14
ASSIGN <dram> CFRAEEIGHTDIG      1 <block2> 15
ASSIGN <dram> CFRAENINEDIG       1 <block2> 16
ASSIGN <dram> ONEPLUSE           1 <block2> 17
       {put a blank line here}
QUIT
   {end of assign file}
```

The following example shows an assign file for DRAM zero with blocks six and seven (or virtual cards six and seven).

Call Forwarding Remote Activation (continued)

In addition, phrases on either the NT1X76AG card or the NT1X76AK card must be assigned a file using the DRAMREC facility. Customer personnel choose the appropriate phrase desired by selecting the associated phrase ID. These phrases allow DN voiceback of a remote number during the CFRA process. The NT1X76AK card, the CLASS Phrase I English Announcements card, is used in conjunction with this process. The ***Hardware Description Manual*** provides detailed information for phrases used in conjunction with the NT1X76AK card.

Customized announcements for CFRA

Customized announcements are recorded on an NT1X77 RAM or NT1X79 electronically erasable programmable read-only memory (EEPROM) card using the DRAMREC utility. Operating companies can record their own phrases on RAM or EEPROM cards using the DRAMREC utility. The phrases

Call Forwarding Remote Activation (continued)

are then datafilled in table DRMUSERS in the same way as prerecorded announcements.

Customized announcements must include the following:

- Announcements similar to those described in "Prerecorded announcements" are required.
- Phrases similar to those stored on the NT1X76AG or NT1X76AK cards are required.
- Phrases used to indicate the DN length, datafilled in table CUSTSTN (Customer Group Station Option), must be recorded. The required phrase names and text follow:
  - CFRAEONEDIG "one digit"
  - CFRAETWODIG "two digit"
  - CFRAETHREEDIG "three digit"
  - CFRAEFOURDIG "four digit"
  - CFRAEFIVEDIG "five digit"
  - CFRAESIXDIG "six digit"
  - CFRAESEVENDIG "seven digit"
  - CFRAEEIGHTDIG "eight digit"
  - CFRAENINEDIG "nine digit"
  - CFRAETENDIG "ten digit"

The DRAMREC command ASSIGNDUMP determines the DRAM commands used to reassign PROM phrases after DMS-100 image booting. These commands can then be added to the profile executed by the operator during system initialization.

See ***Digital Recorded Announcement Machine DRAM and EDRAM Guide*** for further information on the DRAM recording utility and the content of prerecorded phrases. See the data schema section of this document for details on provisioning for these announcements.

SPP

Nonunique PINs allow subscribers to change their PINs from their own phone with the SPP feature access code. SPP can only be performed from the subscriber's phone, thus enhancing the security of the SPP. The use of SPP is optional on a customer group basis.

Call Forwarding Remote Activation (continued)

Subscribers of SPP are required to change their PIN before the first use of CFRA if option SPP is datafilled in table CUSTSTN for the customer group. When accessing or changing a PIN, the subscriber is given a limited number of attempts to enter a correct PIN. If the subscriber fails to enter the correct PIN within the set amount of tries, the subscriber receives feature reorder treatment. Every time the retry count is exceeded, during any part of the SPP function, log report IBN136 is generated. Refer to ***Log Report Reference Manual*** for more information.

CFRA and SPP provide the operating company with enhanced PIN security and simplified service order system (SERVORD) methods. A random assignment of PINs to a subscriber's DN makes PIN compromise more difficult, thus enhancing security. SERVORD methods are simplified because the operating company does not have to ensure the uniqueness of the PIN when assigning an initial value.

The operating company is responsible for the initial PIN assignment. After a PIN is changed by the subscriber, the operating company is not able to view it. If a subscriber forgets a PIN, it is recommended that option CFRA be changed with the SERVORD CHF command.

DISA

CFRA uses translations software to validate the Directory Number (DN) of the base station and customer PIN input by the end user during the CFRA announcements. It is necessary to ensure that translations supporting DISA enable successful termination to the base station.

These translations can be simulated by using a DN assigned to the same customer group and NCOS as the DISA DN. Use this DN as the originator. TRAVER from the DN to the base station digits that were input during the CFRA announcement. In order for CFRA validation to be successful, the translations result must be the base station DN.

Option NCOSOPT assigned against the DISA number in Table DNROUTE, assigns a specific NCOS to the DISA number. When NCOSOPT is not assigned to a DISA number, translations default to NCOS 0.

Intragroup CFRA using the CFRA feature translator, does not use DISA attributes. It uses attributes of the programming station.

> ***Note:*** With the introduction of equal access and the complexity of dialing plans, it has become commonplace to have translations that would previously have resulted in line to line translation now result in line to trunk translation. CFRA cannot locate the base station DN if the translations

Call Forwarding Remote Activation (continued)

results in a trunk. The simplest way to avoid these issues is to create one NCOS to use for CFRA where all translations results will be to lines.

Announcements for SPP

Announcements are necessary to prompt the subscriber during CFRA and SPP use. Announcements are custom recorded by the operating company and are datafilled in table DRMUSERS.

Note: Before datafilling announcements for SPP, read "Appendix Datafilling announcements" for Subscriber Services general announcement information.

The following announcement is recommended for CFRA first-time use. The phrase name in table DRMUSERS is CFRAFRST.

- CFRAFRST announcement—"Access to this feature is prohibited until you change your PIN number. The PIN number change must be made from your own phone."

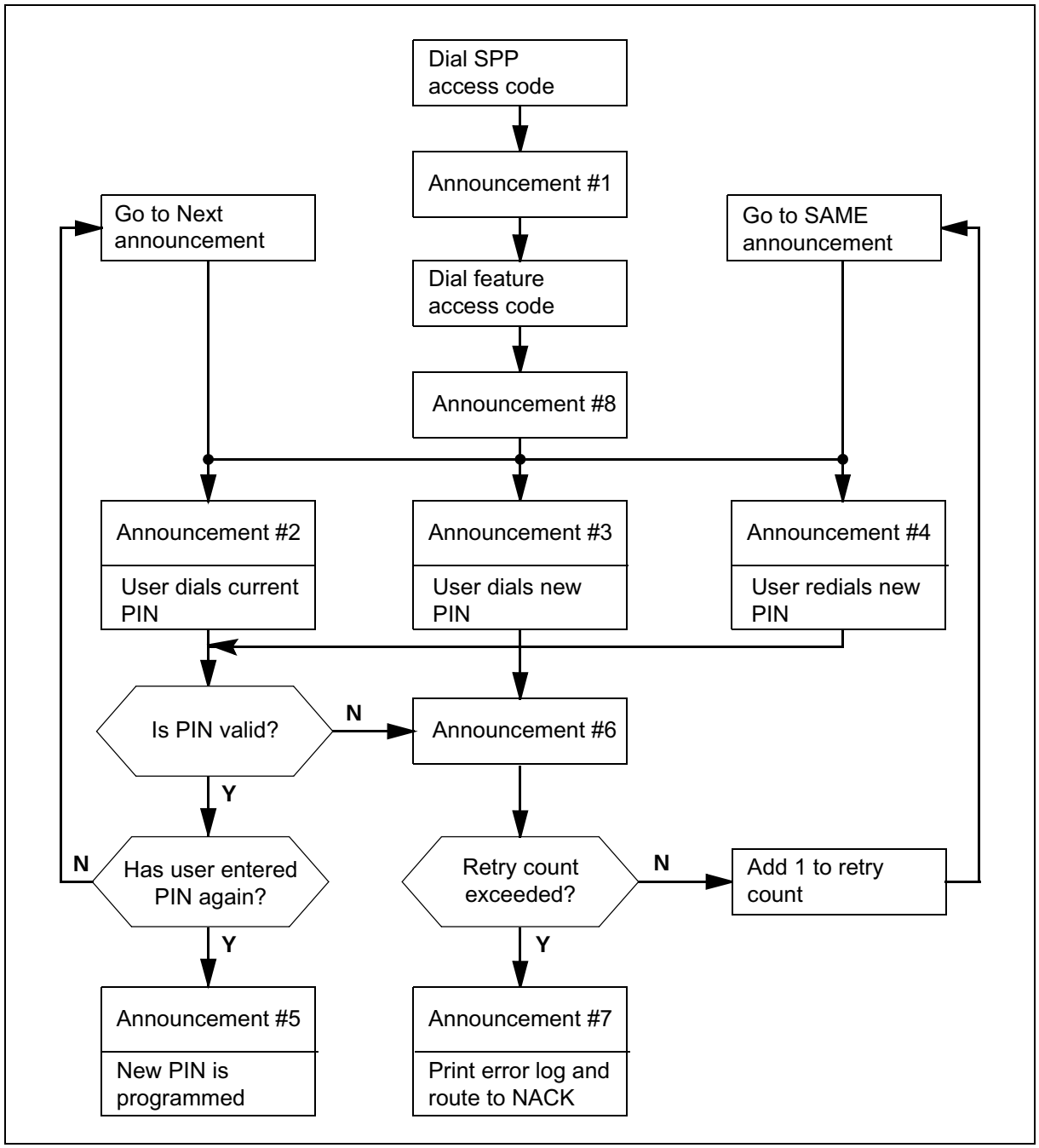
The following announcements are recommended for SPP announcements. They correspond directly to the phrase names in table DRMUSERS. For example, announcement 1 is recommended for phrase SPPANNC1.

- Announcement 1—"Please enter the feature access code for the PIN you wish to change."
- Announcement 2—"Please enter your PIN number."
- Announcement 3—"Please enter your new PIN number."
- Announcement 4—"Please re-enter the new PIN number."
- Announcement 5—"The new PIN number has been updated."
- Announcement 6—"You have entered an incorrect PIN number."
- Announcement 7—"You have exceeded the number of retries. Please hang up and try again."
- Announcement 8—"Call forwarding remote access."

The flowchart in the following figure shows how SPP is activated.

Call Forwarding Remote Activation (continued)

SPP activation sequence



Call Forwarding Remote Activation (continued)

Translations table flow

The Call Forwarding Remote Activation translations tables are described in the following list:

- Table IBNFEAT (IBN Line Feature) lists the features assigned to an LEN. Option CFRA is entered to specify Call Forwarding Remote Access.
- Table IBNXLA (IBN Translation) provides the name of the feature associated with an activation code. The CFRA activation code may be required by the end user when accessing the DISA number if options in addition to DISA are assigned against the number in table DNROUTE. For Call Forwarding Remote Access, CFRA specifies the feature name. For Remote Call Forwarding without Unique PIN, SPP specifies the feature name.
- Table CUSTSTN option CFRA contains the station options assigned to a customer group. Datafill in this table determines the number of digits that can be entered for the subscriber's DN, the number of times the PIN can be re-entered, the number of times the CFW activation code can be re-entered, and the number of times the forwarding DN can be re-entered. Table CUSTSTN option SPP contains the number of times an aspect of the SPP process can be retried (for example, entering current PIN). For Call Forwarding Remote Access, CFRA specifies the option. For Remote Call Forwarding without Unique PIN, SPP specifies the option.
- Table DNROUTE lists information for writable DNs in the switch, such as a DN that identifies a route instead of a line equipment number (LEN). The DISA DN used in the flowchart that follows is defined in table DNROUTE. CFRA must be assigned to the DN.
- Table CLLI (Common Language Location Identifier) contains the CLLI codes used to identify the far end of each announcement used by CFRA.
- Table ANNS (Announcements) contains data for each announcement assigned in the switching unit. For Call Forwarding Remote Access, CFRA specifies the announcement type. For Remote Call Forwarding without Unique PIN, SPP specifies the announcement type.
- Table ANNMEMS (Announcement Members) contains the assignments for each member assigned to the announcement CLLI group in table ANNS.
- Table DRAMTRK (Digital Recorded Announcement Machine Track) contains the phrases that comprise the standard DISA announcement used for the remote access code prompt.

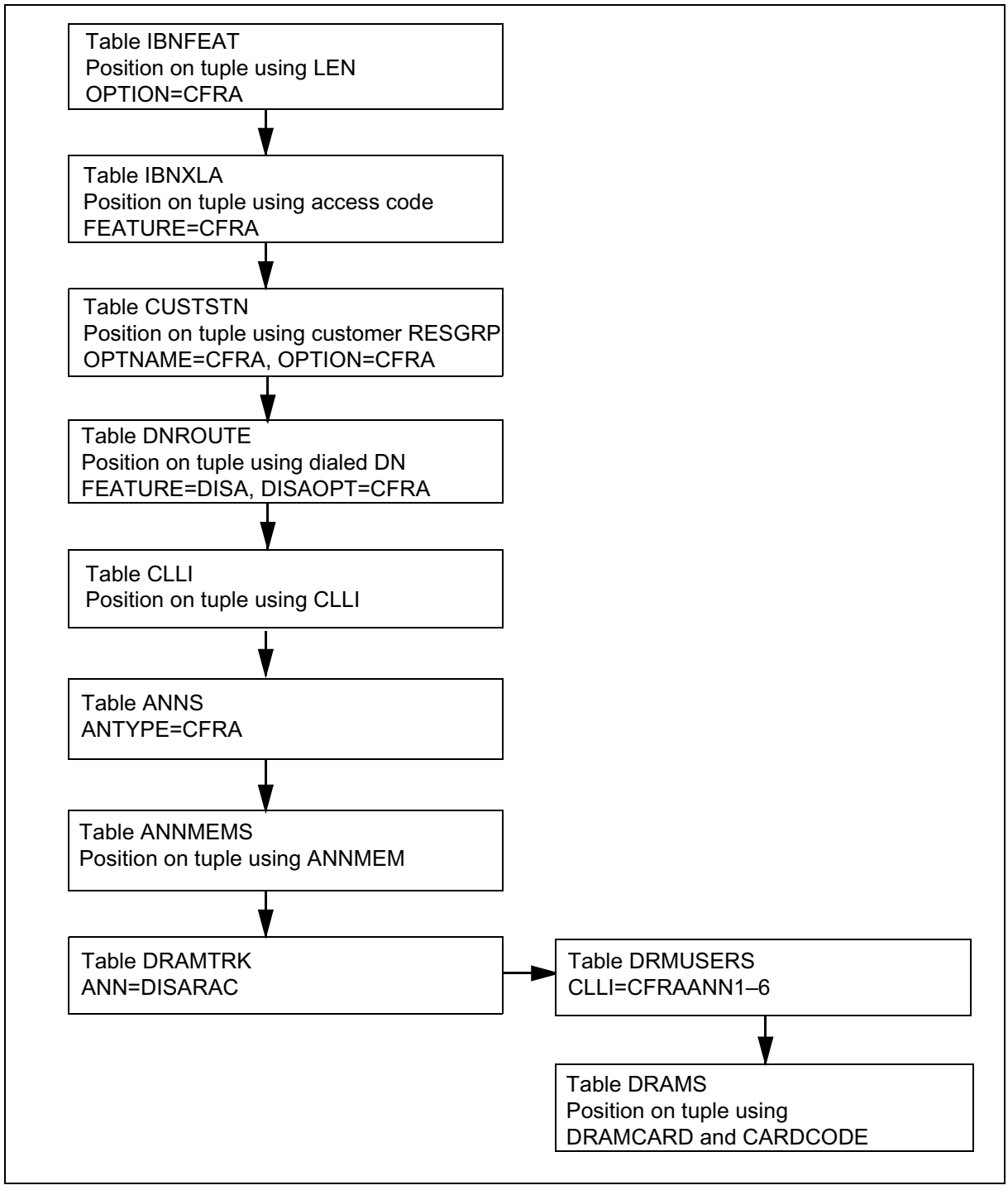
Call Forwarding Remote Activation (continued)

- Table DRMUSERS contains all announcements required by a user, including facilities for the operating company to specify the prime language for announcements.
- Table DRAMS (Digital Recorded Announcement Machines) contains the product engineering codes (PEC) of the CFRA prerecorded message cards in the DRAM.

The CFRA translations process is shown in the flowchart that follows. The flowchart shows the table flow for programming CFW from a remote set.

Call Forwarding Remote Activation (continued)

Table flow for CFRA



Call Forwarding Remote Activation (continued)

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

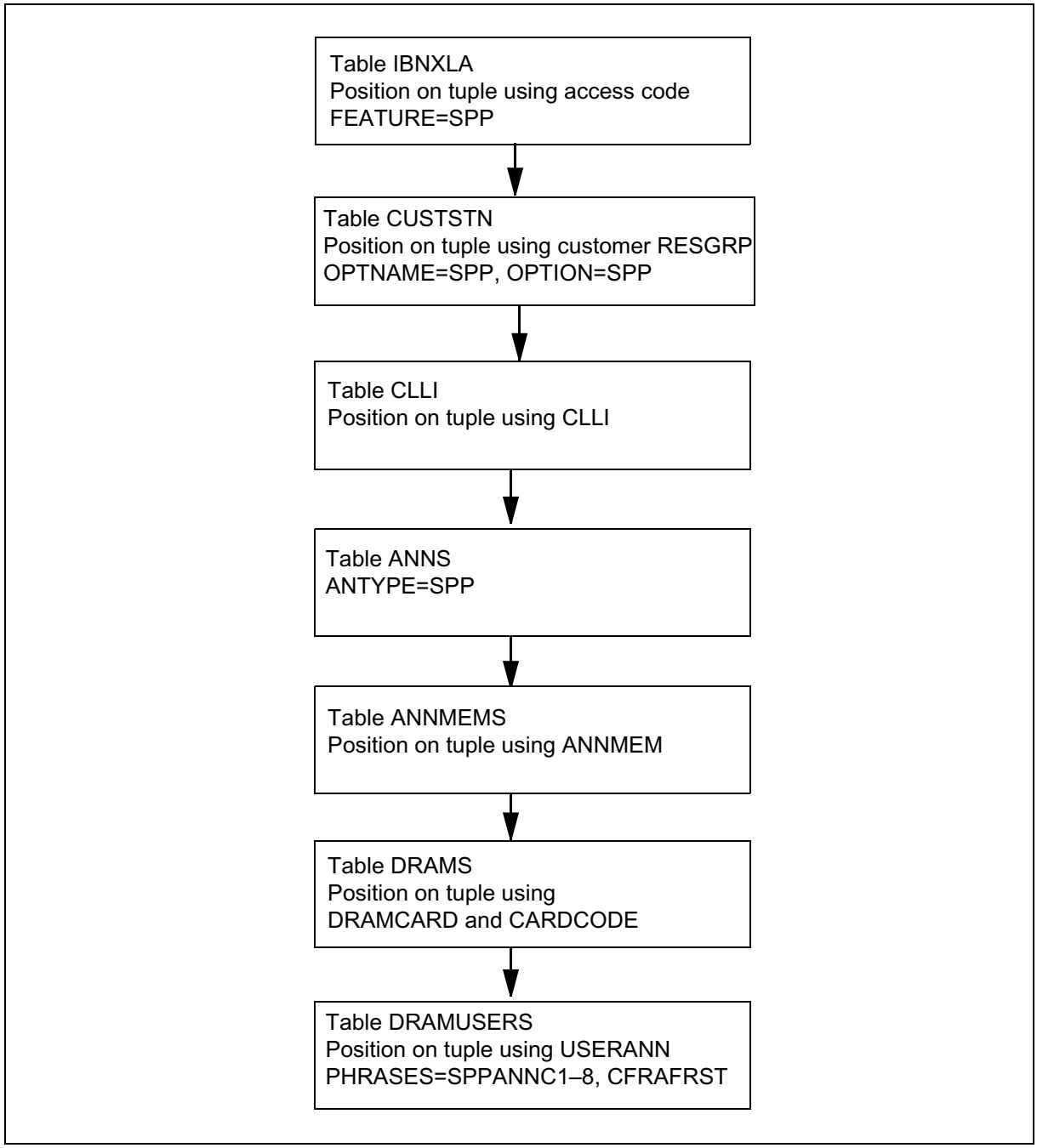
Datafill example for CFRA

Datafill table	Example data
IBNFEAT	HOST 02 0 12 16 0 CFX CFX CFF 6211345 N Y Y 10 1 1 1 SCRNCL NSCR N CFRA 12345 N
IBNXLA	RXCFN 54 FEAT N N N CFRA
CUSTSTN	RESGRP CFRA CFRA 7 2 3 5 RESGRP CFWVAL CFWVAL Y
DNROUTE	613 621 5887 FEAT DISA IBNTST 0 Y N N Y (CFRA) $
CLLI	DISARAC 353 5 RAC_ANNOUNCEMENT CFRAANN 354 9 CFRA_ANNOUNCEMENTS
ANNS	DISARAC STND 25 30 12 2 CFRAANN CFRA 25 1 0 1
ANNMEMS	DISARAC 1 DRAM DRA (0 MTM 1 2 1 MTM 1 3) $ CFRAANN 1 DRAM DRA (0 MTM 1 4) $
DRAMTRK	DISARAC 0 (DISAENG) $ DISARAC 1 (DISAFRE) $
DRMUSERS	CFRAANN 1 (LANGUAGE1) (CFRAEDNPIN1) (CFRAEDIGITS) (CFRAEDNPIN2) (LANGUAGE2) (CFRAFDNPIN1) (CFRAFDPIN2) $ CFRAANN 2 (LANGUAGE1) (CFRAEFAC) (LANGUAGE2) (CFRAFFAC) $ CFRAANN 3 (LANGUAGE1) (CFRAEFWDN) (LANGUAGE2) (CFRAFFWDN) $ CFRAANN 4 (LANGUAGE1) (CFRAEFWD1) (ENGVARDNF) (CFRAEFWD2) (LANGUAGE2) (CFRAFFWD1) (FREVARDNF) (CFRAFFWD2) $ CFRAANN 5 (LANGUAGE1) (CFRAEERR1) (ENGVARDNF) (CFRAEERR2) (LANGUAGE2) (CFRAFERR1) (FREVARDNF) (CFRAFERR2) $ CFRAANN 6 (LANGUAGE1) (CFRAEERR1) (ENGVARDNF) (LANGUAGE2) (CFRAFERR1) (FREVARDNF) $
DRAMS	0 1 STM 0 2 1X76AM PROM 0 1 0 3 STM 0 2 1X76BM PROM 2 3

The SPP translations process is shown in the following figure.

Call Forwarding Remote Activation (continued)

Table flow for SPP



Call Forwarding Remote Activation (continued)

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

Datafill example for SPP

Datafill table	Example data
IBNXLA	RXCFN 74 FEAT N N Y SPP
CUSTSTN	RESGRP SPP SPP 2
CLLI	DISARAC 353 5 RAC_ANNOUNCEMENT SPPANNC 354 9 SPP_ANNOUNCEMENTS
ANNS	SPPANNC SPP 25 15 0 1
ANNMEMS	SPPANNC 1 DRAM DRA (0 MTM 1 0) $
DRAMS	0 2 MTM 1 4 1X79AA EEPROM (2) (3) $
DRMUSERS	SPPANNC 1 (SPPANNC1) $ SPPANNC 2 (SPPANNC2) $ SPPANNC 3 (SPPANNC3) $ SPPANNC 4 (SPPANNC4) $ SPPANNC 5 (SPPANNC5) $ SPPANNC 6 (SPPANNC6) $ SPPANNC 7 (SPPANNC7) $ SPPANNC 8 (SPPANNC8) $ CFRAANN 7 (CFRAFRST) $

Limitations and restrictions

CFRA

The following limitations and restrictions apply to CFRA:

- For intraoffice calls, the CFRA subscriber can place the remote call from either a dial pulse (DP) or Digitone set. However, for interoffice calls, the CFRA subscriber must place the remote call from a Digitone set.
- This feature is not compatible with Call Forwarding Usage Sensitive Pricing (CFW U).
- If an attempt is made to activate or deactivate CFW from a remote set using CFRA at the same time that CFW is being activated or deactivated at the base subscriber set, the two attempts are processed in the order in which they occur. The CFW attempt that successfully completes first takes priority over the other CFW attempt.
- Although the attendant console has the capability to activate or deactivate CFW features remotely, the Subscriber Services RES environment does not support attendant consoles.
- CFRA is incompatible with COOR: RES Translations Simplification (feature number AU2503). If COOR: RES Translations Simplification is datafilled for the RES group, the DISA entry in table DNROUTE should have the DISAOPT NCOSOPT. The NCOS that is entered should use translations that do not contain COOR: RES Translations Simplification.

Call Forwarding Remote Activation (continued)

- Speed call usage is not supported in CFRA. During the CFRA programming , speed call pre-programming cell can not be dialled as the forward to DN.

Call Forwarding Remote Activation (continued)

Call Forwarding Remote Activation (continued)

SPP

The following limitations and restrictions apply to SPP:

- When recording the CFRAFRST phrase, the phrase must be stored on a DRAM or EEPROM card in the same maintenance trunk module (MTM) as the CFRA PROM card NT1X76AM.
- SPP can only be performed from the PIN feature subscriber's own phone.
- When changing a PIN, the subscriber must enter a number different from the current PIN. If the subscriber enters the current PIN, the PIN value is considered an incorrect entry, and the subscriber is prompted to re-enter a different PIN, if the retry limit has not been exceeded.
- SPP subscribers must wait for announcement prompts to enter the digits for PIN feature access code and current, new, and re-entered new PIN entries. The following announcements do not allow digit entry:
  - — PIN feature prompt announcement—"Call forwarding remote access."
  - — Incorrect PIN announcement—"You have entered an incorrect PIN number."
  - — Exceeded retry announcement—"You have exceeded the number of retries. Please hang up and try again."
  - — CFRAFRST announcement—"Access to this feature is prohibited until you change your PIN number. The PIN number change must be made from your own phone."
- Subscribers can speed up the SPP process by entering an octothorpe (#) after the digits have been entered. If a subscriber dials an octothorpe while entering the DISA number, the octothorpe may be interpreted as the first attempt to dial the base station DN and PIN. For this reason, the number of PIN retries should be at least three.
- SPP does not support intergroup access to the base station when an attempt is made to access CFRA through a DISA number. For example, a subscriber in customer group B calls the DISA DN for customer group A to access CFRA. When the subscriber enters a DN and PIN of a base station in customer group B, the subscriber is denied entry.
- This feature does not provide capabilities to remotely access Call Forwarding Busy (CFB) or Call Forwarding Don't Answer (CFDA).
- It is recommended that invalid forward-to digit entry attempts be routed to vacant treatment. Table CUSTHEAD (Customer Group Head) should be datafilled with option VACTRMT if table IBNTREAT (IBN Treatment) index uses the TRMT selector to route to VACT. An S selector in table IBNTREAT cannot be used to route calls to a vacant treatment

announcement. If an announcement is to be used for VAC treatment, use table TNTCNTL (Treatment Control).

Interactions

The following paragraphs describe the interactions between Call Forwarding Remote Activation and other functionalities.

Call Waiting and Call Waiting Intragroup

Call Waiting (CWT) and Call Waiting Intragroup (CWI) calls are not allowed during activation of SPP or CFRA.

The CWT feature sends a special call waiting tone to the CWT subscriber line if a call arrives while the subscriber line is busy.

When the remote set and the CFRA subscriber set are served by the same office (intraoffice), the interaction between the CFRA and CWT features is as follows: Once the subscriber invokes CFRA from a remote set that has CWT, attempts to use CWT on the remote set are denied while the set is being used for CFRA.

When the remote set and the CFRA subscriber set are served by different offices (interoffice), the interaction between the CFRA and CWT features is as follows: Once the subscriber invokes CFRA from a remote set with CFRA on another switch, attempts to use CWT on the remote set are allowed even while the set is being used for CFRA.

Conference

SPP cannot be activated during a station controlled conference call.

Directory Number Hunt group

Directory Number Hunt (DNH) groups can use SPP. CFRA can be assigned to all members of a DNH group.

Meridian business sets

SPP performed on any Meridian business set DN automatically updates all PINs for all the DNs on the set that have CFU, CFF, or CFI.

Note: This allows the subscriber to maintain the same PIN for all DNs on a set. Only primary MADNs or single appearance DNs can have CFU, CFF, or CFI.

Multiline Hunt groups and Distributed Line Hunt group

Multiline Hunt (MLH) and Distributed Line Hunt (DLH) groups cannot use SPP. These hunt groups can have CFRA assigned to a pilot only.

Call Forwarding Remote Activation (continued)

Multiple Appearance Directory Number

SPP cannot be activated from a secondary MADN with single call arrangement (SCA) or extension bridging. Bridging is not allowed if the primary MADN SCA member has SPP active.

Speed Calling

During CFRA operation, when a subscriber is asked to dial the DN to which calls are to be forwarded, it is possible to enter a Speed Calling (SC1 or SC2) cell number instead of a DN. This is only valid if the subscriber has the SC1 or SC2 feature assigned to the line. When a speed calling cell number is dialed during the CFRA process, the contents of the speed calling cell are used to determine the DN to which calls will be forwarded. The speed calling cell must always be proceeded by an asterisk (*) even if the AMBISC functionality is applicable to the subscriber line. Failure to do so may result in forwarded calls being incorrectly translated. The verification announcement that the subscriber receives after dialing the cell number includes the contents of the speed calling cell.

If the subscriber enters a cell number whose contents are empty, the cell number is included in the following error announcement:

- "Your calls cannot be forwarded to (cell number)."

If a cell number is entered instead of a DN during the CFRA process, and the SC1 or SC2 feature is not assigned to the subscriber line, the subscriber receives the following message:

- "Your calls cannot be forwarded to (cell number)."

Three-Way Calling

The Three-Way Calling (3WC) feature allows a subscriber who is talking to add a third party to the call without operator assistance.

When the remote set and the CFRA subscriber set are served by the same office (intraoffice), the interaction between the CFRA and 3WC features is as follows: If the remote set has the 3WC feature, the subscriber calling from the remote set cannot flash to initiate a three-way call once the CFRA feature has been started. If a subscriber is using a remote set that is involved in a three-way call, the subscriber can flash and then make a CFRA call. Once the CFRA call is started, the subscriber cannot flash again to conference into the original call; instead, the subscriber must wait for the completion of the CFRA call before attempting to return to the three-way call.

When the remote set and the CFRA subscriber set are served by the different offices (interoffice), then the interaction between the CFRA and 3WC features is as follows: If the remote set has the 3WC feature, the subscriber calling from

the remote set can flash to initiate a three-way call once the CFRA feature has been started. If a subscriber is using a remote set that is involved in a three-way call, the subscriber can flash and then make a CFRA call. Once the CFRA call is started, the subscriber can flash again to conference into the original call.

Activation and deactivation by the user

CFRA

If at any stage of the activation process, a CFRA subscriber receives a treatment indicating the activation attempt has failed, or if the subscriber goes on-hook, the status of the subscriber set is not changed.

If a subscriber attempts to use CFRA to activate CFW on a set that is already call forwarded, the CFRA feature functions as if CFW were not active.

If a subscriber attempts to use CFRA to deactivate CFW on a set that has no CFW active, the subscriber receives a confirmation announcement.

The following procedure shows how to activate CFRA.

Activation and deactivation of Call Forwarding Remote Access (CFRA) by the user

At your telephone

1 Go off-hook.

Response:

Receive dial tone.

2 Dial a DISA DN to the office serving the CFRA subscriber set.

Response:

If hardware and software resources are available to process the call, the subscriber receives the following message: “Please enter the N-digit telephone number to forward, followed by your PIN number.” The subscriber then enters the DN and personal identification number (PIN), as described in the next step.

Note: The number of digits (N-digit telephone number) announced in the message is derived from field NUMDIGS in table CUSTSTN

If hardware resources are not available to process the call, the subscriber receives no service circuit (NOSC) treatment and must reattempt the call.

If software resources are not available to process the call, the subscriber receives no software resources (NOSR) treatment and must reattempt the call.

3 Enter the DN of the subscriber set that is being call forwarded, plus a PIN, and an octothorpe (#) to signal the end of dialing on Digitone sets.

Response:

Call Forwarding Remote Activation (continued)

If an incorrect DN or PIN is entered, the subscriber receives the previous announcement again asking him or her to enter the DN and PIN.

If, after the last allowed attempt, an acceptable DN and PIN have not been dialed, the subscriber receives feature NACK treatment.

The subscriber is requested to dial the standard call forward activation code for CFU, CFI, or CFF: “Please enter a code to activate or deactivate call forwarding.”

4 Dial the activation code.

Response:

If the set that is being call forwarded has the CFF feature assigned, the subscriber receives confirmation tone (CONF) indicating CFF has been successfully activated. The subscriber has now completed the steps for activating CFRA from a remote set.

If the set has either the CFU or CFI feature assigned, the subscriber is requested to dial the DN to which calls will be forwarded: “Calls to your number will be forwarded to another number. Please enter the number now.” The subscriber must now complete the following step to finish the CFRA activation process.

5 Dial the DN indicating where calls will be forwarded.

Response:

If the DN passes screening, the subscriber receives the following confirmation announcement: “Calls to your telephone will be forwarded to nnn nnnn. To confirm this, press 1; to forward to a different number, press 2; to cancel this, please hang up now.”

If 1 is dialed, the subscriber receives confirmation (CONF) tone, indicating that CFW is active. The CFRA activation steps are completed.

If 2 is dialed, the subscriber is asked to dial the DN to which calls are to be forwarded.

If any number other than 1 or 2 is dialed, and the number of allowed retry attempts is exceeded, the subscriber receives NACK treatment.

If the subscriber goes on-hook (hangs up), the attempt to activate CFRA is canceled, and the status of the subscriber set remains unchanged.

If the DN fails screening, the subscriber receives the following announcement: “Your calls cannot be forwarded to nnn nnnn. Please enter another number now.”

If the subscriber hangs up without dialing another number, the attempt to activate CFRA is canceled, and the status of the subscriber set remains unchanged.

If the subscriber fails to enter a DN that passes screening before the number of allowed retry attempts is reached, the subscriber receives the invalid number announcement followed by NACK treatment.

Call Forwarding Remote Activation (continued)

To deactivate CFRA

From a remote station

1 Go off-hook and dial the DISA DN.

Response:

Subscriber receives the following announcement: “Please enter the n-digit DN to forward, followed by your PIN number.”

2 Dial the DN and PIN, plus an octothorpe “#” to signal the end of dialing.

Response:

Subscriber receives the following announcement: “Please enter a code to activate or to deactivate call forwarding.”

3 Dial the CFF, CFU, or CFI deactivation code.

Response:

Confirmation tone is heard and subscribers's set is no longer call forwarded.

SPP

SPP can only be programmed from the subscriber’s own phone. This restriction improves security. The following procedure shows how to activate SPP.

Activation and deactivation of SPP by the user

At your telephone

1 Dial the SPP feature access code.

Response:

The subscriber is prompted by an announcement to dial the feature access code of the feature requiring a PIN change (for CFRA, the subscriber dials the CFRA access code).

Note: PINs exist on an individual line and individual feature basis; therefore, it is necessary to determine which feature requires a PIN change. A PIN change is only required the first time a subscriber uses the PIN.

2 Dial the CFRA feature access code.

Response:

If the subscriber dials an invalid access code, additional attempts are allowed. The number of additional attempts allowed is datafilled in subfield RETRIES of table CUSTSTN. Subscribers who exceed the retry count receive feature reorder treatment.

The following are examples of invalid feature access codes:

- no digits
- a feature access code for a non-PIN feature
- digits which do not activate an IBN

Call Forwarding Remote Activation (continued)

If the feature access code is correct, the subscriber hears an announcement providing the name of the PIN feature for which the access code was dialed. The subscriber is then prompted by an announcement for his or her current PIN.

> ***Note:*** The retry count is a customer group option that determines the number of times a subscriber is able to re-enter a rejected PIN during the SPP function. This number is used for each part of the SPP function: current PIN entry, new PIN entry, or new PIN reentry. The value of this option ranges from 1 to 3 and is datafilled by the operating company.

Dial the current PIN to be changed.

Response:

The PIN entered is verified against the PIN currently stored for the subscriber's phone. If it is not valid (the numbers do not match), the subscriber is prompted by an announcement to re-enter the PIN, if the retry count is not exceeded. If the retry count is exceeded, the subscriber is routed to an error message, and an IBN136 log is generated indicating excessive PIN entry attempts. After the error announcement, the subscriber is routed to feature reorder treatment.

If the current PIN entry is successful, the subscriber is prompted to enter a new PIN.

Dial the new PIN.

Response:

The new PIN length is verified; however, if the length is incorrect, the subscriber is prompted by an announcement to re-enter the new PIN, if the retry count is not exceeded. If the retry count is exceeded, the subscriber hears an error announcement and is routed to feature reorder treatment.

> ***Note:*** Subscribers are not allowed to enter a new PIN that equals the current PIN. This is considered an invalid new PIN entry, and the subscriber is prompted to re-enter the new PIN, if the retry count is not exceeded.

Once the length is verified, the subscriber is prompted to re-enter the new PIN (the re-entered PIN is verified against the first entry).

Redial the new PIN.

Response:

Call Forwarding Remote Activation (continued)

The re-entered new PIN is verified against the first entry. If a mismatch occurs, the subscriber is prompted by an announcement to re-enter the new PIN if the retry count is not exceeded. An error announcement is given if the retry count is exceeded, and the subscriber is routed to feature reorder treatment.

If the subscriber successfully re-enters the new PIN, an announcement confirms the successful PIN change.

Billing

Call Forwarding Remote Activation does not affect billing.

Station Message Detail Recording

Call Forwarding Remote Activation does not affect Station Message Detail Recording.

Datafilling office parameters

The following table shows the office parameters used by Call Forwarding Remote Activation. For more information about office parameters, refer to ***Office Parameters Reference Manual.***

Office parameters used by CFRA

Table name	Parameter name	Explanation and action
OFCENG	MAX_PROGRAMMERS	The value must equal to the number of CFRA announcement circuits datafilled in table ANNMEMS. Enter a value from 0 to 127. The value 0 is the default.
OFCENG	OFFICE_LANGUAGE	This parameter contains two fields, PRIMARY and SECONDARY. If the second language option is not used, the correct entry for the SECONDARY field is NIL.

Office parameter used by SPP

Table name	Parameter name	Explanation and action
OFCENG	SPP_MAX_PROGRAMMERS	This parameter is required for a switching unit with SPP and specifies the maximum number of subscribers who can change a PIN simultaneously using SPP. Enter a value from 0 to 127.

Call Forwarding Remote Activation (continued)

Datafill sequence

The following tables list the tables that require datafill to implement Call Forward Remote Activation. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for CFRA

Table name	Explanation and action
OFCENG	Engineered office parameter. This table contains data on engineering parameters for the office.
IBNFEAT	IBN line feature. This table defines the features assigned to each Subscriber Services line. ***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.
IBNXLA	IBN translation. This table contains the data for the digit translations of calls from an MDC station, attendant console, incoming trunk group, or incoming side of a two-way MDC trunk group.
CUSTSTN	Customer group station option. This table contains the station options assigned to each customer group.
DNROUTE	Directory number route. This table contains the recommended datafill for the CFRA feature. Table DNROUTE must be datafilled to assign the CFRA feature to a DISA DN.
CLLI	Command language location identifier. This table contains the CLLI codes that are used to identify the far end of each announcement used by CFRA.
ANNS	Announcements. This table contains data for each announcement (analog and digital) assigned in the switching unit.
ANNMEMS	Announcement members. This table contains the assignments for each member assigned to the announcement CLLI in table ANNS. Table ANNMEMS must be datafilled to define the number of channels to be used for CFRA announcements. The number of channels defined should equal the maximum number of concurrent CFRA users specified by office parameter MAX_PROGRAMMERS in table OFCENG. This ensures that every CFRA call can be allocated a channel in the DRAM.
DRAMTRK	Digital recorded announcement machine track. This table contains the phrases that make up the standard DISA announcement that is used for the remote access code prompt.

Call Forwarding Remote Activation (continued)

Datafill tables required for CFRA

Table name	Explanation and action
DRMUSERS	Digital recorded announcement machine users. This table contains all the announcements required by a user. It also includes facilities for the operating company to specify the prime language for announcements for various features. This table must be datafilled to define the CFRA announcements that are required in the DRAM. In addition, table DRMUSERS is used to specify the primary and secondary languages for the announcements.
DRAMS	Digital recorded announcement machines. This table contains the product engineering codes (PEC) of the CFRA prerecorded message cards in the DRAM.

Datafill tables required for SPP

Table name	Explanation and action
OFCENG	Engineered office parameter. This table contains data on engineering parameters for the office.
IBNXLA	IBN translation. This table contains the data for the digit translations of calls from an MDC station, attendant console, incoming trunk group, or incoming side of a two-way MDC trunk group.
CUSTSTN	Customer group station option. This table contains the station options assigned to each customer group.
CLLI	Common language location identifier. This table contains the CLLI codes that are used to identify the far end of each announcement used by CFRA.
ANNS	Announcements. This table contains data for each announcement (analog and digital) assigned in the switching unit.
ANNMEMS	Announcement members. This table contains the assignments for each member assigned to the announcement CLLI in table ANNS. Table ANNMEMS must be datafilled to define the number of channels to be used for CFRA announcements. The number of channels defined should equal the maximum number of concurrent CFRA users specified by office parameter MAX_PROGRAMMERS in table OFCENG. This ensures that every CFRA call can be allocated a channel in the DRAM.

Call Forwarding Remote Activation (continued)

Datafill tables required for SPP

Table name	Explanation and action
DRAMS	Digital recorded announcement machines. This table contains the PEC of the CFRA prerecorded message cards in the DRAM.
DRMUSERS	Digital recorded announcement machine users. This table contains all the announcements required by a user. It also includes facilities for the operating company to specify the prime language for announcements for various features. This table must be datafilled to define the CFRA announcements that are required in the DRAM. In addition, table DRMUSERS is used to specify the primary and secondary languages for the announcements.

Datafilling table IBNXLA

Table IBNXLA contains the data for the digit translations of calls from an MDC station, attendant console, incoming trunk group, or incoming side of a two-way MDC trunk group.

CFRA and SPP

The following table shows the datafill specific to Call Forwarding Remote Activation for table IBNXLA. Only those fields that apply directly to Call Forwarding Remote Activation are shown.

Datafilling table IBNXLA

Field	Subfield	Entry	Explanation and action
KEY		see subfields	Key. This field consists of the subfields XLANAME and DGLIDX.
	XLANAME	see subfield	Translator name. This subfield specifies the 1- to 8-character name assigned to the translator as the access code. Enter the translator name.
	DGLIDX	00 to 99	Digilator index. This subfield specifies the digit or digits assigned to the index. Enter a 2-digit access code. This access code is used by DISA subscribers who must distinguish CFRA from other DISA features.
RESULT		see subfields	Result. This field consists of the subfields TRSEL, ACR, SMDR, and FEATURE.
	TRSEL	FEAT	Translation selector. This subfield specifies the translation selector. Enter FEAT.

Call Forwarding Remote Activation (continued)

Datafilling table IBNXLA

Field	Subfield	Entry	Explanation and action
	ACR	Y or N	Account code entry. This subfield specifies whether or not an account code entry is required. Enter Y or N.
	SMDR	Y or N	Station message detail recording. This subfield specifies whether or not SMDR is required for calls originated by a customer group station or an attendant console. Enter Y or N.
	FEATURE	CFRA, SPP	Feature. This subfield specifies the feature assigned to the access code. Enter CFRA for Call Forwarding Remote Access. Or enter SPP for Station Programmable PIN.

Datafill examples for table IBNXLA

The following examples show sample datafill for table IBNXLA.

MAP display example for table IBNXLA (CFRA)

```
KEY                              RESULT
_____________________________________________________________

RXCFN   54                       FEAT N   N   Y    CFRA
```

MAP display example for table IBNXLA (SPP)

```
KEY                              RESULT
_____________________________________________________________

RXCFN   74                       FEAT N   N   Y    SPP
```

Datafilling table CUSTSTN

Table CUSTSTN contains the station options assigned to each customer group.

Call Forwarding Remote Activation (continued)

CFRA

The following table shows the datafill specific to CFRA for table CUSTSTN. Only those fields that apply directly to CFRA are shown.

Datafilling table CUSTSTN

Field	Subfield	Entry	Explanation and action
CUSTNAME		alphanumeric (1 to 16 characters)	Customer group name. This field specifies the name of the customer group. Enter from 1 to 16 alphanumeric characters for a customer group name.
OPTNAME		CFRA	Option name. This field specifies the option name. Enter CFRA for Call Forwarding Remote Access.
OPTION		see subfields	Option. This field consists of the subfields OPTION, NUMDIGS, PINRETRY, ACCRETRY, and FDNRETRY.
	OPTION	CFRA	Option. This subfield specifies the option name. Enter CFRA for Call Forwarding Remote Access.
	NUMDIGS	1 to 10	Number of digits. This subfield specifies the length (in digits) of the CFRA subscriber's DN (base station). Subscriber Services customers have a 7 datafilled here, while IBN customers have a 4. Enter a value from 1 to 10.
	PINRETRY	1 to 7	PIN retry. This subfield specifies the number of times a CFRA subscriber can attempt to enter the correct DN and PIN of the subscriber set. Enter a value from 1 to 7.
	ACCRETRY	1 to 7	Access code retry. This subfield specifies the number of times a CFRA subscriber can attempt to enter the CFW feature access code (activation or deactivation). Enter a value from 1 to 7.
	FDNRETRY	1 to 7	Forwarded DN retry. This subfield specifies the number of times a CFRA subscriber can attempt to enter a valid DN to which calls are to be forwarded. Enter a value from 1 to 7.
OPTION		see subfields	Option. This field consists of the subfields OPTION and TERMOPTN.

Call Forwarding Remote Activation (continued)

Datafilling table CUSTSTN

Field	Subfield	Entry	Explanation and action
	OPTION	CFWVAL	Option. This subfield specifies the option name. Enter CFWVAL.
	TERMOPTN	Y or N	Terminating option. This subfield specifies if the customer group has the terminating variation or routing variation of CFW validation. The terminating validation option is chosen if an attempt to place a call to the forwarding DN is made. The routing validation option specifies only that the forwarding DN is routable. Enter Y, for the terminating variation or enter N, for the routing variation of CFW validation.

SPP

The following table shows the datafill specific to SPP for table CUSTSTN. Only those fields that apply directly to SPP are shown.

Datafilling table CUSTSTN

Field	Subfield	Entry	Explanation and action
CUSTNAME		alphanumeric	Customer group name. This field specifies a customer group name. Enter 1 to 16 alphanumeric characters.
OPTNAME		SPP	Option name. This field specifies an option name. Enter SPP for Station Programmable PIN.
OPTION		SPP	Option. This field specifies option SPP on a customer group basis and retries the value for SPP. Enter SPP for Station Programmable PIN.
	RETRIES	1, 2, or 3	Retries. This subfield specifies the number of attempts to re-enter the PIN allowed the subscriber during the SPP process. The value can range from 1 to 3 retries. Enter 1, 2, or 3. This value does not include the first attempt.

Datafill examples for table CUSTSTN

The following examples show sample datafill for table CUSTSTN.

Call Forwarding Remote Activation (continued)

In the first example, the following datafill is assumed.

- The number of digits in the CFRA subscriber's DN (NUMDIGS) is seven.
- The number of attempts allowed to dial a correct DN and PIN (PINRETRY) is two.
- The number of attempts allowed to dial a correct CFW feature access code (ACCRETRY) is three.
- The number of attempts allowed to dial a correct forward-to DN (FDNRETRY) is five.
- The terminating option for CFW validation is specified.

MAP display example for table CUSTSTN (CFRA)

```
CUSTNAME    OPTNAME         OPTION
_____________________________________________________

RESGRP      CFRA            CFRA        7  2  3  5
RESGRP      CFWVAL          CFWVAL      Y
```

In the following example, option SPP is datafilled.

MAP display example for table CUSTSTN (SPP)

```
CUSTNAME    OPTNAME         OPTION
_____________________________________________________
RESGRP      SPP             SPP     2
```

Datafilling table DNROUTE

Table DNROUTE (Directory Number Route) contains the recommended datafill for the CFRA feature. Table DNROUTE must be datafilled to assign the CFRA feature to a DISA DN.

Call Forwarding Remote Activation (continued)

CFRA

The following table shows the datafill specific to CFRA for table DNROUTE. Only those fields that apply directly to CFRA are shown.

Datafilling table DNROUTE

Field	Subfield	Entry	Explanation and action
AREACODE		nnn (three-digit area code)	Area code. Specifies the area code to which the DISA DN is assigned. Enter the three-digit area code.
OFCCODE		nnn (three-digit office code)	Office code. Specifies the office code of the DISA DN. Enter the three-digit office code.
STNCODE		nnnn (four-digit station number)	Station number code. Specifies the station number of the DISA DN. Enter the four-digit station number.
DNRESULT		see subfields	Directory number result. This field consists of the subfields DN_SEL, FEATURE, CUSTGRP, SUBGRP, AUTHREQ, SMDRTO, SMDRFROM, INTRAGRP, and DISAOPT.
	DN_SEL	FEAT	Directory number selector. Specifies the DN selector. Enter FEAT.
	FEATURE	DISA	Feature. Specifies the feature to be added. Enter DISA.
	CUSTGRP	alphanumeric (1 to 16 characters)	Customer group. Specifies the customer group name to which the DISA DN belongs. CUSTGRP can be a value from 1 to 16 characters long. Enter RESGRP.
	SUBGRP	0 to 7	Subgroup. Specifies the subgroup in the customer group to which the DISA DN belongs. Enter the subgroup. SUBGRP can be any value from 0 to 7.
	AUTHREQ	Y or N	Authorization required. Specifies whether an authorization code is required for users of this DISA DN. Enter Y or N.
	SMDRTO	Y or N	Station message detail recording to. Specifies whether or not the originator accesses DISA. Enter Y or N.

Call Forwarding Remote Activation (continued)

Datafilling table DNROUTE

Field	Subfield	Entry	Explanation and action
	SMDRFROM	Y or N	Station message detail recording from. Specifies whether SMDR is required on the leg of the call from DISA to the final Subscriber Services destination. Enter Y or N. This subfield specifies whether SMDR is required on the leg of the call from DISA to the final Subscriber Services destination. Enter Y or N.
	INTRAGRP	Y or N	Intragroup. Specifies intragroup or nonintragroup calls. Enter Y for intragroup calls. Enter N for nonintragroup calls.
	DISAOPT	CFRA	DISA options. Specifies the DISA option plus $ to terminate the tuple. Enter CFRA for Call Forwarding Remote Access.

Datafill example for table DNROUTE

The following example shows sample datafill for table DNROUTE.

MAP display example for table DNROUTE (CFRA)

```
AREACODE     OFCCODE STNCODE           DNRESULT
_____________________________________________________
613          621     1000         FEAT DISA IBNTST 0 Y N N
Y (CFRA) $
```

Datafilling table CLLI

Table CLLI contains the CLLI codes that are used to identify the far end of each announcement used by CFRA and SPP.

CFRA and SPP

The following table shows the datafill specific to Call Forwarding Remote Activation for table CLLI. Only those fields that apply directly to Call Forwarding Remote Activation are shown. Refer to the data schema section of this document for a description of the other fields.

Note 1: Memory is allocated by field SIZE in table DATASIZE (Data Size) for the entry with field DATSKEY equal to CLLI.

Call Forwarding Remote Activation (continued)

Note 2: The maximum number of CLLI codes is 8192.

Datafilling table CLLI

Field	Subfield	Entry	Explanation and action
CLLI		see subfields	Common language location identifier. This field specifies the far end of each announcement, tone, trunk, group, test trunk, national milliwatt test line, and service circuit. Enter a 1- to 16-character unique identifier. This field consists of the subfields PLACE, PROV, BLDG, TRAFUNIT, and SUFX.
	PLACE	alphanumeric (4 characters)	Place. This subfield specifies the four-character code used to identify the name of the city or town at the far end of the trunk group. Enter the four-character code.
	PROV	alphanumeric (2 characters)	Province. This subfield specifies the two-character code that identifies the province or state at the far end of the trunk group. Enter the two-character code.
	BLDG	alphanumeric (2 characters)	Building. This subfield specifies the two-character code that identifies the building number at the far end of the trunk group. Enter the two-character code.
	TRAFUNIT	alphanumeric (3 characters)	Traffic unit. This subfield specifies the three-character code that identifies the destination of the traffic unit at the far end of the trunk group. Enter the three-character code.
	SUFX	alphanumeric (1 characters)	Suffix. This subfield specifies the one-character code that identifies trunk groups that terminate at the same CLLI location. Enter the one-character code.
ADNUM		numeric	Administrative trunk group number. This field specifies the unique administrative trunk group number. The number can range from a value of 0 to 1 less than the size of table CLLI, as shown in table DATASIZE (Data Size). Enter the administrative trunk group number.
TRKGRSIZ		0 to 2047	Trunk group size. This field specifies the maximum number of trunk members to be assigned to the trunk group. Enter a value from 0 to 2047.

Call Forwarding Remote Activation (continued)

Datafilling table CLLI

Field	Subfield	Entry	Explanation and action
ADMININF		see subfields	Administration information. This field specifies any information that is of use to administrators but not to the system (up to 32 characters). The recommended subfields, TRAFCLS, OFFCLS, and TRKGRTYP, follow.
	TRAFCLS	alphanumeric	Traffic class. This subfield specifies the trunk group traffic class. This information is optional and is used for administrative purposes only.
	OFFCLS	alphanumeric	Office class. This subfield specifies the office class. This information is optional and is used for administrative purposes only.
	TRKGRTYP	alphanumeric	Trunk group. This subfield specifies the trunk group type. This information is optional and is used for administrative purposes only.

Datafill examples for table CLLI

The following examples show sample datafill for table CLLI.

In the CFRA example, the first entry is for the standard DISA announcement (DISARAC). The DISARAC announcement prompts for the remote code. The second entry is for the CFRA announcements.

MAP display example for table CLLI (CFRA)

```
CLLI        ADNUM       TRKGRSIZ        ADMININF
_____________________________________________________

DISARAC     353         5           RAC_ANNOUNCEMENT
CFRAANN     354         9           CFRA_ANNOUNCEMENTS
```

MAP display example for table CLLI (SPP)

```
CLLI        ADNUM       TRKGRSIZ        ADMININF
_____________________________________________________

SPPANNC     354         9           SPP_ANNOUNCEMENTS
```

Datafilling table ANNS

Table ANNS (Announcements) contains data for each announcement (analog and digital) assigned in the switching unit.

CFRA and SPP

The following table shows the datafill specific to Call Forwarding Remote Activation for table ANNS. Only those fields that apply directly to Call Forwarding Remote Activation are shown.

Datafilling table ANNS

Field	Subfield	Entry	Explanation and action
CLLI		CLLI	Announcement CLLI key. This field specifies the CLASS announcements in table CLLI. Enter the announcement CLLI.
ANTYPE		CFRA, SPP	Announcement type. This field specifies the type of announcement. Enter CFRA for Call Forwarding Remote Access. Or enter SPP for Station Programmable PIN.
TRAFSNO		0 to 127	Traffic separator number. This field specifies whether or not the switching unit has the optional traffic separation software. If traffic separation is required, enter the outgoing traffic separation number assigned to the announcement. Enter a value from 0 to 127. If traffic separation is not required, enter 0. If the switching unit has software package NTX085AA, Traffic Separation Peg Count, the range of DTSN is dependent on the office parameter TFAN_OUT_MAX_NUMBER in table OFCENG.
MAXCONN		1 to 255	Maximum connections. This field specifies the maximum number of simultaneous connections permitted for the announcement. Enter a value from 1 to 255.

Call Forwarding Remote Activation (continued)

Datafilling table ANNS

Field	Subfield	Entry	Explanation and action
CYTIME		0 to 18	Cycle time. This field specifies the time, in seconds, for one announcement cycle on one channel. Enter a value from 1 to 18, or enter 0 to indicate that this field is ignored.
MAXCYC		1	Maximum cycles. This field specifies the maximum number of times the complete announcement is heard before the call is advanced to the next route in the route list. Enter 1.

Datafill examples for table ANNS

The following examples show sample datafill for table ANNS.

MAP display example for table ANNS (CFRA)

```
CLLI     ANTYPE   TRAFSNO MAXCONN     CYTIME   MAXCYC
_____________________________________________________________
DISARAC STND     25       30          12       2
CFRAANN CFRA     25        1           0       1
```

MAP display example for table ANNS (SPP)

```
CLLI     ANTYPE   TRAFSNO MAXCONN     CYTIME   MAXCYC
_____________________________________________________________
SPPANNC SPP      25       15          0        1
```

Datafilling table ANNMEMS

Table ANNMEMS contains the assignments for each member assigned to the announcement CLLI in table ANNS.

CFRA and SPP

Table ANNMEMS must be datafilled to define the number of channels to be used for CFRA and SPP announcements. For CFRA usage, the number of channels defined should equal the maximum number of concurrent users specified by office parameter MAX_PROGRAMMERS in table OFCENG. This ensures that every CFRA call can be allocated a channel in the DRAM.

Call Forwarding Remote Activation (continued)

The following table shows the datafill specific to Call Forwarding Remote Activation for table ANNMEMS. Only those fields that apply directly to Call Forwarding Remote Activation are shown.

Datafilling table ANNMEMS

Field	Subfield	Entry	Explanation and action
ANNMEM		see subfields	Announcement member key. This field consists of the subfields ANN and MEMBER.
	ANN	alphanumeric	Announcement. This subfield specifies the code that represents the announcement group in table CLLI. If the trunk circuit is the first in the trunk list for the announcement member, enter the ANN code. If the trunk circuit is other than the first, leave this field blank.
	MEMBER	alphanumeric	Member. This subfield specifies the code that represents the announcement group in table CLLI. If the trunk circuit is the first in the trunk list for the announcement member, enter the MEMBER code. If the trunk circuit is other than the first, leave this field blank.
HDWTYPE		DRAM	Hardware type. This field specifies the hardware type. Enter DRAM to indicate that the recorded announcement is digital.
CARD		DRA	Card code. This field specifies the card code. Enter DRA to indicate that the trunk member is digital.
MEMINFO		see subfields	Member information. This field consists of the subfields TRACK, TMTYPE, TMNO, and TMCKT.
	TRACK	0 to 31	Track number. This subfield specifies the track number assigned to the trunk card. Enter a value from 0 to 31.
	PMTYPE	TM8, MTM, DTM, or STM	Trunk module type. This subfield specifies the type of trunk module to which the trunk circuit is assigned. Enter TM8, DTM, MTM, or STM. If the announcement is digital, enter MTM or STM.

Call Forwarding Remote Activation (continued)

Datafilling table ANNMEMS

Field	Subfield	Entry	Explanation and action
	TMNO	0 to 255 (for MTM) 0 to 2047 (for TM8)	Trunk module number. This subfield specifies the trunk module number assigned to the trunk module associated with the trunk circuit. If the TM type is MTM, the value is from 0 to 255. If the TM type is TM8, the value is from 0 to 2047. For offices with DRAMs, the trunk circuit consists of an assignment to one of the channels on the MTM in which the DRAM is located. A trunk circuit cannot be assigned to TM circuit number 0.
	TMCKT	0 to 29	Trunk module circuit number. This field specifies the trunk module circuit number assigned to the trunk circuit. Enter a value from 0 to 29.

Datafill examples for table ANNMEMS

The following examples show sample datafill for table ANNMEMS.

In the CFRA example, the DISARAC announcement is a standard announcement with two tracks (for example, English and French). The subfields within field TRCKLIST are repeated, in the case of the DISARAC announcement, to define the two tracks. The CFRA announcement (CFRAANN) is a unilingual announcement with one track; therefore, the subfields within field TRCKLIST appear once to define the single track.

MAP display example for table ANNMEMS (CFRA)

```
ANNMEM          HDWTYPE     CARD    MEMINFO
_____________________________________________________

DISARAC 1       DRAM        DRA   ( 0 MTM 1 2 1 MTM 1 3)$
CFRAANN 1       DRAM        DRA         ( 0   MTM  1 4)$
```

MAP display example for table ANNMEMS (SPP)

```
ANNMEM          HDWTYPE     CARD                MEMINFO
_____________________________________________________

SPPANNC 1       DRAM        DRA          ( 0 MTM 1 0) $
```

Datafilling table DRAMTRK

Table DRAMTRK (Digital Recorded Announcement Machine Track) contains the phrases that make up the standard DISA announcement that is used for the remote access code prompt.

CFRA

The following table shows the datafill specific to CFRA for table DRAMTRK. Only those fields that apply directly to CFRA are shown.

Datafilling table DRAMTRK

Field	Subfield	Entry	Explanation and action
ANNTRACK		see subfields	Announcement track. This field consists of the one-line entry of the subfields ANN and TRACK.
	ANN	alphanumeric or blank	Announcement. This subfield specifies the name that represents the announcement group of the remote DISA access code in table CLLI (alphanumeric or blank). Enter the name.
	TRACK	0 to 31	Track. This subfield specifies the track number assigned to the announcement that matches the track number in table ANNMEMS. Enter a value from 0 to 31 (or leave blank).
PHSLIST		see subfield	Phrase list. This field consists of the subfield PHRASE.
	PHRASE	alphanumeric	Phrase. This subfield specifies the list of phrase names. Each phrase name must be separated from the others by a blank character. Enter the phrase names.

Datafill example for table DRAMTRK

The following example shows sample datafill for table DRAMTRK. In this CFRA example it is assumed that the phrases specified in the phrase list have been recorded on DRA cards. The DISAENG phrase is the DISA request announcement in English, and the DISAFRE phrase is the same announcement in French.

Call Forwarding Remote Activation (continued)

MAP display example for table DRAMTRK (CFRA)

```
ANNTRACK                          PHSLIST
_____________________________________________________________

DISARAC 0                        (    DISAENG)$
DISARAC 1                        (    DISAFRE)$
```

Datafilling table DRMUSERS

Table DRMUSERS contains all the announcements required by a subscriber and includes the facility for the operating company to specify the primary and secondary languages for announcements. This table must be datafilled to define the CFRA announcements that are required in the DRAM.

Note: Defining and assigning primary and secondary languages is executed through the Service Order System (SERVORD) line option SL.

CFRA

The following table shows the datafill specific to CFRA for table DRMUSERS. Only those fields that apply directly to CFRA are shown.

Datafilling table DRMUSERS

Field	Subfield	Entry	Explanation and action
USERANN		see subfields	User announcement. This field consists of the subfields CLLI and ANNUM.
	CLLI	alphanumeric	Common language location identifier. This subfield specifies name associated with the CFRA announcements specified in table CLLI.
	ANNNUM	1 to 255	Announcement number. This subfield specifies the number assigned to the SPP. Enter a value from 1 to 255. ***Note:*** For CFRA usage, there are six CFRA announcements consisting of phrases that are recorded on CFRA PROM cards.

Call Forwarding Remote Activation (continued)

Datafilling table DRMUSERS

Field	Subfield	Entry	Explanation and action
PHSLIST		see subfield	Phrase list. This field consists of the subfield PHRASES.
	PHRASES	alphanumeric	Phrases. This subfield specifies a list of up to 32 phrase names to be associated with the announcement. The phrase names specified here correspond to the CFRA phrases that have been recorded on the CFRA PROM cards. Enter the phrase names.

Customer site personnel can record their own messages. The CLASS Phrase I English Announcements card, NT1X7AK, is used in conjunction with this process to allow for DN voiceback.

The DRAMREC facility is used to select the appropriate phrases by customer site personnel. Site personnel choose the appropriate phrase ID they deem necessary.

The phrase IDs and content (silences, phrases, and tones) associated with the NT1X76AK card can be found in the ***Hardware Description Manual.***

The ***Provisioning Manual*** contains detailed information for provisioning the NT1X76AK card.

Note: The ENG VAR DN F (English Variable Directory Number Forward) phrase comes from the NT1X76AK card. This phrase identifies the forward-to DN.

The CFRA Announcement-English card (NT1X76AM) contains the English phrases that comprise the six prerecorded CFRA announcements. Table DRMUSERS must be datafilled to associate the announcement names with the required phrase names. The DRAM PROM memory card number for English announcements is CFRA Announcement-English (NT1X76AM).

Call Forwarding Remote Activation (continued)

The DRAM PROM memory card number for French announcements is CFRA Announcement-French (NT1X76BM). The six CFRA announcements are listed in the following table.

CFRA announcements

CFRA announcement	English phrase
CFRAANN 1	"Please enter the n digit telephone number to forward, followed by your PIN number."
CFRAANN 2	"Please enter a code to activate or to deactivate call forwarding."
CFRAANN 3	"Calls to your number will be forwarded to another number. Please enter this number now."
CFRAANN 4	"Calls to your telephone will be forwarded to nnn-nnnn. To confirm this, press 1; to forward to a different number, press 2; to cancel this, hang up now."
CFRAANN 5	"Your calls cannot be forwarded to nnn-nnnn. Please enter another number now."
CFRAANN 6	"Your calls cannot be forwarded to nnn-nnnn."
Note: The n digit is the number of digits required for the telephone number. Usually this number is 7; however, the number can be 3 or 4 for Centrex.	

The following table lists the five CFRA announcements and the individual phrases that make up the announcements.

CFRA announcements and phrases

Announcement	Phrase name	Phrase
CFRAANN 1	CFRAEDNPIN1	"Please enter the"
	CFRAFDNPIN1	French equivalent of CFRAEDNPIN1
	CFRAEDIGITS	"n digit"
	CFRAFDIGITS	French equivalent of CFRAEDIGITS
	CFRAEDNPIN2	"telephone number to forward, followed by your PIN number"
	CFRAFDNPIN2	French equivalent of CFRAEDNPIN2
	CFRAEDNPIN3	"Please enter the telephone number to forward, followed by your PIN number."

Call Forwarding Remote Activation (continued)

CFRA announcements and phrases

Announcement	Phrase name	Phrase
	CFRAFDNPIN3	French equivalent of CFRAEDNPIN3
CFRAANN 2	CFRAEFAC	"Please enter a code to activate or to deactivate call forwarding."
	CFRAFFAC	French equivalent of CFRAEFAC
CFRAANN 3	CFRAEFWDN	"Calls to your number will be forwarded to another number. Please enter this number now."
	CFRAFFWDN	French equivalent of CFRAEFWDN
CFRAANN 4	CFRAEFDW1	"Calls to your telephone will be forwarded to"
	CFRAFFDW1	French equivalent of CFRAEFDW1
	ENGVARDNF	"nnn-nnnn" (voice back number of number input)
	FREVARDNF	French equivalent of ENGVARDNF
	CFRAEFWD2	"To confirm this, press 1; to forward to a different number, press 2; to cancel this, hang up now."
	CFRAFFWD2	French equivalent of CFRAEFWD2
CFRAANN 5	CFRAEERR1	"Your calls cannot be forwarded to"
	CFRAFERR1	French equivalent of CFRAEERR1
	ENGVARDNF	"nnn-nnnn" (voice back number of number input)
	FREVARDNF	French equivalent of ENGVARDNF
	CFRAEERR2	"Please enter another number now."
	CFRAFERR2	French equivalent of CFRAEERR2
CFRAANN 6	CFRAEERR1	"Your calls cannot be forwarded to"
	CFRAFERR1	French equivalent of CFRAEERR1
	ENGVARDNF	"nnn-nnnn" (voice back number of number input)
	FREVARDNF	French equivalent of ENGVARDNF

Call Forwarding Remote Activation (continued)

SPP

The following table shows the datafill specific to SPP for table DRMUSERS. Only those fields that apply directly to SPP are shown.

Datafilling table DRMUSERS

Field	Subfield	Entry	Explanation and action
USERANN		see subfields	User announcement. This field consists of the subfields CLLI and ANNNUM. These subfields are described below.
	CLLI	SPPANNC	Common language location identifier. This subfield specifies the name associated with the CFRA announcements specified in table CLLI. For SPP usage, enter SPPANNC.
	ANNNUM	1 to 255	Announcement number. This subfield specifies the number assigned to the SPP. Enter a value from 1 to 255. ***Note:*** For CFRA usage, there are five CFRA announcements consisting of phrases that are recorded on CFRA PROM cards.
PHSLIST		see subfield	Phrase list. This field consists of the subfield PHRASES.
	PHRASES	alphanumeric	Phrases. This subfield specifies a list of up to 32 phrase names to be associated with the announcement. Enter SPPANNC1, SPPANNC2, SPPANNC3, SPPANNC4, SPPANNC5, SPPANNC6, SPPANNC7, SPPANNC8, or CFRAFRST.

Datafill examples for table DRMUSERS

The following examples show sample datafill for table DRMUSERS.

The phrase names used in the CFRA example are the phrase names of the bilingual announcements that are provided on DRAM PROM cards for the CFRA feature. In this example LANGUAGE1 is English, and LANGUAGE2 is French. English phrase names have a prefix of CFRAE, and French phrases have a prefix of CFRAF.

Call Forwarding Remote Activation (continued)

MAP display example for table DRMUSERS (CFRA)

```
USERANN   PHSLIST
_____________________________________________________________________

CFRAANN 1 (LANGUAGE1)    (CFRAEDNPIN1)  (CFRAEDIGITS)  (CFRAEDNPIN2)
          (LANGUAGE2)    (CFRAFDNPIN1)  (CFRAFDIGITS)  (CFRAFDPIN2)$

CFRAANN 2 (LANGUAGE1)    (CFRAEFAC)     (LANGUAGE2)    (CFRAFFAC)$

CFRAANN 3 (LANGUAGE1)    (CFRAEFWDN)    (LANGUAGE2)    (CFRAFFWDN)$

CFRAANN 4 (LANGUAGE1)    (CFRAEFDW1)    (ENGVARDNF)    (CFRAEFWD2)
          (LANGUAGE2)    (CFRAFFDW1)    (FREVARDNF)    (CFRAFFWD2)$

CFRAANN 5 (LANGUAGE1)    (CFRAEERR1)    (ENGVARDNF)    (CFRAEERR2)
          (LANGUAGE2)    (CFRAFERR1)    (FREVARDNF)    (CFRAFERR2)

CFRAANN 6 (LANGUAGE1)    (CFRAEERR1)    (ENGVARDNF)    (LANGUAGE2)
          (CFRAFERR1)    (FREVARDNF)$
```

The following examples show sample datafill for table DRMUSERS.

MAP display example for table DRMUSERS (SPP)

```
USERANN            PHSLIST
_____________________________________________________________________
SPPANNC 1        (SPPANNC1)$
SPPANNC 2        (SPPANNC2)$
SPPANNC 3        (SPPANNC3)$
SPPANNC 4        (SPPANNC4)$
SPPANNC 5        (SPPANNC5)$
SPPANNC 6        (SPPANNC6)$
SPPANNC 7        (SPPANNC7)$
SPPANNC 8        (SPPANNC8)$
CFRAANN 7        (CFRAFRST)$
```

Datafilling table DRAMS

Table DRAMS contains the PECs of the CFRA prerecorded message and SPP announcement cards in the DRAM. Additional DRAM memory cards are needed to store the SPP announcements and the CFRAFRST announcement.

Call Forwarding Remote Activation (continued)

CFRA

The following table shows the datafill specific to CFRA for table DRAMS. Only those fields that apply directly to CFRA are shown.

Datafilling table DRAMS

Field	Subfield	Entry	Explanation and action
DRAMCARD		see subfields	Digital recorded announcement machine card. This field consists of the one-line entry of subfields DRAM and CARD.
	DRAM	0 to 63	Digital recorded announcement machine. This subfield specifies the DRAM. Enter the DRAM number (a value from 0 to 63).
	CARD	1, 3, 5, or 7	Card. This subfield specifies the CFRA prerecorded message card. Enter the CFRA number (a value of 1, 3, 5, or 7). The CFRA number corresponds to a double density card in odd slots 1, 3, 5, or 7. The controller card is in slot 0.
TMTYPE		MTM or STM	Trunk module type. This field specifies the TM type on which the prerecorded message card is located. Enter MTM if the TM is a maintenance trunk module, or enter STM if the TM is a service trunk module.
TMNO		0 to 2047	Trunk module number. This field specifies the TM number assigned to the MTM or STM. Enter a value from 0 to 2047.
TMCKT		2, 6, 10, or 14	Trunk module circuit. Specifies the trunk module circuit number to which the trunk card is assigned. Enter the trunk module circuit number (2, 6, 10, or 14). Trunk module circuit numbers 2, 6, 10, and 14 are double density cards.
CARDCODE		appropriate PEC	Card code. This field specifies the PEC (NT1X76AM or NT1X76BM) for the CFRA prerecorded message card. Cards NT1X76AM and NT1X76BM are the English and French versions of the CFRA announcements, respectively. Enter the PEC.
CARDINFO		see subfields	Card information. This field consists of the subfields CARDTYPE and BLKLIST.

Call Forwarding Remote Activation (continued)

Datafilling table DRAMS

Field	Subfield	Entry	Explanation and action
	CARDTYPE	PROM	Card type. This subfield specifies the card type (PROM, RAM, or EEPROM). Enter PROM to indicate that the CFRA announcement card contains prerecorded messages.
	BLKLIST	see refinement	Block list. This subfield consists of the refinement BLOCKNO.
	BLOCKNO	numeric	Block number. Enter the speech block numbers (0 and 1, 2 and 3, 4 and 5, or 6 and 7) that are assigned on the card. (List 2, with values from 0 to 7, or list up to 16, with values from 0 to 31.) Single-density cards have one speech block, and double-density cards have two speech blocks. Block numbers must not be repeated in the same DRAM, and a maximum of two speech blocks are allowed in the range of 0 to 7.

SPP

The following table shows the datafill specific to SPP for table DRAMS. Only those fields that apply directly to SPP are shown.

Datafilling table DRAMS

Field	Subfield	Entry	Explanation and action
DRAMCARD		see subfields	Digital recorded announcement machine card. This field consists of the one-line entry of subfields DRAM and CARD.
	DRAM	0 to 63	Digital recorded announcement machine. This subfield specifies the DRAM. Enter the DRAM number (a value from 0 to 63).
	CARD	see subfield	Card. This subfield specifies the SPP announcement card. Enter the number. The controller card is in slot 0.
TMTYPE		MTM or STM	Trunk module type. This field specifies the TM type on which the prerecorded message card is located. Enter MTM if the TM is a maintenance trunk module, or enter STM if the TM is a service trunk module.

Call Forwarding Remote Activation (continued)

Datafilling table DRAMS

Field	Subfield	Entry	Explanation and action
TMNO		0 to 2047	Trunk module number. This field specifies the TM number assigned to the MTM or STM. Enter a value from 0 to 2047.
TMCKT		numeric	Trunk module circuit. This field specifies the trunk module circuit number to which the trunk card is assigned. Enter the trunk module circuit number.
CARDCODE		PEC	Card code. This field specifies the PEC (NTX79AA) to store the SPP customized announcements. Enter the PEC.
CARDINFO		see subfields	Card information. This field consists of the subfields CARDTYPE and BLKLIST.
	CARDTYPE	EEPROM	Card type. This subfield specifies the card type (PROM, RAM, or EEPROM). Enter EEPROM.
	BLKLIST	see refinement	Block list. This subfield consists of the refinement BLOCKNO.
	BLOCKNO	numeric	Block number. Enter the speech block numbers (0 and 1, 2 and 3, 4 and 5, or 6 and 7) that are assigned on the card. (List 2, with values from 0 to 7, or list up to 16, with values from 0 to 31.) Single-density cards have one speech block, and double-density cards have two speech blocks. Block numbers must not be repeated in the same DRAM, and a maximum of two speech blocks are allowed in the range of 0 to 7.

Datafill examples for table DRAMS

The following examples show sample datafill for table DRAMS.

In the CFRA example, CFRA announcement cards (1 and 2) are located in DRAM 0, which corresponds to TM type STM. Card 1 is a CFRA Announcement-English (NT1X76AM) PROM card containing prerecorded CFRA announcements in English. Card 2 consists of the French versions of the CFRA announcements found on card 1.

Call Forwarding Remote Activation (continued)

MAP display example for table DRAMS (CFRA)

```
DRAMCARD   TMTYPE   TMNO   TMCKT    CARDCODE     CARDINFO
_____________________________________________________________

0  1       STM      0      2        1X76AM       PROM 0 1
0  3       STM      0      2        1X76BM       PROM 2 3
```

MAP display example for table DRAMS (SPP)

```
DRAMCARD   TMTYPE TMNO   TMCKT    CARDCODE     CARDINFO
_____________________________________________________________

0  2       MTM    1      4        1X79AA   EEPROM (2) (3) $
```

Translation verification tools

Not applicable.

SERVORD

SERVORD is used to add, delete, and change option CFRA to or from a line.

SERVORD limitations and restrictions

The following SERVORD limitations and restrictions apply to Call Forwarding Remote Activation:

- CFRA can only be assigned to a Subscriber Services line if CFW is already assigned to the line or if CFW is being assigned to the line along with CFRA.
- The CFRA PIN must be two to ten digits long.
- FIRSTUSE indicates the end user needs to change the PIN before the first use of CFRA.

Call Forwarding Remote Activation (end)

SERVORD prompts

The following table shows the SERVORD prompts used to add Call Forwarding Remote Activation to a line.

SERVORD prompts for Call Forwarding Remote Activation

Prompt	Valid input	Explanation
OPTION	CFRA	Specifies that CFRA is assigned to the line
CFRAPIN	2 to 10 digits	Specifies the initial PIN assigned to the line by the operator

SERVORD example for adding Call Forwarding Remote Activation

The following SERVORD example shows how Call Forwarding Remote Activation is added to a line using the ADO command.

SERVORD example for Call Forwarding Remote Activation in prompt mode

```
>SERVORD
SO:
> ADO
SONUMBER:   NOW 0 2 11 AM
>
DN_OR_LEN:
> 6751001
OPTION:
> CFRA
CFRAPIN:
> 1234
FIRSTUSE:
> Y
OPTION:
> $
COMMAND AS ENTERED:
ADO NOW 0 2 11 AM 6751001 (CFRA 1234 Y) $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
```

SERVORD example for Call Forwarding Remote Activation in no-prompt mode

```
> ADO $ 6751001 CFRA 1234 Y $ Y
```

History

SN09 (DMS)

Speed Calling description corrected for Q01095576.

History section added.

Call Waiting Auto Suppression (CWAS)

Ordering codes

Functionality ordering code: CSTC0001

Market specific: Canadian only

Release applicability

NA007 and up

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

Teen Service overview

Teen Service allows multiple Directory Numbers (DN) to be assigned to one line without the need for additional line equipment. It is a line option for single party lines that allows one Primary DN (PDN) and up to six Secondary DNs (SDN) to be defined. Currently when provisioning the SDN option to a line, the sub-option SDN_OPT can accept the following three values:

- N : meaning that when the SDN is called, the line will ring and it will not be forwarded along with the PDN if the PDN has CFW active
- P : meaning that the SDN will be forwarded along with the PDN if the PDN has CFW active
- E: Enhanced SDN which has the ability to have its own set of options independent from the PDN.

  Note: Option E is only available on RES or IBN lines.

A call through an SDN to an idle line results in the line ringing with a cadence associated with that SDN. A call to a busy line having both Teen Service and Call Waiting causes that line to receive a distinctive Call Waiting tone. The CWAS feature enhances this existing Teen Service to allow end-users who subscribe to the Call Waiting (CWT) feature to receive data calls such as faxes that are immune from call waiting tone disruptions.

Customers can have the Call Waiting feature on their primary directory number (PDN) and have a secondary directory number (SDN) dedicated to receiving data such as fax calls. The multiple DNs share the same physical line but the CWAS SDN is not disrupted by CWT alerting tones when a second call arrives.

Call Waiting Auto Suppression (CWAS) (continued)

For example, when a first call is placed to a PDN (or any regular SDNs assigned to the line), the CWT feature functions normally and alerts for subsequent incoming calls. However, when a first call is placed to the CWAS SDN, subsequent incoming calls to that line do not receive or generate call waiting tones.

CWAS functionality is not restricted to FAX or modem lines, but can also be used for voice.

Call Waiting (CWT) service overview

CWT is a feature that runs concurrently on two calls, the established (talking) call and the new incoming (waiting) call. The following terminology is used:

The Controller is the party that is the destination of the new incoming call. The controller has the ability to use switchhook flashes to alternate between two calls.

The Waiting party is the party that has originated a call that is waiting to be answered by the controller. A call is considered waiting until it has been answered by the controller. Only the originator of a new incoming call can be waiting.

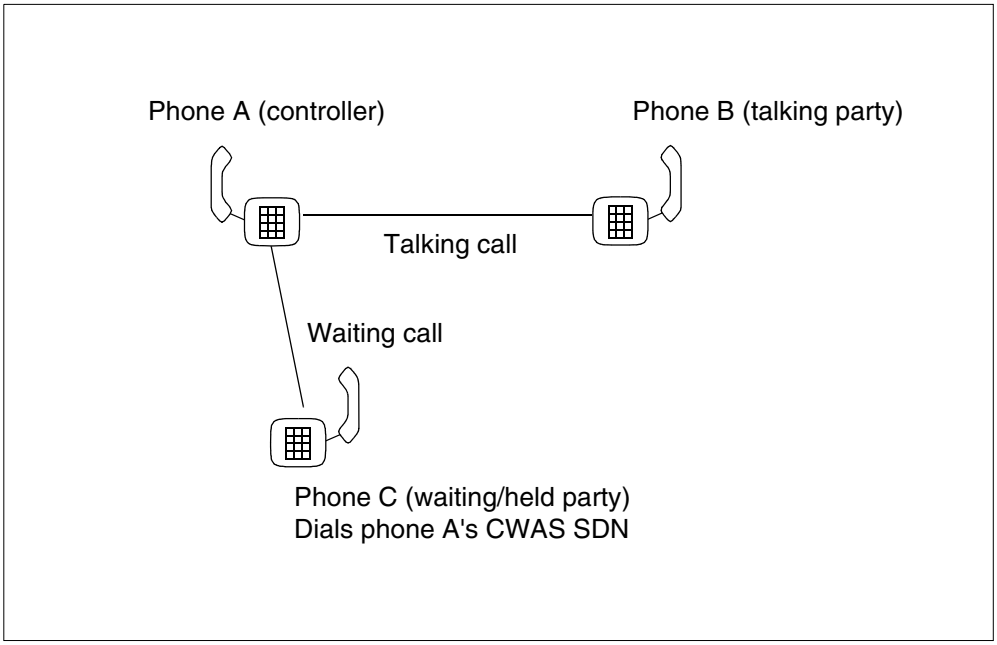
The Talking party is the party that has a speech connection with the controller. If the controller performs a switchhook flash, the talking party becomes the held party and the waiting or held party becomes the talking party.

The Held party is a caller that has been answered by the controller but who has been put on hold

The following figure shows a typical call waiting scenario.

Call Waiting Auto Suppression (CWAS) (continued)

Basic Call Waiting setup



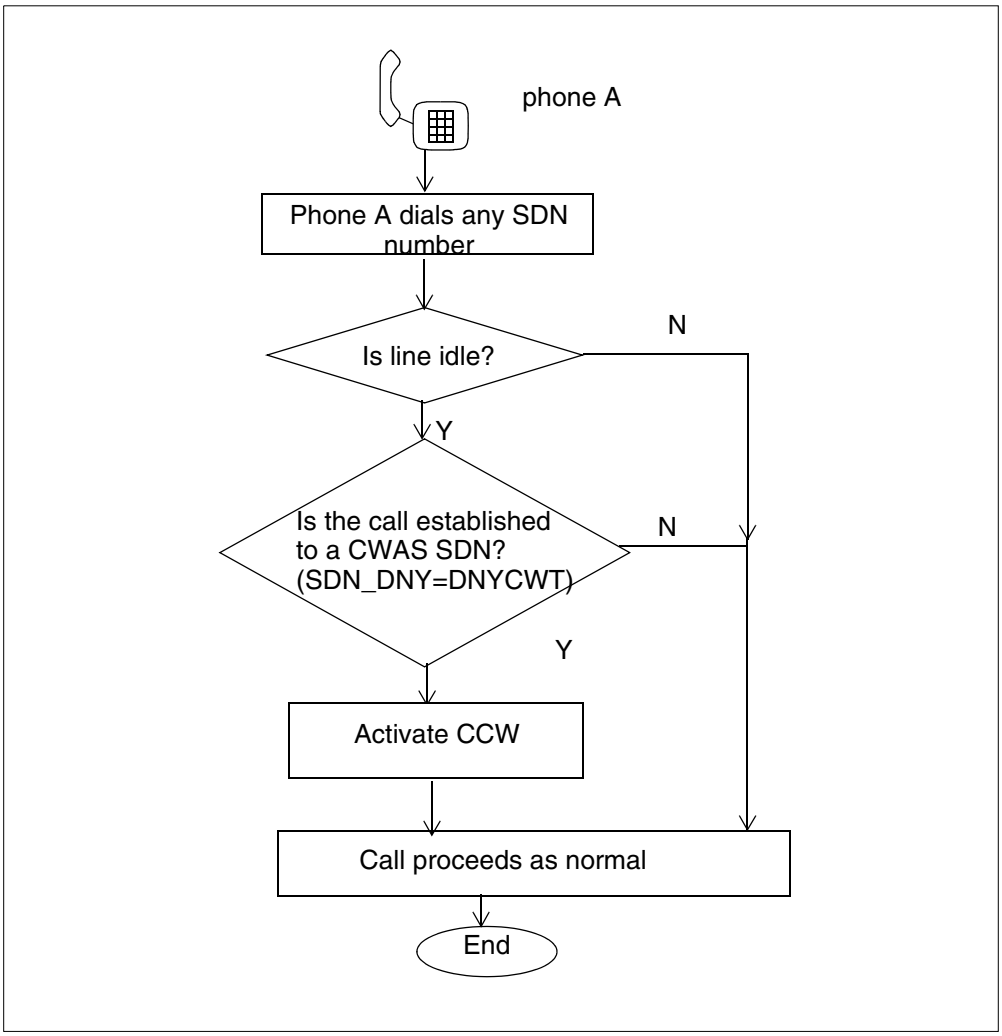
Operation

When the CWAS feature is activated (the CWAS SOC state is ON and the appropriate datafill is present), each time a call is made to a CWAS SDN, the CWAS feature uses CCW to prevent any incoming calls from alerting the terminating line. In addition, the appropriate CCW OM register group is pegged to indicate that CCW has been invoked.

The following figure contains an event flowchart showing the decision events associated with a first call to a CWAS SDN.

Call Waiting Auto Suppression (CWAS) (continued)

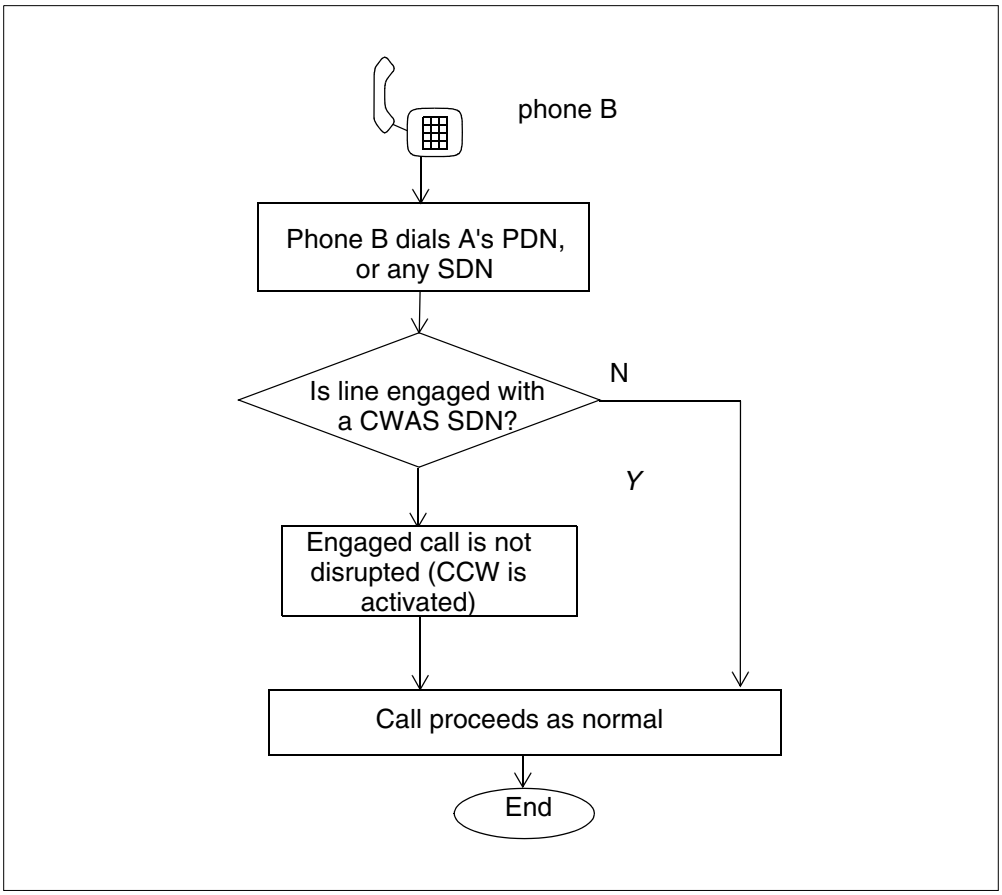
Event flowchart of a first call to a CWAS SDN



The following figure contains an flowchart showing the decision events associated with a subsequent call to a CWAS SDN that is currently busy with an existing call.

Call Waiting Auto Suppression (CWAS) (continued)

Event flowchart of a subsequent call to a CWAS SDN

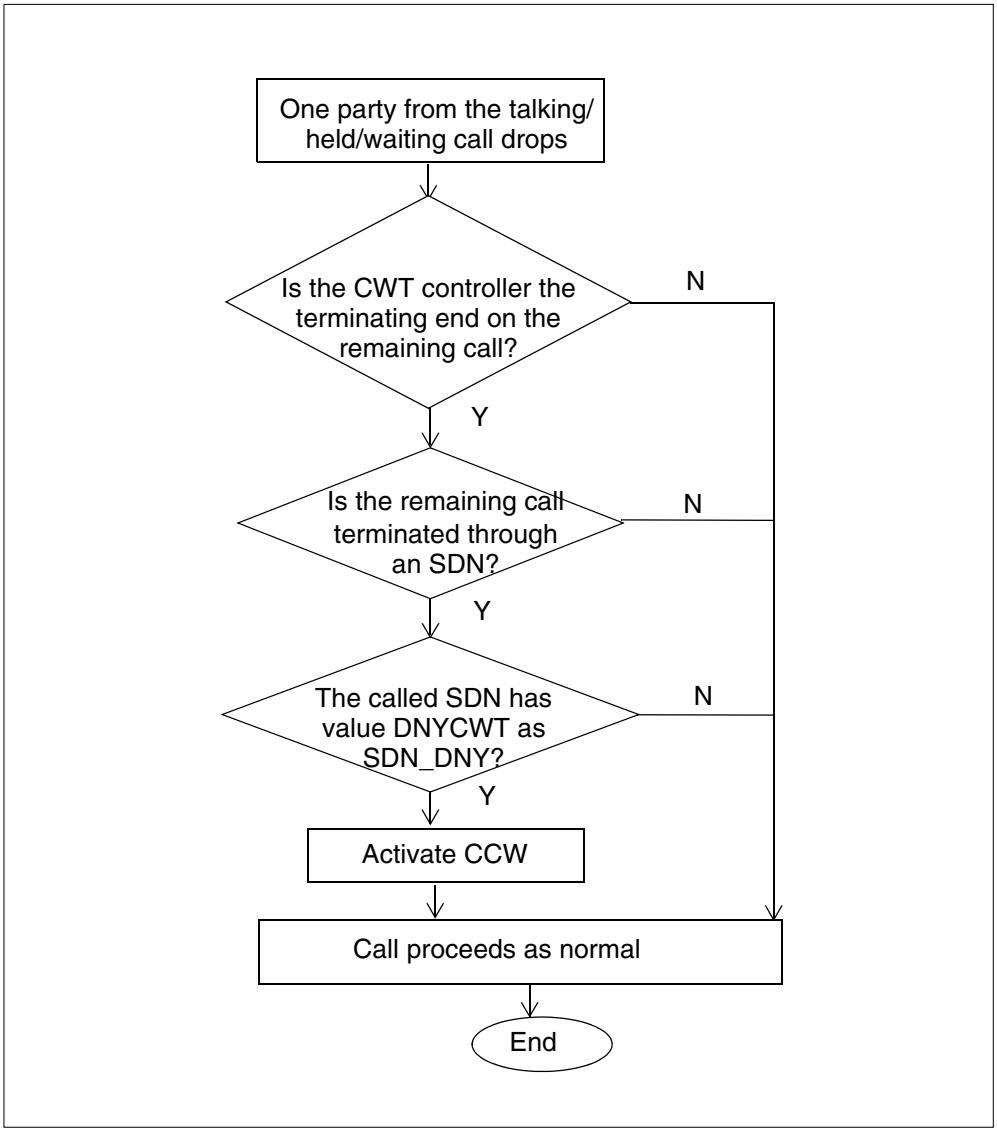


The following figure contains an flowchart showing the decision events associated with a call terminating to a CWAS SDN that has a second call in the call waiting state.

Event flowchart of a call terminating to a CWAS SDN with another call in the

Call Waiting Auto Suppression (CWAS) (continued)

CWT state



Translations table flow

Call Waiting Auto Suppression (CWAS) does not affect translations table flow. Tables LENFEAT and IBNFEAT are automatically datafilled by SERVORD when the SDN feature is added.

Call Waiting Auto Suppression (CWAS) (continued)

Limitations and restrictions

The following limitations and restrictions apply to Call Waiting Auto Suppression (CWAS):

- The target DMS platform for this feature is the DMS-100 and the DMS-100/200 with BRISC processors. This feature is not supported by the NT40 or SuperNode platforms
- Only RES and POTS lines can be assigned this feature.

Interactions

The following paragraphs describe the interactions between Call Waiting Auto Suppression (CWAS) and other functionalities.

Advanced Intelligent Network (AIN)

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

AIN0.0

All triggers have precedence over the CWAS feature.

AIN0.1

The TAT (Terminating Attempt Trigger) trigger has precedence over CWAS.

AIN0.2

In AIN0.2, a *T_Busy* termination trigger attempt associated with an *Offer_Call* SCP response forces the busy called party to receive call waiting alerting. When a call is engaged with a *CWT-denied* SDN, any subsequent calls arriving with an AIN0.2 *T_Busy* termination trigger attempt along with an *Offer_Call* SCP response will be processed as follows: The *Offer_Call* message sent by the SCP is not processed by the SSP and the call proceeds as a normal CWAS call, and the caller is given standard busy treatment.

Automatic Call Back/Automatic Recall (ACB/AR)

On a busy condition, ACB enables a subscriber to be called back when the called line becomes idle.

AR enables a subscriber to make a call to the last station that called, whether or not the call has been answered.

The CWAS feature does not impact the ACB and AR features.

Call Waiting Auto Suppression (CWAS) (continued)

Cancel Call Waiting (CCW)

The CCW feature can be activated at call origination to prevent CWT tone disruptions from subsequent incoming calls. The CWAS feature automatically activates CCW at call termination if the called DN is a *CWT-denied* SDN number.

The CWAS feature uses CCW operational measurements (OM) registers. CWTPOTS (for POTS lines) and CALLWAIT (for RES lines) OM groups are incremented by the CWAS feature.

A termination attempt on a busy *CWT-denied* SDN will peg the CWTPNOWT OM register for POTS lines (CWTPOTS OM group). A termination attempt on a busy *CWT-denied* SDN will peg the DNYBYCCW OM register for RES lines (CALLWAIT OM group). Both OM registers count the number of attempts to use call waiting that are denied because the cancel call waiting feature is active on the called line.

Call Forward Busy Line (CFBL) and Call Waiting (CWT)

On a line where Call Waiting (CWT) and Call forward Busy Line (CFBL) are both present, the CWT feature takes precedence over the CFBL feature. When the Cancel Call waiting feature is active on a line, the CWT precedence is removed and the CFBL feature becomes active on that line. As a result, when a call is established to a *CWT-denied* SDN line, it is as if CCW feature had been activated on that line. Attempts to call the PDN or any of the SDNs of type P are given CFBL treatment. Attempts to call any of the SDNs of type N are given standard busy treatment.

Distinctive Ringing Call Waiting (DRCW) and Call Waiting (CWT)

The DRCW feature provides information to the subscriber about the calling line by providing distinctive ringing patterns or tones.

When a call is made to a *CWT-denied* SDN, the CCW feature is active on the terminating line and cancels all call waiting functions including DRCW. As a result, that line will not receive distinctive CWT tone on any incoming calls attempting DRCW.

Call Waiting Chaining

Call Waiting Chaining provides the capability to chain together CWT calls to non-controller CWT lines. As a result, non-controller lines can also receive CWT call

Call Screening, Monitor and Intercept (CSMI)

Call Screening, Monitor and Intercept (CSMI) enhances voice messaging services by improving incoming call management and message handling for

residential and small business end-users. CSMI allows the monitoring and interception of messages that are being handled by a Voice Messaging System (VMS).

The CSMI feature is compatible with the CWAS feature when the CWAS secondary DN is of type P. The CWAS SDN of type P follows the call forwarding options assigned to the PDN (e.g. CFDA, CFBL) and thus allows terminating calls destined to the CWAS SDN to be forwarded to the VMS system in the context of a voice mail user.

Assuming that voice messaging system can receive data calls such as FAX calls and store it like a voice message, the CWAS end-user is therefore capable of Call Screening, Monitor and Intercept (CSMI) that enhances voice messaging services by improving incoming call management and message handling for residential and small business end-users. CSMI allows the monitoring and interception of messages that are being handled by a Voice Messaging System (VMS) whether or not the call is voice or data. The CWAS end-user must be forewarned that performing interception of a data call in progress leads to data corruption and ends the data call transfer.

Emergency stand-alone (ESA)

The ESA is an emergency service that permits local calling within a Remote Switching Center (RSC) or Remote Line Concentrating Module (RLCM) in the event of loss of communications with the host office.

In the event that a remote peripheral is in an emergency stand-alone mode, the CWT feature is not permitted to be invoked. Therefore, the ESA mode would maintain the CWAS functionality where the denial of the CWT feature is performed by the ESA peripheral software.

Long Distance Signal (LDS)

The LDS feature notifies the subscriber of an incoming toll call by applying distinctive ringing or tone to the line.

When a call is made to a *CWT-denied* SDN number, the CCW feature is active and nullifies all call waiting functions including LDS. The caller receives standard busy treatment.

Spontaneous Call Waiting Identification (SCWID) and SCWID with disposition (DSCWID)

The SCWID and DSCWID features allow subscribers to receive calling party information during call waiting. The DSCWID feature provides the subscriber with a set of disposition options to treat incoming calls.

Call Waiting Auto Suppression (CWAS) (continued)

When a call is made to a *CWT-denied* SDN number, the CCW feature is active and nullifies all call waiting functions including SCWID and DSCWID. The caller receives standard busy treatment.

Series Completion (SCMP)

On a line where line options Call Waiting (CWT) and Series Completion (SCMP) are both present, the CWT feature takes precedence over the SCMP feature. When the Cancel Call waiting feature is active on a call, the CWT precedence is removed and the SCMP feature becomes active on that call.

For example, when a call is established to a *CWT-denied* SDN number, it is as if CCW feature had been activated on that line. Subsequent calls to the PDN are given SCMP treatment. Subsequent calls to the SDNs of type N or P, are given standard busy treatment.

No Double Connect (NDC)

The NDC feature prevents a line from being connected to a verification or test circuit when it is off-hook. Secondary directory numbers can be assigned to a line that is subscribed to NDC. If any of the SDNs assigned are *CWT-denied* SDNs, there is no impact on NDC functionality.

Operator Interrupt service and Busy Line Verification (BLV)

The Operator Interrupt service allows the operator, after having performed a Busy Line Verification (BLV) function, to interrupt a conversation in progress to relay a message (usually an emergency message). If the called party is willing to hang up, the operator can connect the call to the called party.

The Operator Interrupt service has precedence over the CWAS feature. A call established to a CWAS SDN can be interrupted by an Operator Interrupt service request.

Activation/deactivation by the end user

Call Waiting Auto Suppression (CWAS) requires no activation or deactivation by the end user.

Billing

Call Waiting Auto Suppression (CWAS) does not affect billing.

Station Message Detail Recording

Call Waiting Auto Suppression (CWAS) does not affect Station Message Detail Recording.

Call Waiting Auto Suppression (CWAS) (continued)

Office parameters

Call Waiting Auto Suppression (CWAS) does not affect office parameters.

Datafill sequence

The following table lists the tables that require datafill to provide Call Waiting Auto Suppression. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Call Waiting Auto Suppression (CWAS

Table	Purpose of table
IBNFEAT feature SDN	Allows multiple directory numbers to be assigned to an IBN line without additional line equipment
LENFEAT feature SDN	Allows multiple directory numbers to be assigned to a POTS line without additional line equipment
Note: Tables LENFEAT and IBNFEAT are automatically datafilled by SERVORD when the SDN feature is added. These tables appear here only for reference.	

Datafilling table IBNFEAT feature SDN

The following table shows the datafill specific to CWAS for table IBNFEAT feature SDN

Datafilling table IBNFEAT

Field	Subfield	Entry	Explanation and action
DF		SDN	Data feature. Enter the SDN for the Secondary Directory Number feature.
FEATURE		SDN	Datafeature. Enter the SDN
DATA		see subfields	Data. This field consists of up to six multiples of subfields DN, SDNRING, SDNOPT, and SDN_DNY. If less than six multiples are required, end the list with a $ (dollar sign).
	DN	numeric (7 digits)	Directory number. Enter the DN of the SDNs in sequential order. The DN must be unassigned and found in table DN. Enter $ if the SDN is undefined.
	SDNRING	0 to 3	Secondary Directory Number ring pattern. Enter the ring pattern that the SDN is to receive. See tables 1 and 2.

Call Waiting Auto Suppression (CWAS) (continued)

Datafilling table IBNFEAT

Field	Subfield	Entry	Explanation and action
	SDNOPT	E, N, or P	Secondary Directory Number option. Enter E if the SDN is to support its own options (options of the PDN are not utilized by the SDN). Enter N if the SDN is not to be call forwarded, regardless of whether the PDN has Call Forwarding Exempt (CFX). Enter P if the SDN is to be forwarded to the same number as the PDN, provided that the PDN has CFW and CFW is active (activated by the PDN).
	SDN_DNY	DNYCWT, NODNY, or $	Secondary Directory Number Deny. Enter DNYCWT if CWT tone is to be disconnected for calls to the SDN. Enter $ if Call Waiting (CWT) tone is to remain active for calls to the SDN. Default value is $. ***Note:*** NODNY will only appear when the option was datafilled in a patch to the previous switch software load.

Datafill example for table IBNFEAT feature SDN

The following example shows sample datafill for table IBNFEAT feature SDN.

MAP display example for table IBNFEAT feature SDN

```
            LEN
           DNNO       DF    FEATURE
                                                                DATA
-------------------------------------------------------------------
HOST 00 0 01 04
              0       SDN       SDN
                     6219998 1 P (DNYCWT) $ 6219996 1 E $ $
                      0 N $ $ 0 N $ $ 0 N $ $ 0 N $
```

Datafilling table LENFEAT feature SDN

The following table shows the datafill specific to CWAS for table LENFEAT feature SDN

Datafilling table LENFEAT

Field	Subfield	Entry	Explanation and action
LEN			Line equipment number. This field defines the physical location of the equipment that is connected to a specific telephone line. Frame LEN consists of subfields SITE, FRAME, UNIT, DRAWER, or LSG, SHELF, SLOT, and CIRCUIT.
PTY		S	Party. Enter the party to which the feature belongs. The only valid entry is S (single party).
DF		SDN	Data feature. Enter the SDN for the Secondary Directory Number feature.
FEATURE		SDN	Data feature. Enter the SDN
DATA		see subfields	Data. This field consists of subfields DF and SDNS. Separate each subfield with a single space.
	DF	SDN	Data feature. Enter the SDN for the Secondary Directory Number feature.
	SDNS	see subfields	Secondary Directory Numbers. This field consists of subfields DN, SDNRING, SDNOPT, and SDN_DNY. Enter up to six DNs. All four subfields must be datafilled six times even if less than the maximum number of six DNs are datafilled for the feature to work.
	DN	numeric (7 digits)	Directory number. Enter the DN of the SDNs in sequential order. The DN must be unassigned and found in table DN.
	SDNRING	0 to 3	Secondary Directory Number ring pattern. Enter the ring pattern that the SDN is to receive.

Call Waiting Auto Suppression (CWAS) (continued)

Datafilling table LENFEAT

Field	Subfield	Entry	Explanation and action
	SDNOPT	E, N, or P	Secondary Directory Number option. Enter N or P to indicate the call forwarding choice for the SDN. Enter N if the SDN is not to be call forwarded. Enter P if the SDN is to be forwarded to the same number as the (Primary Directory Number) PDN. If the PDN does not have call forwarding, the recommended value for this field is N. This field has no default value.
	SDN_DNY	DNYCWT, NODNY, or $	Secondary Directory Number Deny. Enter DNYCWT if CWT tone is to be disconnected for calls to the SDN. Enter $ if Call Waiting (CWT) tone is to remain active for calls to the SDN. Default value is $.

Datafill example for table LENFEAT feature SDN

The following example shows sample datafill for table LENFEAT feature SDN.

MAP display example for table LENFEAT feature SDN

```
            LEN
               PT     DF
                                                                  DATA
-----------------------------------------------------------------------
HOST 00 0 03 02
                 S   SDN
                     SDN 6219999 1 N (DNYCWT) $ 6219997 1 P $ $
                     0 N $ $ 0 N $ $ 0 N $ $ 0 N $
```

SERVORD

The provisioning of the Call Waiting Auto Suppression (CWAS) feature on lines is done through option SDN. An additional prompt is present when provisioning a line with option SDN. When a value is entered at the SDN_DNY prompt, it indicates if additional features are to be denied for that SDN.

The SDN option is assigned to a single-party plain old telephone service (POTS) line to add a secondary DN to a Teen Service line. When no SDNs are assigned to the line, adding the SDN option establishes Teen Service.

Call Waiting Auto Suppression (CWAS) (continued)

Example

The following is an example of the SDN option. This example assigns SDN to a single-party flat rate (1FR) line or single-party message rate (1MR) line. The primary DN (PDN) is 621-1424. The SDN is 621-1234. The call forwarding choice is P. The SDN is to have normal ringing.

Example of the SDN option in prompt mode

```
>ADO
SONUMBER:      NOW  99 12  7 AM
>
DN_OR_LEN:
>6221424
OPTION:
>SDN
SDN:
>6211234
SDN_RING:
>0
SDN_OPT:
>P
OPTION:
>$
```

Example of the SDN option in no-prompt mode

```
>ADO $ 6221424 SDN 6211234 0 P $
```

Prompts

The following table provides the system prompts for the SDN option.

Input prompts for the SDN option

Prompt	Valid input	Explanation
DN_OR_LEN	DN (up to 15 digits) or LEN	Specifies the directory number or line equipment number
OPTION	SDN	Indicates the name of the option
SDN	up to 15 digits	Secondary DN

Call Waiting Auto Suppression (CWAS) (end)

Input prompts for the SDN option

Prompt	Valid input	Explanation
SDN_RING	0 = normal ringing	Secondary DN ring type
	1 = SDN pattern #1	
	2 = SDN pattern #2	
	3 = SDN pattern #3	
SDN_OPT	P = forward SDN with PDN	Secondary DN type
	N = do not forward SDN	
	E = enhanced SDN can have own option list	

The line option DNYCWT is compatible with SDN types N and P. SERVORD will reject attempts to provision SDNs of type E (ESDN) with option DNYCWT. Teen Service permits up to six SDNs to be assigned on the same physical line. Any of the six SDNs can be datafilled to deny the CWT feature.

Translation verification tools

Call Waiting Auto Suppression (CWAS) does not use translation verification tools.

History

SN07 (DMS)

Functionality ordering code and market specific information amended in accordance with CRQ00891675-01.

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CSMI (Call Screening, Monitoring, and Intercept)

Ordering codes

Functional group ordering code: RES00002

Functionality ordering code: RES00047

Release applicability

NA04 and up.

CSMI was introduced in NA04.

CSMI was introduced to MDC in NA05.

Prerequisites

To operate, CSMI (Call Screening, Monitoring, and Intercept) requires the following functional groups:

- RES00047, CSMI BASE
- BAS00003, BAS Generic
- RES00006, RES Service Enablers
- MDC00001, MDC - MDC Minimum
- MDC00003, MDC - MDC Standard

Description

CSMI allows subscribers of Network Based Answering Services (NBAS) to monitor and intercept calls being handled by NBAS. Call monitoring allows the subscriber to listen to a message as it is being left in their voice mailbox in the NBAS. Call interception allows the subscriber to connect to the call to speak directly to the caller. CSMI Enhancement—Stub Message Deletion deletes the stub message left by the caller on the network based answering service (NBAS).

Operation

CSMI is activated by dialing the activation code as specified by the operating company. CSMI is de-activated by dialing the same code. The feature code is translated in table IBNXLA. The subscriber can be provided with custom announcements or confirmation tone to indicate that they have successfully activated/deactivated the CSMI feature. When custom announcement or confirmation tone cannot be played, a NACK treatment is provided.

Call monitoring is invoked by going off-hook after receiving a ring splash indicating the call has been forwarded to the NBAS. This establishes a

CSMI (Call Screening, Monitoring, and Intercept) (continued)

listen-only connection, via a conference circuit, between the CSMI subscriber and the two-way connection between the calling party and the NBAS. Through the listen-only connection, the subscriber can listen to the caller leaving the messages, but cannot be heard. The subscriber must begin monitoring the call before the caller terminates the call or before the screening timer (as defined by office parameter CSMI_SCREENING_TIMER) expires.

A monitoring session implies that the CSMI subscriber can listen to the forwarded party and the NBAS, but cannot be heard by either. Monitoring is set up via conference circuit.

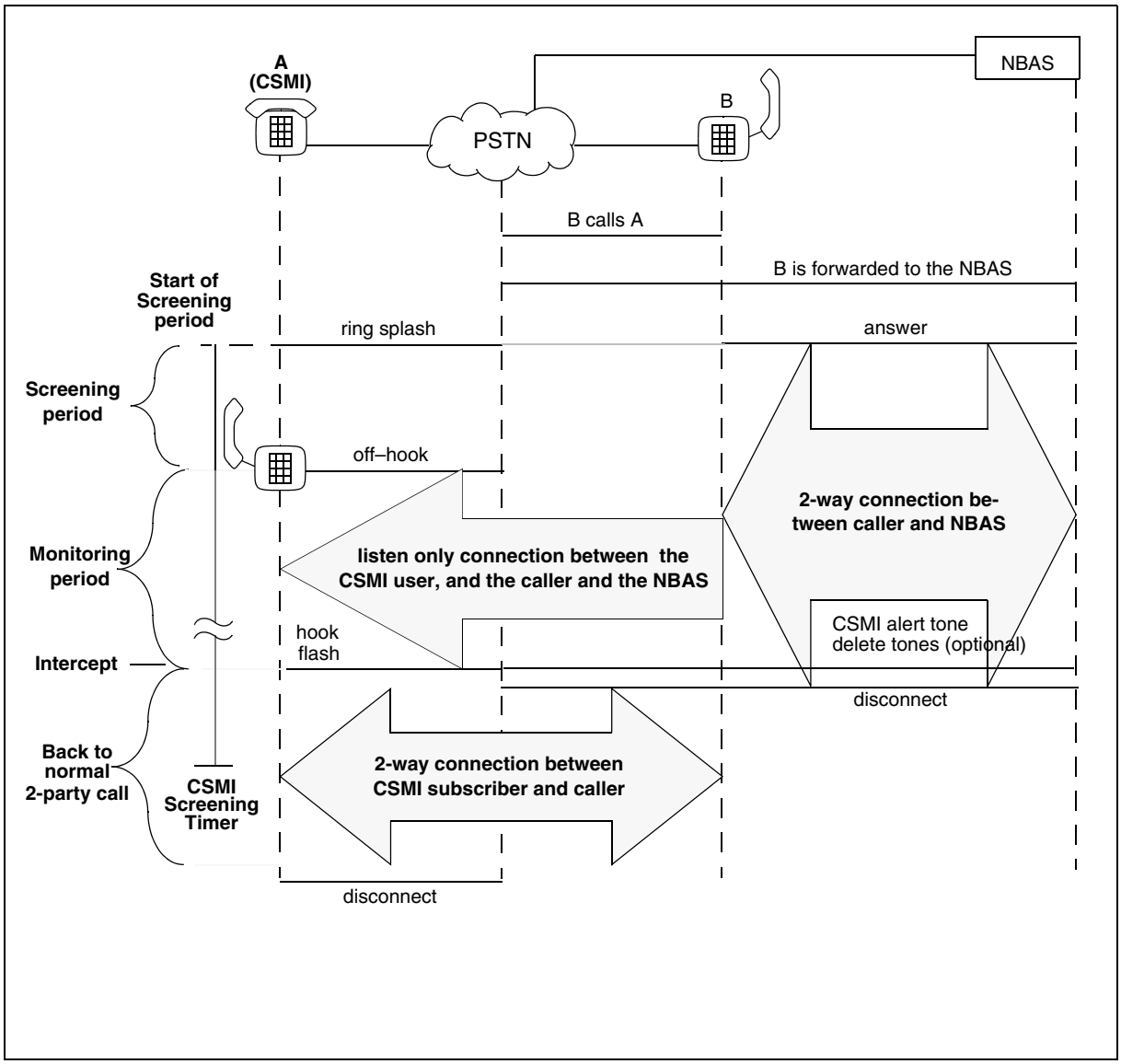
Call interception is invoked by performing a hook-flash while monitoring the call. This replaces the one-way monitoring connection with a two-way connection between the caller and the subscriber. It also drops the connection between the caller and the NBAS. The hook-flash must be less than 1.5 seconds in duration or else it is interpreted as an on-hook followed by an off-hook which allows the subscriber to place an outgoing call.

When a subscriber intercepts a call, a stub message is left on the NBAS. The CSMI Enhancement—Stub Message Deletion is an option offered by a telephone company. If this option is available to the subscriber, the stub message on the NBAS is deleted when the subscriber intercepts the call.

The call flow for a typical CSMI call is illustrated in the following figure.

CSMI (Call Screening, Monitoring, and Intercept) (continued)

CSMI call flow



Translations table flow

The CSMI (Call Screening, Monitoring, and Intercept) translations tables are described in the following list:

- Table IBNXLA (IBN Translation) This table stores data for the digit translation of calls from an IBN station, attendant console, incoming IBN trunk group, or incoming side of a two-way IBN trunk group. Feature

CSMI (Call Screening, Monitoring, and Intercept) (continued)

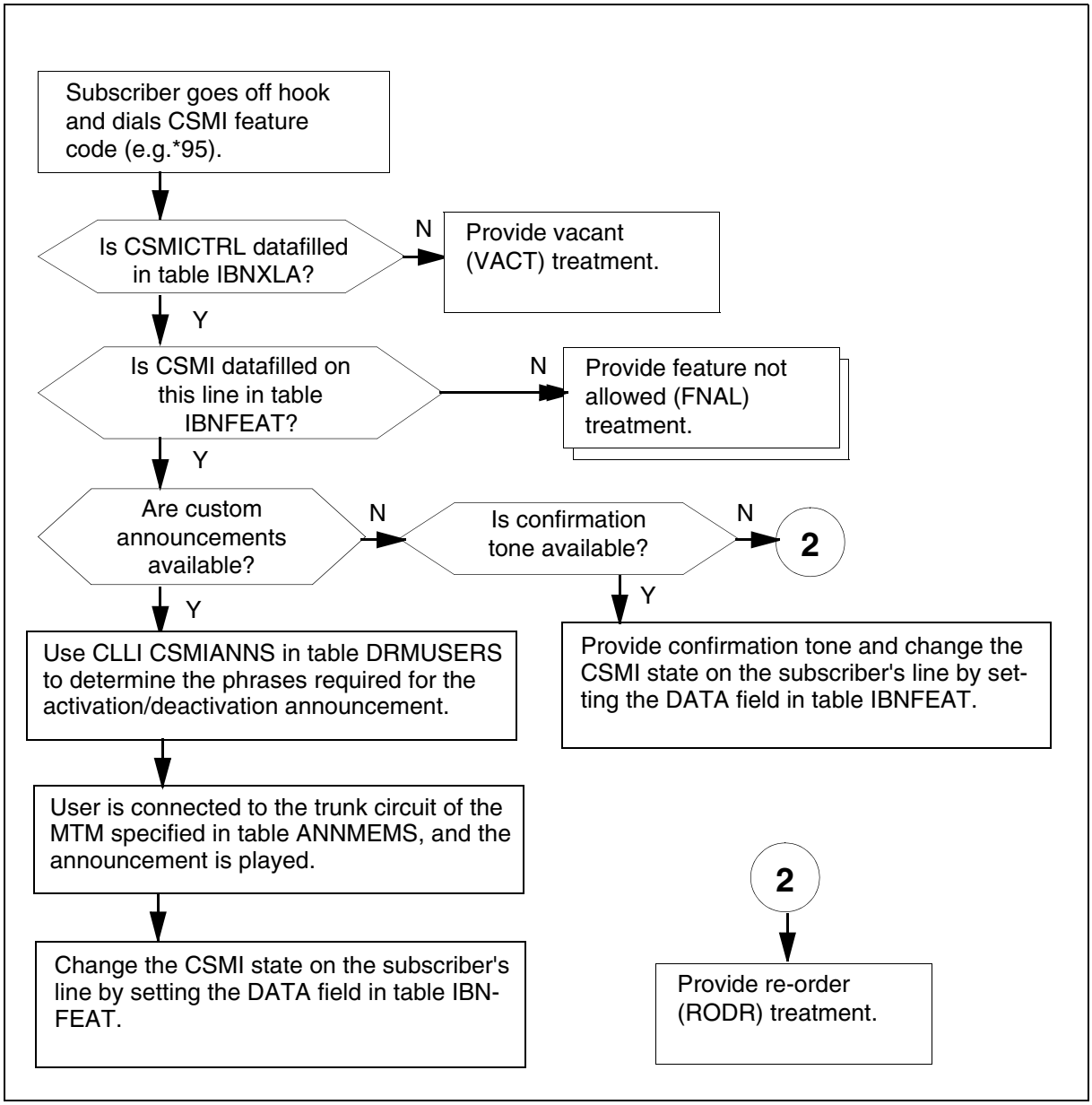
name CSMICTRL is added to the possible values of the FEATURE field (when TRSEL = FEAT) of table IBNXLA.

- Table IBNFEAT (IBN Line Feature) This table lists line features that are assigned to the IBN lines listed in table IBNLINES. The value “CSMI" has been added to fields DF and FEATURE. The field “CSMISTATE" has been added to field DATA.
- Table IBNLINES (IBN Line Assignments) This table contains line assignments for each 500/2500 set assigned to an Integrated Business Network (IBN), Residential Enhanced Services (RES), and Multiple Appearance Directory Number (MADN) station number. This table also contains line assignments for IBN attendant consoles. An error message displays when adding MADN as a non-primary member to a line that is already assigned CSMI.
- Table ANNS (Announcement) This table contains data for each analog and digital announcement that is assigned in the switching unit. The announcement type CSMI has been added to the ANTYPE field.
- Table ANNMEMS (Announcement Members) This table lists the assignments for each of the members assigned to the announcements listed in table ANNS. The circuits assigned to CSMI announcements are found in this table.
- Table CLLI (Common Language Location Identifier) This table is used to uniquely identify the far end of each announcement, tone, trunk group, test trunk, national milliwatt test lines, and service circuit. This table defines the CLLI(s) used to identify the CSMI announcement(s).
- Table DRAMS (Digital Recorded Announcement Machine) This table lists information for the trunk cards that constitute a digital recorded announcement machine (DRAM) or enhanced digital recorded announcement machine (EDRAM). The DRAM cards used by CSMI are defined in this table.
- Table DRMUSERS (Digital Recorded Announcement Machine Users) This table describes the announcement requirements for the features that use a DRAM. The components which make up a particular CSMI announcement are specified in this table.
- Table SVRCKT (Service Circuit) This table contains information on digitone outpulsing circuits, R2 inter-register signaling circuits, and service observing circuits. The 3X68 dual tone multi-frequency (DTMF) sender circuit provides the DTMF delete sequence to delete the stub messages left on the NBAS as a CSMI enhancement.

The CSMI (Call Screening, Monitoring, and Intercept) translation process is shown in the flowchart that follows.

CSMI (Call Screening, Monitoring, and Intercept) (continued)

Table flow for CSMI (Call Screening, Monitoring, and Intercept)



CSMI (Call Screening, Monitoring, and Intercept) (continued)

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

Datafill example for CSMI (Call Screening, Monitoring, and Intercept)

Datafill table	Example data
IBNLINES	HOST 01 1 03 15 0 DT STN RES 6305016 0 (CSMI) $
IBNFEAT	HOST 01 0 01 04 0 CSMI CSMI Y A N N N $
IBNXLA	RESXLA 95 FEAT N Y N CSMICTRL
CLLI	CSMIANN 1030 2 CSMI_ACT
ANNS	CSMIANN CSMI 0 15 4 1
DRAMS	4 4 DTM 0 5 1X80AA RAM 1
ANNMEMS	CSMIANN 1 DRAM DRA (0 DTM 0 1) $
DRMUSERS	CSMIANN 1 (LANGUAGE1) CSMIENG1 (LANGUAGE2) CSMIFRE1 $

Note: Two announcements are required for CSMI, one to confirm the activation of the feature, and one to confirm the deactivation of the feature. Refer to table, “Datafilling table DRMUSERS”.

To have the announcements played in a secondary language, the SL feature must be added to the line.

Limitations and restrictions

The following limitations and restrictions apply to CSMI (Call Screening, Monitoring, and Intercept).

- The target DMS platform for this feature is DMS-100 or DMS-100/200 SuperNode and Brisc.
- Only RES lines have access to CSMI. Centrex lines, multi-party lines, PBX lines and trunks, cellular users, and attendant console are not supported.
- 1FR and 1MR POTS lines must be converted to RES in order to use CSMI.
- CSMI cannot verify that the forwarded-to DN assigned with CFBL/CFDA represents an NBAS.
- CSMI cannot verify that the caller is only leaving a message on the subscriber's voice mailbox. If the caller decides to access other functions of the NBAS (e.g. to listen to their own messages), the CSMI subscriber hears the digits dialed by the caller.

CSMI (Call Screening, Monitoring, and Intercept) (continued)

- Telephone companies must notify the CSMI subscribers of the deletion of stub messages when CSMI Enhancement—Stub Message Deletion is available to the subscriber and is in effect.If a CSMI subscriber is monitoring a forwarded call, incoming calls can be handled by CWT. While CWT is active on the call, it is not possible to intercept the monitored call. CWT, and not CSMI, processes any hook-flash from the CSMI subscriber.
- CSMI cannot be activated on the second leg of a 3-way call or of a call transfer.
- When more than one call is forwarded during a single screening period, only the first one is eligible for monitoring.
- Attendant consoles as caller or NBAS are not supported.
- When the CSMI Enhancement—Stub Message Deletion is in effect, only one NBAS can be active on the CSMI subscriber's DMS.
- When the CSMI Enhancement—Stub Message Deletion is in effect, the delete sequence cannot exceed five alphanumerics.
- Telephone companies must notify the CSMI subscribers of the deletion of stub messages when CSMI Enhancement—Stub Message Deletion is available to the subscriber and is in effect.

Interactions

The following paragraphs describe the interactions between CSMI (Call Screening, Monitoring, and Intercept) and other functionalities.

Automatic Call Back (ACB)

The ACB feature takes precedence over CSMI. As a result, CSMI does not function when an ACB call is pending on the CSMI subscriber's line. For example, when an ACB call is queued on the CSMI subscriber's line and there is an active call that has been forwarded by CFBL to the NBAS, CSMI will not operate on the forwarded call as long as ACB is pending. The CSMI subscriber does not receive ring splash after going on-hook, and will not be able to monitor the forwarded call. The CSMI subscriber will hear ringing from the ACB call and will be connected to it after going off-hook.

Advanced Intelligent Network (AIN) Immediate Off Hook Trigger

If there is a call available for monitoring, the CSMI feature takes precedence over the AIN immediate off hook trigger.

Call Forward Busy Line (CFBL)

CFBL can also be used to forward calls to the NBAS. If the CSMI subscriber does not have CWT along with CFBL, an incoming call to a busy subscriber

CSMI (Call Screening, Monitoring, and Intercept) (continued)

automatically activates the CFBL feature. The caller would then be sent right away to the NBAS. At this point, the CSMI subscriber has no knowledge that a call has been forwarded. If the subscriber goes on-hook while the caller is still leaving a message, he/she is provided with the CSMI ring splash.

If the CSMI subscriber has CFBL and CWT, the subscriber is busy (and CFBL applies) only under one of the following conditions:

- The subscriber already has a call on hold (due to CWT).
- The subscriber is in the dialing (or originating) stage of a call.
- The subscriber is the controller of a 3-way call.

Also, the restriction on the multiple forwarded calls mentioned above applies to CFBL.

Call Forward Don't Answer (CFDA) / (CFCW)

CFDA can be used to forward the incoming calls to the NBAS. If CWT is also assigned to the subscriber's line, it overrides CFDA: when the subscriber is busy, an incoming call would not be forwarded even if the CFDA time-out is reached.

Assigning Call Forward of Call Waiting (CFCW) to the customer group of the subscriber allows CFDA to have precedence over CWT: a call reaching a busy CSMI subscriber would be forwarded by CFDA after the CFDA time-out is attained.

When more than one call is forwarded during a single screening period, CSMI restricts the number of sequential calls which can be monitored in order to allow the CSMI subscriber who wants to originate a new call to get dial tone after one attempt at most. When a ring splash is sent to the CSMI subscriber set to indicate the start of the monitoring period, all subsequent calls that are forwarded within the next 20 seconds (or until the caller hangs-up) are not eligible to CSMI monitoring.

> ***Note:*** Subsequent calls are forwarded within a period specified in the office parameter CSMI_SCREENING_TIMER. In the preceeding paragraph, the time period specified is 20 seconds.

Call Hold (CHD)

If the caller and the CSMI subscriber are in the same office, the caller cannot flash for Call Hold.

If the caller and the CSMI subscriber are in different offices, the caller can put the connection to the NBAS on hold any time to originate another call. This

CSMI (Call Screening, Monitoring, and Intercept) (continued)

does not disrupt the CSMI functionality. If monitoring is performed during the period where the connection to the NBAS is on hold, only the NBAS is heard.

Class Message Waiting Indicator (CMWI) and Periodic Ringing Notification (PRN)

CMWI and PRN can provide a ring burst or a ring splash on a subscriber's set when the message waiting indicator is activated. This short ring might conflict with the one provided by CSMI: a subscriber can confuse the CMWI/PRN ring burst/splash with the start of a CSMI monitoring period.

Calling Number Delivery (CND)

The CND feature does not provide the calling number to the subscriber's set during the CSMI ring splash. Also, the display will not be updated with the caller's number upon interception.

Call Waiting (CWT)

The CSMI feature does not affect the operations of CWT. The CWT feature can be activated while a forwarded call is being monitored. Thus, if a CSMI subscriber with CWT receives a call while monitoring the forwarded party, CWT provides its tones and the CSMI can accept the “waiting" call by flashing the switch-hook. The CSMI subscriber is then active on two calls:

1. The call that was just accepted by CWT.
2. The listen-only connection to the 2-way forwarded call (now on hold).

This situation can be explained by the use of state diagrams. The diagrams follow the notation presented in the figure “State diagram notational conventions." Party A is the CSMI subscriber, party B is the caller that is being monitored (B is being answered by the NBAS) and party C is the new party.

The 1-way and 2-way connections to party B and party C change according to the actions performed by each party. Figure “CWT interaction - normal monitoring to CWT state 1 and 2", figure “CWT interaction - from state 1 back to normal monitoring", and figure “CWT interaction - from state 2 back to normal monitoring" present all possible events with their resulting state. The logic is similar to the one used by CWT. The events that would leave A without a connection are not shown.

Note that if a call is waited on the CSMI subscriber's line during the monitoring period, this prevents the user from intercepting as CWT has precedence over CSMI for interpreting the flash.

After a forwarded call is intercepted, the CSMI feature is released and the 2-way call behaves like a regular call.

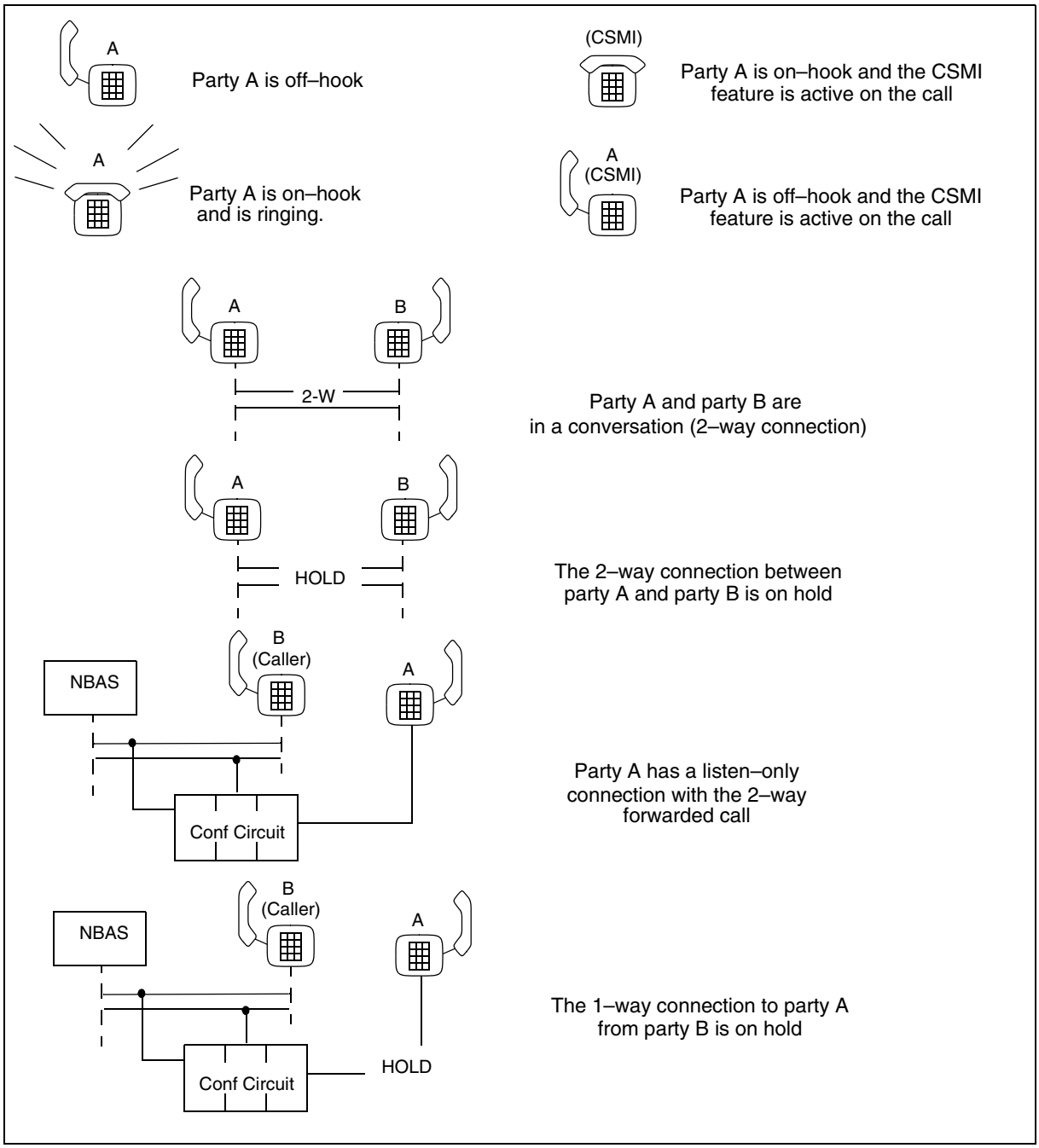
CSMI (Call Screening, Monitoring, and Intercept) (continued)

If the calling party is a CWT subscriber and both the calling party and the CSMI subscriber are in the same office, the calling party cannot flash to accept another call presented by Call Waiting.

If the calling party is a CWT subscriber and both the calling party and the CSMI subscriber are in different offices, the calling party can flash to accept another call presented by Call Waiting. If the calling party receives a call while leaving a message, he/she can flash the switch-hook to answer the call, thus putting the NBAS on hold. If the CSMI subscriber was monitoring at that point, he/she will hear silence until the caller reconnects. The CSMI subscriber can intercept even if the connection between the caller and the NBAS is on hold..

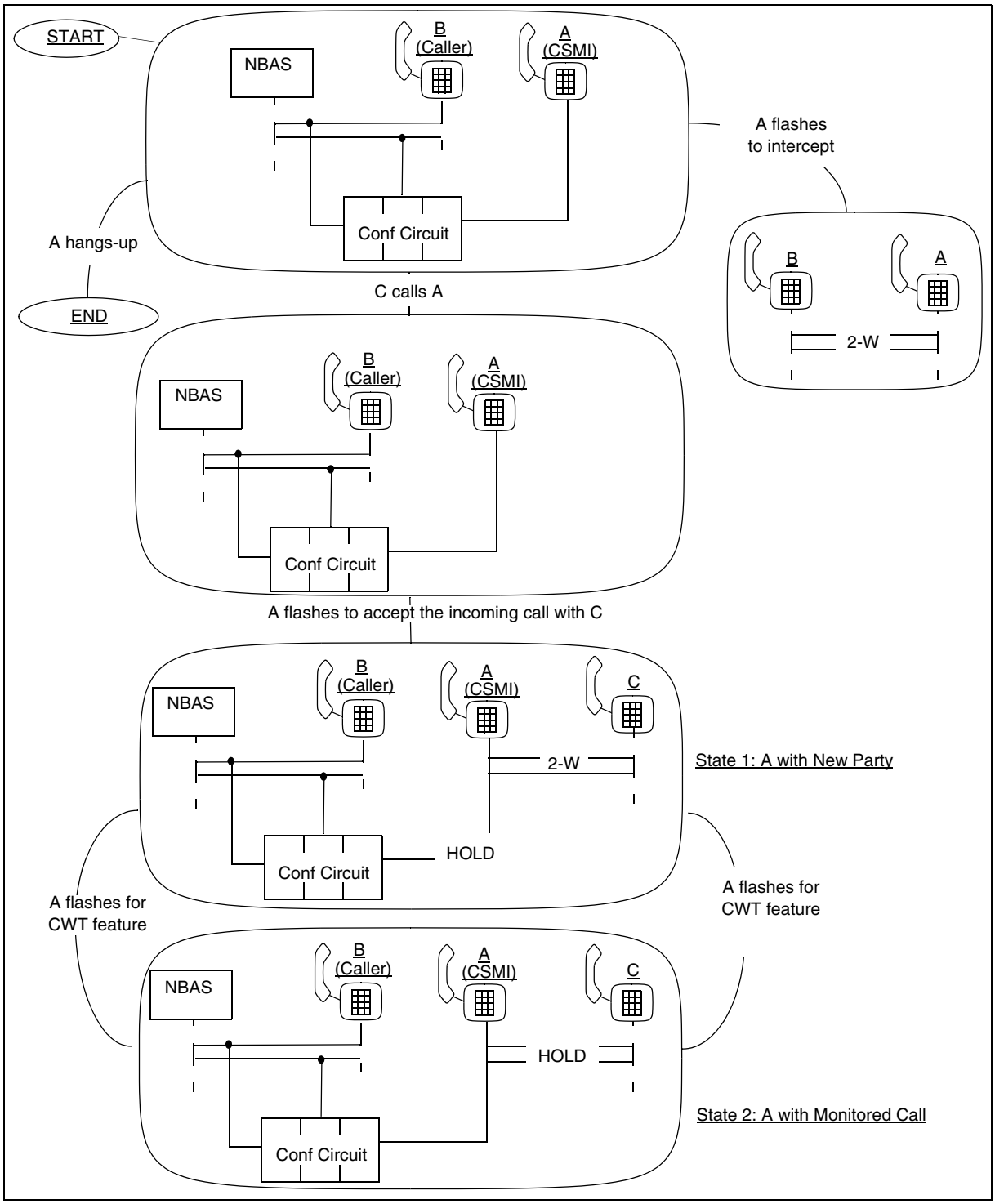
CSMI (Call Screening, Monitoring, and Intercept) (continued)

State diagram notational conventions



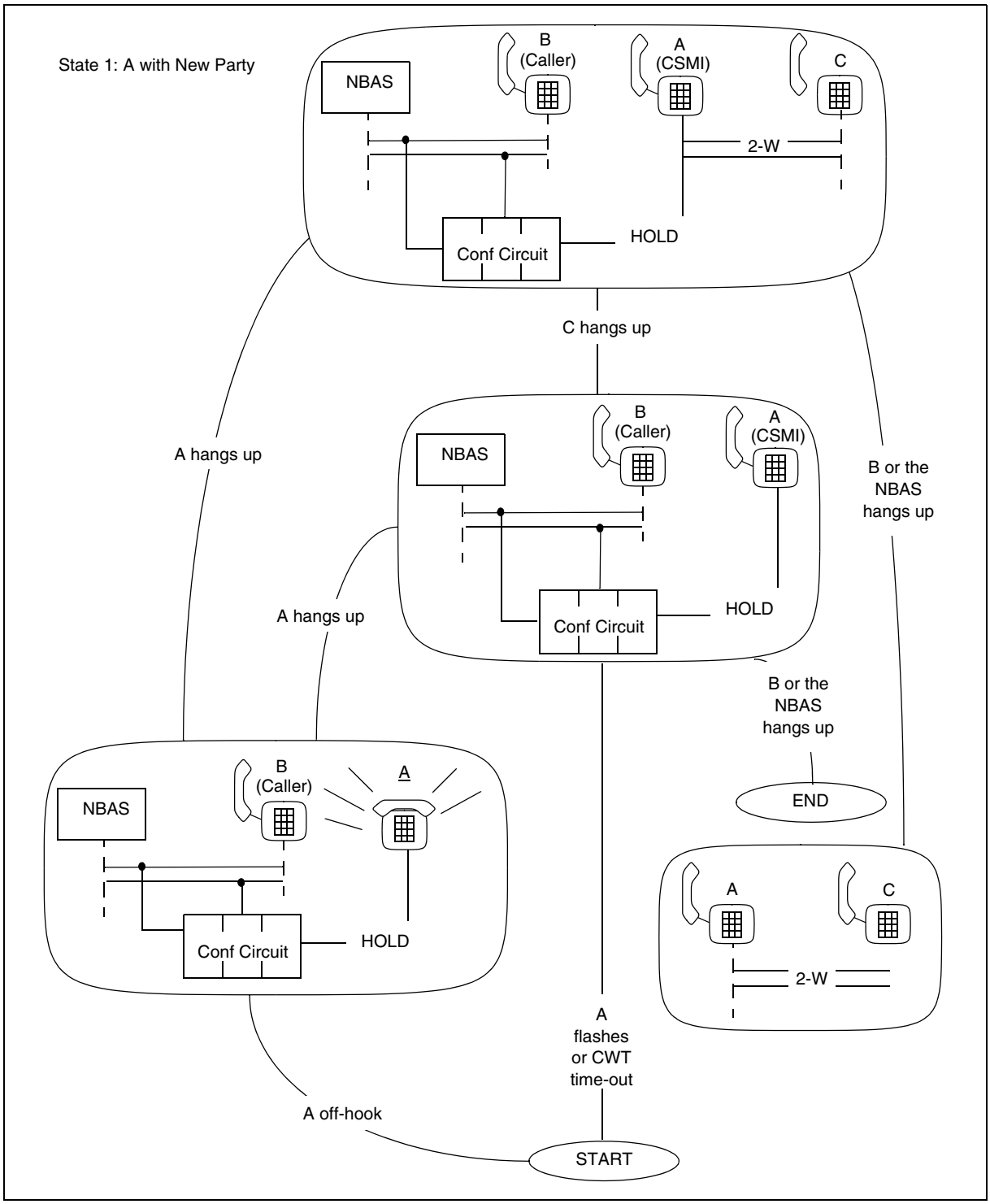
CSMI (Call Screening, Monitoring, and Intercept) (continued)

CWT interaction - normal monitoring to CWT state 1 and 2



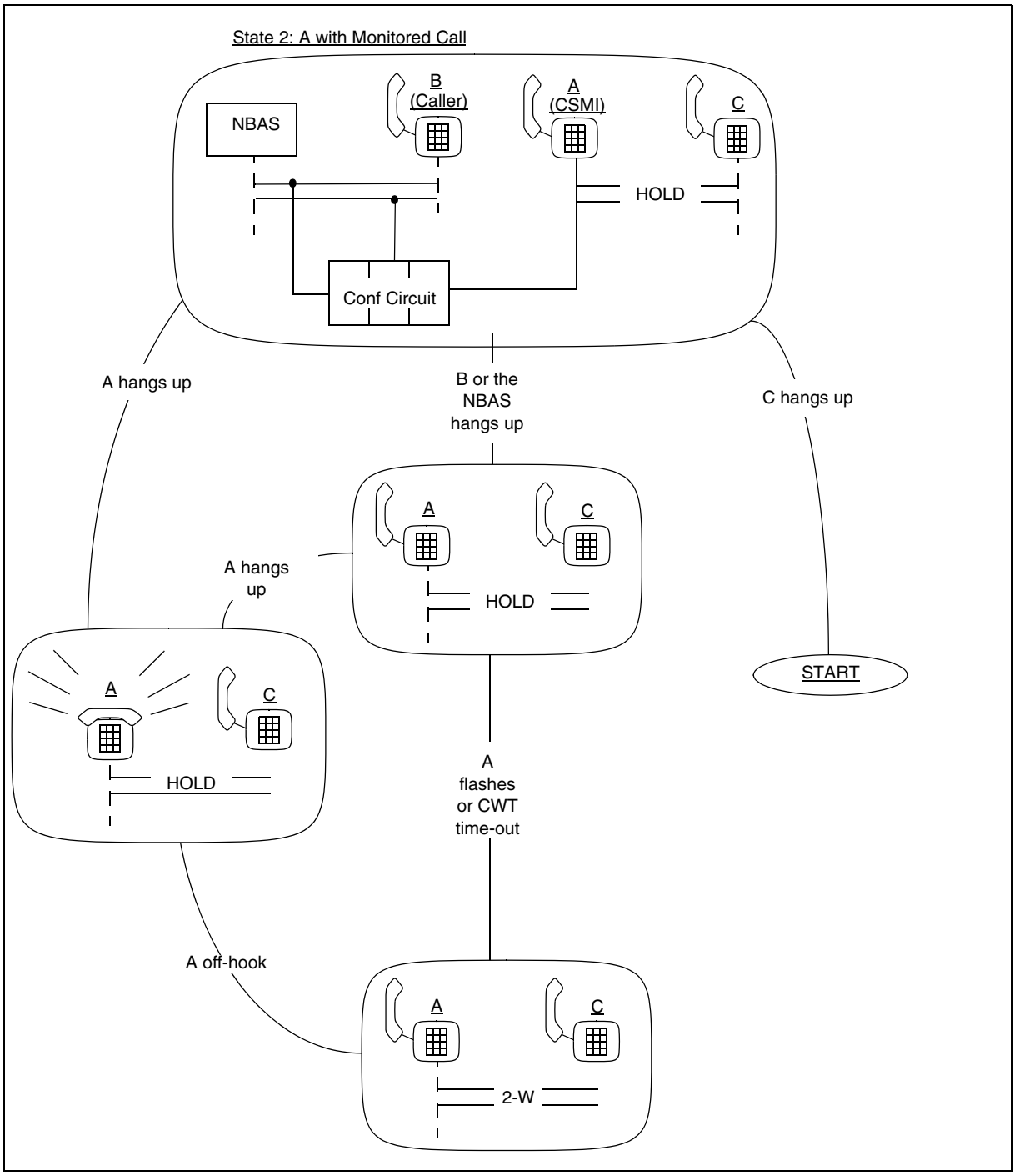
CSMI (Call Screening, Monitoring, and Intercept) (continued)

CWT interaction - from state 1 back to normal monitoring



CSMI (Call Screening, Monitoring, and Intercept) (continued)

CWT interaction - from state 2 back to normal monitoring



CSMI (Call Screening, Monitoring, and Intercept) (continued)

Call Transfer (CXR)

The CSMI feature cannot be activated on the second leg of the CXR feature. Similarly, a call that is under the control of CSMI (a message is being monitored) cannot be transferred to another party. The CSMI subscriber must first intercept the call by flashing the switch-hook. The call between the CSMI subscriber and the forwarded caller can then be transferred to another party.

If the caller and the CSMI subscriber are in the same office, the caller cannot make a Call Transfer of his/her connection to the NBAS to another party.

If the caller and the CSMI subscriber are in different offices, the caller can make a Call Transfer of his/her connection to the NBAS to another party. The CSMI feature functionality is still available to the CSMI subscriber for this call.

Long Distance Signal (LDS) / Distinctive Ringing Call Waiting (DRCW)

Both LDS and DRCW behave like CWT. They both allow a busy subscriber to accept an incoming call. The difference is in the tones provided to the subscriber when a call is waiting. Thus, refer to the sections on the CWT feature for the interaction with CSMI (as with CWT, CFDA with CFCW takes precedence over LDS). Note that unlike CWT or DRCW, Toll Alert has a time-out. When it is reached, LDS is terminated and the called party cannot accept the incoming call anymore.

Multiple Appearance Directory Number (MADN)

Only the MADN extension bridging is supported in RES environment. CSMI monitoring is only valid on MADN primary members, i.e. ring splash is applied only to the primary station and only the primary station can monitor the forwarded call. Extension bridging is not possible during monitoring. After the forwarded call is intercepted, then extension bridging capability is restored to the original state.

Network Facility Access - Implicit (NFA)

If there is a call available for monitoring, the CSMI feature takes precedence of the NFA implicit feature.

Operator Override (OOR)

Barging into the monitoring call will allow the subscriber to hear the originator, the NBAS and the operator.

Operator Override works the same way for 3WC. If an operator barges-in to the connection between the caller and the NBAS, and CSMI monitors the call, the caller and the NBAS will be heard. If an interception takes place, the CSMI subscriber replaces the NBAS.

CSMI (Call Screening, Monitoring, and Intercept) (continued)

Three-Way Calling (3WC)

The CSMI feature cannot be invoked on the second leg of a 3-way call. Therefore, if a CSMI subscriber is active on a call and he/she knows that an incoming call is being handled by the NBAS, he/she cannot use the 3WC feature to activate CSMI (flash-hook followed by the CSMI access code). The subscriber would be routed to the RODR treatment. To properly invoke CSMI under those conditions, the subscriber must terminate the current call and then invoke the feature.

Furthermore, 3WC cannot be invoked during the monitoring of a forwarded call. If the subscriber flashes the switch-hook, the CSMI feature performs the intercept function which transforms the 1-way connection to the forwarded call into a regular 2-way connection. At that point the 3WC feature can be invoked.

If the caller and the CSMI subscriber are in the same office, the caller cannot flash to establish a 3-way conference.

If the caller and the CSMI subscriber are in different offices, the caller can flash to establish a 3-way conference. If the calling party establishes a 3-way conference between another party X and the NBAS, the CSMI subscriber hears all three parties, the caller, the party connected to the caller and the NBAS during monitoring. Upon the interception, the CSMI subscriber takes the place of the NBAS and the 3-way conference set up is preserved.

If the NBAS leaves the call during monitoring and the 3WC collapses into a regular 2-party call between the caller and party X, the CSMI subscriber is provided the disconnect treatment.

Release Link Trunk (RLT)

The RLT feature (also called Call Completion with Trunk Optimization - CCTO) should remove any redundant ISUP trunks in the event of a call transfer or redirection.

RLT does not yet optimize calls that are forwarded (only calls that are part of a special Call Transfer or part of the Enhanced 800 Call Prompter service). Redirected calls are always kept in the End Office where the redirection occurred (the End Office of the base station). Thus, CSMI is not affected by RLT/CCTO.

Selective Call Forward (SCF)

The CSMI feature does not work with SCF.

CSMI (Call Screening, Monitoring, and Intercept) (continued)

Spontaneous Call Waiting Identification (SCWID)

SCWID allows subscribers to receive calling party information in conjunction with a call waiting tone. CSMI does not affect the operation of the SCWID feature.

Line termination

If a termination attempt is made on the CSMI subscriber during the screening period, an off-hook event will not trigger monitoring but will connect to the incoming call instead. After this call is over, if the previously forwarded call is still up, the CSMI subscriber can go off-hook to monitor it.

Activation/deactivation by the end user

CSMI is activated and de-activated by the end user by dialing the same feature activation code.

Activation/deactivation of CSMI (Call Screening, Monitoring, and Intercept) by the end user

At your telephone

1. To activate/deactivate CSMI, go off-hook and dial the CSMI feature activation/deactivation code.

   Response: A confirmation tone or announcement is provided.

Billing

A forwarded call is seen as a call with two legs. The first leg is the connection between the caller's office and the CSMI subscriber's office. The second leg is the connection between the CSMI subscriber's office and the NBAS.

If the call from the CSMI subscriber to the NBAS is a local call:

- a local call from the caller's office to the CSMI subscriber's office is not billed.
- a toll call between the caller's office and the CSMI subscriber's office results in billing being generated for the first leg of the call. At the interception of the call, the CSMI subscriber is substituted for the NBAS agent, and the billing for the connection between the caller's office and the CSMI subscriber's office continues until the call is taken down.

If the call from the CSMI subscriber to the NBAS is a toll call:

- a local call from the caller's office to the CSMI subscriber's office results in billing the CSMI subscriber for the second leg of the call. At the interception of the call, the CSMI subscriber substitutes for the NBAS

CSMI (Call Screening, Monitoring, and Intercept) (continued)

agent, the connection between the caller's office and the NBAS is dropped, and billing is stopped.

- a toll call from the caller's office to the CSMI subscriber's office result in billing the callers for the first leg, and billing the CSMI subscriber for the second leg. At the interception of the call the CSMI subscriber substitutes for the NBAS agent. The second leg is dropped and billing is stopped. Billing of the first leg continues until the connection between the caller and the CSMI subscriber is taken down.

Station Message Detail Recording

CSMI (Call Screening, Monitoring, and Intercept) does not affect Station Message Detail Recording.

Datafilling office parameters

The following table shows the office parameter used by CSMI (Call Screening, Monitoring, and Intercept). For more information about office parameters, refer to *Office Parameters Reference Manual.*

Office parameters used by CSMI (Call Screening, Monitoring, and Intercept)

Table name	Parameter name	Explanation and action
OFCENG	CSMI_CUST_ PROG_CFW	This parameter specifies whether or not CSMI can be used with the feature Customer Programmable Call Forwarding. By default, CSMI is allowed with Customer Programmable Call Forwarding. The parameter is initialized to Y and maintains its value through all restarts. Enter Y or N. The default is Y.
OFCENG	CSMI_I NTERCEPT_3WC _CONNECTION	This parameter determines the way UCSMI users intercept forwarded calls. When set to YES, interception is performed by establishing a 3-way call between the UCSMI user, the calling party, and the NBAS. When set to NO, the interception is performed by establishing a 2-way call between the UCSMI user and the calling party. This parameter is initialized to N (NO) and maintains its value through all restarts. Enter Y or N. The default is N.

CSMI (Call Screening, Monitoring, and Intercept) (continued)

Office parameters used by CSMI (Call Screening, Monitoring, and Intercept)

Table name	Parameter name	Explanation and action
OFCENG	CSMI_ SCREENING_ TIMER	This parameter specifies the length (in seconds) of the screening period used by SCSMI and Centrex CSMI users. The screening period is the time interval during which the monitoring of the forwarded call can be started by the CSMI subscriber. A value of 10 seconds indicates that the screening period lasts as long as the forwarded call. The parameter is initialized to 20 and maintains its value throughout all restarts. The duration of the forwarded call can be 0 to 120 seconds. The default is 20 seconds.
OFCENG	CSMI_PPU_ SCREENING_ TIMER	This parameter specifies the length of time (in seconds) of the screening period for USCMI and CSMIPPU users, that is, the time interval during which monitoring of the forwarded call can be started by the CSMI subscriber (applies to CSMIPPU users only if the SCRACTIVE field is set to N). A call's screening period is the timer interval during which the monitoring can be started by the CSMI subscriber. A value of 0 indicates that the screening period lasts as long as the forwarded call. The parameter is initialized to 20 and maintains its value through all restarts. Enter a value of 0 to 120 seconds. The default is 20.
OFCENG	CSMI_DELETE_ STUB_VM	This parameter contains 2 values. The first value specifies the on/off status of the Deletion of Stub Messages. The second value specifies the delete tones series if the deletion status is on. When the first value is “Y”, the deletion feature is on, and the second value must be datafilled with a delete series that does not exceed 5 alphanumerics. Each alphanumeric can have a value between 1 and c. When the first value is “N”, no datafill is required for the second value.

CSMI (Call Screening, Monitoring, and Intercept) (continued)

Datafill sequence

The following table lists the tables that require datafill to implement CSMI (Call Screening, Monitoring, and Intercept). The tables are listed in the order they are to be datafilled.

Datafill tables required for CSMI (Call Screening, Monitoring, and Intercept)

Table	Purpose of table
IBNLINES	IBN Line Assignments. This table contains line assignments for each 500/2500 set assigned to an Integrated Business Network (IBN), Residential Enhanced Services (RES), and Multiple Appearance Directory Number (MADN) station number.
IBNFEAT	IBN Line Feature. This table lists line features that are assigned to the IBN lines listed in table IBNLINES.
IBNXLA	IBN Translation. This table stores data for the digit translation of calls from an IBN station, attendant console, incoming IBN trunk group, or incoming side of a two-way IBN trunk group.
CLLI	Common Language Location Identifier. This table is used to uniquely identify the far end of each announcement, tone, trunk group, test trunk, national milliwatt test lines, and service circuit.
ANNS	Announcement. This table contains data for each analog and digital announcement that is assigned in the switching unit.
DRAMS	Digital Recorded Announcement Machine. This table lists information for the trunk cards that constitute a digital recorded announcement machine (DRAM) or enhanced digital recorded announcement machine (EDRAM).
ANNMEMS	Announcement Members. This table lists the assignments for each of the members assigned to the announcements listed in table ANNS.
DRMUSERS	Digital Recorded Announcement Machine Users. This table describes the announcement requirements for the features that use a DRAM.
SVRCKT	Service Circuit. This table contains information on digitone outpulsing circuits, R2 inter-register signaling circuits, and service observing circuits. The 3X68 DTMF sender circuit provides CSMI with the DTMF delete sequence to delete the stub messages.

Datafilling table IBNLINES

The following table shows the datafill specific to CSMI (Call Screening, Monitoring, and Intercept) for table IBNLINES. Only those fields that apply directly to CSMI (Call Screening, Monitoring, and Intercept) are shown. For a

CSMI (Call Screening, Monitoring, and Intercept) (continued)

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

Datafilling table IBNLINES

Field	Subfield or refinement	Entry	Explanation and action
LEN		see explanation	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 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.
DNNO		0 to 6	Directory number. Enter the directory number (DN) number to specify which DN on the LEN is being referenced.
RESULT		see subfields	Result. This field consists of subfields SIGTYPE and FORMAT.
	SIGTYPE	DP or DT	Signal type. Enter the type of pulsing expected: DP (dial pulse) or DT (Digitone).
	FORMAT	STN	Format. Enter the format name STN (station) for an IBN or RES station.
IBNVAR	see subfields		Integrated business network (IBN) variable. This field consists of subfields LCC and DN.
	LCC	IBN or RES	Line class code. If the line is an IBN line, enter IBN and datafill refinements CUSTGRP, SUBGRP, NCOS, and SNPA. For a Residential line or a coin line with residential features, enter RES and datafill refinement LNATTIDX.
	DN	numeric(vecto r of upto 15 digits)	Directory number. Enter the DN assigned to the IBN or RES station.

CSMI (Call Screening, Monitoring, and Intercept) (continued)

Datafilling table IBNLINES

Field	Subfield or refinement	Entry	Explanation and action
CUSTGRP		alphanumeric	Customer group. Enter the code assigned to the customer group to which the IBN line is assigned.
SUBGRP		0 to 7	Subgroup. Enter the subgroup within the customer group to which the IBN line is assigned.
NCOS		0 to 511	Network class of service. Enter the NCOS number assigned to the IBN line.
SNPA		numeric	Serving numbering plan area. Enter the serving NPA to which the IBN line is assigned.
LNATTIDX		0 to 31 999	Line attribute index. Enter the line attribute index number defined in table LINEATTR to which the RES line is assigned. For CSMI the index must have field LCC equal to 1FR, or 1MR, and field RESINFO equal to Y (yes). Fields CUSTGRP, SUBGRP, and NCOS must contain valid data.
OPTLIST		(option) $	Option list. Enter the list of options that are assigned to the IBN station (e.g. CSMI). Options must be separated from each other by a blank space.

Datafill example for table IBNLINES

The following example shows sample datafill for table IBNLINES.

MAP display example for table IBNLINES

```
 LEN                DNNO              RESULT
_____________________________________________________________
 HOST 01 0 01 04  0  DP  STN  IBN  2265436  MDCGRP1  2
26  613  (CSMI)  $
```

CSMI (Call Screening, Monitoring, and Intercept) (continued)

Error messages for table IBNLINES

The following error messages apply to table IBNLINES.

Error messages for table IBNLINES

Error message	Explanation and action
CSMI is present, it is compatible only with primary MDN members.	CSMI is present on this line. In order to add this line to an MDN group, this line must be the primary member, or else CSMI must be removed.

Datafilling table IBNFEAT

The following table shows the datafill specific to CSMI (Call Screening, Monitoring, and Intercept) for table IBNFEAT. Only those fields that apply directly to CSMI (Call Screening, Monitoring, and Intercept) are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table IBNFEAT

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 section to avoid unnecessary duplication. Refer to section “Common entry field LEN" for a complete description of field LEN and associated subfields. For ISDN lines, field LEN consists of subfield LTID. For non-ISDN lines, field LEN consists of subfields SITE, FRAME, UNIT, DRAWER or LSG, SHELF, SLOT, and CIRCUIT.
DNNO		0 to 6	Directory number. Enter the directory number (DN) to specify which DN on the line equipment number (LEN) is being referenced.
DF		CSMI	Data feature. Enter CSMI for the Call Screening, Monitoring and Intercept feature.
FEATURE		CSMI	Data feature. Enter CSMI.

CSMI (Call Screening, Monitoring, and Intercept) (continued)

Datafilling table IBNFEAT

Field	Subfield or refinement	Entry	Explanation and action
DATA		see subfield	Data. This field consists of subfield CSMIOPT.
	CSMIOPT	Y or N	CSMI options. Enter Y to indicate that CSMI is assigned to the line and datafill subfields CSMISTATE, CSMIPPU, CONNEC3W, and SCRACTIVE. Or enter N and skip to subfield DENYCSMIOPT.
	CSMISTATE	A or I	CSMI state. This field has a value of “A" for active or “I" for inactive.
	CSMIPPU	Y or N	Field CSMIPPU determines the billing design to use. When set to N, the system bills CSMI on a monthly flat rate basis. When set to Y, the system bills CSMI on a usage-sensitive basis for RES and POTS lines. The default value is N. ***Note:*** When CSMIPPU is set to Y, CSMI is offered to all types of call forwarding on the line (except those restricted through DENYCSMIOPT). In this case, CSMI does not depend on the presence of options CFDA, CFBL, or MWT on a line.
	CONNEC3W	Y or N	Field CONNEC3W determines call interception. When the telephone company technician enters N, the interception establishes a two-way call between the caller and the end user. When set to Y, the interception establishes a three-way call amongst the two parties and the NBAS. The default value is N.

CSMI (Call Screening, Monitoring, and Intercept) (continued)

Datafilling table IBNFEAT

Field	Subfield or refinement	Entry	Explanation and action
	SCRACTIVE	Y or N	Field SCRACTIVE indicates if field SCRDUR is prompted or not. If the telephone company technician sets SCRACTIVE to Y, the value in SCRDUR determines the time of the screening period. When set to N for subscription-based CSMI and Centrex end users, the duration of the screening timer is determined by office parameter CSMI_SCREENING_TIMER. If set to N for for CSMIPPU end users, the screenng timer is determined by office parameter CSMI_PPU_SCREENING_TIMER. The default value is N.
	SCRDUR	0 to 120	The SCRDUR prompt requires the operating company technician to enter the length (in seconds) of the screening period the end user wants. The screening period begins when the CSMI end user begins to monitor the call after a ring splash is received. The system ceases to monitor the call after the timer expires. If the operating company technician enters a value of 0, the screening period lasts as long as the forwarded call. The default value is 20. ***Note:*** The system only prompts SCRDUR is SCRACTIVE was set to Y.
	DENYCSMIOPT	DENYALL, DENYCFDA, DENYCFBL, or DENYCFW	Used to prevent an end user from using CSMI on a given set of call forwarding variations. At least one and up to four valid inputs can be entered successively at the DENYOPT prompt. • all Call forwarding types (DENYALL) • Call forwarding do not answer (DENYCFDA) • Call forward busy line (DENYCFBL) • Call forwarding (DENYCFW)

Datafill example for table IBNFEAT

The following example shows sample datafill for table IBNFEAT.

CSMI (Call Screening, Monitoring, and Intercept) (continued)

MAP display example for table IBNFEAT

```
LEN              DNNO    DF     FEATURE    DATA
_____________________________________________________
HOST 01 0 01 04   0      CSMI   CSMI       Y A N N N $
```

Error messages for table IBNFEAT

The following error messages apply to table IBNFEAT.

Error messages for table IBNFEAT

Error message	Explanation and action
CSMI can only be added to a primary MDN member.	If CSMI is being added to a member of an MDN group, it must be the primary member of the group.

Datafilling table IBNXLA

The following table shows the datafill specific to CSMI (Call Screening, Monitoring, and Intercept) for table IBNXLA. Only those fields that apply directly to CSMI (Call Screening, Monitoring, and Intercept) are shown. For a description of the other fields, refer to the data schema section of this document.

The format with translation selector FEAT is required in a feature translator if the digit or digits dialed are the access code for one of the features listed in field FEATURE.

Datafilling table IBNXLA

Field	Subfield or refinement	Entry	Explanation and action
KEY		see subfields	Key. This field consists of subfields XLANAME and DSLIDX.
	XLANAME	alphanumeric(1 to 8 characters)	Translator name. Enter the name that is assigned to the translator.

CSMI (Call Screening, Monitoring, and Intercept) (continued)

Datafilling table IBNXLA

Field	Subfield or refinement	Entry	Explanation and action
	DGLIDX	vector of up to 18 digits	Digilator index. Enter the digit or digits assigned as an ambiguous code. The range of this field depends on field MAXDIG in table XLANAME. The DGLIDX can accept overdecadic digits. The allowable values for the digilator portion of DGLIDX of table IBNXLA are as follows: *MAXDIG value IBNXLA digilator values* 9 Digits 0 to 9 C Digits 0 to 9 and B to F D Digits 0 to 9 and B to F The allowable digit range for table IBNXLA digilator values is determined for each translator.
RESULT		see subfields	Result. This field consists of subfields TRSEL, ACR, SMDR, and FEATURE.
	TRSEL	FEAT	Translation selection. Enter the translation selector FEAT.
	ACR	Y or N	Account code entry. Enter Y (yes) if an account code entry is required for all calls to the special feature access code. Otherwise, enter N (no). Enter N when the feature is equal to SCPL or SCPS (see field FEATURE).

CSMI (Call Screening, Monitoring, and Intercept) (continued)

Datafilling table IBNXLA

Field	Subfield or refinement	Entry	Explanation and action
	SMDR	Y or N	Station message detail recording. Enter Y if all calls from a customer group station or attendant console to any station in the block of station numbers are recorded. Enter N if no recording is 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 call this field has no effect and no SMDR record is produced. For dump and restore purposes an N must be datafilled after the SMDR field if field TRSEL is datafilled NET, ROUTE, TTTR, AMBI, EXTN, CUTTD, or FEAT. The Station Message Detail Recording fields (SMDR and SMDRB [TRKSEL= NET]) can only be set to Y if the switching unit has the option SMDR_OFFICE set to Y in table OFCOPT. SMDR bills each leg of the call. The option must be turned on in IBN translations to generate SMDR billing. Turning on the option for one leg of the call, does not carry over to another leg of the call. For example, when using virtual facility groups (VFG) for routing, SMDR must be turned on for the leg of the call that requires billing and must be routed through IBN translations. Neither SMDR nor SMDRB can be turned on for calls originating from plain ordinary telephone service (POTS) VFGs.
	FEATURE	CSMICTRL	Feature. Enter CSMICTRL in this field.

Datafill example for table IBNXLA

The following example shows sample datafill for table IBNXLA.

CSMI (Call Screening, Monitoring, and Intercept) (continued)

MAP display example for table IBNXLA

```
KEY             RESULT
_____________________________________________________________
RESXLA 95       FEAT N Y N CSMICTRL
```

Datafilling CSMI announcements

The following sections outline how to set up the announcements required for CSMI.

Datafilling and implementing CSMI announcements

At the MAP terminal

1 Access the DRAMREC utility to record phrases on the RAM cards of the E/DRAM.

>DRAMREC

Response:

```
DRAM:
```

2 Connect an idled (IDL) headset trunk to the E/DRAM controller circuit by typing.

>CONNECT <DRAM_controller_no> <hset_CLLI><member_no>

Where:

controller_no indicates the number of the DRAM controllerhset indicates headsetmember_no indicates the CLLI member

Response:

```
CONNECTION MADE
```

3 Display the E/DRAM phrases.

>DISPLAY <DRAM_controller_no> <DRAM_card_no>

Where:

controller_no indicates the number of the DRAM controllercard_no indicates the DRAM card number

Response:

```
CARD 1 PROM       SPACE: MAX  CONTIG 0 TOTAL 0PHRASE_EXT
PHRASE_EXT
LENGTH----------------------------------------L1BSY
48                  4
```

4 Record the phrase.

>RECORD <name_of_phrase> <length_of_phrase_in_seconds>

5 After three prompt tones, record the phrase.

CSMI (Call Screening, Monitoring, and Intercept) (continued)

6 Playback the phrase.

```
>PLAYBACK <DRAM_controller_no> <name_of_phrase>
```

7 If necessary record the announcement again referring to step 11. It is possible to erase a phrase using the ERASE command as follows:

```
>ERASE <DRAM_controller_no> <name_of_phrase>
```

Note: Refer to Feature Description Manual 297-1001-801 to interpret DRAM phrases.

8 If desired print a display of the announcement using the DISPLAY command.

```
>DISPLAY <DRAM_controller_no> <DRAM_card_no>
```

9 Quit the DRAMREC utility.

```
>quit
```

10 Procedure is complete.

Datafilling table CLLI

The following table shows the datafill specific to CSMI (Call Screening, Monitoring, and Intercept) for table CLLI. Only those fields that apply directly to CSMI (Call Screening, Monitoring, and Intercept) are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table CLLI

Field	Subfield or refinement	Entry	Explanation and action
CLLI		alphanumeric (vector of up to 16 characters)	Common language location identifier. Enter a CLLI code to uniquely identify the far end of each announcement, tone, or trunk group.
ADNUM		numeric(0 to 8191)	Administrative trunk group number. Enter a number in the range from 0 to one less than the current size of table CLLI datafilled in field SIZE of table DATASIZE.
TRKGRSIZ		numeric(0 to 2047)	Trunk group size. Enter the maximum quantity of trunk members that are expected to be assigned in the trunk group. This number is used to allocate storage, consequently it can be greater than the number of initial working trunks.
ADMININF		alphanumeric (vector of up to 32 characters)	Administrative information. Enter operating company administration information. The information in this field is not used by the switch.

CSMI (Call Screening, Monitoring, and Intercept) (continued)

Datafill example for table CLLI

The following example shows sample datafill for table CLLI.

MAP display example for table CLLI

```
CLLI              ADNUM        TRKGRSIZ   ADMININF
------------------------------------------------
CSMIANN           1030           2        CSMI_ACT
```

Datafilling table ANNS

The following table shows the datafill specific to CSMI (Call Screening, Monitoring, and Intercept) for table ANNS. Only those fields that apply directly to CSMI (Call Screening, Monitoring, and Intercept) are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table ANNS

Field	Subfield or refinement	Entry	Explanation and action
CLLI		alphanumeric (1 to 16 characters)	Announcement CLLI keys. Enter the code that represents the announcement in table CLLI.
ANTYPE		CSMI	Announcement type. Enter the announcement type as follows: CSMI to specify Call Screening, Monitoring and Intercept.

CSMI (Call Screening, Monitoring, and Intercept) (continued)

Datafilling table ANNS

Field	Subfield or refinement	Entry	Explanation and action
TRAFSNO		0 to 127	Traffice seperation numbers. If the switch has feature package NTX085AA (Traffic Separation Peg Count), enter the Traffic Separation number, 1 to 127, that is assigned to the announcement. If the traffic separation is not required, enter 0 (zero). For switches with package NTX085AA, the range of values for the traffic separation number depends on office parameter TFAN_OUT_MAX_NUMBER in table OFCENG. For switching units without package NTX085AA, the range of values for the traffic separation numbers is 0 to 15. Reserve the traffic separation numbers 1 to 9 for generic traffic separation numbers. Refer to table TFANINT for more information.
MAXCONN		1 to 255	Maximum connections. Enter the maximum number of simultaneous connections that are permitted on the announcement. An entry outside this range is invalid.
CYTIME		1 to 18or 0	Cycle times. Enter the time, in seconds, for one announcement cycle on one channel. An entry outside this range is invalid. ***Note 1:*** If your office is equipped with a Cook or equivalent announcement machine and table AUDIO is datafilled as ANNS, field CYTIME is changed to 0 (zero). This allows flexible announcement timing. ***Note 2:*** The cycle time for an Audichron is 0 (zero) due to the variable length announcement feature on Audichron. By setting the value of this field to 0 (zero), the length of the announcement is always matched.
MAXCYC		1 to 255	Maximum cycles. Enter the maximum number of times the complete announcement is heard before the call is advanced to the next route in the route list. An entry outside of this range is invalid.

CSMI (Call Screening, Monitoring, and Intercept) (continued)

Datafill example for table ANNS

The following example shows sample datafill for table ANNS.

MAP display example for table ANNS

```
CLLI           ANTYPE    TRAFSNO MAXCONN CYTIME MAXCYC
-------------------------------------------------------
CSMIANN          CSMI         0      15      4      1
```

Datafilling table DRAMS

The following table shows the datafill specific to CSMI (Call Screening, Monitoring, and Intercept) for table DRAMS. Only those fields that apply directly to CSMI (Call Screening, Monitoring, and Intercept) are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table DRAMS

Field	Subfield or refinement	Entry	Explanation and action
DRAMCARD		see subfields	Digital recorded announcement machine key. This field consists of subfields DRAM and CARD.
	DRAM	0 to 63	Digital recorded announcement machine. Enter the number that is assigned to DRAM.
	CARD	1 to 8	Card. Enter the number that is assigned to the card.
TMTYPE		DTM	Trunk module type. Enter DRAM trunk module type, DTM.
TMNO		0 to 2047	Trunk module number. Enter the trunk module number the trunk card is assigned to.
TMCKT		0 to 29	Trunk module circuit. Enter the trunk module circuit number the trunk card is assigned to. Any entry outside the range of indicated values for this field is invalid.
CARDCODE		1X80AA	Cardcodes. Enter 1X80AA for the EDRAM. Any entry outside the range of indicated values for this field is invalid.

CSMI (Call Screening, Monitoring, and Intercept) (continued)

Datafilling table DRAMS

Field	Subfield or refinement	Entry	Explanation and action
CARDINFO		see subfields	Card information. This field consists of subfields CARDTYPE and BLKLIST.
	CARDTYPE	RAM orPROM	Cardtype. Enter RAM for the recordable memory card or PROM for the prerecorded message card. Any entry outside the range of indicated values for this field is invalid.
	BLKLIST	vector of 2 characters (0 to 7) or vector of 16 characters (0 to 31)	Blocklist. Enter the number of the speech block or blocks that are assigned on the card. Single density cards (for example, 1X76AA) have one speech block, double density cards (for example, 1X76BA) have two speech blocks. If entering the speech block numbers for double density cards, the numbers must be contiguous and begin with an even numbered speech block. Block numbers cannot be repeated in the same DRAM.

Datafill example for table DRAMS

The following example shows sample datafill for table DRAMS.

MAP display example for table DRAMS

```
DRAMCARD   TMTYPE   TMNO   TMCKT   CARDCODE   CARDINFO
_____________________________________________________
4 0          DTM     0       0        1X80AA     RAM  3
4 1          DTM     0       2        1X80AA     PROM 0
4 2          DTM     0       3        1X80AA     PROM 1
4 3          DTM     0       4        1X80AA     PROM 2
4 4          DTM     0       5        1X80AA     RAM  1
4 5          DTM     0       6        1X80AA     RAM  2
```

Datafilling table ANNMEMS

The following table shows the datafill specific to CSMI (Call Screening, Monitoring, and Intercept) for table ANNMEMS. Only those fields that apply directly to CSMI (Call Screening, Monitoring, and Intercept) are shown. For a

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

Datafilling table ANNMEMS

Field	Subfield or refinement	Entry	Explanation and action
ANNMEM		see subfields	Announcement member key. This field consists of subfields ANN and MEMBER.
	ANN	alphanumeric or blank	Announcement. If the trunk circuit is the first in the trunk list for the announcement member, enter the code that represents the announcement group in table CLLI. If the trunk circuit is other than the first in the trunk list, leave this field blank.
	MEMBER	0 to 255or blank	Member. If the trunk circuit is the first in the trunk list for the announcement member, enter the number assigned to the member. If the trunk circuit is other than the first, leave this field blank. If digital, each announcement member can be assigned up to eight trunk circuits. If analog, each announcement can be assigned up to two trunk circuits.
HDWTYPE		AUDICHRON DRAMor blank	Hardware type. Enter AUDICHRON if the first entry for the member and hardware type is analog. Enter DRAM if the recorded announcement member is digital. If other than analog or digital, leave this field blank.

CSMI (Call Screening, Monitoring, and Intercept) (continued)

Datafilling table ANNMEMS

Field	Subfield or refinement	Entry	Explanation and action
CARD		2X72AA 2X72AB 2X72AC 2X88AADRA or blank	Card code. Enter the card code if the trunk member is analog. Enter DRA if the trunk member is digital. If other than the analog or digital, leave this field blank. If a switching unit has an analog recorded announcement machine, a trunk circuit consists of one of the trunk circuits on a trunk card with product engineering code NT2X72AA, AB, or AC, or NT2X88AA that is mounted on a TM8 trunk module type.
MEMINFO		see subfield	Memory information. This field consists of subfield TRCKLIST.
	TRCKLIST	see subfields	Tracklist. This field consists of subfields TRACK, PMTYPE, TMNO, and TMCKT.
	TRACK	0 to 31	Track number. Enter the track number assigned to the trunk circuit. If the announcement is multilingual, it is recommended that each language be assigned to a different track (trunk circuit). The order in which the tracks are heard is determined by the sequence in which the tracks are listed in the announcement member trunk list. That is, if a member has three tracks listed in the following sequence 1, 5, and 3, then track 1 is heard first, followed by track 5 and then track 3. If announcements are bilingual, the track assigned to the priority language is the first track assigned in the member trunk list.

CSMI (Call Screening, Monitoring, and Intercept) (continued)

Datafilling table ANNMEMS

Field	Subfield or refinement	Entry	Explanation and action
	PMTYPE	ATM, CTM, DTM, MTM, MTMA, OAU, PTM, RMM, RSM, STM, TAN, TMA, TM2, TM4, TM8, T8A	Peripheral module type. Enter the type of peripheral module to which the trunk circuit is assigned. If the announcement member is digital, enter maintenance trunk module (MTM) or service trunk module (STM). If the announcement member is analog, enter TM8. If the announcement member is connected to an EDRAM (1X80), enter DTM. In the case of Mechanized Calling Card service (MCCS), the announcement channels are not dedicated to any particular announcement as in the case of standard recorded announcements. Instead, MCCS exists as a group in table ANNS with members in table ANNMEMS associated with up to 29 MTM dedicated channels (channel 0 is reserved for diagnostic purposes) on a particular digital recorded announcement machine (DRAM). Normally, a whole DRAM is dedicated as an MCCS machine. Any of the MCCS announcements can be played back through any one channel since the Traffic Operator Position System (TOPS) needs immediate connection to the MCCS announcements where a caller gets an audible ring while waiting to hear an announcement. ***Note:*** PTMs are manufacturer discontinued, so MTM must be datafilled in place of PTM.

CSMI (Call Screening, Monitoring, and Intercept) (continued)

Datafilling table ANNMEMS

Field	Subfield or refinement	Entry	Explanation and action
	TMNO	0 to 2047	Trunk module number. Enter the trunk module number assigned to the trunk module to which the trunk circuit is assigned. If trunk module type is MTM, the range is 0 to 255. If the trunk type is TM8, STM or DTM, the range is 0 to 2047. If the switching unit has a DRAM, a trunk circuit consists of an assignment to one of the trunk circuits (channels) on the maintenance trunk module (MTM) or Service Trunk Module (STM) on which the DRAM is located. A trunk circuit cannot be assigned to trunk module circuit number 0 (zero) because this circuit is reserved for the DRAM controller.

CSMI (Call Screening, Monitoring, and Intercept) (continued)

Datafilling table ANNMEMS

Field	Subfield or refinement	Entry	Explanation and action
	TMCKT	0 to 29	Trunk module circuit number. Enter the trunk module circuit number to which the trunk circuit is assigned. For MTMs, the DRAM can be configured to function as an 8, 16, 24 or 30 trunk circuit interface depending on the dip switch settings on the controller card. There are four dip switches on the controller card, which enable the number of circuits shown below: Switch setting Trunk circuits enabled None 1 to 73 8 to 152 16 to 234 24 to 29 *Note:* Circuits 1 to 7 are permanently enabled and have no switch setting. For STMs, only 15 circuits can be enabled. The DRAM controller switch setting and associated circuit number assignments for STMs are shown below: Switch setting Trunk circuits enabled None 1 to 73 8 to 15 One trunk circuit is required for each announcement track assigned to the announcement member. All trunk circuits assigned to an announcement member must be located on the same trunk module. For DTM, all channels can be used and there are no switches that need setting.

Datafill example for table ANNMEMS

The following example shows sample datafill for table ANNMEMS.

MAP display example for table ANNMEMS

```
ANNMEM              HDWTYPE     CARD      MEMINFO
-------------------------------------------------------------
CSMIANN 1          DRAM       DRA        (0 DTM 0 1) $
```

CSMI (Call Screening, Monitoring, and Intercept) (continued)

Datafilling table DRMUSERS

The following table shows the datafill specific to CSMI (Call Screening, Monitoring, and Intercept) for table DRMUSERS. Only those fields that apply directly to CSMI (Call Screening, Monitoring, and Intercept) are shown. For a description of the other fields, refer to the data schema section of this document.

Note: Two announcements are required for CSMI, one to confirm the activation of the feature (for example, CSMIANNS 1), and one to confirm the deactivation of the feature (for example, CSMIANNS 2).

Datafilling table DRMUSERS

Field	Subfield or refinement	Entry	Explanation and action
USERANN		see subfields	User announcment. This field consists of subfields CLLI and ANNUM.
	CLLI	alphanumeric (up to 16 characters)	Common language location identifier. Enter the name associated with the announcement group for MCCS as given in table ANNS.
	ANNUM	1 to 63	Announcement number. Enter the number assigned to the announcement.
PHSLIST		see subfield	Phrase list. This field consists of subfield PHRASES.
	PHRASES	alphanumeric	Phrases. Enter vector of up to 32 phrases associated with an announcement. If less than 32 phrases are required, end the list with a $.

Datafill example

The following example shows sample datafill for table DRMUSERS.

MAP display example for table DRMUSERS

```
USERANN              PHSLIST
-------------------------------------------------------
CSMIANN 1 (LANGUAGE1) CSMIENG1 (LANGUAGE2) CSMIFRE1 $
CSMIANN 2 (LANGUAGE1) CSMIENG2 (LANGUAGE2) CSMIFRE2 $
```

CSMI (Call Screening, Monitoring, and Intercept) (continued)

Datafilling table SVRCKT

The following table shows the datafill specific to CSMI Enhancement—Stub Message Deletion. Only those fields that apply directly to this feature are shown. For a description of the other fields, refer to the data schema section of this document.

Note: This table must contain datafill for each DTMF sender circuit.

Datafilling table SVRCKT

Field	Subfield	Entry	Explanation and action
SVCTKEY		see subfields	SCVTKEY = service circuit key. This field contains entries to subfields CLLI and NUM.
	CLLI	SVDTMF, SVMFC, SVOBSV	Common language location identifier. SVDTMF = digitone outpulsing circuit, SVMFC = R2 inter-register signaling circuit, SVOBSV = service observing circuit.
	NUM	0 to 1023	Service circuit number. Enter the number assigned to the circuit.
TMTYPE		MTM	MTM = trunk module type.
TMNO		0 to 255	TMNO = trunk module number. This field specifies the number of a trunk module. The digitone outpulsing circuit, R2 inter-register signaling circuit, or service observing circuit is on this trunk module.
TMCKTNO		0 to 29	TMCKTNO = trunk module circuit number. This field specifies the trunk module circuit number of the digitone outpulsing circuit, R2 inter-register signaling circuit, or service observing circuit.
CARDCODE		3X68AB or 3X68AC for SVDTMF, 5X29AB for SVOBSV	This field specifies the engineering code for the tone card.

Datafill example

The following example shows sample datafill for table SVRCKT.

CSMI (Call Screening, Monitoring, and Intercept) (continued)

MAP display example for table SVRCKT

```
SVCTKEY          TMTYPE     TMNO     TMCKTNO     CARDCODE
-------------------------------------------------------

SVDTMF 0          MTM        4        21           3X68AC
```

Translation verification tools

CSMI (Call Screening, Monitoring, and Intercept) does not use translation verification tools.

SERVORD

Line options CSMI and DENYCSMI are added by this feature and can be added (ADO), changed (CHF), or deleted (DEO) through the Service Order System (SERVORD). The SERVORD prompt CSMISTATE is added.

The DENYCSMI option is used to prevent an end user from using CSMI on a given set of call forwarding variations.

SERVORD limitations and restrictions

The following SERVORD limitations and restrictions apply to CSMI (Call Screening, Monitoring, and Intercept):

- The LCC must be 1FR, 1MR, or RES.
- If CSMI is present on a line, then any MDN assigned to that line must be the primary member.

CSMI (Call Screening, Monitoring, and Intercept) (continued)

SERVORD prompts

The following table shows the SERVORD prompt used to assign CSMI to, or delete from, a RES, 1FR, or 1MR line.

SERVORD prompt for CSMI (Call Screening, Monitoring, and Intercept)

Prompt	Valid input	Explanation
SONUMBER	Refer to SONUMBER in Chapter 2, “Service order tables" of the DMS-100 Servord Reference Manual for more information on valid inputs.	The unique number of the service order to be entered.
DN_OR_LEN	Refer to DN and LEN_OR_LTID in Chapter 2, “Service order tables" of the DMS-100 Servord Reference Manual for more information on valid inputs.	Enter the Directory Number (DN) or the Line Equipment Number (LEN) for the line.
OPTION	Refer to Line service option in Chapter 2, “Service order tables" of the DMS-100 Servord Reference Manual for a list of valid inputs.	Option(s) for a service to establish, modify, or delete. The end user can specify a maximum of 20 options for any ADD, ADO, EST, or NEW command.
CSMISTATE	A or I	A value of “A" means that CSMI is active on this line. A value of “I" means that CSMI is inactive on this line. CSMI defaults to A (active).
CSMIPPU	Y or N	Field CSMIPPU determines the billing design to use. When set to N, the system bills CSMI on a monthly flat rate basis. When set to Y, the system bills CSMI on a usage-sensitive basis for RES and POTS lines. The default value is N.
CONNEC3W	Y or N	Field CONNEC3W determines call interception. When the operating company technician enters N, the interception establishes a two-way call between the caller and the end user. When the operating company technician enters Y, the interception establishes a three-way call amongst the two parties and the NBAS. The default value is N.

CSMI (Call Screening, Monitoring, and Intercept) (continued)

SERVORD prompt for CSMI (Call Screening, Monitoring, and Intercept)

Prompt	Valid input	Explanation
SCRACTIVE	Y or N	Field SCRACTIVE indicates if field SCRDUR is prompted or not. If telephone company technician sets SCRACTIVE to Y, the value in SCRDUR determines the duration of the screening period. When set to N for subscription-based CSMI and Centrex end users, the duration of the screening timer is determined by office parameter CSMI_SCREENING_TIMER. If set to N for for CSMIPPU end users, the screenng timer is determined by office parameter CSMI_PPU_SCREENING_ TIMER. The default value is N.
SCRDUR	0 to 120	The SCRDUR prompt requires the operating company technician to enter the length (in seconds) of the screening period the end user wants. The screening period begins when the CSMI end user begins to monitor the call after a ring splash is received. The system ceases to monitor the call after the timer expires. If the operating company technician enters a value of 0, the screening period lasts as long as the forwarded call. The default value is 20. ***Note:*** The system only prompts SCRDUR is SCRACTIVE was set to Y.
DENYOPT	DENYALL, DENYCFD, DENYCFBL, DENYCFW	Used to prevent an end user from using CSMI on a given set of call forwarding variations. At least one and up to four valid inputs can be entered successively at the DENYOPT prompt. • all Call forwarding types (DENYALL) • Call forwarding do not answer (DENYCFDA) • Call forward busy line (DENYCFBL) • Call forwarding (DENYCFW)

SERVORD example for adding CSMI (Call Screening, Monitoring, and Intercept)

The following SERVORD example shows how CSMI (Call Screening, Monitoring, and Intercept) is added to a RES line using the ADO SERVORD command.

CSMI (Call Screening, Monitoring, and Intercept) (continued)

SERVORD example for CSMI (Call Screening, Monitoring, and Intercept) in prompt mode

```
>SERVORD
SO:
> ADO
SONUMBER:
> NOW 76 1 1 PM
DN_OR_LEN:
> 6211518
OPTION:
> CSMI
CSMISTATE:
> A
CSMIPPU:
> N
CONNEC3W:
> N
SCRACTIVE:
> Y
SCRDUR:
> 20
OPTION:
> $
```

SERVORD example for CSMI (Call Screening, Monitoring, Intercept) in no-prompt mode

```
> ADO $ 6211518 CSMI A N N Y 20 $
```

SERVORD example for adding DENYSCMI

The following SERVORD example shows how to deny CSMI for a specific line if the incoming call is forwarded using CFDA or CFBL.

CSMI (Call Screening, Monitoring, and Intercept) (end)

SERVORD example for DENYCSMI in prompt mode

```
> SERVORD
SO:
> ADO
SONUMBER: NOW 76  1  1  PM
>
DN_OR_LEN:
> 6211518
OPTION:
> DENYCSMI
DENYOPT:
> DENYCFDA
DENYOPT:
> DENYCFBL
DENYOPT:
> $
OPTION:
> $
```

SERVORD example for DENYSCMI in no-prompt mode

```
> ADO $ 6211518 DENYCSMI DENYCFDA DENYCFBL $
```

History

SN07 (DMS)

Description of interaction of CSMI with CHD, CWT, CXR, and 3WC amended according to Q00683891.

SN06 (DMS)

Description of Operator Override (OOR) corrected for CR Q00659151. This History section added.

Dual Line Call Management

Ordering codes

Functional group ordering code: RES00002

Functionality ordering code: RES00087

Release applicability

NA010 and up

Dual Line Call Management was introduced in NA010.

Prerequisites

This document includes all the data table information for Dual Line Call Management. Complete use of Dual Line Call Management can require software or hardware not described in this document.

Description

Dual Line Call Management (DLCM) allows the end user to answer calls directed to the DLCM subscriber line from the DLCM associate line. The DLCM subscriber line is the DLCM member line, which receives the call. The DLCM associate line is a member of the same group as the DLCM subscriber line.

The DLCM group uses the following functionalities

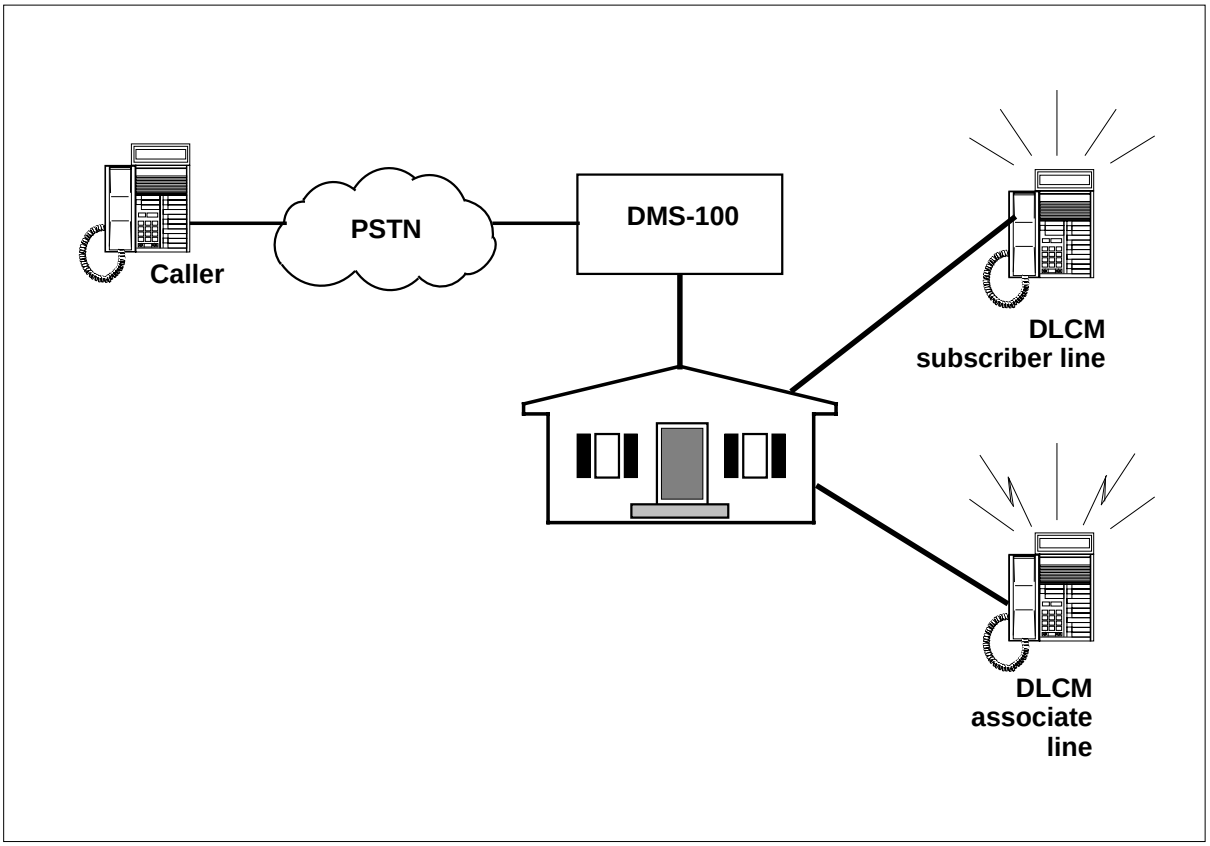
- Simultaneous and Distinctive Ringing
- Call Answer
- Call Hold

The DLCM feature supports coded, superimposed, and frequency ringing types for Simultaneous Ringing and Call Hold Ringback. For each ringing type, there are 15 ringing patterns available ranging from 0 to 14.

The following figure illustrates a DLCM basic call scenario. The caller dials the DLCM subscriber line, if simultaneous ringing is active the DLCM associate line also rings.

Dual Line Call Management (continued)

DLCM basic call scenario



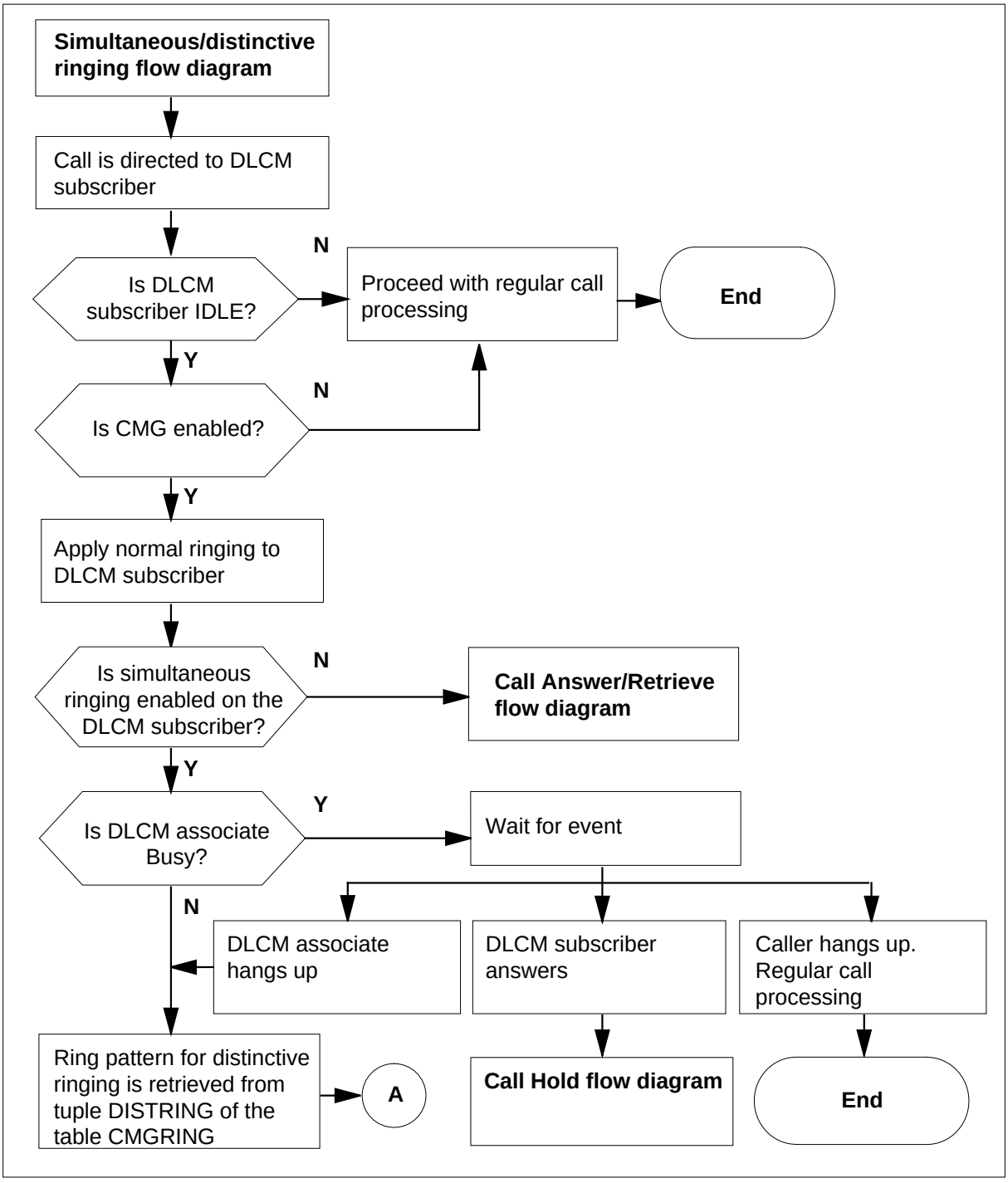
Operation

The following sections provide a detailed description of DLCM operation.

Simultaneous and Distinctive Ringing functionality

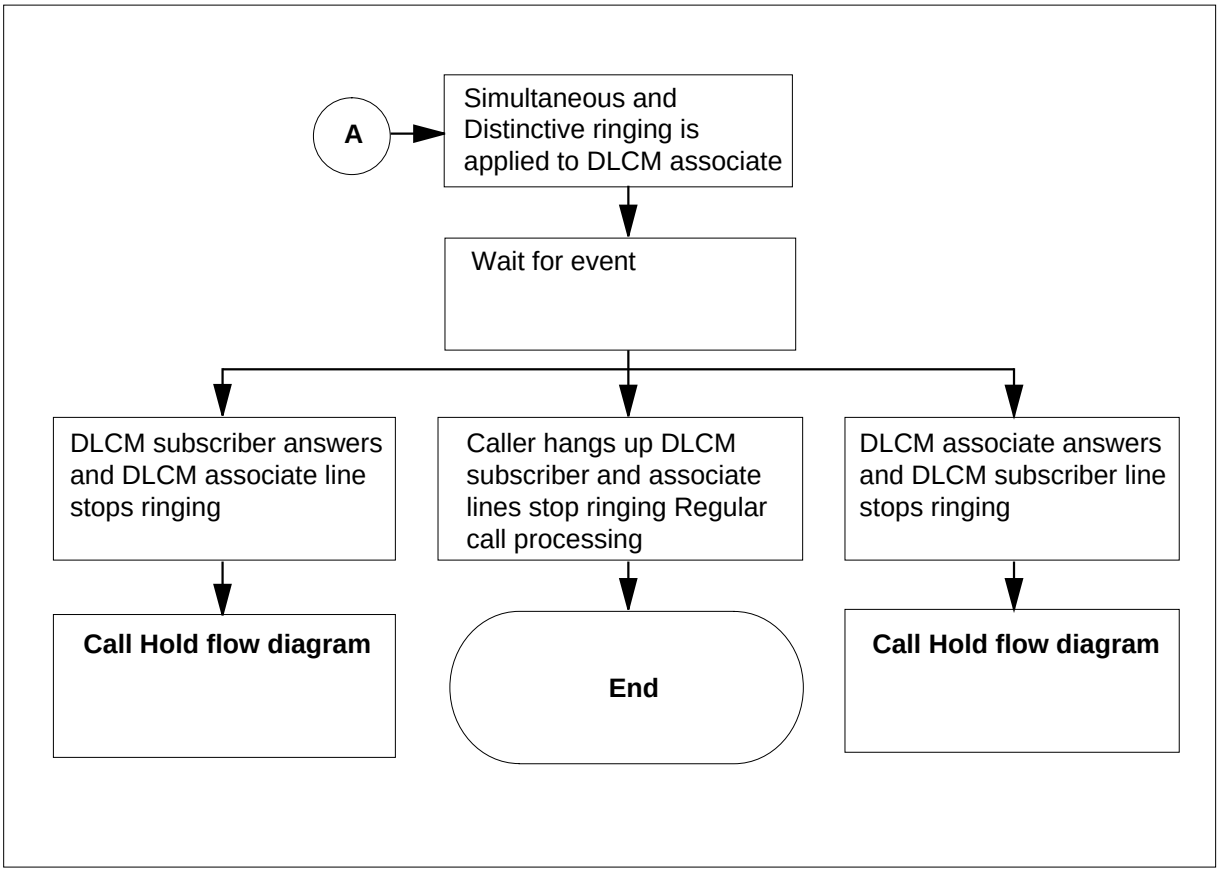
When simultaneous ringing is active, the DLCM subscriber line and the DLCM associate line ring. The DLCM subscriber line receives normal ringing and the DLCM associate line receives distinctive ringing if it is idle. If simultaneous ringing is not active, only the DLCM subscriber line rings. The DLCM member can continue to answer the call from the DLCM associate line by dialing the Call Management Group (CMG) access code. The following diagram illustrates simultaneous and distinctive ringing call flow.

Table flow for Simultaneous and Distinctive ringing



Dual Line Call Management (continued)

Table flow for Simultaneous and Distinctive ringing



Call Management Group access code

The CMG access code is a single access code. The user dials the access code to answer a call from the DLCM associate line or to place a call on hold.

To use the CMG access code, the following conditions must apply

- The CMG access code is in the centrex translations of the end user's customer group.
- The DLCM feature is enabled in the end-office.
- The DLCM line is a member of a CMG.

Simultaneous ringing control

The DLCM feature provides members with the option of a single access code or two separate access codes. The single access code allows the end user to toggle the simultaneous ringing functionality for each DLCM member. The two separate access codes also allow the end user to control Simultaneous

Dual Line Call Management (continued)

Ringing functionality. One code activates simultaneous ringing functionality and the other code deactivates Simultaneous Ringing functionality.

The end user can activate the Simultaneous Ringing functionality by dialing the CMGRACT access code after an off-hook. The end user can deactivate the Simultaneous Ringing functionality by dialing the CMGRDACT access code after an off-hook. The end user can toggle Simultaneous Ringing functionality by dialing the CMGRCTRL code after an off-hook.

The Simultaneous Ringing functionality receives different treatment for activation and deactivation. When the user activates Simultaneous Ringing CMGA is the treatment. If the end user deactivates Simultaneous Ringing, the switch routes the call to CMGD treatment. These two treatments are datafilled in table TMTCNTL and correspond to tones or announcements.

The following conditions apply to modify the simultaneous ringing status:

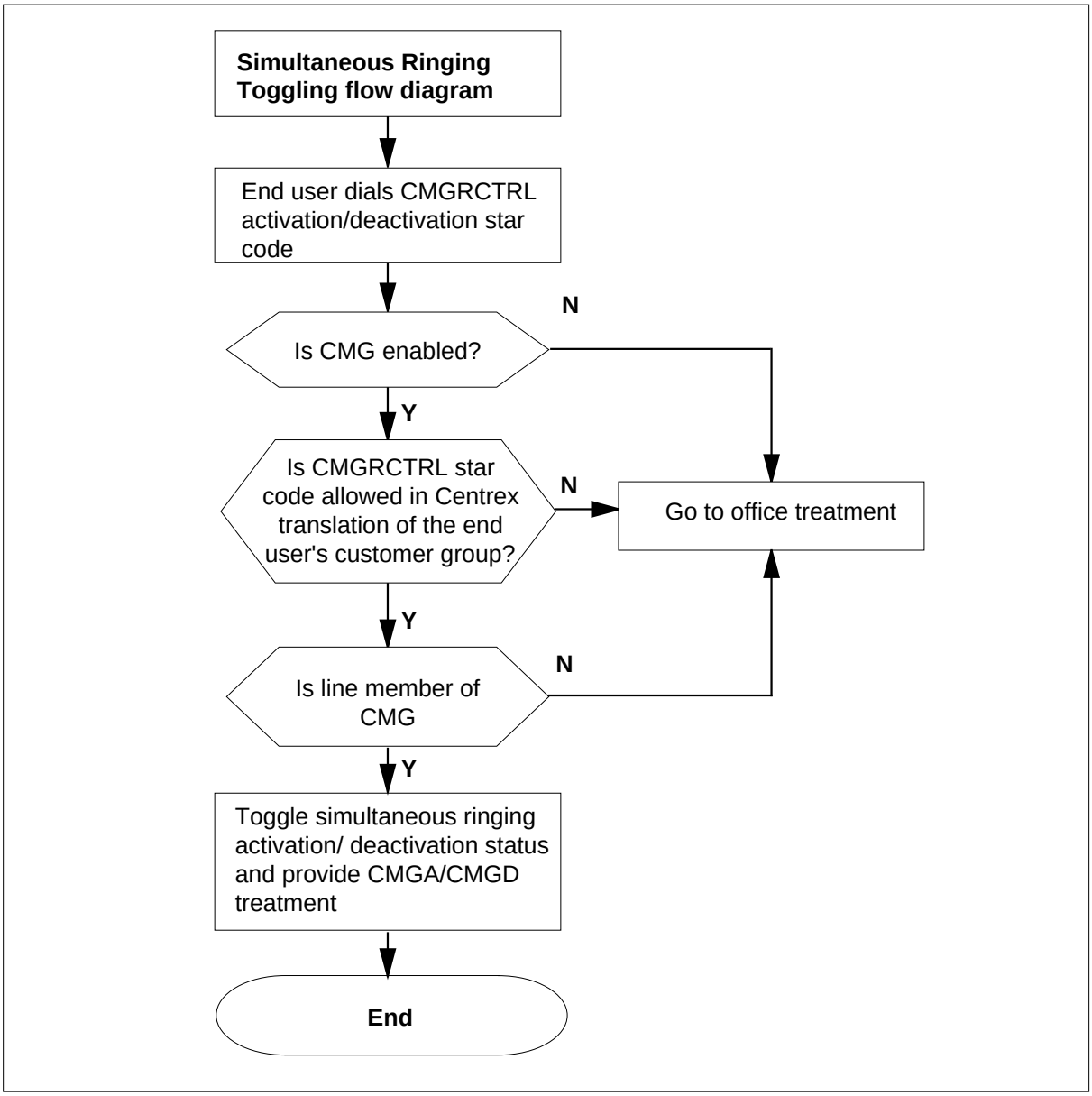
- The CMGRCTRL, CMGRACT, or CMGDACT access codes are in the Centrex translation of the end user's customer group.
- The DLCM feature is enabled in the end-office.
- The line is a member of a CMG.

If the end user can not modify the simultaneous ringing status, Simultaneous Ringing functionality receives the feature not allowed (FNAL) treatment. The following diagrams illustrate simultaneous ringing toggling, activation, and deactivation.

Note: A system image dump does not affect the activation or deactivation of the CMGRCTRL, CMGRACT, or CMGRDACT features.

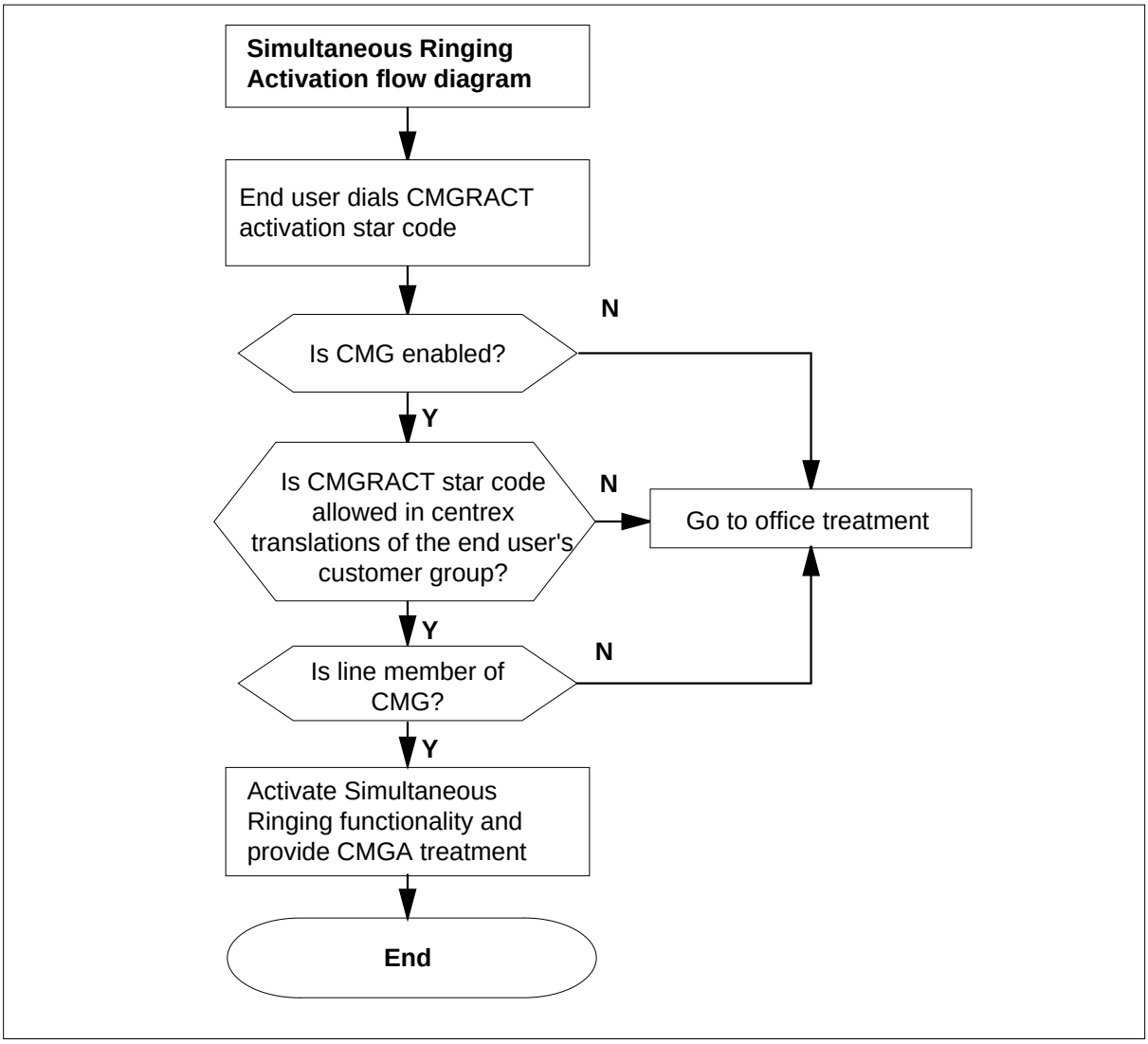
Dual Line Call Management (continued)

Table flow for Simultaneous Ringing Toggling



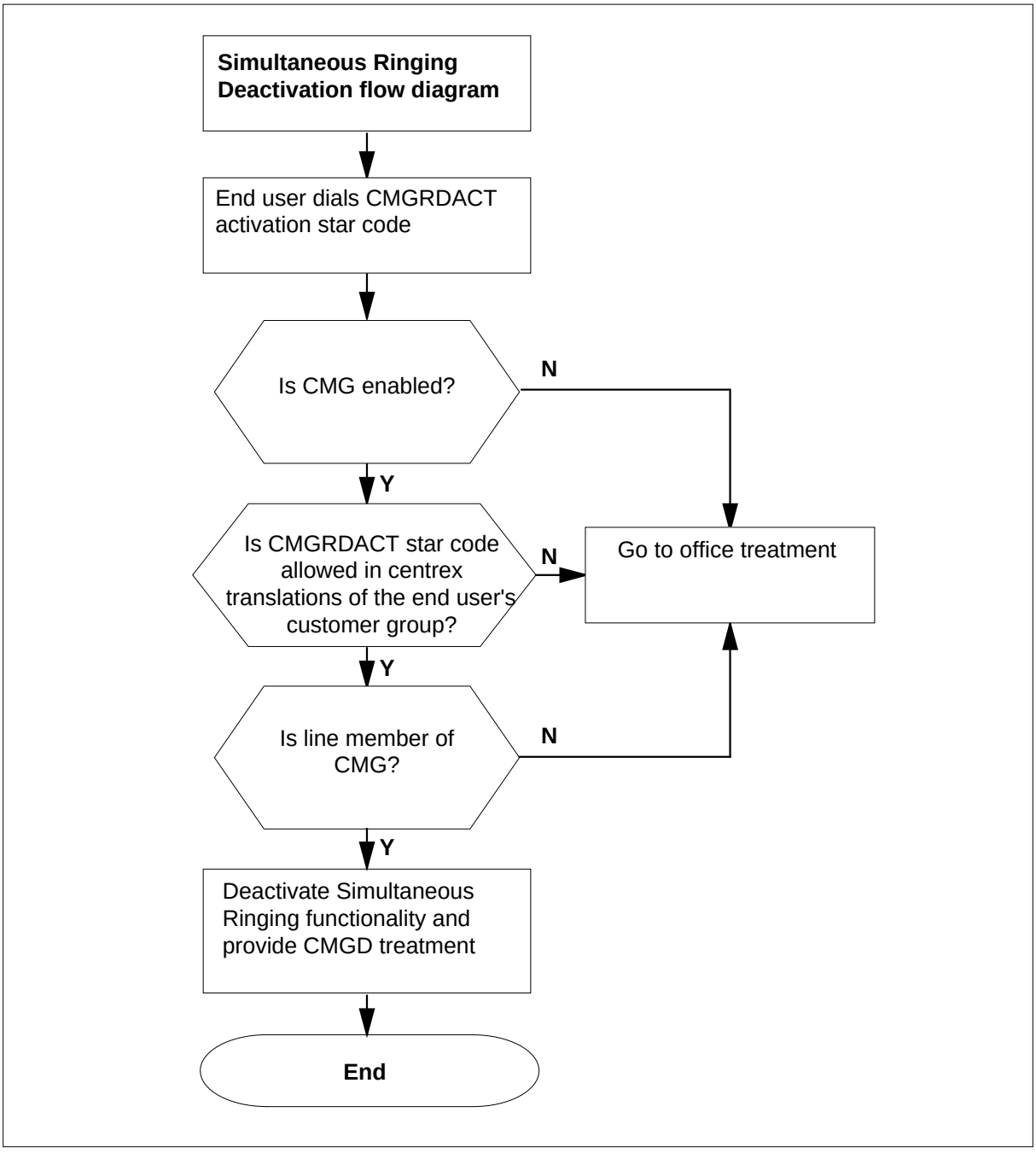
Dual Line Call Management (continued)

Simultaneous Ringing Activation



Dual Line Call Management (continued)

Table flow for Simultaneous Ringing Deactivation



Dual Line Call Management (continued)

Call Management Group provisioning

The CMG office provisioning consists of the following:

- CMG_ENABLED office parameter
- default value set to disable the DLCM functionality

Note: The operating company can allow provisioning while the DLCM feature is disabled.

The CMG table provisioning consists of the following:

- table CMGRING specifies the ringing types and pattern
- tuple DISTRING is for simultaneous ringing
- tuple HOLDRGBK is for call hold ringback

By default, both tuples receive the normal ringing pattern.

The CMG line provisioning consists of the following:

- CMG line option
- suboption CMGRING
- suboption DENY_SDN

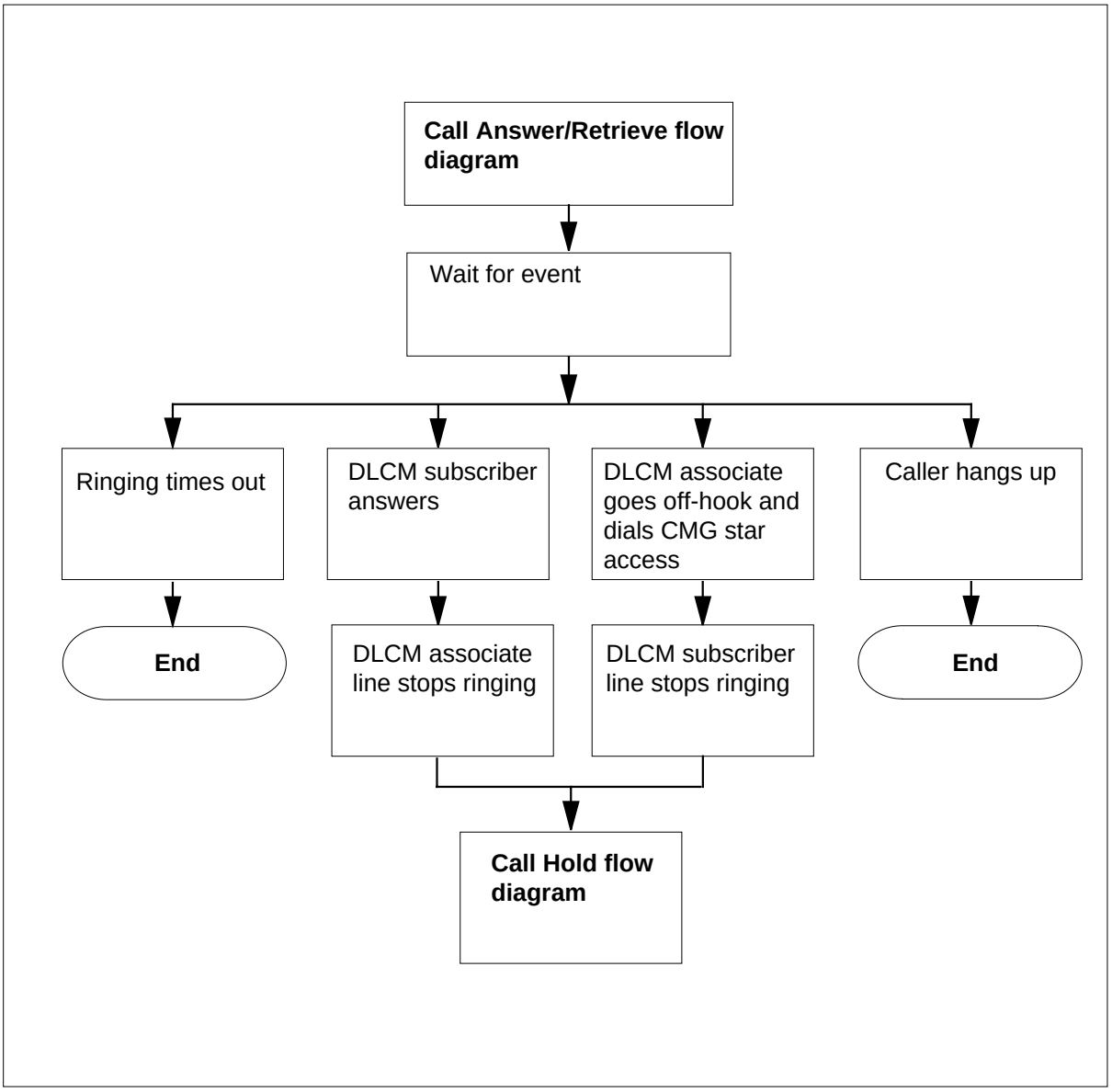
By default, simultaneous ringing status is active and secondary directory numbers (SDN) deny simultaneous ringing.

Call Answer functionality

The CMG access code activates the Call Answer functionality. The functionality allows the end user to answer a DLCM call from the DLCM associate line. This function is applicable when simultaneous ringing is not active on the DLCM subscriber line and the DLCM associate line does not ring. If simultaneous ringing is active, the end user can answer the call from the DLCM subscriber line or associate line by going off-hook. The following diagram illustrates the call answer call flow of DLCM when simultaneous ringing is inactive.

Dual Line Call Management (continued)

Table flow for Call Answer and retrieve



Call Hold functionality

When a DLCM member answers a call, the call hold functionality allows the member to place a DLCM call on hold. The DLCM member places a call on hold by hook flashing and dialing the CMG access code. Next, the member hears dial tone for 10-seconds.

Dual Line Call Management (continued)

During the 10-second interval the DLCM member

- initiates a new call or activates a feature
- goes on-hook

The DLCM member hears silence if the 10-second interval expires. The member must hook flash again to receive 10 more seconds of dial tone. There is not a limit to the number of 10-second dial tones a member can receive.

If the DLCM member initiates a new call after placing a call on hold, the member can toggle between the new and original calls by hookflashing and redialing the CMG star access code. Toggling places one call on hold and makes the other call active. The DLCM member retrieves the call on hold during the 10-second interval by redialing the CMG access code. There must not be a call terminating to the other DLCM member. If there is a new incoming call to the other DLCM member, the DLCM member can answer that call by redialing the CMG star access code during the 10-second interval.

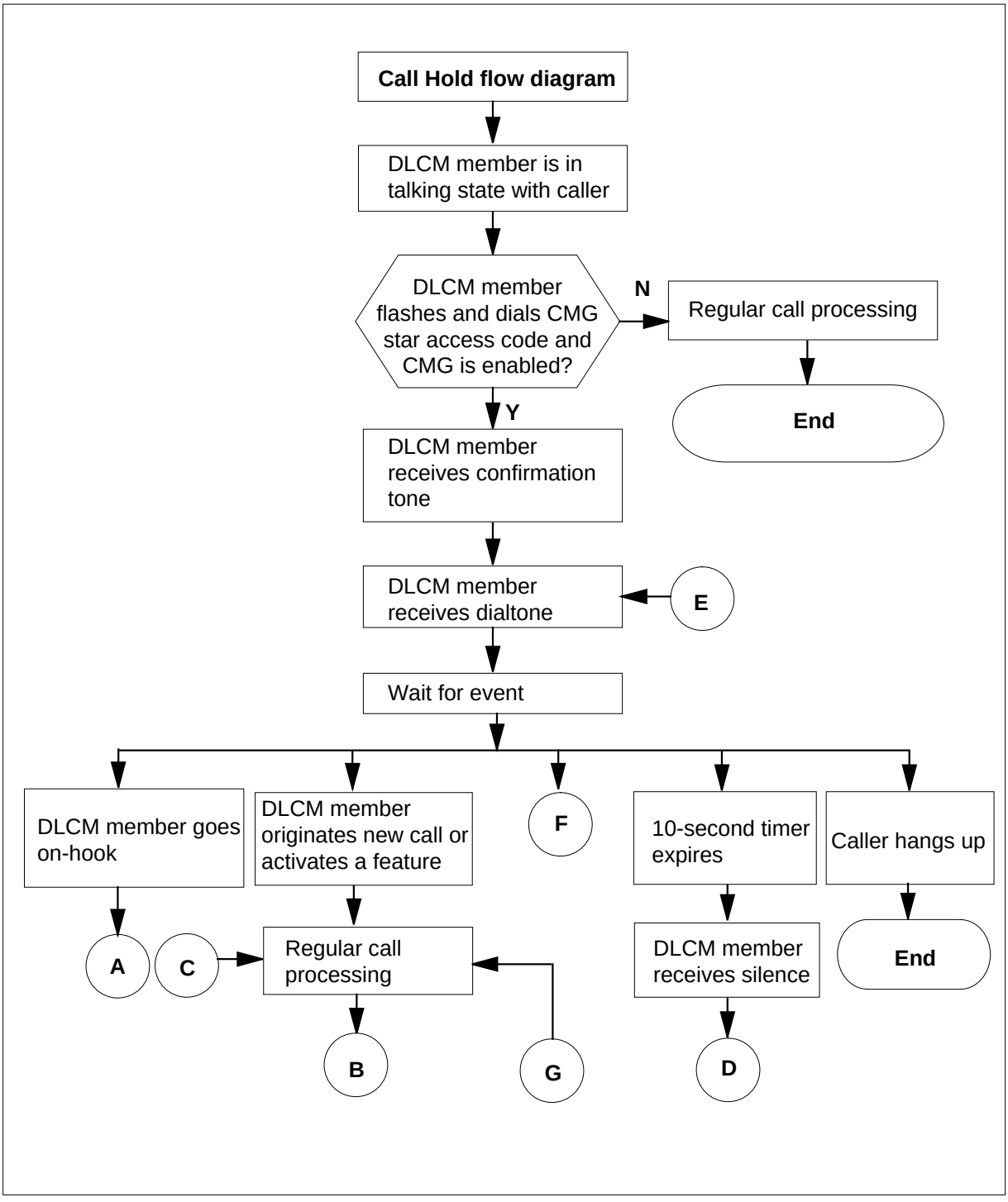
The DLCM line receives ringback when the DLCM member goes on-hook. If simultaneous ringing is active on the DLCM subscriber line, then the DLCM associate line receives ringback. If simultaneous ringing is not active on the DLCM subscriber line, the DLCM associate line does not receive ringback.

The end user can retrieve a call on hold by going off-hook when the line receives ringback. When the line does not receive ringback, the end user can retrieve the call by going off-hook and dialing the CMG access code. Refer to figure “Table flow for Call Answer and retrieve."

If the line is busy, then the line does not receive ringback until it is idle. The operating company can specify the ringback pattern. Refer to figures “Table flow for Call Hold" and “Table flow for Call Hold ringback" for details on the call flow for DLCM call hold and DLCM hold ringback.

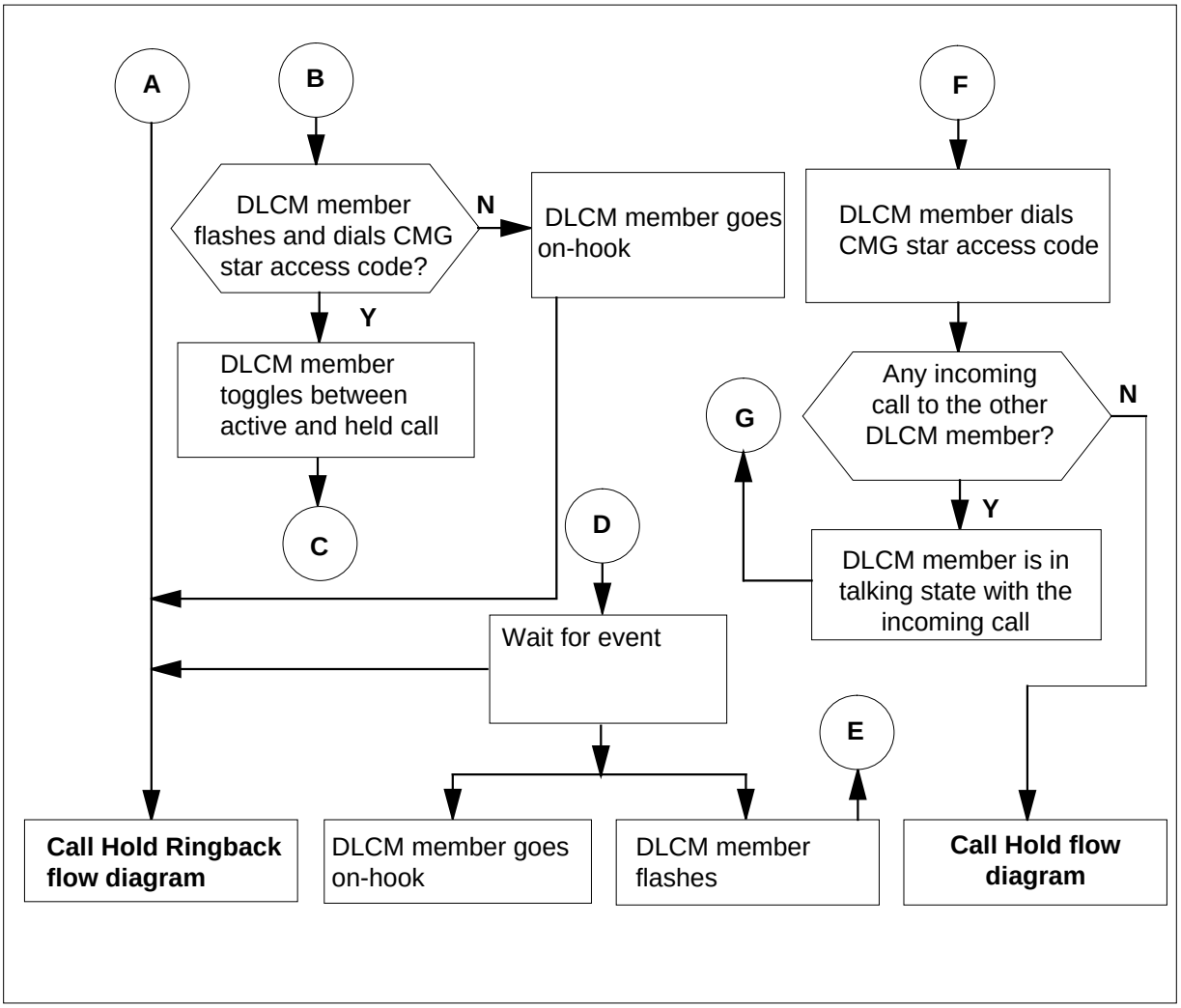
Dual Line Call Management (continued)

Table flow for Call Hold



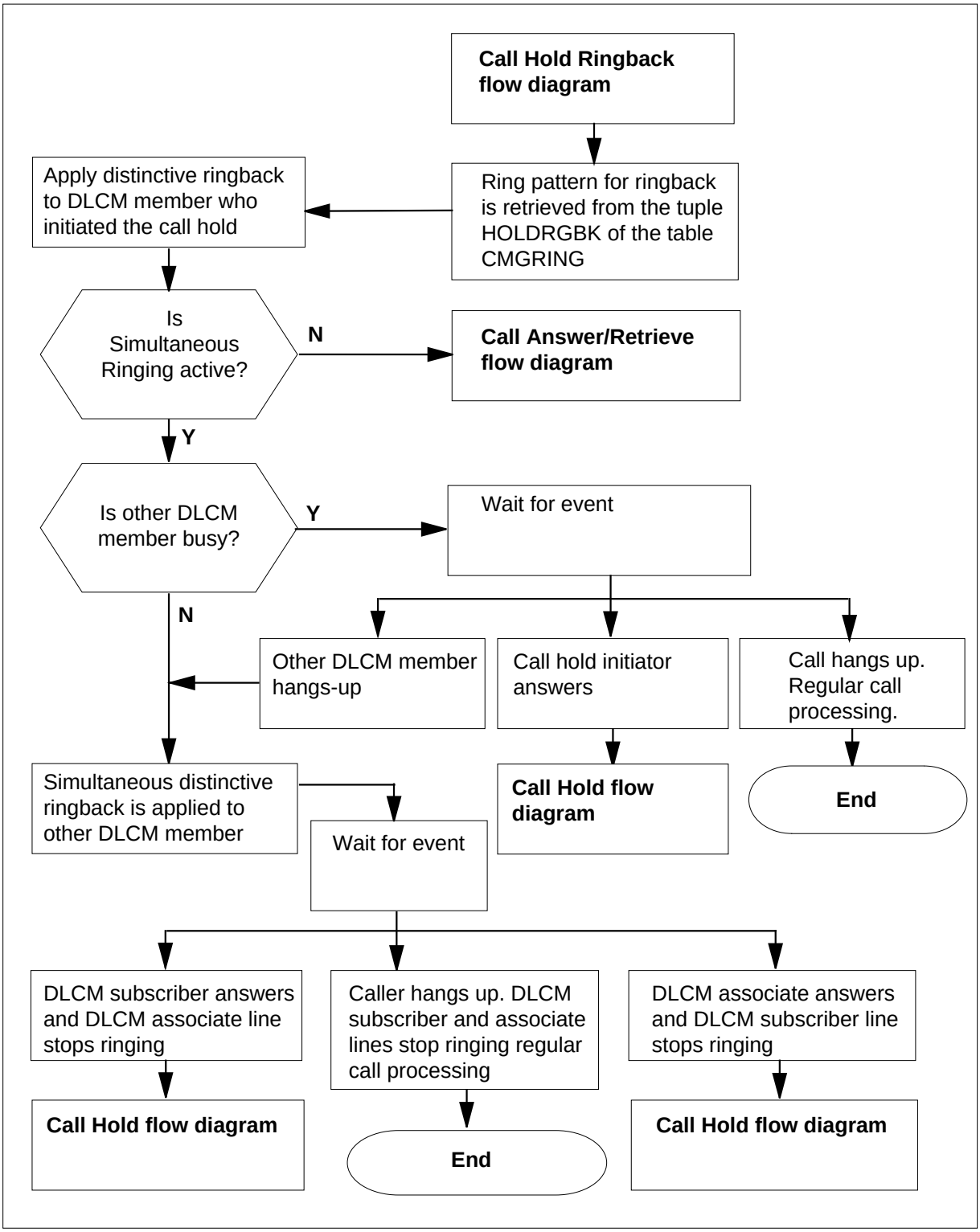
Dual Line Call Management (continued)

Table flow for Call Hold



Dual Line Call Management (continued)

Table flow for Call Hold ringback



Translations table flow

The DLCM translations tables are described in the following list:

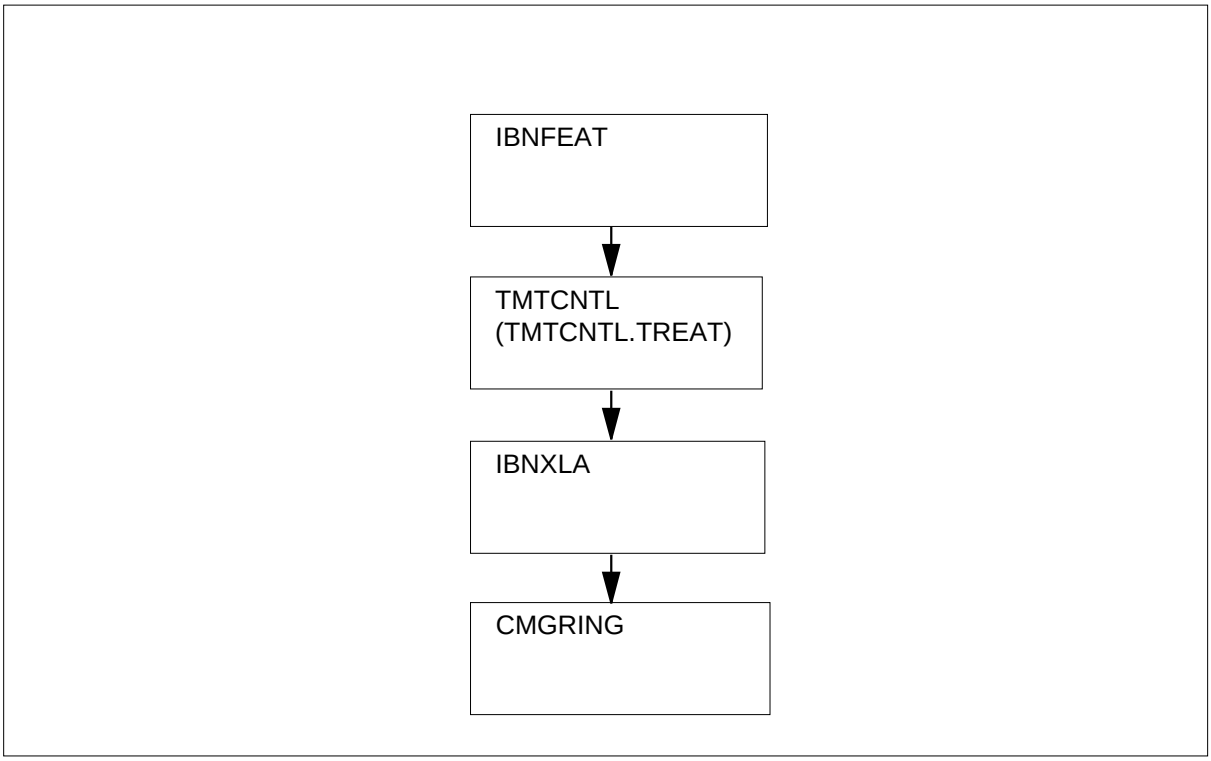
- Table IBNFEAT contains the information that defines IBN line features. Two main parts compose a tuple in this table. The fields: LEN, DNNO, DF, and FEATURE compose the tuple key, and DATA composes the tuple data field. The DATA field is divided into a number of subfields, which are different for each IBN line feature.
- Table TMTCNTL.TREAT is a subtable of TMTCNTL. TMTCNTL.TREAT contains the information that determines the tone, announcement, or state to return to the originator. The call must terminate to identify a treatment code.
- Table IBNXLA contains the information used to translate the digits for calls from IBN stations. A FEAT format tuple added to table IBNXLA creates a feature translator, which contains the access code and the name of the feature.
- Table CMGRING identifies the ringing types and their associated ringing pattern supported in the end-office for the CMG Simultaneous Ringing and the CMG Call Hold ringback.

Note: Table IBNLINES and IBNFEAT are datafilled through the Service Order System.

The DLCM translation process is shown in the flowchart that follows.

Dual Line Call Management (continued)

Table flow for Dual Line Call Management



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

Datafill example for Dual Line Call Management

Datafill table	Example data
IBNFEAT	HOST 00 0 03 03 0 CMG CMG 00 0 03 04 A Y
TMTCNTL	CMGA Y T OFRT 910
	CMGD Y T OFRT 911
IBNXLA	RESXLA 88 FEAT N N CMG
	RESXLA 97 FEAT N N CMGRCTRL
	RESXLA 98 FEAT N N CMGRACT
	RESXLA 99 FEAT N N CMGRDACT
CMGRING	DISTRING (CODE 3) (CODE30 4) (SUPER 5) $
	HOLDRGBK (CODE 6) (CODE30 5) (SUPER 7) $

Limitations and restrictions

The following limitations and restrictions apply to DLCM:

- The target DMS platform for this feature is DMS-100 or DMS-100/200 BRISC.
- The two lines of a CMG must be part of the same RES group and in the same end-office. The feature intent is for the two lines to be in the same household.
- You can not assign DLCM to a Plain Old Telephone Service (POTS) line through SERVORD commands ADD and EST, despite field RES_AS_POTS for office parameter RES_SO_SIMPLIFICATION.
- DLCM only supports RES/1FR and RES/1MR LCCs.
- A CMG has a maximum of two lines.
- A DLCM member cannot be part of more than one call management group.
- The two CMG members cannot be datafilled on the same KSET.
- CMG Call Hold cannot be activated in KSET.
- CMG can be provisioned only on a Primary DN (KEY 1) of KSET.
- LCC change allowed only for RES to IBN, IBN to RES and KSET to KSET. If Line is a CMG Member.
- Customer Group change Not Allowed for CMG Member.

Interactions

The following paragraphs describe the interactions between DLCM and other functionalities.

Advanced Intelligent Network

Advanced Intelligent Network (AIN0.0, AIN0.1, AIN0.2) enhances the switch call processing capabilities. The operating company provides centralized service logic programs placed at the service control points (SCP). The service logic determines how AIN calls proceed with further call processing.

All AIN terminating triggers applied to the call before the Present_Call Point in Call (PIC #14) have precedence over the DLCM feature on the call extended to the DLCM subscriber line. All AIN originating triggers and events have precedence over the DLCM feature.

AIN triggers are not applicable when the call is extended to the DLCM associate line through simultaneous ringing.

Dual Line Call Management (continued)

Automatic Call Back

Automatic Call Back (ACB) enables a subscriber to receive a call back when the line is idle. If the DLCM subscriber activates ACB and receives call back, the associate line does not ring. The DLCM feature is a terminating feature and does not interact with the ACB feature or the Outgoing Call Memory (OCM). The operating company needs to review ring code assignments to verify that there are no ring code conflicts with the ACB feature.

Automatic Call Distribution and Uniform Call Distribution

The Automatic Call Distribution (ACD)and Uniform Call Distribution (UCD) features allow calls to be evenly distributed to a number of predesignated stations known as ACD/UCD group members by dialing a ACD/UCD number.

A CMG member cannot be an ACD/UCD number or group member. ACD and UCD are added to the incompatible list of CMG.

Automatic Line

The Automatic Line (AUL) feature connects a location when there is an off-hook condition. The calling station does not receive dial tone. The connection is automatically made to a stored number consisting of 1 to 11 digits. The DLCM feature is not compatible with AUL.

Automatic Recall

Automatic Recall (AR) enables a subscriber to recall the last station even though the subscriber did not answer the last call. After any DLCM call, the end user can activate AR on the DLCM subscriber line. The Incoming Call Memory (ICM) of the DLCM subscriber line updates the number of the caller.

The ICM of the DLCM associate line does not change when the DLCM feature activates simultaneous ringing. The activation of AR from the DLCM associate line would not recall the originator of the last DLCM call. The operating company needs to review its ring code assignments in order to verify that no ring code conflicts with the AR feature.

Blind Transfer Recall and Call Transfer

The Call Transfer (CXR) feature allows the subscriber to transfer a call to a third party. If the third party does not answer after a certain period of time, the end user receives a recall through normal or distinctive ringing.

When the third party is a DLCM subscriber line and the DLCM associate line receives simultaneous ringing, the CXR controller receives the recall ringing if the third party does not answer the call. The DLCM feature does not impact the CXR functionality.

Dual Line Call Management (continued)

Bridge Night Number

The Bridge Night Number (BNN) feature allows the customer to advertise a different number for night service. A hunt group can have many BNNs assigned on an individual basis. The DLCM feature is not compatible with the BNN feature.

Call Forward

The DLCM associate line does not receive simultaneous ringing if the third party receives a forwarded call originally directed to the DLCM subscriber line. Only the DLCM subscriber line receives a ring splash once the third party receives a forwarded call. If the DLCM subscriber line receives a forwarding call, then the DLCM associate line receives simultaneous ringing. The forwarding party receives ring splash once the DLCM subscriber line or the DLCM associate line answers the call.

Call Forward Busy Line

The DLCM associate line does not receive simultaneous ringing if the third party receives a forwarded call originally directed to the DLCM subscriber line. Only the DLCM subscriber line receives a ring splash once the third party receives a forwarded call. If the DLCM subscriber line receives a forwarding call, then the DLCM associate line receives simultaneous ringing. The forwarding party receives ring splash once the DLCM subscriber line or the DLCM associate line answers the call.

Call Forward Don't Answer and Call Forward Group Don't Answer

If Call Forward Don't Answer (CFDA)/ Call Forward Group Don't Answer (CFGDA) timer expires on the original call directed to the DLCM subscriber line, simultaneous ringing stops. The datafill on the DLCM subscriber line forwards the call as specified. The CFDA/CFGDA feature and timer does not activate for simultaneous ringing on the DLCM associate line when the line subscribes to the feature.

When a call is forwarded to a third party, a ring splash is applied to the DLCM subscriber line only. If the third party is a DLCM subscriber line, simultaneous ringing is applied to the DLCM associate line if it is activated. The forwarding party receives ring splash once the DLCM subscriber line or the DLCM associate line answers the call.

Calling Name Delivery, Dialable Directory Number, and Calling Number Delivery

Calling Name Delivery (CNAMD)/Dialable Directory Number (DDN), and Calling Number Delivery (CND) features deliver the calling party's name and number to the DLCM subscriber line set. When the DLCM associate line

Dual Line Call Management (continued)

receives simultaneous ringing, CND/DDN and CNAMD deliver the calling party's name and number to the line.

The CND/DDN and CNAMD delivers the calling party's name and number when a call is on hold on the DLCM subscriber line or the DLCM associate line. The set display receives an update of the callers information on ringback. The CND/DDN and CNAMD delivers the calling party's name and number when the line receives ringback.

Call Pickup

There is no interaction between the Call Pickup (CPU) feature and the DLCM feature. A CMG can be a member of a CPU group. Different CMG access codes activate the CPU feature and the DLCM feature so both features can be on the same line.

Call Screening, Monitor and Intercept

Call Screening, Monitor and Intercept (CSMI) enhances voice messaging service by improving incoming call management and message handling for residential and small business end users. CSMI allows the monitoring and interception of messages that a Voice Messaging System (VMS) handles. CSMI starts once the VMS receives a forwarded call. There is no interaction between CSMI and DLCM services since simultaneous ringing stops after a forwarded call. The CSMI feature is active on the call to the DLCM subscriber line. The line receives ring splash once the VMS answers the call. Monitoring starts only from the DLCM subscriber line.

Call Waiting

The Call Waiting (CWT) feature activates when the DLCM subscriber line is busy, and the DLCM associate line does not receive simultaneous ringing. The CWT feature does not activate when the DLCM associate line is busy and it subscribes to the CWT feature. When the DLCM associate line becomes idle, the line receives ringing if the DLCM subscriber does not answer the call first.

CLASS screening features

If screening is successful, the DLCM associate line receives simultaneous ringing regardless of the screening lists for the line. If screening is unsuccessful, the DLCM subscriber line and the DLCM associate line do not receive ringing. The operating company needs to review ring code assignments to verify that there are no ring code conflicts with the distinctive ringing and call waiting features.

Dual Line Call Management (continued)

Denied termination

Simultaneous ringing on the DLCM associate line disregards the denied termination (DTM) option applied to the DLCM associate line. When the DLCM subscriber line has the DTM option, the DLCM subscriber line denies the initial call and the DLCM associate line does not receive simultaneous ringing.

Hunt groups

The DLCM feature supports hunt groups. The CMG members can also be members of hunt groups. The hunt group must exist before adding the CMG option to hunt member lines. This eliminates the possibility of more members in the hunt group than permitted by the CMG feature.

If an idle hunt group member subscribes to the DLCM feature, the CMG member receives simultaneous ringing. The hunt group member is the DLCM subscriber line, and the CMG member and hunt member is the DLCM associate line.

When applying simultaneous ringing to a busy DLCM associate line, the attempt to find a hunt group member does not occur even if the line is busy. The idle DLCM associate line receives simultaneous ringing unless the DLCM subscriber line answers the call or the caller is on-hook.

In-Session Activation

In-Session Activation (ISA) is a feature the operating company uses to offer callers a menu of call completion services when a call meets a busy or no answer condition. The ISA feature provides in-session activation capability for DTMF and dial pulse sets. This enables callers to activate a call completion service without hanging up or remembering an activation code.

For a DLCM call, a caller receives an ISA menu when the call to the subscriber line remains unanswered. This also applies when the DLCM associate line receives simultaneous ringing. The ISA menu offer stops when the end user answers from the DLCM subscriber line or the DLCM associate line. If the end user answers the call before the ISA no-answer-timer expires, the ISA menus are not available.

Local Number Portability

If the two lines are on the same switch and members of the same RES customer group, then the lines can be ported. The DLCM functionality is triggered on ported calls to DLCM subscribers.

Dual Line Call Management (continued)

Long Distance Signal

The Long Distance Signal (LDS) feature notifies the subscriber of an incoming toll call with distinctive ringing or tone. The ringing pattern of DLCM overrides the ringing pattern of the LDS feature on the DLCM associate line. The DLCM subscriber line can still receive LDS ringing. The operating company needs to review its ring code assignment to verify that there are no ring code conflicts with the LDS feature.

Line Hunt Overflow to DN and Line Hunt Overflow to Route

Line Hunt Overflow continues to find an idle line at a specific directory number (DN) or route index when all lines in a hunt group are busy. If the third party is a DLCM subscriber line, DLCM associate line receives simultaneous ringing.

Make Set Busy all calls

Make Set Busy (MSB) activation or deactivation codes permit the end user to make their line busy or available to all incoming calls. Simultaneous ringing on the DLCM associate line ignores the MSB status set for the DLCM associate line. The DLCM subscriber line can not receive any call and does not receive simultaneous ringing on the DLCM associate line when the MSB functionality is active.

Multiple Appearance Directory Number

Multiple Appearance Directory Number (MADN) allows a group of subscriber lines to associate with a single DN. All members see a call that terminates to a MADN group. A DLCM line can not be a member of a MADN group and the DLCM feature is incompatible with MADN.

Plug-Up

The Plug-Up (PLP) command disables call terminations on single-line sets. End users can originate call, but not receive calls. You can not use the PLP command with multiline telephone set DNs. The DLCM feature does not apply ringing to any DLCM line with the PLP option.

Remote Message Indicator

The Remote Message Indicator (RMI) feature allows end users to check for the existence of new messages in their Voice Messaging System (VMS) from a remote station. End users call their home stations and receive an indication if there are any messages in their voice mailboxes. The indicator is the number of audible ringback cycles before the VMS receives the call. End users can verify the existence of messages without connecting to the VMS and without paying long distance charges. The DLCM feature ignores the RMI status of the RMI option provisioned on the DLCM associate line.

Dual Line Call Management (continued)

Residential Call Hold

The Residential Call Hold (RCHD) option allows the end user to place a call on hold for three minutes and the end user can originate or receive a call. The DLCM Call hold functionality differs from the RCHD feature functionality. The DLCM feature and the RCHD feature can be on the same line because they have different access codes.

Ring Again

The Ring Again (RAG) option allows a station user who encounters a busy DN to be notified when the busy station becomes idle. The system then automatically redials the same number.

If the subscriber who activates RAG is a DLCM subscriber, for IBN lines it is indicated by ringing, and for P-Phone by the flashing lamp. The associate line is not notified.

Series Completion

Series Completion (SCMP) redirects calls from a busy DN to a designated DN in the same office. When the DLCM subscriber line has the SCMP feature, the DLCM associate line does not receive Simultaneous Ringing. Calls directed to the DLCM subscriber line that have the SCMP feature and active Simultaneous Ringing, causes the DLCM associate line to ring when the call is not redirected. If the DLCM subscriber line receives a redirected call, the DLCM feature functions as specified.

Simultaneous Ringing

Simultaneous Ringing (SimRing) alerts a pre-defined group of DNs that a SimRing pilot DN is called. The first DN that answers the call connects to the calling party while the calls to the other SimRing members drop. A DLCM line can not be a SimRing pilot DN, but can be a non-pilot member of a SimRing group.

A SimRing call terminates to a DLCM subscriber line. The DLCM feature applies DLCM distinctive ringing to the DLCM associate line. The DLCM subscriber line or the DLCM associate line can answer the SimRing call. When one of the lines answers the call, the other SimRing calls drop.

The DLCM subscriber line is the first idle DLCM line that SimRing terminates when the SimRing pilot DN receives a call. The SimRing call can terminate on the DLCM associate line before the DLCM feature can apply DLCM distinctive ringing to the call. The DLCM associate line receives non-distinctive ringing through the SimRing termination. Even though the DLCM associate line does not receive DLCM distinctive ringing, the DLCM call answer and call hold functionalities are still available to the line.

Dual Line Call Management (continued)

Special Delivery Service

The Special Delivery Service (SDS) feature provides the caller with the option to activate message delivery or Automatic Call Back (ACB). The ACB feature is active when the called party is busy. The message delivery is active when the called party does not answer within an office defined time. When the end user answers on the DLCM subscriber line or the DLCM associate line, SDS service announcements stop during the ring and no-answer function.

Speed Calling Long List and Speed Calling Short List

The Speed Calling Long List (SCL) option allows a customer to specify a list of frequently-called numbers that can be called by dialing a two-digit speed-calling code instead of the complete number.

The Speed Calling Short List (SCS) option allows a customer to specify a list of frequently-called numbers that can be called by dialing a one-digit speed-calling code instead of the complete number.

DLCM is a terminating feature and does not interact with the SCL/SCS feature. The DLCM subscriber and associate lines contain separate speed call lists.

Spontaneous Call Waiting Identification and Spontaneous Call Waiting with Disposition

Spontaneous Call Waiting Identification (SCWID) and Spontaneous Call Waiting with Disposition (DSCWID) allow the end user to receive calling party information during call waiting scenarios. The DSCWID feature provides the subscriber with a set of disposition options to treat incoming calls. There is no interaction among the DLCM feature, the SCWID, and DSCWID features because the DLCM feature is only active when the DLCM subscriber line is idle.

Station Controlled Conference

The Station Controlled Conference (CNF) option allows a station to have a conference call with a maximum of 30 parties.

The second leg of a conference call can be a call that is directed to a DLCM subscriber line. In this situation, simultaneous ringing may be applied to the DLCM associate line if activated.

The CNF subscriber can flash to conference in the DLCM subscriber line and DLCM associate line as they simultaneously ring. When the call is answered on either the DLCM subscriber line or the DLCM associate line, simultaneous ringing stops.

Dual Line Call Management (continued)

Suppressed Ringing Access

The Suppressed Ringing Access Unsuppressed Ringing Access (SRA/USRA) features provide the capability to access an operating company's customer loops without ringing the customer's premises. The SRA/USRA features take precedence over the DLCM feature.

Suspend Service/ Requested Suspend service

Suspend Service (SUS) and Requested Suspend Service (RSUS) can suspend originating and terminating service. The DLCM associate line can not receive simultaneous ringing when the line has SUS or RSUS. Also the DLCM subscriber line can not complete a call and does not receive simultaneous ringing with SUS or RSUS.

Teen Service

A Teen Service subscriber can also be a CMG member. The DLCM feature is active when the call to the DLCM subscriber line is made through the SDN. When a DLCM subscriber line is also an SDN, the line receives the SDN distinctive ringing pattern. If simultaneous ringing is active, the DLCM associate line receives the DLCM feature ring code.

Through the CMG line option, the DLCM is assigned only to the primary DN (PDN). The DLCM functionality is available on SDNs associated with the PDN. The suboption DENY_SDN can deny SDNs on the CMG line.

When the suboption DENY_SDN denies SDNs on the DLCM subscriber line, the DLCM associate line does not receive simultaneous ringing when a call terminates on any of the SDNs the PDN provisions. The DLCM Call Hold and Call Answer functionalities still apply to the CMG line. The operating company needs to review ring code assignments to verify that the ring code does not conflict with teen service.

Enhanced Teen Service

The DLCM feature can not be provisioned on an Enhanced Teen Service. The DLCM feature is only active on calls made to the primary DN or regular secondary DNs.

Three-way Calling/ Usage Sensitive Three-way Calling

The Three-way Calling (3WC) feature enables the end user to

- place a call on hold
- set up an inquiry call
- connect two parties in a 3WC

Dual Line Call Management (continued)

The DLCM subscriber line can receive the second party conference call and the DLCM associate line can receive simultaneous ringing. The end user can flash to conference in the DLCM subscriber line and the DLCM associate line with simultaneous ringing. Simultaneous ringing stops once the DLCM subscriber line or the DLCM associate line answers the call. Also the end user can use the 3WC or Usage Sensitive 3WC functionality to establish a conference call while the original call is on hold.

Activation/deactivation by the end user

The DLCM feature provides the choice of a single access code to toggle simultaneous ringing functionality or two access codes to activate or deactivate simultaneous ringing.

Activation to toggle simultaneous ringing functionality by the end user

At your telephone

1 Go off-hook.

Response:

Receive a dial tone.

2 Dial the CMGRCTRL access code.

Response:

Toggle simultaneous ringing activation/deactivation status, and provide CMGA/CMGD treatment.

Activation/deactivation of simultaneous ringing functionality by the end user

At your telephone

1 Go off-hook

Response:

Receive a dial tone.

2 Dial the CMGRACT access code.

Response:

Simultaneous ringing functionality is active. If the end user dials the CMGRDACT access code after an off-hook then simultaneous ringing functionally is inactive.

Billing

Dual Line Call Management does not affect billing, because both CMG lines should be in the same local calling area.

Station Message Detail Recording

Dual Line Call Management does not affect Station Message Detail Recording.

Datafilling office parameters

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

Office parameters used by Dual Line Call Management

Table name	Parameter name	Explanation and action
OFCVAR	CMG_ENABLED	The parameter activates and deactivates the functionality of the DLCM feature on the switch.

Datafill sequence

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

Datafill tables required for Dual Line Call Management

Table	Purpose of table
IBNFEAT (Note)	IBN feature contains information that defines IBN line features.
TMTCNTL.TREAT	Treatment control.treatment contains information that determines the tone, announcement, or state to return to the originator when the call must terminate to a specified treatment code.
IBNXLA	IBN translation contains information on the data for digit translations calls from IBN stations.
CMGRING	Call management group ringing specifies the ringing types and their associated ringing pattern supported in the end office for the CMG simultaneous ringing and the CMG call hold ringback.
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.	

Dual Line Call Management (continued)

Datafilling table IBNFEAT

The following table shows the datafill specific to Dual Line Call Management for table IBNFEAT. Only those fields that apply directly to DLCM are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table IBNFEAT

Field	Subfield or refinement	Entry	Explanation and action
LINK_DN_ OR_LEN		Type is DR_LEN_TYPE (DN or LEN)	Link directory number or line equipment number indicates to the DLCM member which line is linked.
CMGRING		A or I	Call Management Group ring indicates the status of simultaneous ringing of the linked DLCM member. “A" indicates active and “I" indicates inactive.
DENY_SDN		Y or N	Deny secondary directory number specifies that simultaneous ringing is denied on SDNs when the PDN of the teen line has the CMG line option.

Datafill example for table IBNFEAT

The following example shows sample datafill for table IBNFEAT.

MAP display example for table IBNFEAT

```
LEN             DNNO       DF FEATURE   DATA
-------------------------------------------------------------
HOST 00 0 03 03  0          CMG CMG     00 0 03 04 A Y
```

Datafilling subtable TMTCNTL.TREAT

The following subtable shows the datafill specific to Dual Line Call Management for table TMTCNTL.TREAT. Only those fields that apply

directly to Dual Line Call Management are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling subtable TMTCNTL.TREAT

Field	Subfield or refinement	Entry	Explanation and action
TREATMT		CMGA or CMGD	The end user activates simultaneous ringing by CMGA treatment and deactivates simultaneous ringing by CMGD treatment.

Datafill example for table TMTCNTL

The following example shows sample datafill for table TMTCNTL.

MAP display example for table TMTCNTL

```
TREATMT       LOG     FSTRTE
------------------------------------------------------
CMGA        Y T OFRT  910;
CMGD        Y T OFRT  911;
```

Datafilling table IBNXLA

The following table shows the datafill specific to Dual Line Call Management for table IBNXLA. Only those fields that apply directly to Dual Line Call Management are shown. 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
RESULT		see subfield	Result consists of the subfield FEATURE.
	FEATURE	CMG, CMGRCTRL, CMGRACT, or CMGRDACT	FEATURE specifies the name of the feature for activation and deactivation of hold and answer functionalities and simultaneous ringing functionalities.

Dual Line Call Management (continued)

Datafill example for table IBNXLA

The following example shows sample datafill for table IBNXLA.

MAP display example for table IBNXLA

```
KEY            RESULT
-------------------------------------------------------
RESXLA           99 FEAT N N CMG;
RESXLA           97 FEAT N N CMGRCTRL;
RESXLA           98 FEAT N N CMGRACT;
RESXLA           99 FEAT N N CMGRDACT;
```

Datafilling table CMGRING

The following table shows the datafill specific to Dual Line Call Management for table CMGRING. Only those fields that apply directly to Dual Line Call Management are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table CMGRING

Field	Subfield or refinement	Entry	Explanation and action
CMGRING		DISTRING or HOLDRGBK	Call management group ring specifies the key of the table consisting of two values, DISTRING and HOLDRGBK.
RINGLIST		see explanation	Ring list has a vector of up to 15 pairs of ringing types and ringing patterns. The vector can also be empty when no ringing type or pattern is specified, or the default ringing type (0) is assigned to the ringing type. Ringing type: (CODE | SUPER | CODE30 | CSRING | CODE5_A | CODE5_B | CODE3_C | CODE3_D | CODE6_E | CODE4_A | CODE5_C | FREQ_DEC | FREQ_SYNC | FREQ_HARM | FREQ_SYNC16) Ringing pattern: (0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |)
Note: When the ringing pattern is set to 7 through 11 on the Access Node peripheral, the switch only provides normal ringing. On all other peripherals the ringing pattern is distinctive.			

Datafill example for table CMGRING

The following example shows sample datafill for table CMGRING.

MAP display example for table CMGRING

```
CMGRING                                              RINGLIST
-------------------------------------------------------------

DISTRING                    (CODE 3) (CODE30 4) (SUPER 5) $
HOLDRGBK                    (CODE 6) (CODE30 5) (SUPER 7) $
```

Translation verification tools

Dual Line Call Management does not use translation verification tools.

SERVORD

MAKE CHANGES/ADDITIONS TO THIS SECTION AS IN THE SERVORD MODULE - BEING REVIEWED BY THE DESIGNER FROM 4TH DECEMBER 2000.

Dual Line Call Management (DLCM) introduces the CMG line option and CMG line group option.

SERVORD limitations and restrictions

The following SERVORD limitations and restrictions apply to DLCM:

- The LCC must be RES/1FR or RES/1MR.
- CMG is not compatible with MDN, SimRing, BNN, or AUL.

Dual Line Call Management (continued)

SERVORD prompts

The following table shows the SERVORD prompts used to add a CMG line option or line group option.

SERVORD prompts for Dual Line Call Management

Prompt	Valid input	Explanation
LINK_DN_ OR_LEN	DR_LEN_TYPE	Specifies the LEN or DN of an existing member of a CMG group. The ADD command adds a new member. The ADO command adds to the CMG option. The NEW command creates a new single member to the CMG.
CMG_DN_ OR_LEN	DR_LEN_TYPE	The ADD or DEL command adds or deletes LEN or DN from an existing CMG.
DENY_SDN	Y or N	Specifies that simultaneous ringing is denied on all SDNs associated with the PDN.

SERVORD example for establishing a Call Management Group

The following SERVORD example shows how to establish a CMG using the EST command.

SERVORD example for CMG in prompt mode

```
> EST
SONUMBER:       NOW 97 4 27 AM
>
GROUPTYPE:
> CMG
CMG_DN_OR_LEN:
> host   0 1 2 3
DENY_SDN
> Y
CMG_DN_OR_LEN:
> host    0 1 2 4
DENY_SDN:
> Y
```

SERVORD example for CMG in no-prompt mode

```
> EST $ CMG HOST 0 1 2 3 Y HOST 0 1 2 4 Y
```

SERVORD example for adding a new member to a CMG

The following SERVORD example shows how to add a new member to a CMG using the ADD command.

SERVORD example for CMG in prompt mode

```
> ADD
SONUMBER:       NOW 97 4 27 AM
> $
GROUPTYPE:
> CMG
LINK_DN_OR_LEN:
> host    0 1 2 3
CMG_DN_OR_LEN
> HOST 0 1 2 4
DENY_SDN:
> N
```

SERVORD example for CMG in no-prompt mode

```
> ADD $ CMG  HOST  0  1  2  3  HOST  0  1  2  4  N
```

SERVORD example for adding option CMG

The following SERVORD example shows how to add CMG option to a line using the ADO command.

SERVORD example for option CMG in prompt mode

```
>ADO
SONUMBER:       NOW 97 4 27 AM
>
DN_OR_LEN:
> 6266060
OPTION:
> CMG
LINK_DN_OR_LEN
>6266061
DENY_SDN:
> Y
OPTION:
> $
```

Dual Line Call Management (continued)

SERVORD example for option CMG in no-prompt mode

```
> ADO 6266060 CMG 6266061 Y $
```

SERVORD example for creating a new CMG from a line option

The following SERVORD example shows how to create a new CMG from a line option using the NEW command.

SERVORD example for a new CMG in prompt mode

```
>NEW
SONUMBER:       NOW 97 4 27 AM
>
DN:
>6261000
LCC_ACC:
> 1FR
LATANAME:
>NILLATA
LTG:    0
>
LEN_OR_LTID:
>01 1 05 09
OPTION:
> CMG
LINK_DN_OR_LEN:
> 6266061
DENY_SDN:
> Y
OPTION:
> $
```

SERVORD example for a new CMG in no-prompt mode

```
> NEW 6261000 1FR NILLATA 01 1 05 09 CMG 6266061 Y $
```

SERVORD example for deleting CMG

The following SERVORD example shows how to delete a line from CMG using the DEL command.

SERVORD example for CMG in prompt mode

```
>DEL
SONUMBER:       NOW 97 4 27 AM
>
GROUPTYPE:
>CMG
CMG_DN_OR_LEN:
> 6266060
CMG_DN_OR_LEN:
> $
```

SERVORD example for CMG in no-prompt mode

```
> DEL  CMG  6266060 $
```

SERVORD example for deleting option CMG from a line

The following SERVORD example shows how to delete option CMG from a line using the DEO command.

SERVORD example for option CMG in prompt mode

```
>DEO
SONUMBER:       NOW 97 4 27 AM
>
DN_OR_LEN:
>6266060
OPTION:
>CMG
OPTION:
> $
```

SERVORD example for option CMG in no-prompt mode

```
> DEO  6266060  CMG $
```

SERVORD example for changing a CMG member

The following SERVORD example shows how a CMG member changes attributes using the CHF command.

Dual Line Call Management (end)

SERVORD example for CMG member in prompt mode

```
>CHF
SONUMBER:       NOW 97 4 27 AM
>
DN_OR_LEN:
>6266060
OPTION:
>CMG
LINK_DN_OR_LEN:
> HOST 0 1 2 5
DENY_SDN: Y
>
OPTION:
> $
```

SERVORD example for CMG member in no-prompt mode

```
> CHF 6266060 CMG HOST 0 1 2 5 Y $
```

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Enhanced CSMI

Ordering codes

Functional group ordering code: RES00002

Functionality ordering code: RES00053 and RES00047

Note: RES00053 only covers RES pay-per-use users who have subscribed to call forward/message waiting (CFDA/MWT) or call forward busy line/message waiting (CFBL/MWT).

Release applicability

SN07 (DMS) and up

NA005 and up

Stub Message Deletion was introduced in NA013.

Prerequisites

Enhanced Call Screening, Monitoring, and Intercept (CSMI) is offered as a pay-per-use feature to Residential Enhanced Services (RES) users who subscribe to either Call Forward Don't Answer (CFDA)/Message Waiting (MWT) or Call Forward Busy Line (CFBL)/MWT. For RES lines, those features are provided with the following functional groups:

- BAS00001, AMA - Cook
- BAS00003, BAS Generic
- RES00006, RES Service Enablers
- MDC00001, MDC - MDC Minimum
- MDC00003, MDC - MDC Standard
- RES00053, CSMI - Universal

Enhanced CSMI is also offered as a line option to all RES and Meridian Digital Centrex (MDC) subscribers. The support of all call forwarding variations requires the following functional groups to be present:

- MDC00007, MDC - MBS Minimum
- MDC00008, MDC - MBS Standard
- RES00047, CSMI - BASE

Description

The CSMI feature provides subscribers to a Network Based Answering Service (NBAS) with the means of monitoring and intercepting calls that are

Enhanced CSMI (continued)

being handled by the NBAS, in order to bring it closer to the functionality currently being provided with a Telephone Answering Device (TAD).

Currently, calls to a NBAS subscriber that are forwarded to the NBAS cannot be accessed by the subscriber after they have been forwarded. When the NBAS answers a forwarded call, it allows the calling party to leave a message for the NBAS subscriber.

With CSMI, the NBAS subscriber is able to monitor a call that has been forwarded to the NBAS. Call monitoring enables the NBAS subscriber to listen to a message as it is being left by the calling party, without the calling party being aware that the message is being monitored.

Also with CSMI, NBAS subscribers are able to intercept a call that they are monitoring. Call interception permits NBAS subscribers to connect to a monitored call using either a two-way call between themselves and the calling party or a three-way call between themselves and both the calling party and the NBAS.

When a subscriber intercepts a call, a Stub Message Deletion option is available to delete the stub message left by a caller on the NBAS. A telephone must notify the subscriber when this option is turned on, so the subscriber does not expect the stub messages to remain on the NBAS.

The two functional components of the CSMI feature follow:

- call monitoring, which enables a CSMI subscriber to listen to a message while it is being left with the NBAS
- call intercepting, which permits CSMI subscribers to connect to a call that they are in the process of monitoring through CSMI

These functions are available to end users with RES or MDC lines that subscribe to an NBAS and a call forwarding feature that can direct calls to the NBAS. CSMI is offered as an office-wide, subscription-based feature, or on a pay-per-use basis to RES customers and as a subscription-based feature to MDC customers. The office-wide feature is billed on a pay-per-use basis, the subscription-based feature is billed on a monthly flat-rate basis, and the pay-per-use feature is billed on a pay-per-use basis.

The figure “Forwarded call (CFDA) available for monitoring" shows the following points:

- The call has been forwarded to and answered by the NBAS.
- A two-way connection between the NBAS and the caller has been established.

Enhanced CSMI (continued)

- An audible indication, in the form of a ring splash, of a call that can be monitored has been sent to the CSMI subscriber.
- The calling party is in the process of talking with the subscriber's NBAS.

The CSMI subscriber initiates call monitoring by going off-hook after receiving a ring splash. A user of CSMI as a pay-per-use feature must also enter an access code after going off-hook to invoke monitoring. Invoking CSMI establishes, by way of a conference circuit, a one-way connection between the CSMI subscriber and a two-way connection between the caller and the NBAS. Through this one-way connection, CSMI subscribers can listen to but not be heard by the caller as they talk with the NBAS.

The CSMI subscriber executes call interception by executing a hook-flash while monitoring the call. Interception can take the form of either a standard two-way call between the caller and the subscriber or a three-way call, using a conference circuit, between the calling party, the subscriber, and the NBAS. In the case of a two-way call after interception, the NBAS is sent an alert tone before it is disconnected.

The CSMI feature is available to customers with RES or MDC lines who subscribe to both an NBAS and a call forwarding feature that is able to direct calls to the NBAS.

CSMI is offered to RES customers in three forms:

- Usage Sensitive CSMI (UCSMI) is an office option billed on a pay-per-use basis (An AMA billing record is generated each time this form of CSMI is used). It is available to Call Forward Don't Answer (CFDA) and Call Forward Busy Line (CFBL) subscribers that also subscribe to Message Waiting (MWT). UCSMI is available only on a line when no other form of CSMI is assigned (that is, an assigned CSMI line option takes precedence over UCSMI).
- Subscription Based CSMI (SCSMI) is a line option billed on a monthly flat-rate basis.
- CSMI Pay-Per-Use (CSMIPPU) is a line option that is billed on a pay-per-use basis (An AMA billing record is generated each time this form of CSMI is used). It differs from UCSMI in that it can be used with any variation of call forwarding (that is, not just CFDA and CFBL) and does not require the MWT option.

Enhanced CSMI (continued)

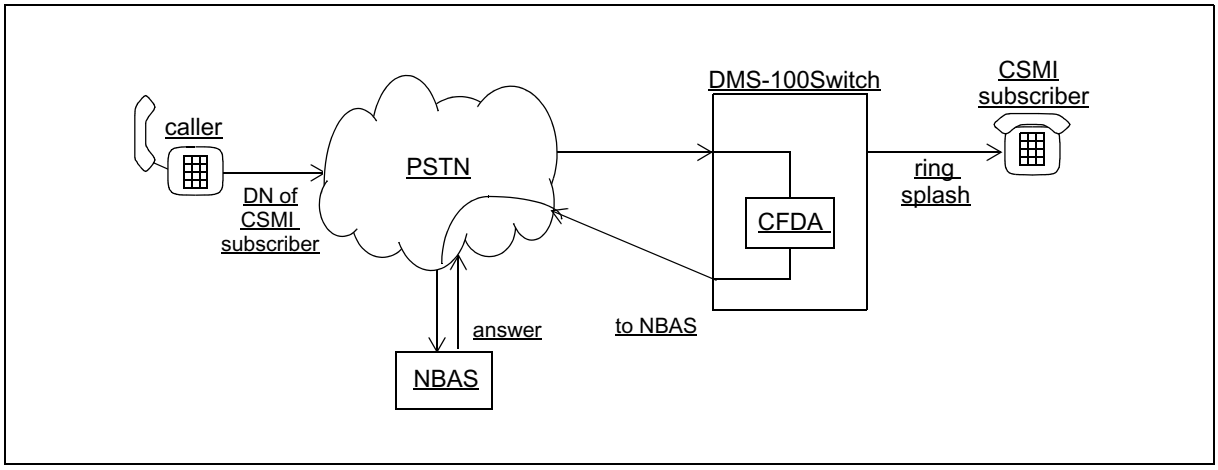
CSMI is offered to MDC customers (billed on a monthly flat-rate basis) in two forms:

- CSMI line option
- CSMI customer group option

> ***Note:*** The CSMI customer group option is not supported on KSET line types.

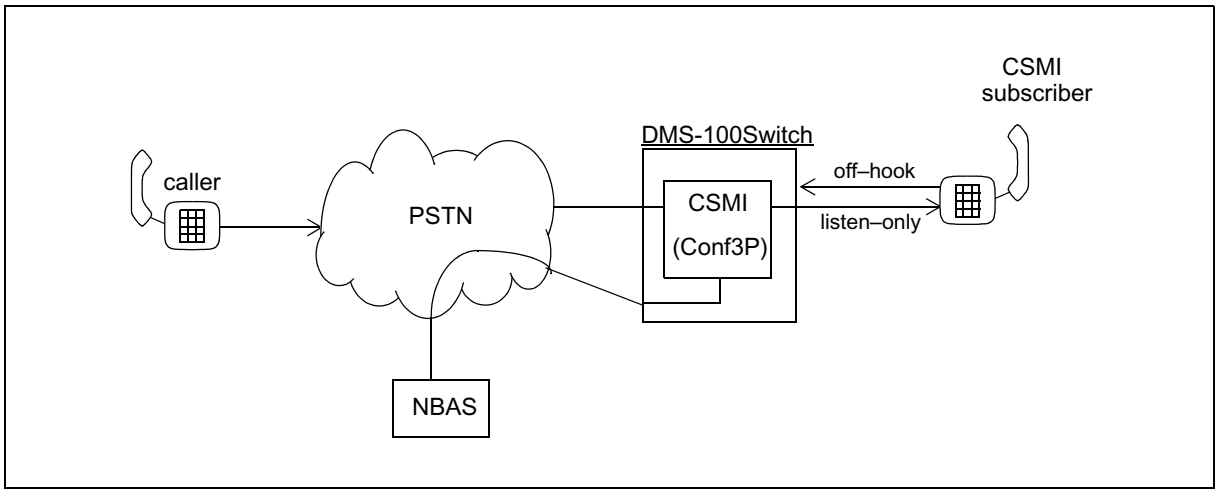
A RES subscription-based form of CSMI (SCSMI, CSMIPPU) always takes precedence over the office option form of CSMI (UCSMI). For MDC CSMI subscribers, the line option always takes precedence over the customer group option.

Forwarded call (CFDA) available for monitoring

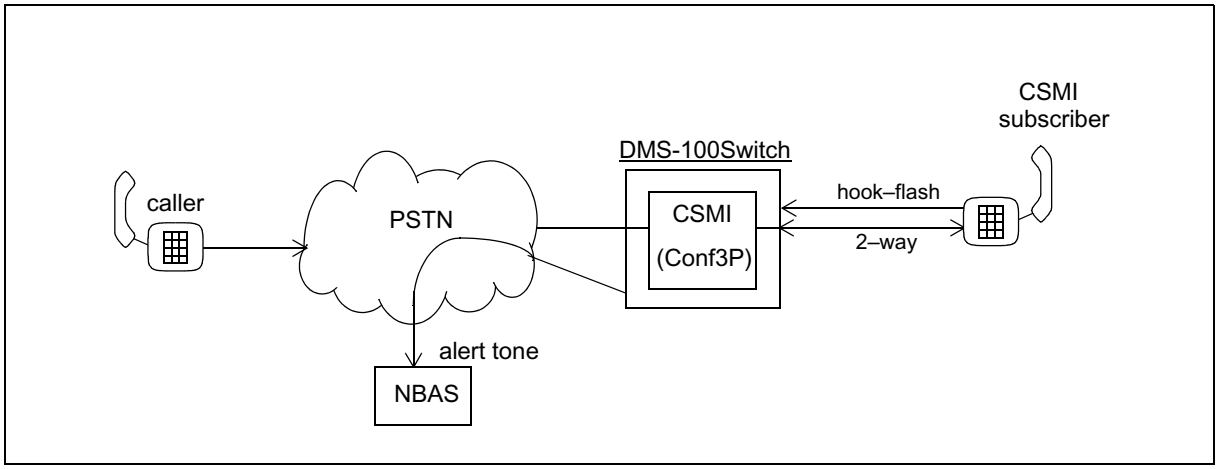


Enhanced CSMI (continued)

CSMI subscriber monitoring a call



CSMI subscriber intercepting a call (two-way interception)



The forms of CSMI assigned as a line option (SCSMI, CSMIPPU, MDC CSMI) or a customer group option (MDC CSMI) are refined by five attributes

Enhanced CSMI (continued)

used to control key aspects of CSMI operation. These attributes are identified in the following table.

CSMI line option and customer group option attributes

Attribute	Value	Meaning
State	A	CSMI functionality is active.
	I	CSMI functionality is inactive.
Pay-per-use (see Note)	Y	Pay-per-use billing is in effect.
	N	Pay-per-use billing is not in effect.
Three-way call interception	Y	Three-way call interception is in effect.
	N	Three-way call interception is not in effect, but two-way interception is in effect.
Screening active timer	Y	Screening timer duration attribute applies.
	N	Screening timer duration attribute does not apply.
Screening duration	0 to 120	Length in seconds of the screening period (only available if screening active timer = Y)
Note: The pay-per-use attribute is not applicable to the CSMI MDC customer group option.		

Availability of CSMI can be denied by assigning the DENYCSMI line option to a RES or MDC line. Denial is based on a set of call forwarding variations (CFDA, CFBL, CFW or all) specified as a refinement of DENYCSMI. For example, assigning DENYCSMI and specifying CFDA prevents CSMI from working on calls forwarded by CFDA.

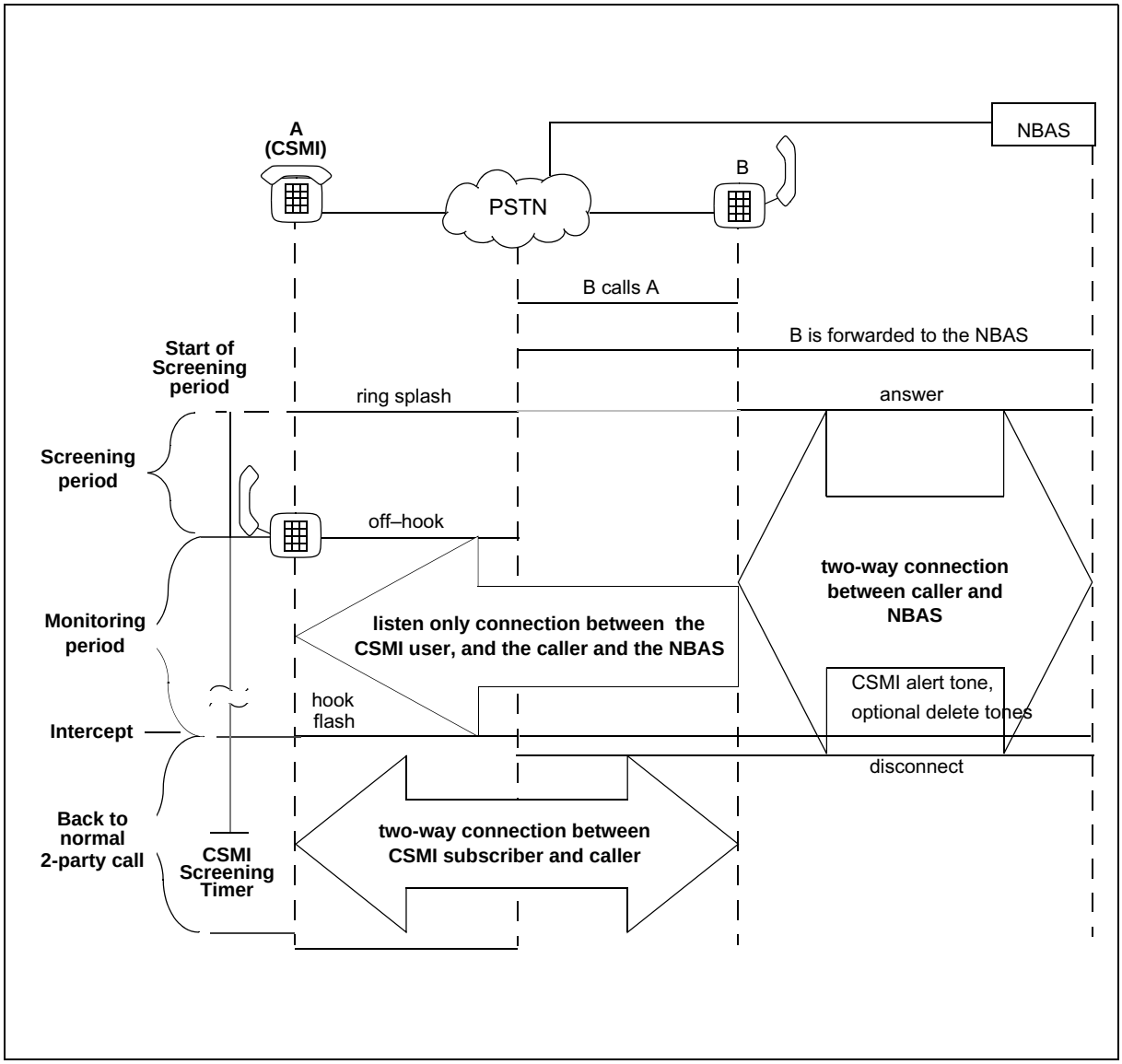
Note: For KSET MDC subscribers, the DENYCSMI line option is not provided. Instead, the DENYCSMI prompting is combined with the CSMI line option.

The line option forms of CSMI (SCSMI, CSMIPPU, MDC CSMI line option) and their attributes as well as the DENYCSMI line option are assigned through the Service Order System (SERVORD) for each line.

Enhanced CSMI (continued)

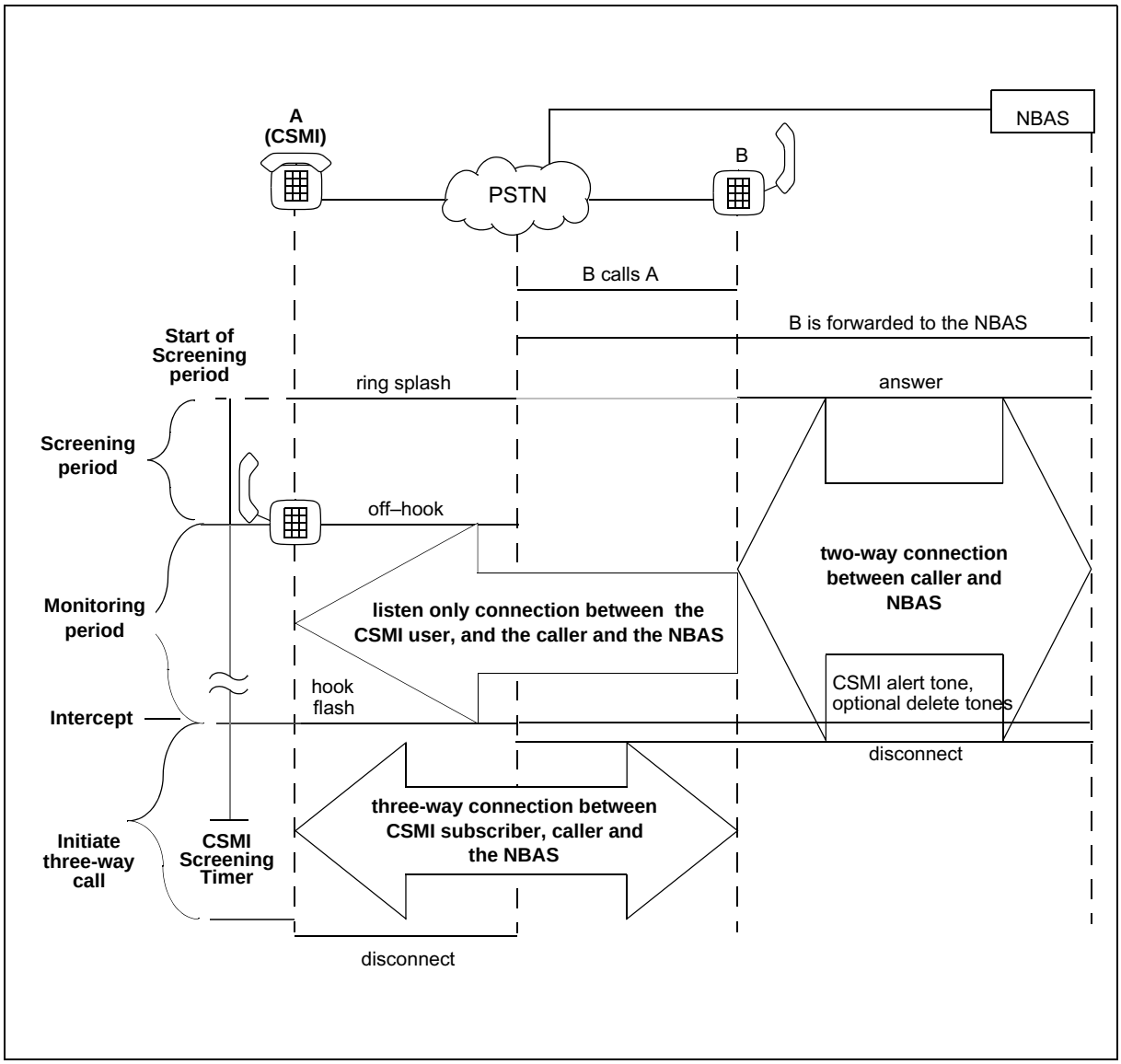
CSMI works with most variations of call forwarding but does not depend on the type of call forwarding being assigned. If CSMI is assigned to a line and no variation of call forwarding is present on the line, CSMI will not work. CSMI also does not depend on the type of NBAS (electronic or live attendant) used but does require that it be reached through the variation of call forwarding assigned on the CSMI subscriber's line.

CSMI call flow for monitoring and intercepting a two-way call



Enhanced CSMI (continued)

CSMI call flow for monitoring and intercepting a three-way call



Operation

CSMI execution

There are three main stages in the execution of CSMI:

- call screening
- call monitoring
- call interception

Enhanced CSMI (continued)

CSMI is not executed if its line or customer group option is set to inactive or if its Software Optionality Control (SOC) state is IDLE.

Call screening

The CSMI subscriber is sent an audible indication, in the form of a ring splash (single ring cycle of 0.5 s), after the NBAS has answered a call that has been forwarded to it. The ring splash informs the CSMI subscriber that a forwarded call has just been answered by the NBAS and that it is available to be monitored using CSMI. It also signals the start of the screening period for the forwarded call.

The screening period is the interval of time during which a CSMI subscriber can initiate monitoring on a call that has been forwarded to the NBAS. The screening period ends when one of the following events occurs:

- The screening period timer expires without CSMI monitoring being initiated.
- The call is disconnected from the NBAS prior to the expiration of the screening period timer. Disconnection from the NBAS occurs when either the calling party hangs up before the NBAS connect time limit is exceeded or when this limit is reached while the call is in progress.
- CSMI monitoring is initiated prior to the expiration of the screening period timer.

The screening period timer expires when the maximum length of the screening period has been reached. This maximum length depends on the form of CSMI being executed and the value of the screening timer active line or customer group option attribute. When the screening timer value is zero, the screening period lasts the entire length of the forwarded call.

CSMI screening timer values

CSMI form	Screening timer active attribute	Screening timer source
SCSMI	Y	CSMI screening timer duration attribute
MDCCSMI -line option -customer group option	N	CSMI_SCREENING_TIMER office parameter

Enhanced CSMI (continued)

CSMI screening timer values

CSMI form	Screening timer active attribute	Screening timer source
CSMIPPU	Y	CSMI screening timer duration attribute
	N	CSMI_PPU_SCREENING_TIMER office parameter
UCSMI	Not applicable	CSMI_PPU_SCREENING_TIMER office parameter

A ring splash is sent to CSMI subscribers immediately after the NBAS has answered a forwarded call, only if their phone set is idle. If their phone set is busy, they are sent a ring splash immediately after they go back on-hook, provided that the forwarded call is still connected to the NBAS.

The CSMI feature does not itself send the ring splash, but rather requests that the system have a peripheral module generate the ring splash. There is a delay between the time that the request for the ring splash is made and when it actually gets generated. The length of this delay depends on the ringing cycle of the peripheral module and therefore can range from 1 to 6 s.

Call monitoring

A SCSMI or MDC CSMI (line or customer group option) subscriber starts the monitoring of a call that has been forwarded to the NBAS by simply going off-hook during the screening period of the forwarded call. A UCSMI or a CSMIPPU end user starts monitoring by going off-hook during a call's screening period and then dialing a numeric access code.

Subscribers can initiate call monitoring only when their telephone set is idle and the feature is active on their line. They must disconnect from any active call (which may be one that was intercepted through CSMI) before going off-hook to start monitoring and cannot execute a hook-flash during an active call to start monitoring.

Call monitoring can only be initiated once during the screening period of a call and cannot be re-initiated after the monitoring of the call has been terminated. Termination of call monitoring, without call interception, occurs when the monitored call ends as a result of either the caller or the NBAS going on-hook or when the CSMI subscriber hangs up before the monitored call ends. The

Enhanced CSMI (continued)

subscriber receives DISC (DISConnect) treatment when the monitored call ends and interception does not take place.

Once a CSMI subscriber has initiated call monitoring they have three options:

- Monitor the call, without attempting to intercept it, until either the caller or the NBAS goes on-hook.
- Terminate the monitoring of the call by going on-hook before either the caller or the NBAS goes on-hook.
- Intercept the monitored call before either the caller or the NBAS goes on-hook.

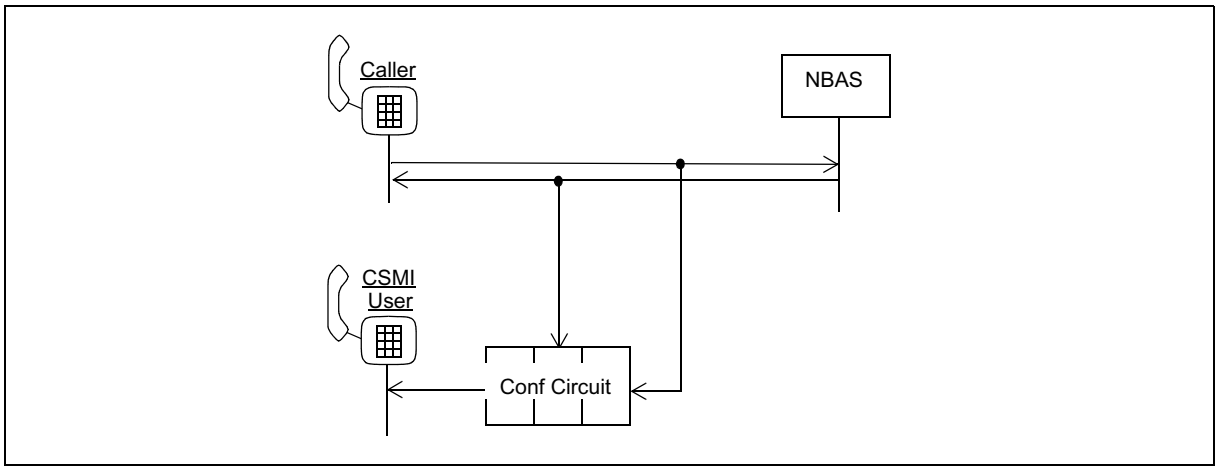
If more than one call is forwarded to the NBAS during the screening period for a call, only the original call is eligible for monitoring during that screening period. This restriction allows the CSMI subscriber to terminate the monitoring of a call for the purpose of making an outgoing call. They receive dial tone after going on-hook during call monitoring and then going back off-hook. The on-hook period must be longer than 1.5 s so that it is not interpreted as a hook-flash.

Call monitoring establishes a one-way connection, by way of a conference circuit, between the CSMI subscriber and both channels of the two-way connection between the caller and the NBAS.

In the case where the NBAS is an electronic answering service, this connection allows the CSMI subscriber to listen to the message being left by the caller and hear any greeting messages played by the NBAS. In the case where the NBAS is a live attendant, it allows the subscriber to listen to the conversation between the caller and the NBAS. In either case it also allows the CSMI subscriber to interact with other features.

Enhanced CSMI (continued)

CSMI call monitoring using a conference circuit



Call interception

A CSMI subscriber intercepts a call by executing a hook-flash any time before the monitored call ends as a result of either the caller or the NBAS going on-hook. The hook-flash must not last longer than 1.5 seconds or it is interpreted as going on-hook. An attempt, by the subscriber, to intercept a call after either the caller or the NBAS has gone on-hook results in the subscriber being given a dial tone.

When a subscriber intercept a call, a Stub Message Deletion option is available to delete the stub message left by a caller on the NBAS. A telephone company must notify the subscriber when this option is turned on, so the subscriber does not expect the stub messages to remain on the NBAS.

Interception releases the monitoring connections and establishes either a two-way call or a three-way call depending on the form of CSMI being

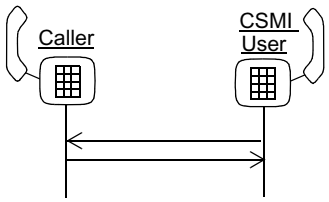
executed and the value of the three-way call interception line or customer group option attribute.

Call interception type

CSMI form	Interception type source	Interception type value	Interception call type
SCSMI CSMIPPU	three-way call interception attribute	Y	three-way call
MDC CSMI -line option -customer group option		N	two-way call
UCSMI	CSMI_INTERCEPT_3WC_CONNECTION office parameter	Y	three-way call
		N	two-way call

In the two-way call interception case, the listen-only connection between the subscriber and the conference circuit that it uses are released and a standard two-way call between the caller and the subscriber is established. An alert tone is sent to the NBAS before it is disconnected.

Two-way connection following call interception



In the three-way call case, the listen-only monitoring connection is released and the conference circuit that was employed for monitoring is reused to establish a three-way call between the caller, the subscriber, and the NBAS. In this three-way call topology, the CSMI subscriber is the controlling party and the NBAS is the added party.

Enhanced CSMI (continued)

Since the subscribers are the controlling party, when they execute a hook-flash, the NBAS is disconnected from the three-way call topology, which then reverts to a two-way call between the caller and the subscriber. Furthermore, when the subscriber hangs up, the three-way call ends and disconnects both the caller and the NBAS.

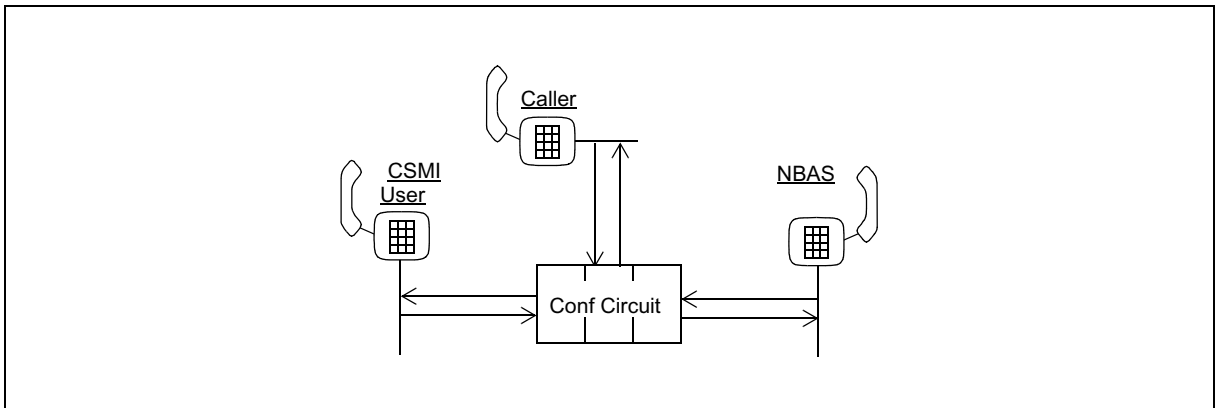
In the rare event where the 3WC feature cannot be started for three-way interception due to lack of software resources, the hook-flash results in a two-way interception without the alert tone to the NBAS.

The activation of 3WC upon interception is accompanied with the pegging of the 3WC activation OM (OM group TWCIBN, register TWCATT). Furthermore, in the case of lack of software resources, the 3WC software overflow OM is pegged (register TWCOVFL).

The OM group CF3P is also pegged on CSMI calls. This OM group measures the usage of three-port conference circuits. The CSMI feature allocates a three-port conference circuit when the call is forwarded. The three-port conference circuit is held throughout the call for two-way and three-way interception.

For SN06, CSMI has the caller and NBAS/VoiceMail in a conference 3-port, regardless of whether the CSMI subscriber is a legacy or a Succession agent. Therefore it takes on behavior of calls associated with conference 3-port, including behavior over ONP/MTCSWACT's.

Three-way connection following call interception



SCSMI and MDC CSMI line option subscribers activate and deactivate the CSMI feature on their line by dialing a numeric access code. This functionality is not available to pay-per-use CSMI end users (UCSMI and CSMIPPU) and CSMI MDC customer group subscribers.

Enhanced CSMI (continued)

The CSMI feature is by default active and, after deactivation, remains inactive until it is re-activated by the CSMI subscriber or reset by the operating company. Call monitoring through CSMI can only be initiated when CSMI is in the active state and does not function when it is in the inactive state. When CSMI is inactive, the subscriber is not sent a ring splash for a forwarded call that is answered by the NBAS and is not able to monitor, and subsequently intercept, such a call.

A single access code is used to control the state of the CSMI feature, which can be either active or inactive. Dialing the access code changes the state of CSMI from the current state to the only other possible state (for example, dialing the access code when CSMI is active changes its state to inactive). The access code can only be dialed when the CSMI subscriber's telephone set is idle (that is, not during call monitoring).

A custom announcement indicating a change in the CSMI state is sent to the subscriber after the access code is dialed. There is one announcement for the active to inactive state change and another announcement for the inactive to active state change. The announcements are, by default, provided in the primary language but can also be provided in a secondary language.

Announcements are defined through datafill in tables ANNS, ANNMEMS, CLLI, DRAMS, and DRMUSERS. If this datafill is not present, CSMI defaults to a confirmation tone for the CSMI state change announcements. If the confirmation tone is not present, then the caller is given reorder (RODR) treatment (as it is currently defined by datafill) and the CSMI state is not changed.

The activation and deactivation of CSMI operates as described only if the SOC state is ON.

CSMI access code

CSMI has a single access code whose value is datafilled in table IBNXLA by the operating company. The access code is dialed by SCSMI and CSMI MDC line option subscribers when their line is idle to activate or deactivate CSMI on their line. UCSMI and CSMI PPU end users dial the access code when their line is idle during the screening period of a forwarded call to initiate call monitoring that is billed on a pay-per-use basis. There is no functionality provided to CSMI MDC customer group option subscribers through the access code.

Enhanced CSMI (continued)

The following table shows the action taken when the CSMI access code is dialed by the different types of CSMI end users under various conditions.

CSMI access code processing

Access code datafill	End user	Access code processing conditions	Action
N	All		End user is given VACT treatment.
Y	IUCSMI	There is a call to monitor and the applicable SOC option state is ON.	Monitoring is started.
	CSMIPPU	The applicable SOC option state is ON but there is no call to monitor.	End user given FNAL treatment.
	SCSMI	The applicable SOC option state is ON and the state attribute change announcements are available.	State attribute is changed and a change announcement is played.
	CSMI MDC line option	The applicable SOC option state is ON and the state attribute change announcements are not available, but the confirmation tone is available.	State attribute is changed and the end user is given the confirmation tone.
		The applicable SOC option state is ON and the state attribute change announcements and confirmation tone are not available.	State attribute is changed and the end user is given RORD treatment.
		The applicable SOC option state is IDLE.	End user is given FNAL treatment.
	CSMI MDC customer group option		End user is given NACK treatment.

CSMI interaction on KSET

To implement CSMI on a KSET, a new CSMI key is defined. The purpose of this key is to allow the CSMI KSET subscriber to incorporate CSMI functionality when the key is pressed. Once a call has been forwarded to an

Enhanced CSMI (continued)

NBAS, and the NBAS has answered, the CSMI KSET subscriber receives a ring splash (BUZZ on a KSET) and the lamp adjacent to the key flashes. If CSMI KSET subscribers press the CMSI key, they are able to monitor the forwarded call. If the CSMI KSET subscriber wants to intercept the call, the CSMI key needs to be pressed another time.

Different scenarios are established when the CSMI key is pressed during different stages of a call as shown in the following table.

Functionality of CSMI KSET subscriber when CSMI key is pressed at different stages

CSMI KSET subscriber state	Result of CSMI key being pressed
Subscriber goes off-hook and presses the CSMI key.	Subscriber receives a NACK treatment.
Subscriber goes off-hook, dials a DN partially, and presses the CSMI key.	Subscriber receives a NACK treatment.
Subscriber goes off-hook, dials a DN completely, and presses the CSMI key.	Subscriber continues call with dialed party.
Subscriber in a normal two-way call with party A.	Conversation between subscriber and party A continues.
Forwarded call available for monitoring and subscriber dials a DN (or access code) partially and CSMI key is pressed.	Subscriber goes to monitor the forwarded call. The state of dialing the DN (or access code) is abandoned.
Forwarded call available for monitoring and subscriber dials a DN (or access code) completely and CSMI key is pressed.	Subscriber cannot monitor the forwarded call and is connected to the DN that was dialed (or the functionality that is associated with dialing a DN). See Note.
Note: Should the CSMI KSET subscriber decide to monitor the forwarded call, then the current call should be abandoned and the CSMI key pressed. This assumes that the CSMI screening time has not expired.	

Translations table flow

The Enhanced CSMI translations tables are described in the following list:

- Table IBNXLA (IBN Translation) This table stores data for the digit translation of calls from an IBN station, attendant console, incoming IBN trunk group, or incoming side of a two-way IBN trunk group. This table defines the access code that CSMI subscribers enter to control the CSMI

Enhanced CSMI (continued)

feature. Feature name CSMI is added to the possible values of the FEATURE field (when TRSEL = FEAT) of table IBNXLA.

- Table IBNFEAT (IBN Line Feature) This table lists line features that are assigned to the IBN lines listed in table IBNLINES. This table defines CSMI as an IBN line feature. The value CSMI has been added to fields DF and FEATURE. The field CSMISTATE has been added to field DATA.
- Table IBNLINES (IBN Line Assignments) This table contains line assignments for each 500/2500 set assigned to an Integrated Business Network (IBN), RES, and Multiple Appearance Directory Number (MADN) station number. This table also contains line assignments for IBN attendant consoles. An error message displays when adding MADN as a non-primary member to a line that is already assigned CSMI.
- Table ANNS (Announcement) This table contains data for each analog and digital announcement that is assigned in the switching unit. The announcement type CSMI has been added to the ANTYPE field to define CSMI as a valid announcement type.
- Table ANNMEMS (Announcement Members) This table lists the assignments for each of the members assigned to the announcements listed in table ANNS. The circuits assigned to CSMI announcements are found in this table.
- Table CLLI (Common Language Location Identifier) This table is used to uniquely identify the far end of each announcement, tone, trunk group, test trunk, national milliwatt test lines, and service circuit. This table defines the CLLI used to identify the CSMI announcement.
- Table DRAMS (Digital Recorded Announcement Machine) This table lists information for the trunk cards that constitute a digital recorded announcement machine (DRAM) or enhanced digital recorded announcement machine (EDRAM). The DRAM cards used by CSMI are defined in this table.
- Table DRMUSERS (Digital Recorded Announcement Machine Users) This table describes the announcement requirements for the features that use a DRAM. The components that make up a particular CSMI announcement are specified in this table.
- Table KSETFEAT (Business Set and Data Unit Feature) This table lists the line features that are assigned to the business sets and data units (DU) listed in table KSETLINE. This table defines CSMI as a KSET line feature.
- Table CUSTSTN (Customer Group Station Option) This table lists the station options assigned to each of the customer groups. This table defines CSMI as an option for MDC customer groups.

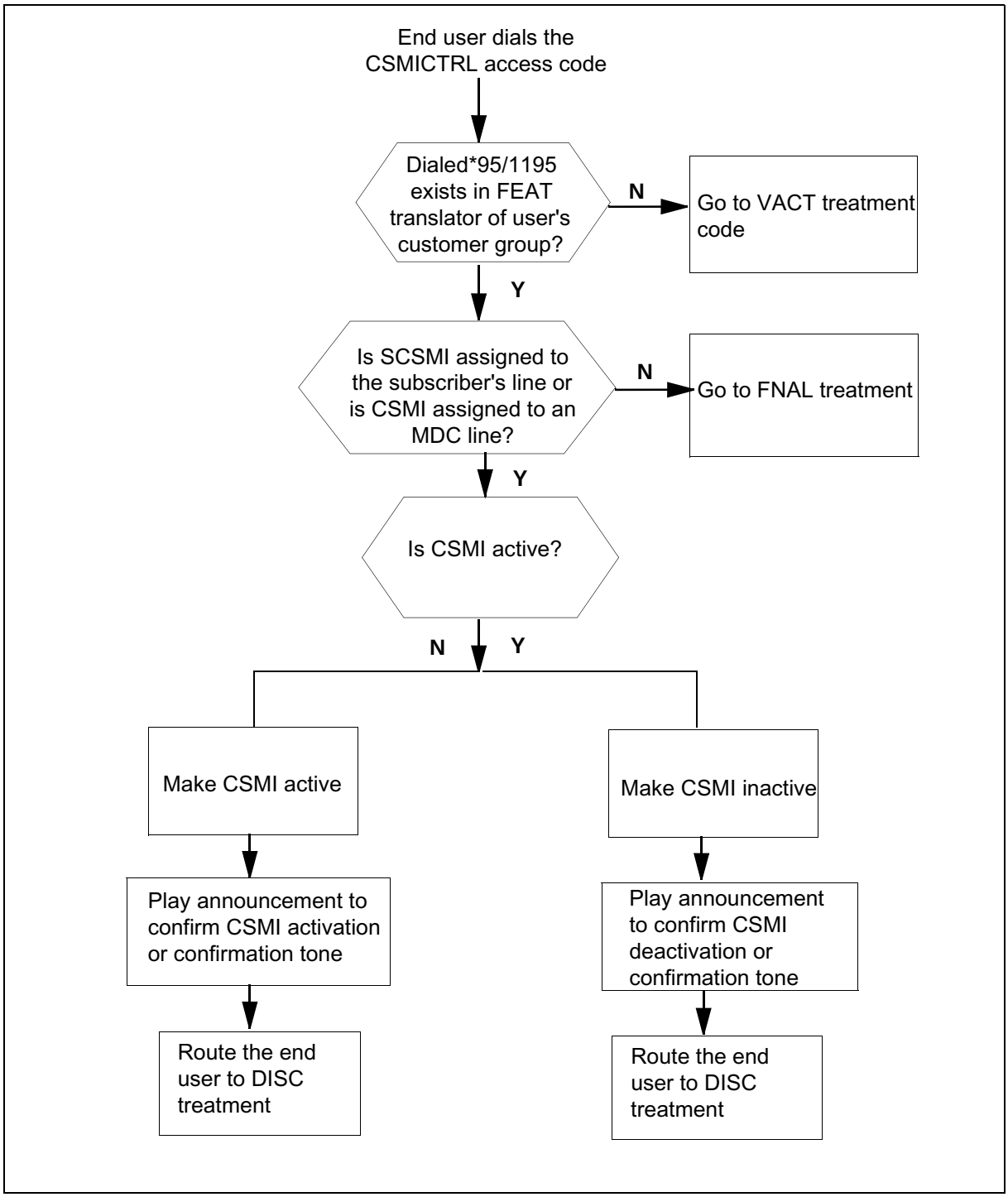
Enhanced CSMI (continued)

- Table AMAOPTS (Automatic Message Accounting Options) This table defines CSMI as an option for which billing can be generated for pay-per-use end users.
- Table SVRCKT (Service Circuit) This table contains information on digitone outpulsing circuits, R2 inter-register signaling circuits, and service observing circuits. The 3X68 dual tone multi-frequency (DTMF) sender circuit provides the DTMF delete sequence to delete the stub messages left on the NBAS.

The Enhanced CSMI translation process is shown in the flowchart that follows.

Enhanced CSMI (continued)

Table flow for Enhanced CSMI



Limitations and restrictions

The following limitations and restrictions apply to Enhanced CSMI:

- Only subscribers with RES and MDC lines can invoke CSMI.
- UCSMI is offered only to RES users who already subscribe to CFBL or CFDA and also to the MWT feature.
- The CSMI customer group option can be assigned only to MDC customer groups.
- The CSMI feature cannot verify that the forward-to DN assigned with the call forwarding feature represents an NBAS.
- The CSMI feature cannot verify that the caller is only leaving a message on the subscriber's voice mail box. If the caller decides to access other functions of the NBAS (for example, to listen to his own messages), the CSMI subscriber would be able to hear the digits dialed by the caller.
- When a CSMI subscriber is monitoring a forwarded call, incoming calls can be handled by CWT (it is waiting for the CSMI subscriber). While CWT is active on the call, it is not possible to intercept the monitored call. CWT, not CSMI, processes any hook-flash from the CSMI subscriber.
- The CSMI feature cannot be activated on the second leg of a three-way call or the Call Transfer feature.
- When more than one call is forwarded during a single screening period, only the first one is eligible for monitoring.
- Although CSMI can be assigned to a line that does not subscribe to any call forwarding option, this makes CSMI functionality unavailable to that line as CSMI is triggered by call forwarding.
- CSMI cannot be assigned or used from an attendant console. Furthermore, if the NBAS (forwarded-to party) or the caller is an attendant console, CSMI will not be activated.
- If 3WC is active on the NBAS, two-way call interception of the monitored call cannot be performed by CSMI.
- CSMI cannot be datafilled on a line as part of a feature group.
- When the CSMI user is monitoring a forwarded call, the CONNECT disposition of DSCWID on ADSI phone sets is disabled on incoming calls. The end user cannot establish a three-way call while monitoring. However, the display on the ADSI phone set is updated as though the operation took place.

Enhanced CSMI (continued)

- If the NBAS call transfers a forwarded call that is being monitored, the CSMI monitoring session ends. If the call transfer occurs during the CSMI screening period, the CSMI user cannot monitor the call.
- When the Stub Message Deletion is in effect, only one NBAS can be active on the CSMI subscriber's DMS switch, the delete sequence cannot exceed five alphanumerics, and the telephone companies must notify the subscribers of the deletion of stub messages.

Interactions

The following paragraphs describe the interactions between Enhanced CSMI and other functionalities.

Advanced Intelligent Network (AIN) Immediate Off-Hook Trigger

If there is a call available for monitoring, the CSMI feature takes precedence over the AIN immediate off hook trigger.

Call Forward Busy Line (CFBL)

CFBL can also be used to forward calls to the NBAS. If the CSMI subscriber does not have CWT along with CFBL, an incoming call to a busy subscriber automatically activates the CFBL feature. The caller would then be sent right away to the NBAS. At this point, the CSMI subscriber has no knowledge that a call has been forwarded. If subscribers go on-hook while callers are still leaving a message, they are provided with the CSMI ring splash.

If the CSMI subscriber has CFBL and CWT, the subscriber is busy (and CFBL applies) only under one of the following conditions:

- The subscriber already has a call on hold (due to CWT).
- The subscriber is in the dialing (or originating) stage of a call.
- The subscriber is the controller of a three-way call.

Also, the restriction on the multiple forwarded calls mentioned above applies to CFBL.

Call Forward Don't Answer (CFDA) / (CFCW)

CFDA can be used to forward the incoming calls to the NBAS. If CWT is also assigned to the subscriber's line, it overrides CFDA: when the subscriber is busy, an incoming call would not be forwarded even if the CFDA time-out is reached.

Assigning Call Forward of Call Waiting (CFCW) to the customer group of the subscriber allows CFDA to have precedence over CWT: a call reaching a busy

CSMI subscriber would be forwarded by CFDA after the CFDA time-out is attained.

When more than one call is forwarded during a single screening period, CSMI restricts the number of sequential calls which can be monitored in order to allow the CSMI subscriber who wants to originate a new call to get dial tone after one attempt at most. When a ring splash is sent to the CSMI subscriber set to indicate the start of the monitoring period, all subsequent calls that are forwarded within the next 20 s (or until the caller hangs-up) are not eligible to CSMI monitoring.

Note: Subsequent calls are forwarded within a period specified in the office parameter CSMI_SCREENING_TIMER. In the preceding paragraph, the time period specified is 20 s.

Call Hold (CHD)

If the caller and the CSMI subscriber are in the same office, the caller cannot flash for Call Hold.

If the caller and the CSMI subscriber are in different offices the caller can put the connection to the NBAS on hold any time to originate another call. This does not disrupt the CSMI functionality. If monitoring is performed during the period where the connection to the NBAS is on hold, only the NBAS is heard.

Calling Number Delivery (CND)

The CND feature does not provide the calling number to the subscriber's set during the CSMI ring splash. Also, the display is not updated with the caller's number upon interception.

Call Forwarding (CFW)

When the CFW option is assigned to a line, all calls terminating on that line are forwarded to a remote DN right away. If the set is idle when the call is forwarded, a ring splash is given to notify the user that a call was just forwarded. It is offered in three variations: Customer Programmable (C), Fixed (F), and Usage Sensitive (U).

CSMI functionality can be used on calls forwarded by the CFW feature. If CSMI is active on the forwarded call, the end user hears the CFW first ring splash indicating that a call has just been forwarded. Instead, whenever the NBAS answers the forwarded call, the end user receives a ring splash which indicates that the forwarded call is available for monitoring. If the calling party hangs up before the NBAS answers the call, a ring splash is given to CFW subscribers to remind them that CFW is active.

Enhanced CSMI (continued)

CSMI cannot be used with calls forwarded with the customer programmable CFW (CFWC) if the CSMI_CUST_PROG_CFW office parameter is set to N.

Call Forwarding Separate Keylist

The call forwarding separate keylist feature is available to MDC customers and allows separate keylists in table KSETFEAT for Call Forwarding Universal (CFU), Call Forwarding Intragroup (CFI), Call Forwarding Fixed (CFF), Call Forwarding Busy (CFB), and Call Forwarding Don't Answer (CFD).

When office parameter CALL_FORWARDING_SEPARATE_KEYLIST_FEATURE is set to Y in table OFCENG, each DN key of a Meridian business set (MBS) can have its own set of call forwarding options. Otherwise (that is, when set to “N"), all DN keys share the same call forwarding options.

When datafilled against an MBS, CSMI can only be used on calls forwarded from a primary DN.

Call Transfer (CXR)

The CSMI feature cannot be activated on the second leg of the CXR feature. Therefore, if a CSMI subscriber is active on a call and he/she knows that an incoming call is being handled by the NBAS, he/she cannot use the Call Transfer feature to activate CSMI (flash-hook followed by the CSMI access code). The subscriber would be routed to the RODR treatment. To properly invoke CSMI under those conditions, the subscriber must go on-hook for more than 1.5s and then invoke the feature.

Similarly, a call that is under the control of CSMI (a message is being monitored) cannot be transferred to another party. The CSMI subscriber must first intercept the call by flashing the switch-hook. In the case where two-way call interception applies, the call between the CSMI subscriber and the forwarded caller can then be transferred to another party. However, in the other case where three-way call interception applies, the CSMI subscriber must first go back to a two-way call—by flashing the switch-hook to drop the NBAS party—before attempting a call transfer.

When a CSMI user is called as the second leg of a CXR and the calling party gets connected to the NBAS, the CSMI subscriber is allowed to monitor and intercept the connection between the NBAS and the two other parties. Furthermore, if the controller of the CXR hangs up and the connection remains between the first leg of the call and the NBAS, the CSMI user can monitor and intercept that call as usual.

Enhanced CSMI (continued)

Call Waiting (CWT)

The CSMI feature does not affect the operations of CWT. The CWT feature can be activated while a forwarded call is being monitored. Thus, if a CSMI subscriber with CWT receives a call while monitoring the forwarded party, CWT provides its tones and the CSMI can accept the waiting call by flashing the switch-hook. The CSMI subscriber is then active on two calls:

- The call that was just accepted by way of CWT.
- The listen-only connection to the two-way forwarded call (now on hold).

This situation can be explained by the use of state diagrams. The diagrams follow the notation presented in the figure “State diagram notational conventions." Party A is the CSMI subscriber, party B is the caller that is being monitored (B is being answered by the NBAS), and party C is the new party.

The one-way and two-way connections to party B and party C changes according to the actions performed by each party. Figure “CWT interaction - normal monitoring to CWT state 1 and 2", figure “CWT interaction - from state 1 back to normal monitoring", and figure “CWT interaction - from state 2 back to normal monitoring" present all possible events with their resulting state. The logic is similar to the one used by CWT. The events that would leave A without a connection are not shown.

Note that if a call is waited on the CSMI subscriber's line during the monitoring period, this prevents the user from intercepting as CWT has precedence over CSMI for interpreting the flash.

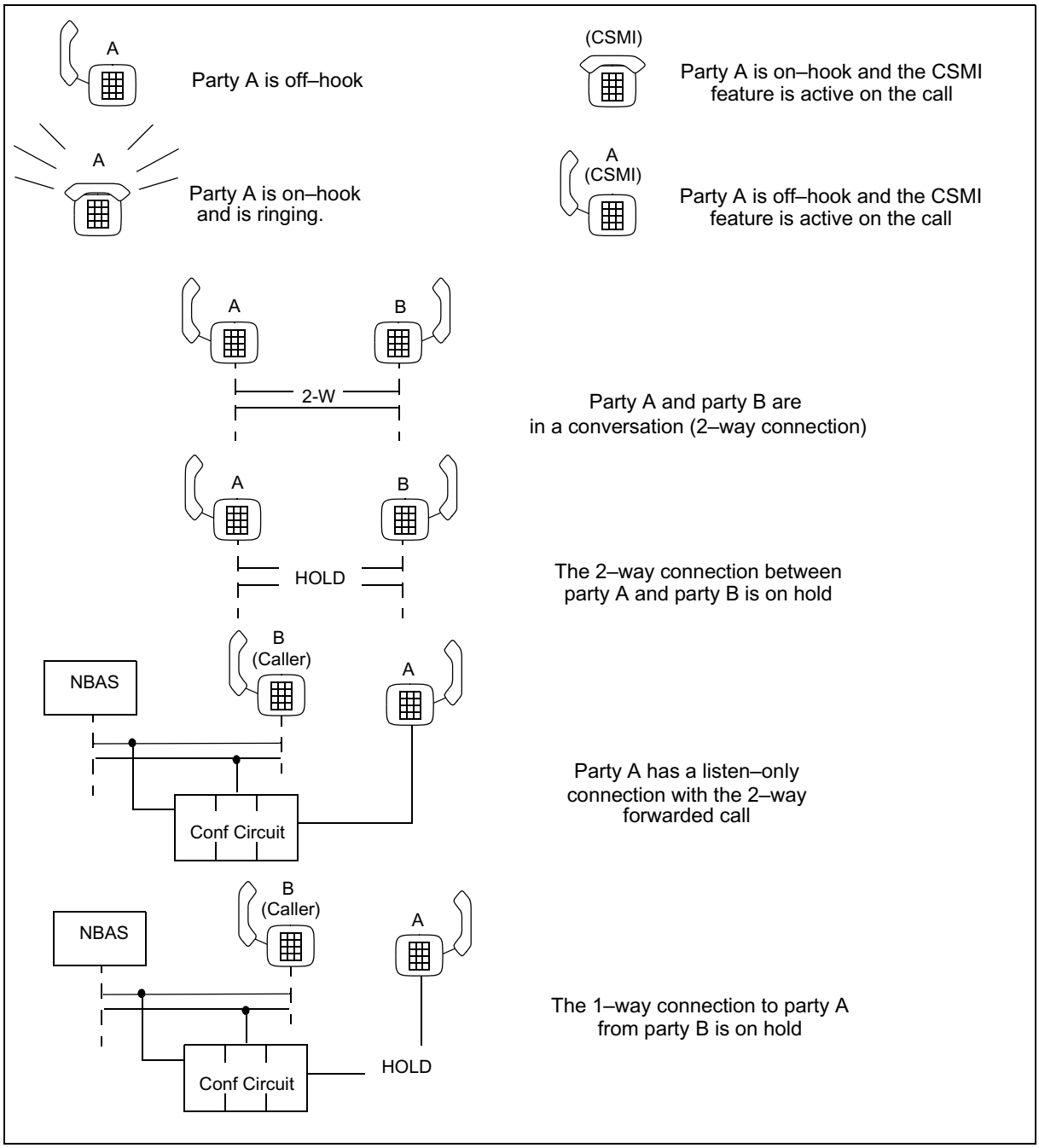
For the purpose of the example, it is assumed that A subscribes to the SCSMI option and does not have to enter the CSMI monitoring access code. Also, it is assumed that the interception causes the CSMI user and the calling party to revert to a regular two-way call (3WC_CONNECTION is set to N).

If the calling party is a CWT subscriber and both the calling party and the CSMI subscriber are in the same office, the calling party cannot flash to accept another call presented by Call Waiting.

If the calling party is a CWT subscriber and both the calling party and the CSMI subscriber are in different offices, the calling party can flash to accept another call presented by Call Waiting. If the calling party receives a call while leaving a message, he can flash the switch-hook to answer the call, thus putting the NBAS on hold. If the CSMI subscriber was monitoring at that point, he hears silence until the caller reconnects. The CSMI subscriber can intercept even if the connection between the caller and the NBAS is on hold

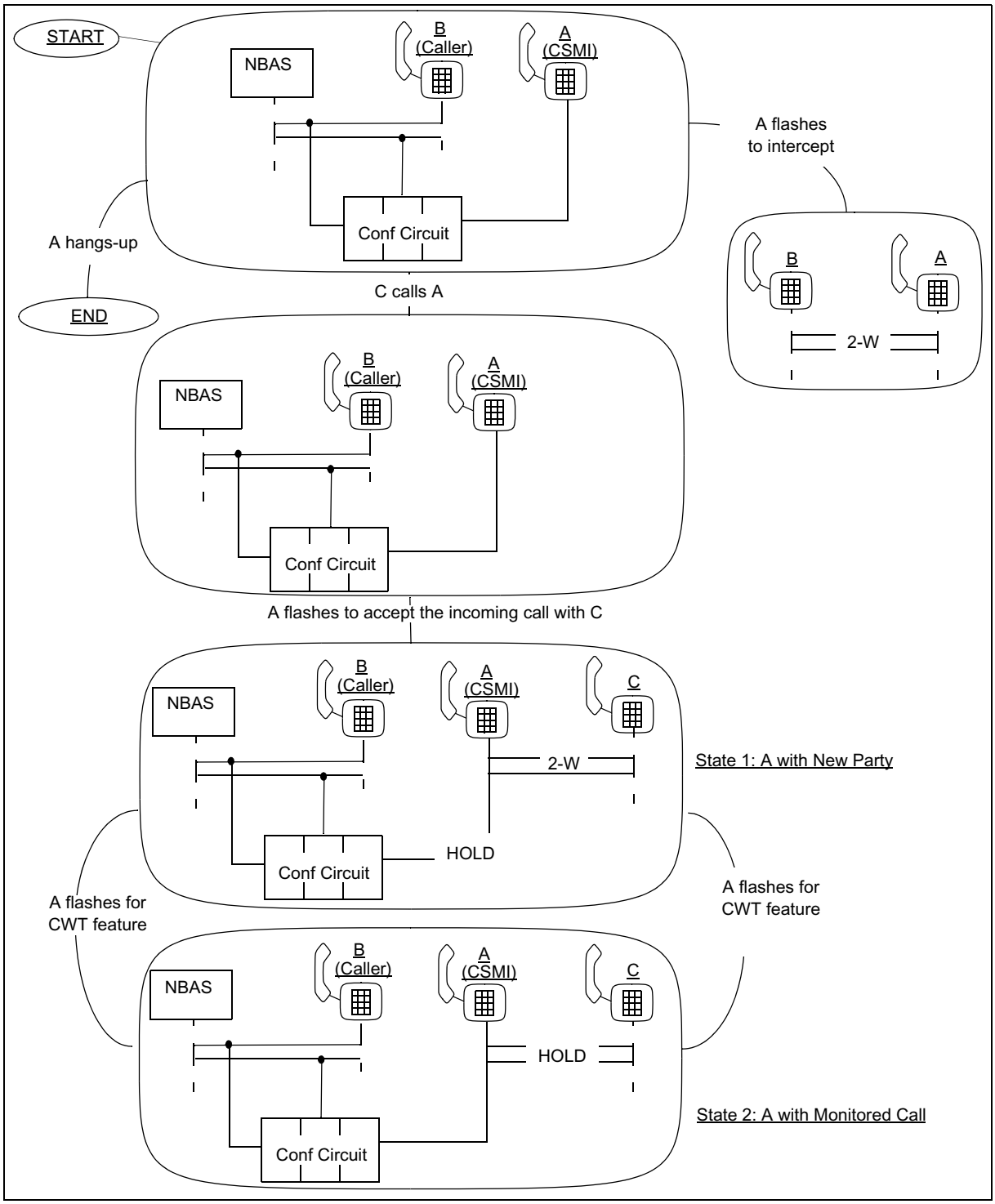
Enhanced CSMI (continued)

State diagram notational conventions



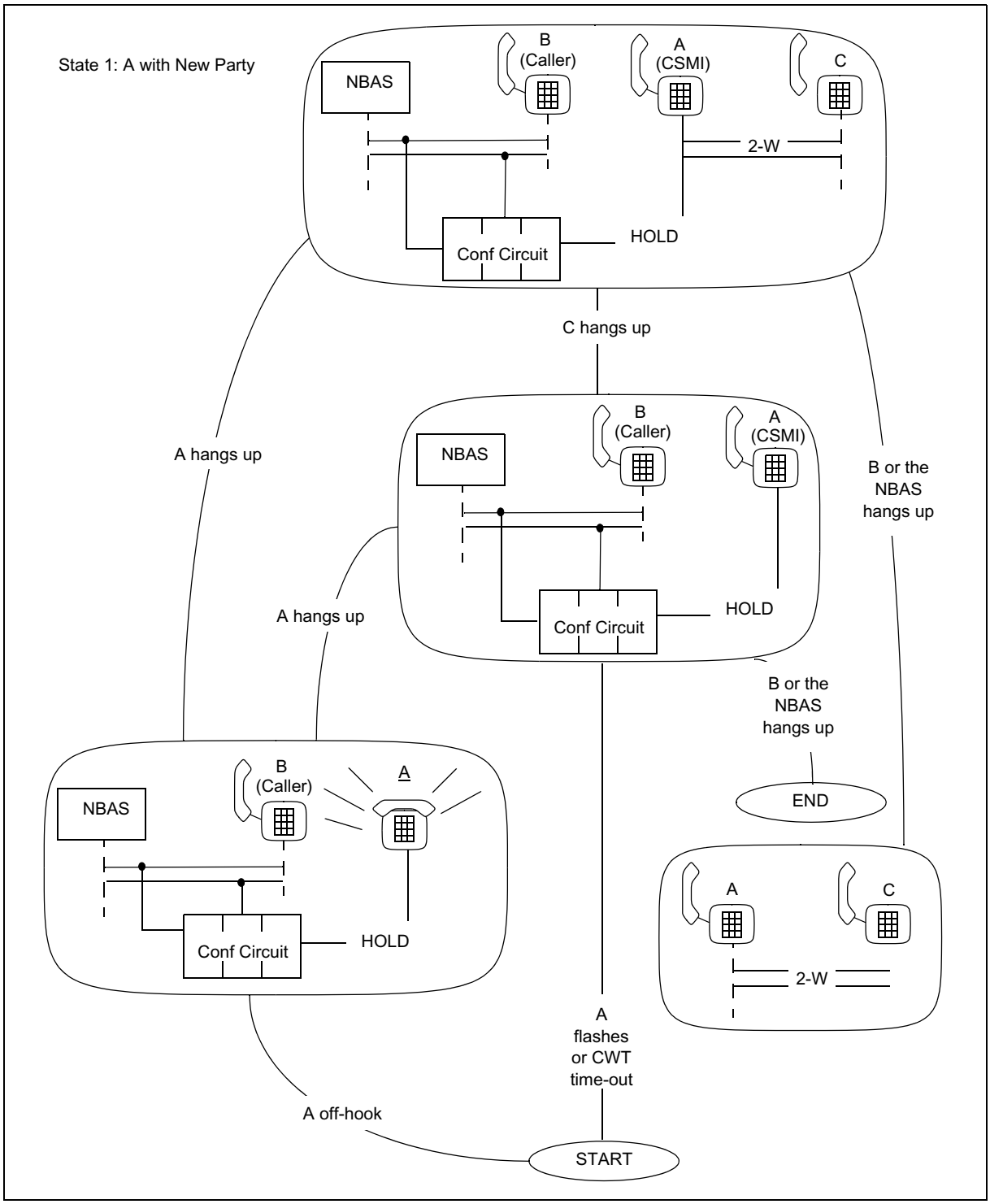
Enhanced CSMI (continued)

CWT interaction - normal monitoring to CWT state 1 and 2



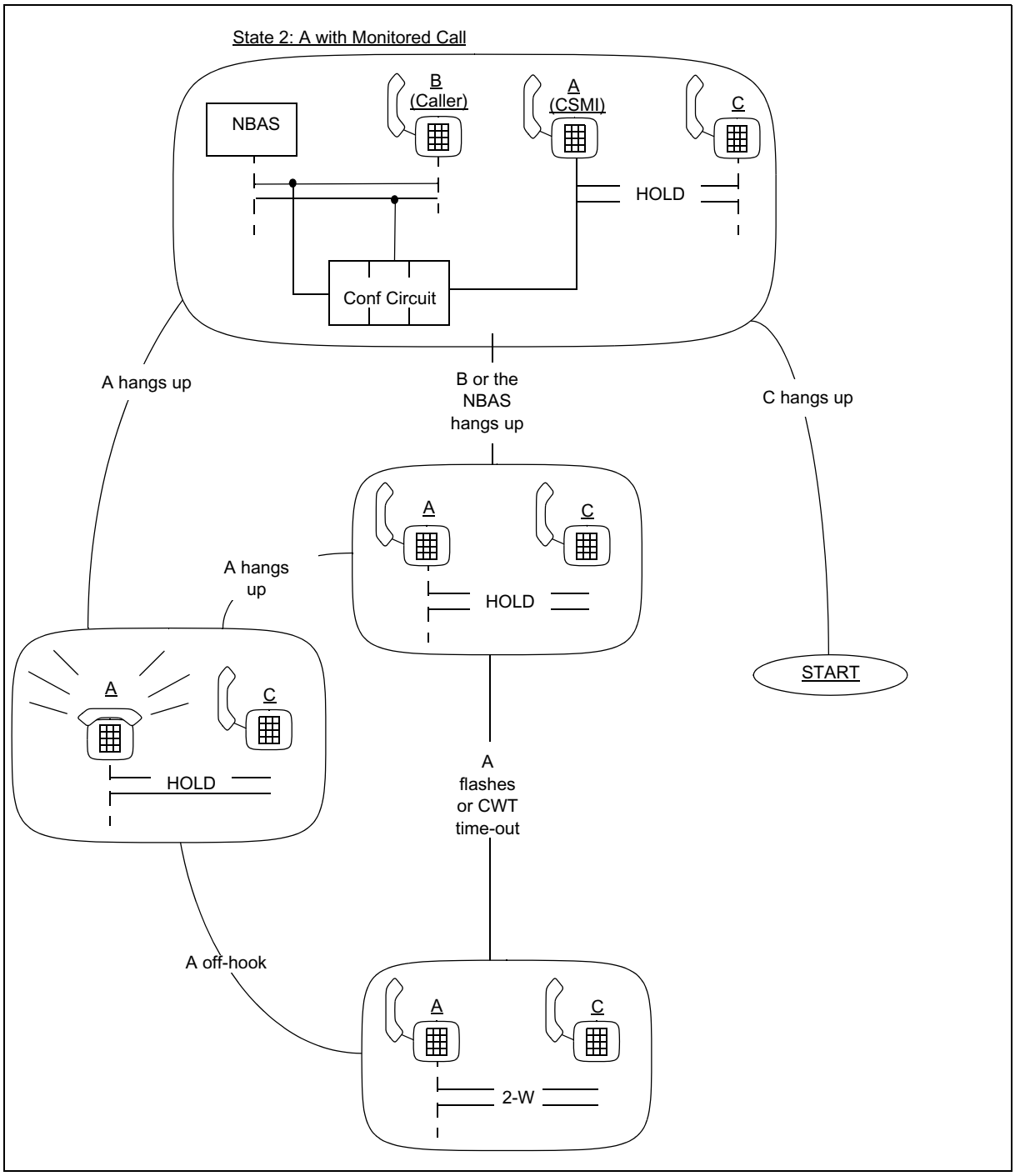
Enhanced CSMI (continued)

CWT interaction - from state 1 back to normal monitoring



Enhanced CSMI (continued)

CWT interaction - from state 2 back to normal monitoring



Enhanced CSMI (continued)

Class Message Waiting Indicator (CMWI) and Periodic Ringing Notification (PRN)

CMWI and PRN can provide a ring burst or a ring splash on a subscriber's set when the message waiting indicator is activated. This short ring might conflict with the one provided by CSMI: a subscriber can confuse the CMWI/PRN ring burst/splash with the start of a CSMI monitoring period.

CSMI interaction on KSET

To implement CSMI on a KSET, a new CSMI key is defined. The purpose of this key is to allow the CSMI KSET subscriber to incorporate CSMI functionality when the key is pressed. Once a call has been forwarded to an NBAS, and the NBAS has answered, the CSMI KSET subscriber receives a ring splash (BUZZ on a KSET) and the lamp adjacent to the key is flashing. If the CSMI KSET subscriber presses the CMSI key, then he/she is able to monitor the forwarded call. If the CSMI KSET subscriber wants to intercept the call, the CSMI key needs to be pressed another time.

Different scenarios are established when the CSMI key is pressed during different stages of a call.

CSMI line option and CSMI customer group option on MDC

The CSMI line option has precedence over the CSMI customer group option. This means that if an MDC user has the CSMI option assigned to the line, the state of the line option, either active or inactive, always overrides the state of the customer group option.

CSMI RES line option and UCSMI interaction

The CSMI RES line option has precedence over UCSMI. This means that if the CSMI line option is assigned to a RES line, it behaves as per the line option even if the line has CFDA or CFBL along with MWT a message waiting indicator option. This holds even if the SCSMI functionality is deactivated.

Incoming Call Memory

The Incoming Call Memory (ICM) of the CSMI subscriber is updated with the caller's information when a CSMI call is intercepted.

Note however that in the case where the monitored/intercepted call was forwarded to the NBAS through CFD, CFDA, CFGD, or CFGDA, the ICM was already updated at the time the call was forwarded. Therefore, in those cases, the updating of the ICM at interception time represents no change to the end result.

Enhanced CSMI (continued)

Line termination

If a termination attempt is made on the CSMI subscriber during the screening period, an off-hook event will not trigger monitoring but will connect to the incoming call instead. After this call is over, if the previously forwarded call is still up, the CSMI subscriber can go off-hook to monitor it.

Long Distance Signal (LDS) / Distinctive Ringing Call Waiting (DRCW)

Both LDS and DRCW behave like CWT. They both allow a busy subscriber to accept an incoming call. The difference is in the tones provided to the subscriber when a call is waiting. Thus, refer to the sections on the CWT feature for the interaction with CSMI (as with CWT, CFDA with CFCW takes precedence over LDS). Note that unlike CWT or DRCW, LDS has a time-out. When it is reached, LDS is terminated and the called party cannot accept the incoming call anymore.

Multiline Hunt Group (MLH, DNH, DLH, CIR)

When a call terminates on a hunt group member, the feature hunts for the first idle member in the group to whom the call is to be presented. The way the members are hunted varies among the different variations of the feature.

Hunt members are allowed to have the CSMI option assigned. When the CFGD/CFGDA option is assigned to the group, only the station from which that call has been forwarded can invoke CSMI on the forwarded call, given that CSMI is assigned to this line.

Multiple Appearance Directory Number

The MADN feature allows a single DN to be associated with a group of subscriber lines. A call that terminates to a MADN group is presented to all members simultaneously.

For the primary member of a MADN group, CSMI interacts according to the call forwarding interactions mentioned before.

Secondary members of a MADN group cannot be assigned the CSMI option. Furthermore, CSMI does not interact with the CFW for MADN members (CFMDN) feature, which simply allows secondary members to toggle the activation of the call forwarding option assigned to the primary member.

Network Facility Access - Implicit (NFA)

If there is a call available for monitoring, the CSMI feature takes precedence of the NFA implicit feature.

Enhanced CSMI (continued)

Operator Override (OOR)

Barging into the monitoring call removes the monitoring connection to the forwarded call.

Operator Override works the same way for 3WC. If an operator barges in the connection between the caller and the NBAS, and CSMI monitors the call, all three parties are heard. If an interception takes place, the CSMI subscriber replaces the NBAS.

Release Link Trunk (RLT)

The RLT feature (also called Call Completion with Trunk Optimization - CCTO) should remove any redundant ISUP trunks in the event of a call transfer or redirection.

RLT does not yet optimize calls that are forwarded (only calls that are part of a special Call Transfer or part of the Enhanced 800 Call Prompter service). Redirected calls are always kept in the end office where the redirection occurred (the end office of the base station). Thus, CSMI is not affected by RLT/CCTO.

Spontaneous Call Waiting Identification (SCWID)

SCWID allows subscribers to receive calling party information in conjunction with a call waiting tone. CSMI does not affect the operation of the SCWID feature.

Three-Way Calling (3WC)

The CSMI feature cannot be invoked on the second leg of a three-way call. Therefore, if a CSMI subscriber is active on a call and he/she knows that an incoming call is being handled by the NBAS, he/she cannot use the 3WC feature to activate CSMI (flash-hook followed by the CSMI access code). The subscriber would be routed to the RODR treatment. To properly invoke CSMI under those conditions, the subscriber must terminate the current call and then invoke the feature.

Other than by the means of 3WC call interception, 3WC cannot be invoked during the monitoring of a forwarded call. If the subscriber flashes the switch-hook, the CSMI feature performs the intercept function. In the case where two-way call interception applies, the call topology reverts to a single call between the caller and the CSMI subscriber. The 3WC feature can then be invoked normally by the CSMI subscriber. In the other case where three-way interception applies, a three-way call is built between the forwarded caller, the NBAS, and the CSMI subscriber with the CSMI subscriber as the controller and the NBAS as the added party. If the CSMI subscriber wishes

then to start another three-way call, he/she must first go back to a two-way call—by flashing the switch-hook to drop the NBAS party.

When a CSMI user is called as the second leg of a 3WC and the calling party gets connected to the NBAS, the CSMI subscriber is allowed to monitor and intercept the connection between the NBAS and the two other parties.

If 3WC is running on the NBAS, a two-way call interception by the CSMI subscriber is blocked.

User interface

The Query Directory Number (QDN) and Query Line Equipment Number (QLEN) commands are enhanced by the CSMI feature to display:

- the CSMI line option and its attributes
- the DENYCSMI line option and its refinements
- the UCSMI office option

Activation/deactivation by the end user

An access code is dialed by SCSMI and CSMI MDC line option subscribers when their line is idle to activate or deactivate CSMI on their line. UCSMI and CSMI pay-per-use end users dial the access code when their line is idle during the screening period of a forwarded call to initiate monitoring that is billed on a pay-per-use basis. There is no functionality provided to CSMI MDC customer group option subscribers through the access code.

Activation/deactivation of Enhanced CSMI by the end user

At your telephone

1 To activate CSMI, go off-hook and dial the CSMI feature activation code.

Response:

A confirmation tone or announcement is provided.

Datafilling CSMI announcements

The following procedure outlines how to set up the announcements required for CSMI.

Enhanced CSMI (continued)

Datafilling and implementing CSMI announcements

At the MAP terminal

1 Access the DRAMREC utility to record phrases on the RAM cards of the E/DRAM by typing

```
>DRAMREC
```

and pressing the Enter key.

Response:

```
DRAM:
```

2 Connect an idled (IDL) headset trunk to the E/DRAM controller circuit by typing

```
>CONNECT  controller_no  hset  member_no
```

and pressing the Enter key.

where:

controller_no
is the number of the DRAM controller

hset
is the headset

member_no
is the CLLI member

Response:

```
CONNECTION MADE
```

3 Display the E/DRAM phrases by typing

```
>DISPLAY  controller_no  card_no
```

and pressing the Enter key.

where:

controller_no
indicates the number of the DRAM controller

card_no
indicates the DRAM card number

Response:

```
CARD 1 PROM         SPACE: MAX  CONTIG 0 TOTAL 0
PHRASE_EXT  PHRASE_EXT          LENGTH
-------------------------------------
L1BSY       48                  4
```

4 Record the phrase by typing

```
>RECORD  name_of_phrase  length_of_phrase_in_seconds
```

and pressing the Enter key.

where:

name_of_phrase
indicates the name of the phrase

length_of_phrase_in_seconds
indicates the length of the phrase

5 After three prompt tones, record the phrase.

6 Playback the phrase by typing

```
>PLAYBACK  controller_no  name_of_phrase
```

and pressing the Enter key.

where:

controller_no
indicates the number of the DRAM controller

name_of_phrase
indicates the name of the phrase

7 If necessary, record the announcement again. You can erase a phrase by typing

```
>ERASE  controller_no  name_of_phrase
```

and pressing the Enter key.

where:

controller_no
indicates the number of the DRAM controller

name_of_phrase
indicates the name of the phrase

Note: Refer to the *Feature Description Manual*, 297-1001-801, to interpret DRAM phrases.

8 Print a display of the announcement by typing

```
>DISPLAY  controller_no  card_no
```

and pressing the Enter key.

where:

controller_no
indicates the number of the DRAM controller

card_no
indicates the DRAM card

9 Quit the DRAMREC utility by typing

```
>QUIT
```

and pressing the Enter key.

10 This procedure is complete.

Billing

For a call that is eligible to be monitored and intercepted through CSMI, there are potentially two types of billing records that can be generated: toll and pay-per-use. Depending on the form of CSMI being executed and whether or not the original and forwarded legs of the CSMI call are toll, both types, only one type, or neither type of billing record may be generated.

Enhanced CSMI (continued)

Toll billing record generation

Toll billing records are generated for a forwarded call when either the original leg or forwarded leg is a toll call. That is, the end offices of the originating and terminating ends of the call are different and they are not local to each other. Generation of toll billing records occurs whether or not the forwarded call can be monitored and intercepted by CSMI.

The only case where CSMI affects the generation of toll billing records is when the forwarded leg is a toll call and two-way call interception takes place. In this case, CSMI ensures that the billing record for the forwarded leg, which is billable to the CSMI subscriber, is generated when interception takes place (that is, when the toll connection to the NBAS is dropped).

Table “Toll billing record generation on CSMI calls" identifies the cases where toll billing records are generated for CSMI calls. For each combination of original and forwarded call type (local or toll) and type of subscriber action, the table identifies the party or parties billed (caller or subscriber, or both) and the period of time charged.

The possible types of subscriber action follow: screen (that is, do not go off-hook during the screening period and therefore do not monitor the forwarded call); monitor the forwarded call; and intercept the forwarded call. The billing period is composed of one or more of the following CSMI call stages:

- screening: period of time from when the forwarded call is answered by the NBAS to when the forwarded call either ends without being monitored or when monitoring of the forwarded call starts
- monitoring: period of time from when monitoring of the forwarded call starts to when either the forwarded call disconnects without being intercepted or when interception of the forwarded call starts
- intercepting: period of time between when the interception of the forwarded call starts to the end of the intercepted call

Pay-per-use billing record generation

Pay-per-use billing applies to a CSMI call when the CSMI functionality has been invoked by a CSMI pay-per-use subscriber, that is, when CSMI call monitoring is invoked through the dialing of the monitoring access code by either a UCSMI or CSMIPPU end user. A CSMI pay-per-use billing record is

Enhanced CSMI (continued)

generated at the end of call monitoring when one of the following three events occurs:

- at the end of call monitoring when interception does not occur as a result of either the caller, the subscriber, or the NBAS hanging up during monitoring
- at the end of call monitoring when interception with a two-way call occurs as a result of the CSMI subscriber executing a hook-flash
- when the three-way call generated by three-way interception collapses to a two-way call or completely ends

A CSMI pay-per-use billing record is a structure code 00001 AMA billing record that contains CSMI-specific data in the following six fields:

- the call code field (CALL CODE 048 - Usage Sensitive Feature)
- the feature code field (SERVICE FEATURE 210 for CSMI pay-per-use 2WC, 211 for CSMI pay-per-use 3WC)
- the answer field (CLD PTY OFF-HK indicates if interception has taken place)
- the connect time field (CONNECT TIME)
- the elapsed time field (ELAPSED TIME)

Enhanced CSMI (continued)

A pay-per-use CSMI billing record is only generated when the CSMI entry in table AMAOPTS is set to ON.

Toll billing record generation on CSMI calls

Original call type: first leg, originator to CSMI user	Forwarded call type: second leg, CSMI user to forward party (NBAS)	Billed party	Billing party duration			
			Screen	Monitor	Intercept	
					2-way call	3-way call
local	local	caller	no billing	no billing	no billing	
		subscriber	no billing	no billing	no billing	
local	toll	caller	no billing	no billing	no billing	
		subscriber	screening	screening, monitoring	screening, monitoring	screening, monitoring, interception
toll	local	caller	screening		screening, monitoring, interception	no billing
		subscriber	no billing	no billing		
toll	toll	caller	screening	screening, monitoring	screening, monitoring, interception	screening, monitoring
		subscriber	screening	screening, monitoring		

Software optionality control

The SOC option names and order codes applied to the subscription-based (SCSMI, CSMIPPU, MDC CSMI line option and CSMI customer group option) and office option (UCSMI) forms of CSMI follow.

SCSMI SOC options

CSMI form	SOC option name	SOC order code
SCSMI	CSMI Subscription	RES00047
CSMIPPU		

SCSMI SOC options

CSMI form	SOC option name	SOC order code
MDC CSMI-line option-customer group option		
UCSMI	CSMI Universal	RES00053

PCL specification

The CSMI-Subscription and CSMI-Universal SOC options are delivered in PCL CDN005B.

Option functionality

The CSMI-Subscription SOC option controls the functionality of the subscription-based forms of CSMI (SCSMI, CSMIPPU, and both line option and customer group option MDC CSMI forms). It also controls the functionality to activate and deactivate CSMI on a line option that is provided to SCSMI and MDC line option subscribers through the dialing of a CSMI access code. By default, both of these are types of functionality are disabled by the CSMI-Subscription SOC option (that is, when the SOC state for the CSMI-Subscription SOC option is set to IDLE).

The CSMI-Universal SOC option controls the functionality of the office option form of CSMI (UCSMI). By default, this functionality is disabled by the CSMI-Universal SOC option (that is, when the SOC state for the CSMI-Universal SOC option is set to IDLE).

State behavior

Both the CSMI-Subscription SOC option and the CSMI-Universal SOC option support the IDLE and ON SOC states.

The CSMI feature functions fully for subscription-based CSMI subscribers (SCSMI, CSMIPPU, MDC CSMI line option, MDC CSMI customer group option) when the CSMI-Subscription SOC option is in the ON state and functions fully for office option CSMI users (UCSMI) when the CSMI-Universal SOC option is in the ON state.

For all CSMI subscribers, full CSMI functionality means that they receive a ring splash and are able to initiate the monitoring of a call after it has been answered by the NBAS. For subscription-based CSMI line option subscribers (SCSMI and CSMI MDC line option), full CSMI functionality also means that they can activate and deactivate CSMI on their line by dialing an access code.

Enhanced CSMI (continued)

All CSMI functionality is disabled for subscription-based CSMI subscribers (SCSMI, CSMIPPU, MDC CSMI line option, MDC CSMI customer group option) when the CSMI-Subscription SOC option is in the IDLE state and is disabled for office option CSMI users (UCSMI) when the CSMI-Universal SOC option is in the IDLE state.

For both CSMI SOC options, when the SOC state is in either the ON or IDLE state, the operating company is able to

- display CSMI line option data using the QDN and QLEN commands
- add, delete, and change CSMI line option data through SERVORD
- add, delete, and change CSMI datafill through the data table editor
- CSMI customer group option attributes in table CUSTSTN
- CSMI access code table IBNXLA
- CMSI office parameters in table OFCENG
- CSMI entry in table AMAOPTS

SOC option states

CSMI Universal SOC Option state	CSMI Subscription SOC option state	State of SCSMI/CSMIPPU	What is available
Idle	Idle	Inactive	Nothing
Idle	Idle	Active	Nothing
Idle	ON	Inactive	Nothing
Idle	ON	Active	SCSMI/CSMIPPU
ON	Idle	Inactive	UCSMI
ON	Idle	Active	UCSMI
ON	ON	Inactive	Nothing
ON	ON	Active	SCSMI/CSMIPPU

Option dependencies

Subscription-based CSMI always has precedence over UCSMI regardless of the state of the CSMI-Subscription SOC option.

If a RES line is assigned the set of options that would normally make it eligible for UCSMI (CFDA/CFBL and MWT) but it is also assigned a subscription-based CSMI option (SCSMI, CSMIPPU), only the

subscription-based CSMI service can apply as controlled by the CSMI-Subscription SOC option.

ON to IDLE transition

All datafill pertaining to CSMI is maintained in the transition from ON to IDLE for both the CSMI-Subscription SOC option and the CSMI-Universal SOC option.

When the state of CSMI-Subscription goes from ON to IDLE, the functionality of SCSMI, CSMIPPU, and both MDC CSMI forms is disabled. When the state of CSMI-Universal goes from ON to IDLE, the functionality of UCSMI is disabled.

IDLE to ON transition

All datafill pertaining to CSMI is maintained in the transition from IDLE to ON for both the CSMI-Subscription SOC option and the CSMI-Universal SOC option.

When the state of CSMI-Subscription CSMI-Universal goes from IDLE to ON, the functionality of SCSMI, CSMIPPU and both MDC CSMI forms is enabled. When the state of CSMI-Universal goes from IDLE to ON, the functionality of UCSMI is enabled.

Station Message Detail Recording

Enhanced CSMI does not affect Station Message Detail Recording.

Enhanced CSMI (continued)

Datafilling office parameters

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

Office parameters used by Enhanced CSMI

Table name	Parameter name	Explanation and action
OFCENG	CSMI_PPU_SCREENING_TIMER	This parameter specifies the maximum length (in seconds) of the screening period that applies to pay-per-use CSMI end users (UCSMI and CSMIPPU). Its value ranges from 0 to 120 and is by default 20.
OFCENG	CSMI_SCREENING_TIMER	This parameter specifies the maximum length (in seconds) of the screening period that applies to subscription based CSMI end users (SCSMI, MDC CSMI line option, MDC CSMI customer group option). Its value ranges from 0 to 120 and is by default 20.
OFCENG	CSMI_CUST_PROG_CFW	This parameter specifies whether CSMI is available on calls that are forwarded by a customer programmable variation of call forwarding. The default is Y.

Enhanced CSMI (continued)

Office parameters used by Enhanced CSMI

Table name	Parameter name	Explanation and action
OFCENG	CSMI _INTERCEPT_3WC_CONNECTION	This parameter specifies whether a three-way call is to be established at interception for a UCSMI end user. A three-way call between the caller, the UCSMI end user and the NBAS is established at interception when it is set to Y. Its permissible values are Y and N. The default value is N.
OFCENG	CSMI_DELETE_STUB_VM	This parameter contains 2 values. The first value specifies the on/off status of Deletion of Stub Messages. The second value specifies the delete tones series if the deletion status is on. When the first value is “Y”, the deletion feature is on, and the second value must be datafilled with a delete series that does not exceed 5 alphanumerics. Each alphanumeric can have a value between 1 and c. When the first value is “N”, no datafill is required for the second value.

Datafill sequence

The following table lists the tables that require datafill to implement Enhanced CSMI. The tables are listed in the order they are to be datafilled.

Datafill tables required for Enhanced CSMI

Table	Purpose of table
IBNLINES	IBN Line Assignments. This table contains line assignments for each 500/2500 set assigned to an Integrated Business Network (IBN), Residential Enhanced Services (RES), and Multiple Appearance Directory Number (MADN) station number.
IBNFEAT	IBN Line Feature. This table lists line features that are assigned to the IBN lines listed in table IBNLINES.
IBNXLA	IBN Translation. This table stores data for the digit translation of calls from an IBN station, attendant console, incoming IBN trunk group, or incoming side of a two-way IBN trunk group.
KSETFEAT	Business Set and Data Unit Feature. This table lists the line features that are assigned to the business sets and data units (DU) listed in table KSETLINE.

Enhanced CSMI (continued)

Datafill tables required for Enhanced CSMI

Table	Purpose of table
CLLI	Common Language Location Identifier. This table is used to uniquely identify the far end of each announcement, tone, trunk group, test trunk, national milliwatt test lines, and service circuit.
CUSTSTN	Customer Group Station Option. This table lists the station options assigned to each of the customer groups.
AMAOPTS	Automatic Message Accounting Options. This table defines CSMI as an option for which billing can be generated for pay-per-use end users.
ANNS	Announcement. This table contains data for each analog and digital announcement that is assigned in the switching unit.
DRAMS	Digital Recorded Announcement Machine. This table lists information for the trunk cards that constitute a digital recorded announcement machine (DRAM) or enhanced digital recorded announcement machine (EDRAM).
ANNMEMS	Announcement Members. This table lists the assignments for each of the members assigned to the announcements listed in table ANNS.
DRMUSERS	Digital Recorded Announcement Machine Users. This table describes the announcement requirements for the features that use a DRAM.
SVRCKT	Service Circuit. This table contains information on digitone outpulsing circuits, R2 inter-register signaling circuits, and service observing circuits. The 3X68 DTMF sender circuit provides CSMI with the DTMF delete sequence to delete the stub messages.

Datafilling table IBNLINES

The following table shows the datafill specific to Enhanced CSMI for table IBNLINES. Only those fields that apply directly to Enhanced CSMI are

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

Datafilling table IBNLINES

Field	Subfield	Entry	Explanation and action
LEN		see explanation	*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 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.
DNNO		0 to 6	*Directory number number* Enter the directory number (DN) number to specify which DN on the LEN is being referenced.
RESULT		see subfields	*Result* This field consists of subfields SIGTYPE and FORMAT.
	SIGTYPE	DP or DT	*Signal type* Enter the type of pulsing expected: DP (dial pulse) or DT (Digitone).
	FORMAT	STN	*Format* Enter the format name STN (station) for an IBN or RES station.
IBNVAR	see subfields		*Integrated business network variable* This field consists of subfields LCC and DN.

Enhanced CSMI (continued)

Datafilling table IBNLINES

Field	Subfield	Entry	Explanation and action
	LCC	IBN or RES	*Line class code* If the line is an IBN line, enter IBN and datafill refinements CUSTGRP, SUBGRP, NCOS, and SNPA. For a Residential line or a coin line with residential features, enter RES and datafill refinement LNATTIDX.
	DN	numeric(vector of upto 15 digits)	*Directory number* Enter the DN assigned to the IBN or RES station.
CUSTGRP		alphanumeric	*Customer group* Enter the code assigned to the customer group to which the IBN line is assigned.
SUBGRP		0 to 7	*Subgroup* Enter the subgroup within the customer group to which the IBN line is assigned.
NCOS		0 to 511	*Network class of service* Enter the NCOS number assigned to the IBN line.
SNPA		numeric	*Serving numbering plan area* Enter the serving NPA to which the IBN line is assigned.
LNATTIDX		0 to 31 999	*Line attribute index* Enter the line attribute index number defined in table LINEATTR to which the RES line is assigned. For CSMI the index must have field LCC equal to 1FR, or 1MR, and field RESINFO equal to Y (yes). Fields CUSTGRP, SUBGRP, and NCOS must contain valid data.
OPTLIST		(option) $	*Option list* Enter the list of options that are assigned to the IBN station (e.g. CSMI). Options must be separated from each other by a blank space.

Datafill example for table IBNLINES

The following example shows sample datafill for table IBNLINES.

MAP display example for table IBNLINES

```
 LEN              DNNO              RESULT
_____________________________________________________________
 HOST 01 0 01 04  0  DP  STN  IBN  2265436  MDCGRP1  2
26  613  (CSMI)  $
```

Error messages for table IBNLINES

The following error messages apply to table IBNLINES.

Error messages for table IBNLINES

Error message	Explanation and action
CSMI is present, it is compatible only with primary MDN members.	CSMI is present on this line. In order to add this line to an MDN group, this line must be the primary member, or else CSMI must be removed.

Datafilling table IBNFEAT

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

Datafilling table IBNFEAT

Field	Subfield	Entry	Explanation and action

Enhanced CSMI (continued)

Datafilling table IBNFEAT

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 section to avoid unnecessary duplication. Refer to section “Common entry field LEN" for a complete description of field LEN and associated subfields. For ISDN lines, field LEN consists of subfield LTID. For non-ISDN lines, field LEN consists of subfields SITE, FRAME, UNIT, DRAWER or LSG, SHELF, SLOT, and CIRCUIT.
DNNO		0 to 6	*Directory number number* Enter the directory number (DN) to specify which DN on the line equipment number (LEN) is being referenced.
DF		CSMI	*Data feature* Enter CSMI for the Call Screening, Monitoring and Intercept feature.
FEATURE		CSMI	*Data feature* Enter CSMI.
DATA		see subfield	*Data* This field consists of subfield CSMISTATE. with a value of “A" for active or “I" for inactive.
	CSMISTATE	A or I	*CSMISTATE* This field has a value of “A" for active or “I" for inactive.

Datafill example for table IBNFEAT

The following example shows sample datafill for table IBNFEAT.

MAP display example for table IBNFEAT

```
LEN              DNNO    DF     FEATURE    DATA
_____________________________________________________
HOST 01 0 01 04   0      CSMI   CSMI       A
```

Error messages for table IBNFEAT

The following error messages apply to table IBNFEAT.

Error messages for table IBNFEAT

Error message	Explanation and action
CSMI can only be added to a primary MDN member.	If CSMI is being added to a member of an MDN group, it must be the primary member of the group.

Datafilling table IBNXLA

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

The format with translation selector FEAT is required in a feature translator if the digit or digits dialed are the access code for one of the features listed in field FEATURE.

Datafilling table IBNXLA

Field	Subfield	Entry	Explanation and action
KEY		see subfields	*Key* This field consists of subfields XLANAME and DSLIDX.
	XLANAME	alphanumeric(1 to 8 characters)	*Translator name* Enter the name that is assigned to the translator.

Enhanced CSMI (continued)

Datafilling table IBNXLA

Field	Subfield	Entry	Explanation and action
	DGLIDX	vector of up to 18 digits	*Digilator index* Enter the digit or digits assigned as an ambiguous code. The range of this field depends on field MAXDIG in table XLANAME. The DGLIDX can accept overdecadic digits. The allowable values for the digilator portion of DGLIDX of table IBNXLA are as follows: *MAXDIG value* *IBNXLA digilator values* 9 Digits 0 to 9 C Digits 0 to 9 and B to C F Digits 0 to 9 and B to F The allowable digit range for table IBNXLA digilator values is determined for each translator.
RESULT		see subfields	*Result* This field consists of subfields TRSEL, ACR, SMDR, and FEATURE.
	TRSEL	FEAT	*Translation selector* Enter the translation selector FEAT.
	ACR	Y or N	*Account code entry* Enter Y (yes) if an account code entry is required for all calls to the special feature access code. Otherwise, enter N (no). Enter N when the feature is equal to SCPL or SCPS (see field FEATURE).

Enhanced CSMI (continued)

Datafilling table IBNXLA

Field	Subfield	Entry	Explanation and action
	SMDR	Y or N	*Station message detail recording* Enter Y if all calls from a customer group station or attendant console to any station in the block of station numbers are recorded. Enter N if no recording is 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 call this field has no effect and no SMDR record is produced. For dump and restore purposes an N must be datafilled after the SMDR field if field TRSEL is datafilled NET, ROUTE, TTTR, AMBI, EXTN, CUTTD, or FEAT. The Station Message Detail Recording fields (SMDR and SMDRB [TRKSEL= NET]) can only be set to Y if the switching unit has the option SMDR_OFFICE set to Y in table OFCOPT. SMDR bills each leg of the call. The option must be turned on in IBN translations to generate SMDR billing. Turning on the option for one leg of the call, does not carry over to another leg of the call. For example, when using virtual facility groups (VFG) for routing, SMDR must be turned on for the leg of the call that requires billing and must be routed through IBN translations. Neither SMDR nor SMDRB can be turned on for calls originating from plain ordinary telephone service (POTS) VFGs.
	FEATURE	CSMI	*Feature* IEnter CSMI in this field.

Datafill example for table IBNXLA

The following example shows sample datafill for table IBNXLA.

Enhanced CSMI (continued)

MAP display example for table IBNXLA

```
KEY             RESULT
_____________________________________________________________
RESXLA 95       FEAT N Y N CSMI
```

Datafilling table CLLI

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

Datafilling table CLLI

Field	Subfield	Entry	Explanation and action
CLLI		alphanumeric (vector of up to 16 characters)	*Common language location identifier* Enter a CLLI code to uniquely identify the far end of each announcement, tone, or trunk group.
ADNUM		numeric(0 to 8191)	*Administrative trunk group number* Enter a number in the range from 0 to one less than the current size of table CLLI datafilled in field SIZE of table DATASIZE.
TRKGRSIZ		numeric(0 to 2047)	*Trunk group size* Enter the maximum quantity of trunk members that are expected to be assigned in the trunk group. This number is used to allocate storage, consequently it can be greater than the number of initial working trunks.
ADMININF		alphanumeric (vector of up to 32 characters)	*Administrative information* Enter operating company administration information. The information in this field is not used by the switch.

Datafill example for table CLLI

The following example shows sample datafill for table CLLI.

MAP display example for table CLLI

```
CLLI              ADNUM        TRKGRSIZ   ADMININF
-------------------------------------------------
CSMIANN           1030           2        CSMI_ACT
```

Datafilling table ANNS

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

Datafilling table ANNS

Field	Subfield	Entry	Explanation and action
ANTYPE		CSMI	*Announcement type* Enter the announcement type as follows: CSMI to specify Call Screening, Monitoring and Intercept.

Datafill example for table ANNS

The following example shows sample datafill for table ANNS.

MAP display example for table ANNS

```
CLLI          ANTYPE    TRAFSNO MAXCONN CYTIME MAXCYC
-----------------------------------------------------------
CSMIANN         CSMI        0      15      4      1
```

Enhanced CSMI (continued)

Datafilling table DRAMS

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

Datafilling table DRAMS

Field	Subfield	Entry	Explanation and action
DRAMCARD		see subfields	*Digital recorded announcement machine key* This field consists of subfields DRAM and CARD.
	DRAM	0 to 63	*Digital recorded announcement machine* Enter the number that is assigned to DRAM.
	CARD	1 to 8	*Card* Enter the number that is assigned to the card.
TMTYPE		DTM	*Trunk module type* Enter DRAM trunk module type, DTM.
TMNO		0 to 2047	*Trunk module number* Enter the trunk module number the trunk card is assigned to.
TMCKT		0 to 29	*Trunk module circuit* Enter the trunk module circuit number the trunk card is assigned to. Any entry outside the range of indicated values for this field is invalid.
CARDCODE		1X80AA	*Card codes* Enter 1X80AA for the EDRAM. Any entry outside the range of indicated values for this field is invalid.
CARDINFO		see subfields	*Card information* This field consists of subfields CARDTYPE and BLKLIST.

Datafilling table DRAMS

Field	Subfield	Entry	Explanation and action
	CARDTYPE	RAM orPROM	*Card type* Enter RAM for the recordable memory card or PROM for the prerecorded message card. Any entry outside the range of indicated values for this field is invalid.
	BLKLIST	vector of 2 characters (0 to 7) or vector of 16 characters (0 to 31)	*Block list* Enter the number of the speech block or blocks that are assigned on the card. Single density cards (for example, 1X76AA) have one speech block, double density cards (for example, 1X76BA) have two speech blocks. If entering the speech block numbers for double density cards, the numbers must be contiguous and begin with an even numbered speech block. Block numbers cannot be repeated in the same DRAM.

Datafill example for table DRAMS

The following example shows sample datafill for table DRAMS.

MAP display example for table DRAMS

```
DRAMCARD   TMTYPE   TMNO   TMCKT   CARDCODE   CARDINFO
_____________________________________________________
4 0          DTM     0       0       1X80AA     RAM  3
4 1          DTM     0       2       1X80AA     PROM 0
4 2          DTM     0       3       1X80AA     PROM 1
4 3          DTM     0       4       1X80AA     PROM 2
4 4          DTM     0       5       1X80AA     RAM  1
4 5          DTM     0       6       1X80AA     RAM  2
```

Datafilling table ANNMEMS

The following table shows the datafill specific to Enhanced CSMI for table ANNMEMS. Only those fields that apply directly to Enhanced CSMI are

Enhanced CSMI (continued)

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

Datafilling table ANNMEMS

Field	Subfield	Entry	Explanation and action
ANNMEM		see subfields	*Announcement member key* This field consists of subfields ANN and MEMBER.
	ANN	alphanumeric or blank	*Announcement* If the trunk circuit is the first in the trunk list for the announcement member, enter the code that represents the announcement group in table CLLI. If the trunk circuit is other than the first in the trunk list, leave this field blank.
	MEMBER	0 to 255or blank	*Member* If the trunk circuit is the first in the trunk list for the announcement member, enter the number assigned to the member. If the trunk circuit is other than the first, leave this field blank. If digital, each announcement member can be assigned up to eight trunk circuits. If analog, each announcement can be assigned up to two trunk circuits.
HDWTYPE		AUDICHRON DRAMor blank	*Hardware type* Enter AUDICHRON if the first entry for the member and hardware type is analog. Enter DRAM if the recorded announcement member is digital. If other than analog or digital, leave this field blank.

Enhanced CSMI (continued)

Datafilling table ANNMEMS

Field	Subfield	Entry	Explanation and action
CARD		2X72AA 2X72AB 2X72AC 2X88AA DRA or blank	*Card code* Enter the card code if the trunk member is analog. Enter DRA if the trunk member is digital. If other than the analog or digital, leave this field blank. If a switching unit has an analog recorded announcement machine, a trunk circuit consists of one of the trunk circuits on a trunk card with product engineering code NT2X72AA, AB, or AC, or NT2X88AA that is mounted on a TM8 trunk module type.
MEMINFO		see subfield	*Memory information* This field consists of subfield TRCKLIST.
	TRCKLIST	see subfields	*Track list* This field consists of subfields TRACK, PMTYPE, TMNO, and TMCKT.
	TRACK	0 to 31	*Track number* Enter the track number assigned to the trunk circuit. If the announcement is multilingual, it is recommended that each language be assigned to a different track (trunk circuit). The order in which the tracks are heard is determined by the sequence in which the tracks are listed in the announcement member trunk list. That is, if a member has three tracks listed in the following sequence 1, 5, and 3, then track 1 is heard first, followed by track 5 and then track 3. If announcements are bilingual, the track assigned to the priority language is the first track assigned in the member trunk list.

Enhanced CSMI (continued)

Datafilling table ANNMEMS

Field	Subfield	Entry	Explanation and action
	PMTYPE	ATM, CTM, DTM, MTM, MTMA, OAU, PTM, RMM, RSM, STM, TAN, TMA, TM2, TM4, TM8, T8A	*Peripheral module type*Enter the type of peripheral module to which the trunk circuit is assigned. If the announcement member is digital, enter maintenance trunk module (MTM) or service trunk module (STM). If the announcement member is analog, enter TM8. If the announcement member is connected to an EDRAM (1X80), enter DTM. In the case of Mechanized Calling Card service (MCCS), the announcement channels are not dedicated to any particular announcement as in the case of standard recorded announcements. Instead, MCCS exists as a group in table ANNS with members in table ANNMEMS associated with up to 29 MTM dedicated channels (channel 0 is reserved for diagnostic purposes) on a particular digital recorded announcement machine (DRAM). Normally, a whole DRAM is dedicated as an MCCS machine. Any of the MCCS announcements can be played back through any one channel since the Traffic Operator Position System (TOPS) needs immediate connection to the MCCS announcements where a caller gets an audible ring while waiting to hear an announcement. ***Note:*** PTMs are manufacturer discontinued, so MTM must be datafilled in place of PTM.

Enhanced CSMI (continued)

Datafilling table ANNMEMS

Field	Subfield	Entry	Explanation and action
	TMNO	0 to 2047	*Trunk module number* Enter the trunk module number assigned to the trunk module to which the trunk circuit is assigned. If trunk module type is MTM, the range is 0 to 255. If the trunk type is TM8, STM or DTM, the range is 0 to 2047. If the switching unit has a DRAM, a trunk circuit consists of an assignment to one of the trunk circuits (channels) on the maintenance trunk module (MTM) or Service Trunk Module (STM) on which the DRAM is located. A trunk circuit cannot be assigned to trunk module circuit number 0 (zero) because this circuit is reserved for the DRAM controller.

Enhanced CSMI (continued)

Datafilling table ANNMEMS

Field	Subfield	Entry	Explanation and action
	TMCKT	0 to 29	*Trunk module circuit number* Enter the trunk module circuit number to which the trunk circuit is assigned. For MTMs, the DRAM can be configured to function as an 8, 16, 24 or 30 trunk circuit interface depending on the dip switch settings on the controller card. There are four dip switches on the controller card, which enable the number of circuits shown below: Switch setting — Trunk circuits enabled None — 1 to 73 — 8 to 152 — 16 to 234 — 24 to 29 ***Note:*** Circuits 1 to 7 are permanently enabled and have no switch setting. For STMs, only 15 circuits can be enabled. The DRAM controller switch setting and associated circuit number assignments for STMs are shown below: Switch setting — Trunk circuits enabled None — 1 to 73 — 8 to 15 One trunk circuit is required for each announcement track assigned to the announcement member. All trunk circuits assigned to an announcement member must be located on the same trunk module. For DTM, all channels can be used and there are no switches that need setting.

Datafill example for table ANNMEMS

The following example shows sample datafill for table ANNMEMS.

MAP display example for table ANNMEMS

```
ANNMEM              HDWTYPE      CARD       MEMINFO
-------------------------------------------------------------
CSMIANN 1           DRAM         DRA        (0 DTM 4 2)
           (1 MTM 4 3) (2 MTM 4 4) (3MTM 4 5) (4MTM 4 6)$
```

Datafilling table DRMUSERS

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

Note: Two announcements are required for CSMI, one to confirm the activation of the feature (for example, CSMIANNS 1), and one to confirm the deactivation of the feature (for example, CSMIANNS 2).

Datafilling table DRMUSERS

Field	Subfield	Entry	Explanation and action
USERANN		see subfields	*User announcement* This field consists of subfields CLLI and ANNUM.
	CLLI	alphanumeric (up to 16 characters)	*Common language location identifier* Enter the name associated with the announcement group for MCCS as given in table ANNS.
	ANNUM	1 to 63	*Announcement number* Enter the number assigned to the announcement.

Enhanced CSMI (continued)

Datafilling table DRMUSERS

Field	Subfield	Entry	Explanation and action
PHSLIST		see subfield	*Phrases list* This field consists of subfield PHRASES.
	PHRASES	alphanumeric	*Phrases* Enter vector of up to 32 phrases associated with an announcement. If less than 32 phrases are required, end the list with a $.

Datafill example

The following example shows sample datafill for table DRMUSERS.

MAP display example for table DRMUSERS

```
USERANN              PHSLIST
-------------------------------------------------------
CSMIANN 1 (LANGUAGE1) CSMIENG1 (LANGUAGE2) CSMIFRE1 $
CSMIANN 2 (LANGUAGE1) CSMIENG2 (LANGUAGE2) CSMIFRE2 $
```

Datafilling table CUSTSTN

The following table shows the datafill specific to Enhanced CSMI for table CUSTSTN. Only those fields that apply directly to Enhanced CSMI are

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

Datafilling table CUSTSTN

Field	Subfield	Entry	Explanation and action
CSMISTATE		A or I	*CSMI state* This field contains the state of the CSMI line option, which indicates whether the feature is active or inactive. A filed value of A represents the active state, while a field value of I represents the inactive state.
CONNEC3W		Y or N	*Connection three-way* This field is used to determine the mode of interception to take place. When set to y, the interception is done by establishing a three-way call. When set to N, the interception is done by establishing a regular two-way connection. The default value is N.
SCRTIMER		Y or N	*Screening Timer* When this field set to Y, the duration of the screening timer is determined by filed SCRDUR. When set to N, the duration of the screening timer is determined by the office parameter CSMI_SCREENING_TIMER. The default value is N.
	SCRDUR	0 to 120	*Screening duration* This field datafills the screening timer duration. Its value is prompted for, only if the SCRACTIVE field is set to Y. The default value is 20 with a range of 0 to 120. A value of 0 indicates that the screening period is as long as the forwarded call.

Datafill example for table CUSTSTN

The following example shows sample datafill for table CUSTSTN.

Enhanced CSMI (continued)

MAP display example for table CUSTSTN

```
CUSTNAME  OPTNAME  OPTION
-------------------------------------------------------
COMDEMOS   CSMI     CSMI  A  Y  Y  20
```

Datafilling table AMAOPTS

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

Datafilling table AMAOPTS

Field	Subfield	Entry	Explanation and action
OPTION		CSMI	*Option* This field indicates that CSMI is added to the list of options that generate billing records.
SCHEDULE		ON, OFF	*Schedule* This field specifies whether to enable or disable billing for CSMI. Set field SCHEDULE to ON to enable billing for CSMI or to set field SCHEDULE to OFF to disable billing for CSMI.

Datafill example for table AMAOPTS

The following example shows sample datafill for table AMAOPTS.

```
OPTION  SCHEDULE
-------------------------------------------------------
CSMI      ON
```

Datafilling table KSETFEAT

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

Datafilling table KSETFEAT

Field	Subfield	Entry	Explanation and action
FEATURE		CSMI	*Feature* This field specifies the feature assigned to the line.
	CSMISTATE	A, I	*CSMI state* This field specifies the state of the CSMI line option, which indicates whether the feature is active or inactive.

Datafill example for table KSETFEAT

The following example shows sample datafill for table KSETFEAT.

MAP display example for table KSETFEAT

```
FEATKEY            FEATURE                          KVAR
-----------------------------------------------------------
HOST 00 0 02 04   CSMI   CSMI   A   Y   Y   Y   30   (DENYCFBL) $
```

Datafilling table SVRCKT

The following table shows the datafill specific to the Stub Message Deletion option. Only those fields that apply directly to this feature are shown. For a

Enhanced CSMI (continued)

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

Note: This table must contain datafill for each DTMF sender circuit

Datafilling table SVRCKT

Field	Subfield	Entry	Explanation and action
SVCTKEY		see subfields	SCVTKEY = service circuit key. This field contains entries to subfields CLLI and NUM.
	CLLI	SVDTMF, SVMFC, SVOBSV	Common language location identifier. SVDTMF = digitone outpulsing circuit, SVMFC = R2 inter-register signaling circuit, SVOBSV = service observing circuit.
	NUM	0 to 1023	Service circuit number. Enter the number assigned to the circuit.
TMTYPE		MTM	MTM = Trunk module type
TMNO		0 to 255	TMNO = trunk module number. This field specifies the number of a trunk module. The Digitone Outpulsing Circuit, R2 inter-register Signaling Circuit, or Service Observing Circuit is on this trunk module.
TMCKTNO		0 to 29	TMCKTNO = trunk module circuit number. This field specifies the trunk module circuit number of the digitone outpulsing circuit, R2 inter-register signaling circuit, or service observing circuit.
CARDCODE		3X68AB, 3X68AC, 5X29AB	This field specifies the engineering code for the tone card.

Datafill example for table SVRCKT

The following example shows sample datafill for table SVRCKT.

MAP display example for table SVRCKT

```
SVCTKEY          TMTTYPE      TMNO     TMCKTNO      CARDCODE
-------------------------------------------------------------
SVDTMF 0         MTM          4        21           3X68AC
```

Translation verification tools

Enhanced CSMI does not use translation verification tools.

SERVORD

Line options CSMI and DENYCSMI (RES, IBN lines only), are added by this feature and can be added (ADO), changed (CHF), or deleted (DEO) through the Service Order System (SERVORD). The SERVORD prompt CSMISTATE is added.

The line option forms of CSMI (SCSMI, CSMIPPU, MDC CSMI line option) and their attributes as well as the DENYCSMI line option are assigned through SERVORD for each line.

The DENYCSMI option is used to prevent an end user from using CSMI on a given set of call forwarding variations.

SERVORD limitations and restrictions

The following SERVORD limitations and restrictions apply to Enhanced CSMI:

- The line class code (LCC) must be 1FR, 1MR, or RES.
- If CSMI is present on a line, any MDN assigned to that line must be the primary member.

Enhanced CSMI (continued)

SERVORD prompts

The following table shows the SERVORD prompts used to assign CSMI to, or delete from, a RES, 1FR, or 1MR line.

SERVORD prompts for Enhanced CSMI

Prompt	Valid input	Explanation
DN_OR_LEN	DN (up to 15 digits) or LEN	Specifies the directory number or line equipment number
OPTION	CDC	Indicates the name of the option
CSMISTATE	A or I	A value of “A" means that CSMI is active on this line. A value of “I" means that CSMI is inactive on this line. CSMI defaults to A (active).
DENYOPT	DENYALL, DENYCFD, DENYCFBL, DENYCFW	Used to prevent an end user from using CSMI on a given set of call forwarding variations. At least one and up to four valid inputs can be entered successively at the DENYOPT prompt.

SERVORD example for adding Enhanced CSMI

The following SERVORD example shows how Enhanced CSMI is added to a RES line using the ADO command.

SERVORD example for adding Enhanced CSMI in prompt mode

```
>SERVORD
SO:
> ADO
SONUMBER:  NOW  99  1  1PM
>
DN_OR_LEN:
> 6211518
OPTION:
> CSMI
CSMISTATE:
> A
OPTION:
> $
```

SERVORD example for adding Enhanced CSMI in no-prompt mode

```
> ADO $ 6211518 CSMI A $
```

SERVORD example for adding DENYSCMI

The following SERVORD example shows how to deny CSMI for a specific line if the incoming call is forwarded using CFDA or CFBL.

SERVORD example for DENYCSMI in prompt mode

```
> SERVORD
SO:
> ADO
SONUMBER: NOW 99  1  1  PM
>
DN_OR_LEN:
> 6211518
OPTION:
> DENYCSMI
DENYOPT:
> DENYCFDA
DENYOPT:
> DENYCFBL
DENYOPT:
> $
OPTION:
> $
```

SERVORD example for DENYSCMI in no-prompt mode

```
> ADO $ 6211518 DENYCSMI DENYCFDA DENYCFBL $ $
```

History

SN07 (DMS)

Description of interaction of CSMI with CHD and with CWT amended according to Q00683891.

History section added.

Extension Bridging (EXB)

Ordering codes

Functional group ordering code: RES00002

Functionality ordering code: not applicable

Release applicability

BCS25 and up

Prerequisites

To operate, Extension Bridging (EXB) has the following prerequisites:

- BAS Generic, BAS00003
- MDC Standard, MDC00003
- MDC Minimum, MDC00001
- RES Service Enablers, RES00006
- MDC MBS Standard, MDC00003

Description

The Extension Bridging (EXB) feature associates a single directory number (DN) with a group of subscribers on different lines and enables these group members to behave as if they were extensions of a single line.

EXB is a variant of the Multiple Appearance Directory Number (MADN) feature. MADN is a Meridian Digital Centrex (MDC) feature that associates a single DN with a group of subscriber lines.

The subscriber lines associated with the single DN are referred to as a MADN group, and each subscriber is a MADN group member. The MADN variants are as follows:

- Extension Bridging (EXB)
- multiple call arrangement
- single call arrangement

Note: Throughout the remainder of this chapter the expression *MADN group* refers to a MADN EXB group. Similarly, *MADN member* and *MADN call* refer to a MADN EXB member and a MADN EXB call, respectively.

Operation

The EXB feature uses conference circuits to enable one idle member within a MADN group to join a call already in progress between a MADN member and

an external party from outside the MADN group. All MADN calls are initially made up of one MADN member and one external party. Any MADN group member can originate a call. Any MADN member can answer an incoming call to the MADN group. EXB allows a maximum of two MADN members to be active on a call with an external party. Any idle member within the MADN group is eligible to enter a call in progress.

The Privacy (PRV) feature can be invoked by an active MADN member to prevent another MADN member from bridging into a call. Normally the PRV feature is not used, and an active call is available to all members of the MADN group.

Compatible features

The following features are compatible with MADN EXB:

- Denied Origination (DOR)
- Denied Termination (DTM)
- Free Number Termination (FNT)
- Requested Suspension (RSUS)
- Suspended Line (SUS)
- Automatic Line (AUL)
- Denied Incoming (DIN)
- Calling Line Identification (CLI)
- Calling Line Identification with Flash (CLF)
- Cutoff on Disconnect (COD)
- Special Billing (SPB)

Translations table flow

The EXB translations process is shown in the flowchart in the following figure. The flowchart and data show the translations for a call made with EXB.

Table IBNLINES lists the features assigned to a line equipment number (LEN).

The PRV translations process is shown in the following in the following figure. The flowchart and data show the translations when a subscriber implements PRV.

Table IBNLINES lists the features assigned to a LEN.

Extension Bridging (EXB) (continued)

Table LINEATTR gives information relating to the calling party.

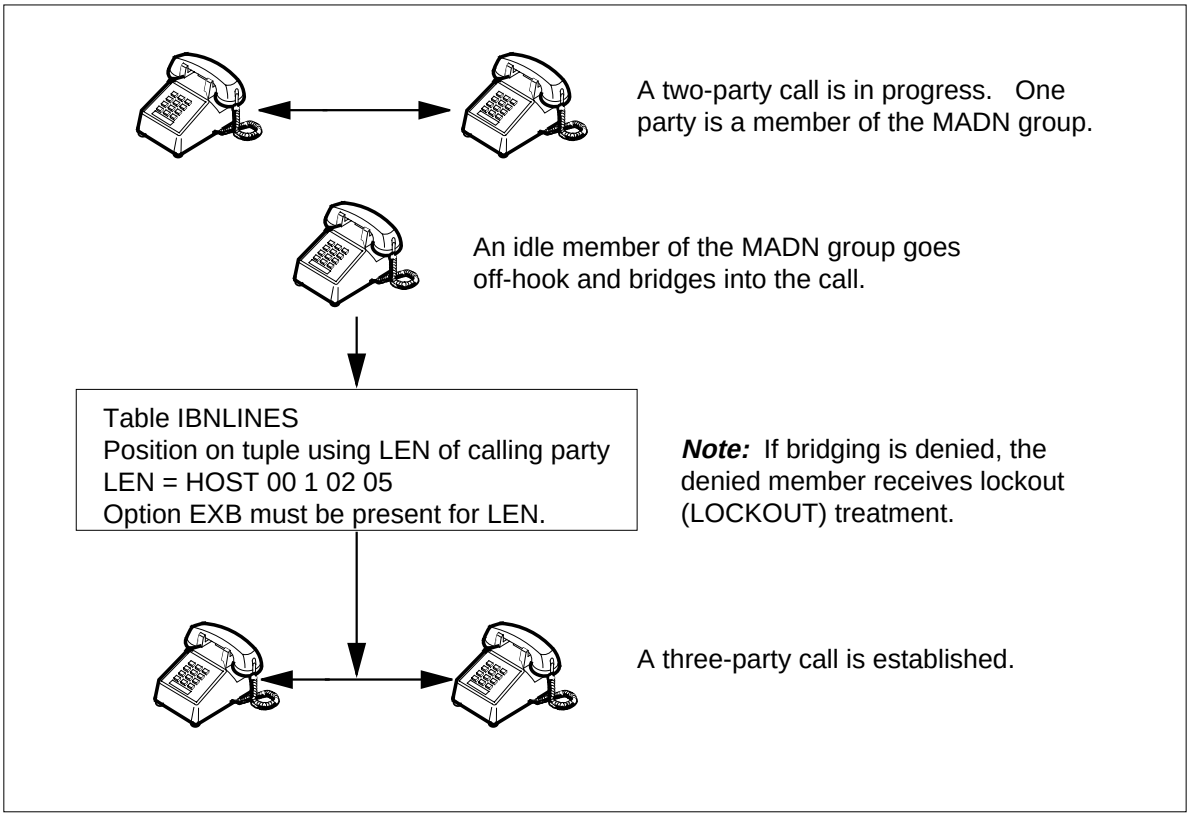
Table NCOS consists of NCOS numbers that are assigned to RES stations. The NCOS number can be shared by one or many RES stations.

Table CUSTHEAD contains blocks of data relating to RES stations and is used when further pretranslations are required.

Table IBNXLA provides the name of the feature associated with the dialed activation code. The CFRA activation code is not required unless more than one DISA option is assigned to the DISA DN.

The Extension Bridging (EXB) translation process is shown in the flowchart that follows.

Table flow for Extension Bridging (EXB)



Extension Bridging (EXB) (continued)

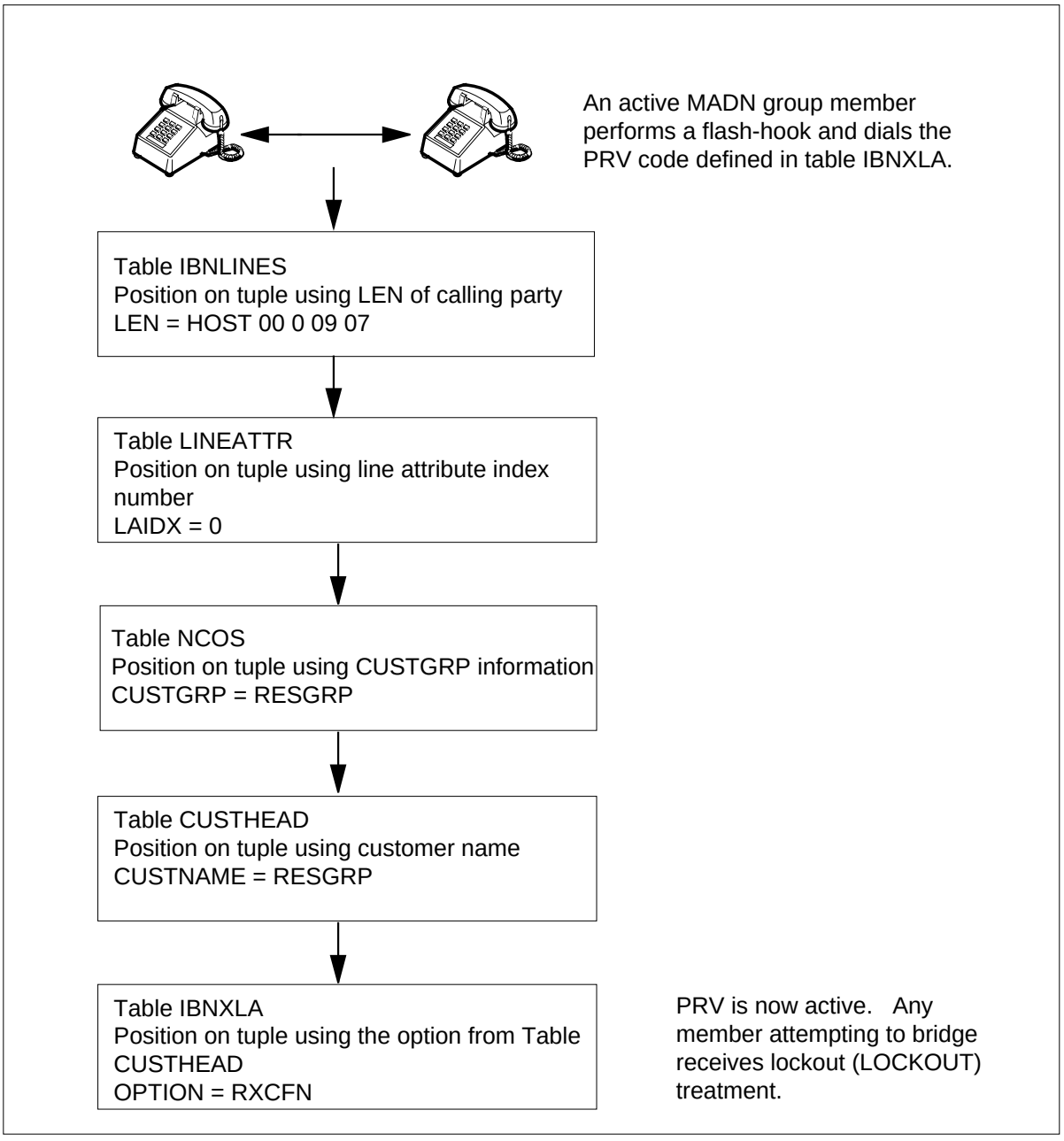
The following table lists the datafill content used in the flowchart. The LEN of MADN group member is HOST 00 1 20 05.

Datafill example for Extension Bridging (EXB)

Datafill table	Example data
IBNLINES	HOST 00 1 02 05 0 DP MDN RES 7273800 100 EXB N N (DOR) $

Extension Bridging (EXB) (continued)

Table flow for Privacy (PRV)



The following table lists the datafill content used in the preceding figure. The LEN of MADAN group member is HOST 00 09 07.

Datafill example for PRV

Datafill table	Example data
IBNLINES	HOST 00 0 09 07 0 DP STN RES 6211233 0 $
LINEATTR	0 1FR NONE NT FR01 0 613 P621 L613 TSPS 10 NIL NILSFC LATA1 0 NIL NIL 00 Y RESGRP 0 2 $
NCOS	RESGRP 2 0 0 0 RNCOS2 0 (XLAS RXCMN2 NXLA RES) $
CUSTHEAD	RESGRP NXLA RESXLA RXCFN 0 RES
IBNXLA	RXCFN 22 FEAT N N N PRV

Limitations and restrictions

The following limitations and restrictions apply to Extension Bridging (EXB):

- Only one active call is permitted within a MADN group at one time.
- Only one MADN group member can be bridged into a call already in progress.
- A maximum of two MADN members can be active on a call with an external party.
- After the external party has left the call, no additional members can be bridged in.
- Whenever bridging is denied, the denied member receives lockout treatment.
- Subscriber Services lines do not support MADN MCA or SCA.
- The Call Forwarding (CFW) feature can only be assigned to the primary member of the MADN group.
- All members of a MADN group should have the same feature set assigned to them (except CFW).
- All members of a MADN group should be taken out of service before any changes are made to a member or to any related data.
- Only one member of a MADN group can be designated the primary member.
- If a primary member is not specified, a member is chosen as an acting primary member for the purpose of having a line equipment number to terminate incoming calls.

Extension Bridging (EXB) (continued)

- The maximum number of members in a MADN group is 32.
- Call Request is only assignable to a specified primary member.
- Bridging is not allowed during a call when
  - conferencing resources are not available
  - the call is not in a stable talking state
  - either the external party or the active party flashes and is in a dialing state during a two-party call
- The following features are incompatible with the MADN EXB feature:
  - circuit switched digital data systems
  - hunt groups (all types)
  - Do Not Disturb (DND)
  - Group Intercom (GIC)
  - Plug Up (PLP)
  - Uniform Call Distribution (UCD)
- A RES line supports FLASH only if the line is assigned a feature that uses FLASH.

Interactions

The following paragraphs describe the interactions between Extension Bridging (EXB) and other functionalities.

Call Forwarding

Call Forwarding (CFW) interacts with MADN EXB as follows:

- There must be a primary member in a MADN group, and only the primary member can be assigned CFX options.
- Any member in the MADN group can program, activate, and deactivate the CFX options that have been assigned to the primary member.

Call Pickup

Call Pickup (CPU) interacts with MADN EXB as follows:

- CPU can be assigned to any member in a MADN group.
- The MADN group members can belong to the same CPU group, or they can be independent of a group.

Extension Bridging (EXB) (continued)

Call Waiting

Call Waiting (CW)T interacts with MADN EXB as follows:

- CWT can be assigned to any member in a MADN group.
- If a group member with CWT is involved in an active call, and an incoming call arrives for the MADN group, the incoming call receives call waiting until the MADN group member with CWT goes on-hook and can be re-rung.

Executive Busy Override

EBO cannot be used to barge in on a MADN EXB call because the MADN group member must be known for EBO to function, and this is not usually possible with MADN EXB.

Preset Conference

Preset Conference interacts with MADN EXB as follows.

- If a MADN group is included in the call-out list of a preset conference, only the primary member of a MADN group receives these calls.
- Bridging is not allowed if any of the following MDC features is active during a call:
  - — Directed Call Pickup - Barge-in
  - — Executive Busy Override
  - — Preset Conference
  - — Station Controller Conference
  - — Meet-Me Conference
  - — Malicious Call Hold

Ring Again

Ring Again (RAG) interacts with MADN EXB as follows.

- RAG can be assigned to any member in a MADN group.
- Any member can invoke RAG, and only that member receives the RAG recall for that call.
- Each MADN group member is allowed one RAG request at any one time.

Extension Bridging (EXB) (continued)

Speed Calling

Speed Calling interacts with MADN EXB as follows.

- All members of a MADN group that have the Speed Calling Long List (SC2 or SC3) features must share a common Speed Calling list of stored DNs that consists of 30 DNs for SC2 or 50 DNs for SC3.
- All members of a MADN group that have the Speed Calling Short List (SC1) feature must share a common Speed Calling list of ten stored DNs.
- An existing line with the SC1 list option cannot be added to a MADN group when that group already has a member with option SC1.
- An existing line with the SC2 or SC3 list option cannot be added to a MADN group when that group already has a member with the SC2 or SC3 list option.
- A member of a MADN group that has the SC1 list option cannot be removed from a MADN group when that group has another member with the SC1 list option.
- A member of a MADN group that has the SC2 or SC3 list option cannot be removed from a MADN group when that group has another member with the SC2 or SC3 list option.
- When adding MADN EXB and Speed Calling (SC1, SC2, or SC3) to a line simultaneously using the NEW or ADO command, option MADN EXB must be added first in the list.

Subscriber Line Usage

Subscriber Line Usage (SLU) interacts with MADN EXB as follows.

- SLU must be assigned to individual MADN group members using office equipment numbers.
- SLU cannot be assigned to a MADN group.

Three-Way Calling

Three-Way Calling (3WC) interacts with MADN EXB as follows.

- 3WC can be assigned to any member in a MADN group.
- 3WC cannot be used to set up a second conference once the EXB feature has set up a three-way call (only one active conference is allowed for each DN).

Trunk Answer From Any Station

Trunk Answer From Any Station (TAFAS) interacts with MADN EXB as follows.

- A MADN group can act as a TAFAS device that can be answered directly or picked up by a TAFAS access code.
- A group member can answer a TAFAS call using an access code.

Activation/deactivation by the end user

The following procedure shows how to activate the EXB feature when a call between an external party and an active MADN group member is in the talking state.

Activation/deactivation of Extension Bridging (EXB) by the end user

At your telephone:

1. An idle member of the MADN group goes off-hook.
2. If the idle member can be bridged into the call, the active parties of the call recieve a warning tone, and a three-party conference call is established. The only confirmation that bridging member recieves is a voice connection.
3. If the idle member cannot be bridged into the call, this member receives an audible treatment and is locked out.
4. If the bridged MADN group member goes on-hook, the call reverts to the original two-party call.
5. If either of the two original parties goes on-hook while the three-party conference is in effect, the two remaining parties carry on a regular two-party call.

An idle member who attempts to bridge into a call receives audible treatment and is locked out under any of the following conditions:

- no conferencing resources are available
- the call is private
- the call is not in a stable talking state (The active member is still in a dialing state.)
- an EXB conference is already established

Extension Bridging (EXB) (continued)

Activation/deactivation of the Privacy feature

The following procedure shows how to activate the PRV feature when an active call is established in the stable talking state between an external party and a MADN group member.

Note: The Privacy feature can be invoked by an active MADN group member after bridging has occurred.

Activation/deactivation of PRV:

1. An active MADN group member flashes and dials the PRV activation code.

   Response:

   This MADN group member becomes the PRV controller and receives a confirmation tone. (Only the PRV controller can cancel the PRV feature.)

   The PRV feature is in effect, and no bridging by an idle MADN group member can occur.

2. To deactivate the PRV feature, the PRV controller flashes and dials the PRV deactivation code.

   Response:

   The PRV controller receives confirmation tone.

   The PRV feature is automatically canceled if the PRV controller goes on-hook during a call.

Billing

Extension Bridging (EXB) does not affect billing.

Station Message Detail Recording

Extension Bridging (EXB) does not affect Station Message Detail Recording.

Datafilling office parameters

Extension Bridging (EXB) does not affect office parameters.

Extension Bridging (EXB) (continued)

Datafill sequence

The following table lists the tables that require datafill to implement Extension Bridging (EXB). The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Extension Bridging (EXB)

Table	Purpose of table
IBNLINES	IBN Line Assignment Table. Table IBNLINES contains the line assignments for Subscriber Services station numbers. ***Note:*** This table is datafilled through SERVORD; therefore, no datafill procedure or example is provided.
IBNXLA	IBN Translations Table. Table IBNXLA contains the data for the digit translations of calls from an MDC station, attendant console, incoming trunk group, or incoming side of a two-way MDC trunk group. ***Note:*** Table IBNXLA is an optional table. It is only used if PRV is available.

Datafilling table IBNXLA

Table IBNXLA (IBN Translations) contains the data for the digit translations of calls from an MDC station, attendant console, incoming trunk group, or incoming side of a two-way MDC trunk group.

If the PRV feature is to be made available to members of a MADN group, Table IBNXLA must be datafilled in order to specify an access code for the PRV feature.

The following table shows the datafill specific to Extension Bridging (EXB) for table IBNLINES. Only those fields that apply directly to Extension

Extension Bridging (EXB) (continued)

Bridging (EXB) are shown. 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		see subfields	Key. This field consists of the subfields XLANAME and DGLIDX. These subfields are described below and must be entered in succession.
	XLANAME	RXCFN	Translator name. This subfield specifies the 1- to 8-character name assigned to the translator. Enter RXCFN.
	DGLIDX	alphanumeric	Digilator index. This subfield specifies the digit or digits assigned to the index. Enter the access code assigned to the digilator index.
RESULT		see subfields	Result. This field consists of the subfields TRSEL, ACR, SMDR, and FEATURE. These subfields are described below.
	TRSEL	FEAT	Translation selector. This subfield specifies the translation selector. Enter FEAT.
	ACR	N	Account code entry. This subfield specifies whether or not an account code entry is required for all calls to the special feature access code. Enter N.
	SMDR	N	Station message detail recording. This subfield specifies whether or not SMDR is required. Enter N.
	FEATURE	PRV	Feature. This subfield specifies the feature assigned to the function code. Enter PRV.

Datafill example for table IBNXLA

The following example shows sample datafill for table IBNXLA.

Extension Bridging (EXB) (continued)

MAP display example for table IBNXLA

```
      KEY                    RESULT
_____________________________________________________

RXCFN  22              FEAT  N  N  N  PRV
```

Translation verification tools

The following example shows the output from TRAVER (translations verification) command when it is used to verify Extension Bridging (EXB).

TRAVER command output example for Extension Bridging (EXB)

```
TRAVER  L  6211233  'B22' B
TABLE IBNLINES
   HOST 00 0 09 07 0 DP STN RES 6211233 0 EXB N N  $
TABLE LINEATTR
   0 1FR NONE NT FR01 0 613 P621 L613 TSPS 10 NIL NILSFC
LATA1 0 NIL NIL 00 Y RESGRP 0 2
   LCABILL OFF – BILLING DONE ON BASIS OF CALLTYPE
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
TUPLE NOT FOUND
TABLE NCOS
RESGRP 2 0 0 RNCOS2 ( XLAS RXCMN2 NXLA RES ) $
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT,
AND DIGCOL
RESGRP NXLA RESXLA RXCFN 0 RES
TABLE DIGCOL
   RES SPECIFIED: RES DIGIT COLLECTION
NCOS FEAT XLA NAME IS NIL.  GO TO NEXT XLA NAME.
TABLE IBNXLA: XLANAME RXCFN
   RXCFN 22 FEAT N N N PRV

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

Extension Bridging (EXB) (continued)

SERVORD

SERVORD can be used to assign the EXB feature to individual Subscriber Services lines. When SERVORD is used, table IBNLINES is automatically datafilled; however, table IBNXLA must be datafilled if the PRV feature is added with the EXB feature.

Note: The option code for Multiple Appearance Directory Number is MDN, and the abbreviation is MADN.

SERVORD limitations and restrictions

Extension Bridging (EXB) has no SERVORD limitations and restrictions.

SERVORD prompts

The following table shows the SERVORD prompts used to assign Extension Bridging (EXB) to a line.

SERVORD prompts for Extension Bridging (EXB)

Prompt	Valid input	Explanation
OPTION	MDN CFW C	Specifies the service to be established, modified, or deleted
MDNTYPE	EXB	Specifies the MADN type
PRIMARY	Y or N	Specifies whether this is the primary member of a MADN group
DIR_NUMBER	7 digits, entered without spaces or hyphens	Specifies the DN to be assigned to a MADN line

SERVORD example for adding Extension Bridging (EXB)

The following SERVORD example shows how Extension Bridging (EXB) is added to an existing Subscriber Services line using the ADO command.

Extension Bridging (EXB) (continued)

SERVORD example for Extension Bridging (EXB) in prompt mode using ADO Input and response

```
>SERVORD
SO:
> ADO
SONUMBER:  NOW 89 09 12 AM
>
DN_OR_LEN:
> 6214444
OPTION:
> MDN
MDNTYPE:
> EXB
PRIMARY:
> Y
RINGING:
> Y
DIR_NUMBER:
> 6214444
OPTION:
> $
COMMAND AD ENTERED:
ADO NOW 89 09 12 AM 6214444 (MDN EXB Y Y 621444) $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
> Y
```

SERVORD example for Extension Bridging (EXB) in no-prompt mode using ADO Input and response

```
> ADO $ 6214444 MDN EXB Y Y 621444 $ Y
```

In the following example, a Subscriber Services RES line is put into service using the NEW command with

- the MADN EXB option
- the call forwarding universal option

  Note: The SERVORD prompt for Call Forwarding Universal (CFU) is CFW C.

- the speed calling long list (SC2) option

Extension Bridging (EXB) (end)

SERVORD example for Extension Bridging (EXB) in prompt mode using NEW Input and response

```
>SERVORD
SO:
> NEW
SONUMBER:  NOW 89 09 12 AM
>
DN:
> 6215555
LCC:
> 1FR
LATANAME:
> LATA1
LTG: 0
>
LEN_OR_LTID:
> 0 0 1 5
OPTION:
> MDN
MDNTYPE:
> EXB
PRIMARY:
> Y
OPTION:
> CFW C
SCRNCL:
> NSCR
NUMCALLS:
> 3
OPTION:
> SC2
OPTION:
> $
COMMAND AS ENTERED:
NEW NOW 89 09 12 AM 6215555 1FR LATA1 0 HOST 00 0 01 05
(MDN EXB Y Y) (CFW C NSCR 3) (SC2) $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
> Y
```

SERVORD example for Extension Bridging (EXB) in no-prompt mode using NEW Input and response

```
> NEW $ 6215555 1FR  LATA1 0 HOST 00 0 01 05 (MDN EXB Y Y )
(CFW C NCSR 3) (SC2) $ Y
```

Long Distance Alerting

Ordering codes

Functional group ordering code: RES00002

Functionality ordering code: RES00059

Release applicability

DMSCNA02 and up

Long Distance Alerting was introduced in NA02.

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

The Long Distance Alerting (LDA) functionality provides POTS and Residential Enhanced Services (RES) subscribers with an indication that they have an incoming long distance call. Subscribers are alerted by distinctive ringing if the line is idle or distinctive call waiting tones if the line is busy. If the called party does not respond to the LDA distinctive call waiting tones within a predefined time period, the call is routed to no terminal response treatment.

Operation

Validation of LDA distinctive tone/ringing applicability occurs at the terminating station of a two-party call. First, the incoming call must be recognized as a toll call, and second, the terminating line must have LDA assigned. Multifrequency (MF) signaling environments recognize toll calls differently than do Common Channel Signaling #7 (CCS7) environments.

Toll call recognition

A call is recognized as toll if it meets one of the following criteria:

- The NATURE OF ADDRESS INDICATOR field in the CCS7 message is set to UNIQUE INTERNATIONAL NUMBER or NON-UNIQUE INTERNATIONAL NUMBER.
- The calling party's numbering plan area (NPA) or NXX, or both, are not in table LCASCRCN (Local Calling Area Screening Control).
- The common language location identifier (CLLI) of the trunk group carrying the call is datafilled in table TOLLTRKS (Toll Trunks).

Long Distance Alerting (continued)

Note: The toll screening method used with LDA assumes that if the calling party is long distance from the called party's point of view, then the called party is also long distance from the calling party's point of view.

The following table shows how a call is determined to be toll or local according to the presence of its NXX or NPA, or both, in table LCASCRCN.

Toll call recognition in table LCASCRCN

NXX	NPA	Local or toll call
present	present	local
present	not present	toll
not present	present	toll
not present	not present	toll

Multifrequency signaling environments

In MF signaling environments, calls are recognized as long distance if the call is carried on a dedicated toll trunk, which is datafilled in table TOLLTRKS.

CCS7 signaling environments

In CCS7 environments, tables LCASCRCN and LCASCRCN.LCASCR (Local Calling Area Screening) are checked for the presence of the calling party's NPA and NXX (in the form of the CLID). If the NPA or the NXX, or both, are not present, LDA distinctive tones/ringing apply. If the NPA or the NXX, or both, are present, the calling party is not long distance from the called party's point-of-view, so LDA does not apply.

This method requires the CLID to be available at the terminating office. On interoffice calls, the CLID is made available to the terminating office by one or more of the following protocols:

- CCS7 ISDN User Part (ISUP) in the initial address message (IAM)
- CCS7 ISDN primary rate interface (PRI) in the calling party information element of the set-up message
- trunks (originating from SP-1 or #1 ESS offices) that support the Stored Program Control-Call Management Services (SPC-CMS) feature using CCS7 transaction capabilities application part (TCAP)

Long Distance Alerting (continued)

Terminating line eligibility for LDA

To receive LDA distinctive tones/ringing, a terminating line must meet the following requirements:

- Its end office must have LDA enabled office-wide (office parameter LDS_ENABLED set to Y).
- The corresponding tuple in table LINEATTR (Line Attributes) must have option LDSV assigned and activated.
- Option LDSO must be assigned to the line through the Service Order System (SERVORD).
- Option LDSA must be assigned to the line by end user activation (*49) or SERVORD.
- If the terminating line is already engaged in a two-way call, the line must not have the Cancel Call Waiting (CCW) feature activated.
- If the line is already engaged in a two-way call and the Call Forward Busy Line (CFBL) feature is active on the line, either the Call Forward Don't Answer (CFDA) feature must also be active on the line, or the Call Waiting (CWT) feature must be assigned to the line. CFDA is active on the line if the customer group option CFCW (Call Forward Call Waiting) is assigned to the line's customer group.

  Since POTS lines do not have any customer group options (like CFCW), CFBL always has precedence over CFDA. In this context, CFDA can be active only on RES lines.

Call waiting interactions

If the called party is a RES line, does not respond to the distinctive ringing tones, and does not have the option CFDA with the CFCW options assigned to its customer group, the caller is routed to no terminal responding (NTRS) treatment. The NTRS treatment indicates that the called party is not able to answer the incoming call. The amount of time between the first LDA call waiting tone to the NTRS treatment is 25 s (first call waiting tone + 10 s + second tone + 15 s + NTRS).

The following conditions prevent an incoming call from being call waited:

- Another call is already waiting on the called station.
- The called party is in the process of originating a call.
- Another call has terminated on the line but has not been answered yet.
- The called station is involved in a multiparty conference, call transfer, or call hold configuration and the controller is on the same switch as the called station.

Long Distance Alerting (continued)

If an incoming toll call cannot be call waited on a busy line, LDA is not activated and the incoming call is sent to busy treatment.

When the called party receives the LDA distinctive call waiting tone, the incoming call can be accessed by either of the following methods:

- The called party flashes the switchhook or uses the link key to put the current call on hold and answers the incoming call. Subsequent switch-hook flashes enable the called party to toggle between the two calls.
- The called party goes on-hook, waits for the station to ring, and on answer is connected to the calling party.

Line types incompatible with LDA

The following table lists the types of lines not supported by LDA.

Line types not supported by LDA

Lines	Description
ADATA1	Meridian Aries Set Option
A2008	Meridian Aries 2008 8-Key Set
A2016	Meridian Aries 2016 16-Key Set
A2016S	Meridian Aries 2016 16 Secure Set
A2216B	Meridian Aries 2016 ACD Set
CCF	Prepay Coin Service
CDF	Dial Tone First Coin Service
CFD	Coin Free Dialing
COIN	International Coin Line
CSD	Circuit Switched Digital Data Service
CSP	Semi-postpay Coin Service
DATA	Data Unit
DISP	Electronic Business Set with Display
ISDN	ISDN Lines
MOB	Mobile CELLULAR
M5018	Meridian Set (18 keys)

Long Distance Alerting (continued)

Line types not supported by LDA

Lines	Description
M5112	Meridian Set (12 keys)
M5209	Meridian Set (9 keys, built-in display)
M5212	Meridian Set (12 keys, built-in display, hands-free)
M5312	Meridian Set (12 keys, built-in display, hands-free)
M5317	Meridian Set (17 keys, hands-free unit)
OWT	OUTWATS Service
PBM	PBX Message Rate Service
PBX	PBX Flat Rate Service
PDATA	Data Unit
PSET	Electronic Business Set without LCD Display
SPC	Semi-permanent Connection
STD	Standard International POTS Lines
TWX	TWX Service
VLN	Virtual Line
2FR	Two-Party Flat Rate Service
2WW	Two-Way WATS
4FR	Four-Party Flat Rate Service
8FR	Eight-Party Flat Rate Service
10FR	Ten-Party Flat Rate Service

LDA announcements

LDA announcements can be provided in two manners: a centralized announcement system using table OFRT (Office Route), or localized announcements for each switch.

Long Distance Alerting (continued)

LDA announcements inform the end user of LDA activation and deactivation and provide busy treatment. The following announcement phrases are suggested:

- The Long Distance Alerting feature is now activated.
- The Long Distance Alerting feature is now deactivated.
- The number you have dialed is busy. Please try your call later.

Announcements are recorded using the digital recorded announcement machine (DRAM) recording utility DRAMREC. Refer to *DRAM and EDRAM Guide*, 297-1001-527 for more information on recording announcements.

To establish an announcement, the following tables must be datafilled in the order listed and an announcement recorded:

- Table TMINV (Trunk Module Inventory) lists the assignment data for each trunk module.
- Table EDRAMINV (Enhanced Digital Recording Machine Inventory) contains loadfile information for the Enhanced DRAM (EDRAM). This table applies to EDRAMs only.
- Table CLLI (Common Language Location Identifier) contains the LDA CLLI definition specifying the maximum number of announcement members for all LDA applications.
- Table DRAMS (Digital Recorded Announcement Machine) contains the physical card information related to the DRAM and EDRAM, including the location, speech memory arrangement, and the CLLI of the trunk group of the controller.
- Table ANNS (Announcement) associates the CLLI code with the type, the maximum number of connections, the cycle time, and the number of repetitions of the announcements. For LDA, the announcement type is STND. An announcement member can have only one line connected to it at one time, so the maximum number of connections is set to one. Since cycle time is determined internally, it is set to zero.
- Table ANNMEMS (Announcement Members) contains the assignments of the tracks for each of the members of the announcements defined in table ANNS.
- Table DRAMTRK (Digital Recorded Announcement Machine Track) specifies the phrases used to define an announcement.
- Table OFRT defines the set of announcement routes that represent the entire treatment.

- Table TMTCNTL (Treatment Control) and subtable TMTCNTL.TREAT define the office route to be used in determining the treatments to be accessed by LDA. The NTRS treatment can be datafilled in the subtable at position OFFTREAT of table TMTCNTL. The two treatments for communicating the status of option LDSA to the end user can be datafilled in the subtable at position LNT.
- Table TMTMAP (Treatment to Cause Map) defines the mapping of the NTRS treatment to the cause value, for example, when the calling party is routed (according to TMTMAP) to the NTRS treatment after the LDA call waiting timeout occurs and the incoming trunk supports ISUP or PRI.

Translations table flow

For an incoming call to trigger LDA on the terminating line, the incoming call must be recognized as a toll call and the terminating line must be eligible for LDA functionality.

CCS7 and MF signaling environments recognize toll calls in different manners. In CCS7 environments, a call is determined to be long distance if the calling directory number's (DN) NPA/NXX is not found in table LCASCRCN. In MF environments, a call is long distance if it is carried on dedicated toll trunks, which are datafilled in table TOLLTRKS.

The Long Distance Alerting translations tables are described in the following list:

- Table TOLLTRKS (Toll Trunks) stores the CLLIs of all trunk groups carrying incoming toll-completing traffic. For MF signaling environments, a call is recognized as long distance if the dedicated toll trunk groups are datafilled here. Field CLLI must have the trunk group name datafilled for toll calls.
- Table LCASCRCN (Local Calling Area Screening Control) is required in a toll or local/toll switching unit for incoming or two-way TOPS, Centralized Automatic Message Accounting (CAMA), or AMR5 trunk groups. For CCS7 signaling environments, if the calling party's NPA or NXX or both are not present in this table, the call is recognized as long distance.
- Table LINEATTR (Line Attribute) assigns line attributes stations. The line attribute option LDSV must be assigned to the terminating line and set to active.
- Table LENLINES (Line Assignment) contains (for each datafilled line) the site name assigned to the remote location (if the line is remote), the line equipment number (LEN), the party to which the DN is assigned, the DN, the signal type, the index into table LINEATTR, and options assigned to

Long Distance Alerting (continued)

the line. The line option LDSO is assigned to the terminating line through SERVORD. Applicable line class codes (LCC) without RES-specific options are datafilled here.

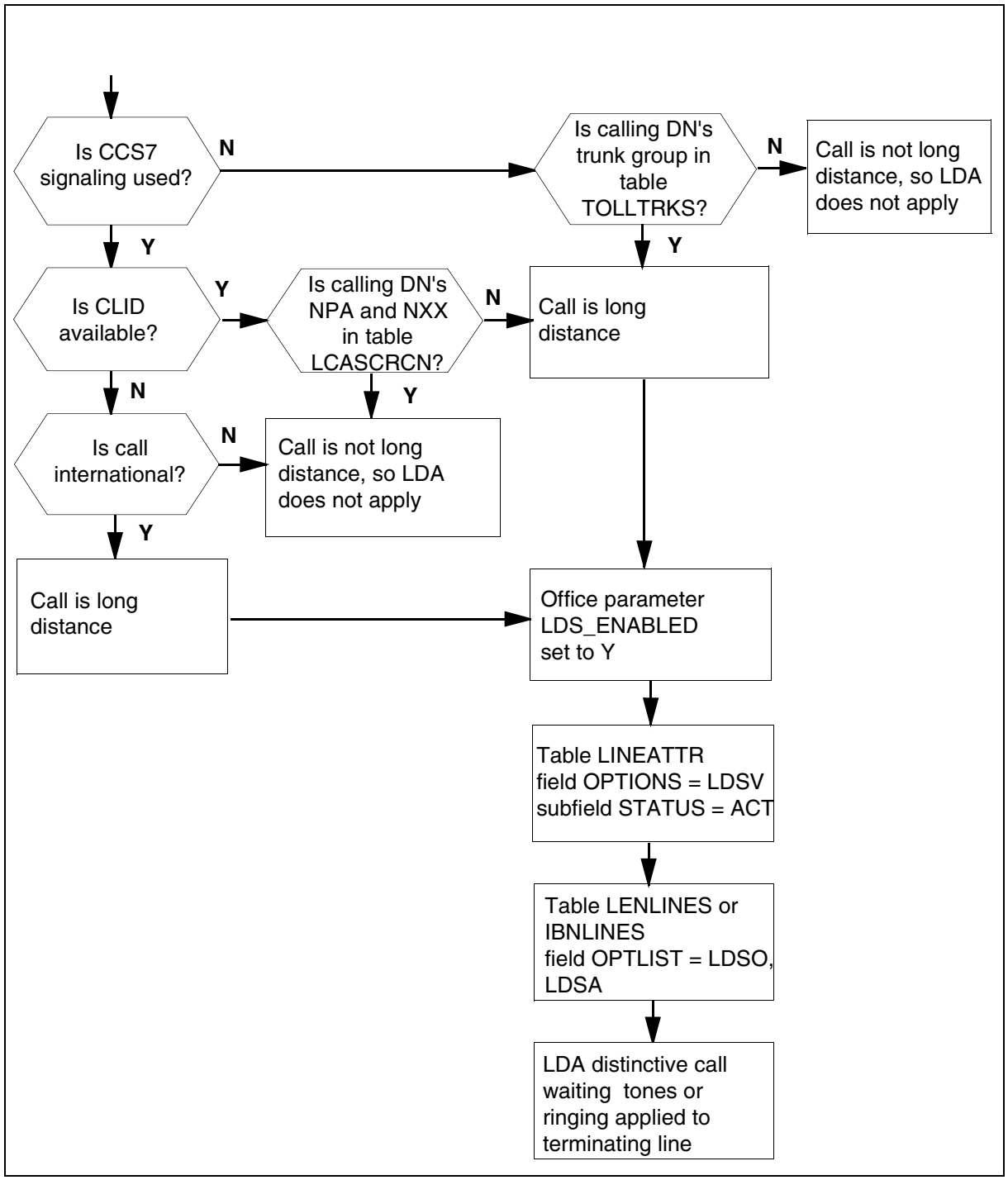
- Table IBNLINES (IBN Line Assignments) contains (for each datafilled line) the site name assigned to the remote location (if the line is remote), the line equipment number (LEN), the party to which the DN is assigned, the DN, the signal type, the index into table LINEATTR, and options assigned to the line. The line option LDSA is assigned to the terminating line either by end user activation (*49) or SERVORD. Applicable LCCs with RES-specific options are datafilled here.

Contrary to the following flowchart, the presence of line option LDSV in table LINEATTR is not required for line options LDSO and LDSA to be added. However, if office parameter LDS_AUTO_PROV_ENABLED is set to Y, autoprovisioning will add/remove options LDSO and LDSA at the first call that terminates on the line (or the first *49 originating from the line) if the setting of LDSO contradicts that of LDSV.

Line option LDSV supersedes options LDSO and LDSA. If the corresponding option LDSV is present, LDSO and LDSA are automatically added to the line even if they had been manually removed. If LDSV is not present, options LDSO and LDSA are removed even if they had been manually added.

Long Distance Alerting (continued)

Table flow for Long Distance Alerting



Long Distance Alerting (continued)

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

Datafill example for Long Distance Alerting

Datafill table	Example data
TOLLTRKS	TOLLIBN
LCASCRCN	613 OTWA (11) MAND N
LINEATTR	0 1FR NONE NT NSCR 0 001 NPRT NLCA NONE 0 NIL NILSFC NILLATA 0 NIL NIL 00 N LCABILL HOT LDSV ACT $
LENLINES	01 0 07 07 S 0 555 1212 DT 0 (GLTC) LDSO LDSA $
IBNLINES	01 0 07 07 0 DT STN RES 555 1212 100 (ACB LDSA LDSO) $

Limitations and restrictions

The following limitations and restrictions apply to Long Distance Alerting:

- LDA is available to single-line residential subscribers and small business subscribers who reside on a DMS-100 or DMS-100/200 switch only with the following line class codes (LCC): one-party flat rate (1FR), one-party message rate (1MR), zero minus denied (ZMD), zero minus zero plus allowed (ZMZPA), and RES (field RESINFO of table LINEATTR is set to Y).
- Incoming toll calls that activate LDA in these offices must originate from offices that provide CLID, or the call must arrive at the terminating office on trunks dedicated to toll traffic. If the toll indication is based on the CLID, the set of switches through which the call is routed must also contain the CLID in the signalling information provided to the adjoining switch.
- LDA does not support the following:
  - — MDC subscribers, because it is not currently feasible to determine if a call terminating on an MDC line is a toll call
  - — feature groups, because the LDSA line option cannot be added to the list of options in a feature group
- LDA autoprovisioning is not available during image dumps.

Interactions

The following paragraphs describe the interactions between Long Distance Alerting and other functionalities.

Long Distance Alerting (continued)

Advanced Intelligent Network 0.1 (AIN)

Any call that encounters AIN trigger detection points and needs to query a service control point (SCP) may interact with LDA. If the SCP response contains a new originating CLID substituted for the old one, LDA performs long-distance verification based on the SCP-supplied CLID. AIN features may also provide distinctive alerting (ringing and tones) different than that provided by LDA. AIN-supplied ringing and tones take precedence.

Automatic Call Back/Automatic Recall (ACB/AR)

The ACB/AR feature checks the busy/idle status of an intended line termination. If the line is busy, ACB/AR does not assume call waiting and will activate ringing again. It does not check for the applicability of LDA distinctive call waiting tones. Therefore, LDA distinctive tones are not applied, and the call is not completed until the destination line is idle. If the line is idle, the call is completed immediately with LDA distinctive ringing (if datafilled), and ACB/AR is not invoked.

Call Forward Busy Line (CFBL)

If an incoming toll call terminates on a busy line that can receive LDA distinctive call waiting tones, then the LDA tones are applied (if the line has the CWT option). Otherwise, the call will be forwarded to the route specified by the CFBL parameters.

Call Forward Don't Answer (CFDA)

If the called party's line receives the LDA distinctive ringing or CWT tones and CFDA is active on the call, CFDA causes the call to be forwarded after the CFDA timeout that applies to the end user's line. CFDA can be activated only through the use of the CFCW feature in a call waiting scenario. When CFDA is active on a call that is call waited by LDA, the call is never routed to the NTRS treatment because CFDA takes precedence over LDA.

When CFCW is assigned to the customer group, a RES line in the customer group is able to have a waiting call forwarded according to the CFDA parameters assigned to the line (time-out, forward to DN). When CFCW is not assigned to the customer group, CFDA is not invoked for a waiting call. CFCW is not available to POTS subscribers.

Call Forwarding (CFW)

If a toll call is forwarded to another station, the applicability of LDA is evaluated for the new station. For example, if

- B and C have the LDA feature assigned
- a call from A to B is a toll call

Long Distance Alerting (continued)

- a call from A to C is a local call
- the CLID is delivered

LDA functions as follows:

- If C has CFW activated to forward calls to B, a call from A to C causes LDA to be activated on B because A to B is a toll call.

  However, if C to B is a local, non-CCS7 call, LDA will not be activated on B since no CLID is delivered, and the call does not arrive at B on a dedicated toll trunk.

- If B is the station that has CFW activated to forward its calls to C, a call from A to B will not cause LDA activation when the call terminates on C because A to C is a local call.

  However, when B to C is a toll call on a trunk datafilled in table TOLLTRKS, a call from A to B will cause LDA activation on C. LDA is activated on C because LDA activation is not evaluated on the basis of the originating and terminating DNs; rather, it is triggered by the fact that the call terminating on C arrives on a dedicated trunk.

Call Transfer (CXR)

If the last leg of a CXR call is toll, LDA distinctive tones/ringing applies. If the last leg of a CXR call is local, LDA does not apply.

Call Waiting (CWT)

If an incoming toll call terminates on a line with CWT, LDA distinctive tones have precedence over CWT tones.

The CWT option is not a requirement for the LDA call waiting functionality on the terminating station. CWT is not a requirement for the ability to use the CCW feature for stations that are eligible to receive LDA. The Call Waiting Intragroup (CWI) option is not a requirement for intragroup toll calls that activate LDA.

Calling Number Delivery Blocking (CNDB)

A toll call received with CNDB applied to it does not impact LDA distinctive ringing/tones, because the CLID is still delivered to the terminating end office.

Cancel Call Waiting (CCW)

The CCW feature, in addition to providing per-call blocking of the CWT feature activation for subscribers to CWT, is provided for temporary per-call blocking of the LDA feature call waiting activation. The provisioning of

Long Distance Alerting (continued)

CCW to the subscriber by the operating company is regulated by the following office parameters:

- CCW_ACTIVE must be set to Y to activate CCW on an office-wide basis to RES and POTS lines.
- CCW_AS_LINE_OPTION defines whether the subscriber is required to have CCW provisioned implicitly or explicitly. If set to N, the subscriber can activate CCW if the line is datafilled to receive LDA or has the line option CWT, or both. If set to Y, the subscriber must have the line option CCW assigned explicitly to the line to be able to activate CCW. If CCW is added to a line, then CWT is required, even if the line has the LDA options. CCW applies to POTS lines only when the line also has the CWT option.
- LINE_WITH_CWT_CAN_FLASH determines whether the subscriber can activate CCW by switchhook flash. If set to N, the subscriber must go off-hook to activate CCW. If set to Y or the line has flash privileges from another feature on the line (Three-Way Calling [3WC]), the subscriber can flash to activate CCW or go off-hook to activate CCW.

The CWT feature is not a requirement for the ability to use the CCW feature for stations that are eligible to receive LDA alerting.

Customer Originated Trace (COT)

If a toll call terminates to a busy line with COT, the subscriber receives the LDA distinctive tones and the current DN is overridden in the Incoming Memory Slot (IMS). If the subscriber subsequently tries to activate COT, the DN of the call-waited toll call is traced.

Long Distance Alerting Activate (LDSA)

The LDSA feature and line option provide subscribers with a means of toggling LDA functionality on their lines. This option requires that option LDSO be provisioned.

Multiple Appearance Directory Number (MADN)

All members of a MADN Extension Bridging (EXB) group are supported by LDA. MDC-related MADNs are not supported.

Long Distance Alerting (continued)

Selective List Editing (SLE)

If the DN of the incoming toll call is part of the terminating line's SLE list, the treatment specific to SLE features applies, as follows:

- Distinctive Ringing Call Waiting (DRCW) power ringing or call waiting tones are used.
- The call is forwarded to the route specified for the Selective Call Forwarding (SCF) feature.
- The call does not terminate to the called line and is given treatment specified by the Selective Call Rejection (SCRJ) feature.

Speed Calling Long List (SC2, SC3)

The SC2 and SC3 features provide a subscriber with the ability to assign numbers for speed calling to the digits 20 to 49 and 20 to 69 respectively. The subscriber has three means of accessing the numbers in the Speed Calling Long List using 49. The subscriber can do the following:

- Dial 49. After a time-out, the call is recognized as a speed calling call.
- Dial 49#. The call is immediately recognized as a speed calling call.
- Dial *49 (or 1149). The call is immediately recognized as a speed calling call only if the RES or POTS subscriber does not have option LDSA datafilled for the subscriber's customer group (in table IBNXLA [IBN Translation]). Otherwise, the call is recognized as a request for LDSA activation/deactivation.

If the subscriber has both LDA and SC2 or SC3 assigned to the line, entering the code *49 (1149) invokes the option LDSA. Entering the code 49# or entering the code 49 and waiting for a time-out invokes the speed calling long

list 49 cell. The following table shows the interactions when both LDA and SC2 or SC3 are assigned to a line.

LDA interaction with SC2 and SC3 features

Access code	Option accessed when only SC2 or SC3 assigned to subscriber's line	Option accessed when both LDA and SC2 or SC3 assigned to subscriber's line
*49 (1149)	SCL 49 cell	LDA activation/deactivation
49#	SCL 49 cell (note)	SCL 49 cell (note)
49 plus time-out	SCL 49 cell (note)	SCL 49 cell (note)
Note: For RES lines, entering codes 49# or 49 plus time-out invokes the 49 SCL cell only if option AMBISC is datafilled for the line's customer group in table CUSTSTN (Customer Group Station Option). If option AMBISC is not assigned to the customer group, entering the SCL code 49# and 49 plus time-out route to feature not allowed (FNAL) treatment. Refer to the MDC data schema section of this document.		

Spontaneous Call Waiting ID (SCWID) and Deluxe SCWID (DSCWID)

When LDA is assigned to a line with the SCWID or DSCWID option, the LDA distinctive call waiting tone is heard prior to the Subscriber Alerting Signal (SAS) and the customer premises equipment (CPE) Alerting Signal (CAS) tones. The CAS tone alerts the phone set that display information will be transmitted. After acknowledgment is received from the subscriber's set, the display information is transmitted.

Teen Service (SDN)

For subscribers with SDN, the primary DN is supported by LDA distinctive ringing, but the secondary line is not. The primary DN is also supported by LDA distinctive CWT tones. For LDA distinctive CWT tones to work on the secondary line, that line cannot already have CWT.

Three-Way Calling (3WC)

If a toll call terminates on a line that has 3WC but is engaged in a regular two-party call, LDA provides distinctive CWT tones. A switchhook flash is not interpreted as a request for the 3WC feature.

If a toll call terminates on a line that is the controller of a three-way call, the 3WC feature takes precedence over LDA.

Long Distance Alerting (continued)

Activation/deactivation by the end user

Long Distance Alerting can be activated and deactivated temporarily in the following manners.

Activation/deactivation of LDA by the end user on a per-line basis

At your telephone

1. Dial the LDSA feature activation code: *49 (or 1149 on rotary phones).

   Response: An announcement informs you about the state of the LDA functionality on your line.

   The LDSA activation code acts as a toggle. If the LDSA option is provisioned on your line, *49 deactivates it. If the LDSA option is not provisioned on your line, *49 activates it. The LDSA activation code adds or removes option LDSA on your line.

Deactivation of LDA by the end user on a per-call basis

At your telephone

1. Dial the CCW feature activation code: *70 (or 1170 on rotary phones), or flash the switch-hook when involved in a call.

   Response: LDA distinctive call waiting tones are blocked on a temporary, per-call basis.

   Note: See the “Cancel Call Waiting (CCW)" section in this feature description for office parameters that must be set correctly for this deactivation method to work.

Billing

Long Distance Alerting does not affect billing.

Station Message Detail Recording

Long Distance Alerting does not affect Station Message Detail Recording.

Long Distance Alerting (continued)

Datafilling office parameters

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

Office parameters used by Long Distance Alerting

Table name	Parameter name	Explanation and action
OFCENG	LDS_AUTO_ PROV_ENABLED	This parameter is used to automatically provision line options LDSO and LDSA for each line in the line groups that have been assigned option LDSV in table LINEATTR. The values are Y and default N.
	LDS_ENABLED	This parameter is used to enable LDA for the switch. The values are Y and default N.
	LDS_OM_ ENABLED	This parameter allows the operating company to activate/deactivate LDA operational measurement (OM) pegging. The values are Y and default N.
	LDS_PATTERN	This parameter is used to specify the LDA distinctive ringing pattern. The default value is LONG_SHORT_SHORT. ***Note:*** The Bellcore recommended value is MEDIUM_SHORT_MEDIUM.
	LDS_RINGING_ ENABLED	This parameter is used to enable LDA distinctive ringing on the switch. The values are Y and default N.

Long Distance Alerting (continued)

Datafill sequence

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

Datafill tables required for Long Distance Alerting

Table	Purpose of table
OFCENG	Office Engineering. This table contains data on engineering parameters for the office. Refer to “Datafilling office parameters" for how LDA affects office parameters.
TOLLTRKS	Toll Trunks. This table stores the CLLIs of all trunk groups carrying incoming toll-completing traffic. For MF signaling environments, a call is recognized as long distance if the dedicated toll trunk groups are datafilled here. Field CLLI must have the trunk group name datafilled for toll calls.
LCASCRCN	Local Calling Area Screening Control. This table is required in a toll or local/toll switch for incoming or two-way TOPS, CAMA, or AMR5 trunk groups. For CCS7 signaling environments, if the calling party's NPA or NXX, or both, are not present in this table, the call is recognized as long distance.
LINEATTR	Line Attribute. This table assigns line attributes to stations. Option LDSV must be assigned to the terminating line and set to active.
LENLINES (Note)	Line Assignment. This table contains (for each datafilled line) the site name assigned to the remote location (if the line is remote), the LEN, the party to which the DN is assigned, the DN, the signal type, the index into table LINEATTR, and options assigned to the line. Options LDSO and LDSA must be assigned.
IBNLINES (Note)	IBN Line Assignments. This table contains the line assignments for data channel links for the Bulk Calling Line Identification (BCLI) feature under the format name of BL. Option LDSA must be assigned to the terminating line either by end user activation (*49) or SERVORD.

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 TOLLTRKS

The following table shows the datafill specific to Long Distance Alerting for table TOLLTRKS. Only the field that applies directly to Long Distance

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

Datafilling table TOLLTRKS

Field	Subfield	Entry	Explanation and action
CLLI		alphanumeric (1 to 16 characters)	Common language location identifier. This field specifies the trunk group over which long distance calls can come into an office. Enter a CLLI from table TRKGRP (Trunk Group).

Datafill example for table TOLLTRKS

The following example shows sample datafill for table TOLLTRKS.

MAP display example for table TOLLTRKS

```
CLLI
-----------------------------------------------------
TOLLIBN
```

Datafilling table LCASCRCN

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

Datafilling table LCASCRCN

Field	Subfield	Entry	Explanation and action
NPALLOCNM		see subfields	NPA local calling area subtable name. This field consists of subfieLDA STS and LCANAME.
	STS	numeric	Serving translation scheme. Enter a serving NPA code for the trunk group.

Long Distance Alerting (continued)

Datafilling table LCASCRCN

Field	Subfield	Entry	Explanation and action
	LCANAME	alphanumeric (up to 4 characters)	Local calling area name. Enter the name of subtable LCASCRCN.LCASCR. Entry NLCA is not allowed in table LCASCRCN because it is reserved by DMS software to mean no local calling area screening. (Accidental addition of NLCA in table LCASCRCN followed by deletion removes NLCA from tables such as LINEATTR field LCANAME, making the specification of no local calling area screening impossible.)
LCASCR		blank	Local calling area screening. This is the table ownership field. It does not accept any input or output, and is not shown on the form. Only the used space field is displayed.
PFXSELEC		MAND, OPTL, or alphabetic (up to 4 characters)	Prefix selector. Enter the name of the prefix selector that is assigned to the LCASCRCN.LCASCR subtable. This is a four-character vector.
PFXFOR10		Y or N	Prefix for 10. This field is used to set the call screening on operator assisted (OA), direct dial (DD), and no prefix (NP) no toll calls. If Y is entered, all operator assisted calls will be routed as described in table Table , "PFXFOR10 call screening effects on OA call types" on page -21. If Y is entered, all direct dial calls will be routed as described in table Table , "PFXFOR10 call screening effects on DD call types" on page -21. If Y is entered, all no prefix calls will be routed as described in table Table , "PFXFOR10 call screening effects on NP call types" on page -22. If N is entered no call screening will be performed.

Long Distance Alerting (continued)

PFXFOR10 call screening effects on OA call types

Dialed Digits	Pre-NA006	Pre-NA006 with WIS34 patch active	NA006 with PFXFOR10 feature activated
7 digits	Complete	Complete	Complete
0+7	Complete	EMR4 Trmt	MSOA Trmt
1+7	Complete	EMR4 Trmt	MSOA Trmt
10xxx+7	Complete	EMR4 Trmt	Complete
10xxx+0+7	Complete	EMR4 Trmt	MSOA Trmt
10xxx+1+7	Complete	EMR4 Trmt	MSOA Trmt
10 digits	Complete	Complete	MSOA Trmt
0+10	Complete	Complete	Complete
1+10	Complete	Complete	Complete
10xxx+10	Complete	Complete	MSOA Trmt
10xxx+0+10	Complete	Complete	Complete
10xxx+1+10	Complete	Complete	Complete
Service Codes	Complete	If code type is SCD(X), complete.Otherwise, EMR4 Trmt	If code type is SCD(X), complete.Otherwise, MSOA Trmt

PFXFOR10 call screening effects on DD call types

Dialed Digits	Pre-NA006	NA006 with PFXFOR10 feature activated
7 digits	MSCA Trmt	Complete
0+7	MSCA Trmt	MSCA Trmt
1+7	MSCA Trmt	MSCA Trmt
10xxx+7	MSCA Trmt	Complete
10xxx+0+7	MSCA Trmt	MSCA Trmt
10xxx+1+7	MSCA Trmt	MSCA Trmt

Long Distance Alerting (continued)

PFXFOR10 call screening effects on DD call types

Dialed Digits	Pre-NA006	NA006 with PFXFOR10 feature activated
10 digits	Complete	MSLCTrmt
0+10	Complete	Complete
1+10	Complete	Complete
10xxx+10	Complete	MSLC Trmt
10xxx+0+10	Complete	Complete
10xxx+1+10	Complete	Complete
Service Codes	Complete	Complete

PFXFOR10 call screening effects on NP call types

Dialed Digits	Pre-NA006	NA006 with PFXFOR10 feature activated
7 digits	Complete	Complete
0+7	Complete	MSCA Trmt
1+7	Complete	MSCA Trmt
10xxx+7	Complete	Complete
10xxx+0+7	Complete	MSCA Trmt
10xxx+1+7	Complete	MSCA Trmt
10 digits	MSLC Trmt	MSLCTrmt
0+10	MSLC Trmt	Complete
1+10	MSLC Trmt	Complete
10xxx+10	MSLC Trmt	MSLC Trmt
10xxx+0+10	MSLC Trmt	Complete
10xxx+1+10	MSLC Trmt	Complete
Service Codes	Complete	Complete

Datafill example for table LCASCRCN

The following example shows sample datafill for table LCASCRCN.

The example shows a table LCASCRCN.LCASCR subtable in NPA 613 with the name OTWA and mandatory dialing of prefix digit 11, and a subtable in NPA 819 with the name HULL and optional dialing of prefix digit 3. No input or output is allowed for field LCASCR.

MAP display example for table LCASCRCN

```
NPALOCNM   LCASCR       PFXSELEC     PFXFOR10
-------------------------------------------------------
613 OTWA   (    11)       MAND             N

819 HULL   (     3)      OPTL              N
```

Datafilling table LCASCR

Field	Subfield	Entry	Explanation and action
FROMDIGS		000 to 999	From digits. Enter the three-digit prefix (NXX) code. This number represents a single code, or the first in a block of consecutive local NXX codes.
TODIGS		000 to 999	To digits. If field FROMDIGS represents the first of a block of consecutive local NXX codes, enter the last NXX code in the block. If field FROMDIGS represents a single local NXX code, enter the NXX code entered in FROMDIGS.

Datafill example for table LCASCRCN.LCASCR

If the local serving NPA is 613 and the NXXs are 231, 232, 233, and 234 then the subtable LCASCRCN.LCASCR must be datafilled properly.

The following example shows sample datafill for table LCASCRCN.LCASCR.

Long Distance Alerting (continued)

MAP display example for table LCASCRCN.LCASCR

```
POS 613 OTWA; SUB LCASCR;LIST 2

 FROMDIGS      TODIGS
_____________________________________________________________
   613         613
   231         234
```

Datafilling table LINEATTR

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

Datafilling table LINEATTR

Field	Subfield	Entry	Explanation and action
OPTIONS		AMAGRPID, HOT, LCABILL, LDSV	Line attribute options. This field is a vector consisting of up to three options. Enter AMAGRPID if a group identity for subscription basis tariff is required, and datafill subfield AMAGRPID. Enter HOT if identification of hotel lines to the TOPS operator for time and charge is required, or if the outgoing trunk group type is OP (operator). Enter LCABILL if a non-interexchange carrier call is billable. Enter LDSV if LDA is required, and datafill subfield STATUS.
	STATUS	ACT or DEACT	Long Distance Alerting Valid status. Enter ACT to indicate that LDA is activated for the line group. Otherwise, enter DEACT for deactivated.

Datafill example for table LINEATTR

The following example shows sample datafill for table LINEATTR.

MAP display example for table LINEATTR

```
LNATTIDX  LCC CHGCLSS COST SCRNCL LTG STS PRTNM LCANAME ZEROMPOS TRAFSNO
MRSA    SFC  LATANM  MDI       IXNAME DGCLNAME FANIDIGS
                RESINF                                  OPTIONS
_____________________________________________________________________

       0  1FR    NONE   NT   NSCR   0  001 NPRT    NLCA     NONE      0
 NIL  NILSFC NILLATA    0  NIL          NIL      00
                     N           LCABILL HOT LDSV ACT            $
```

Translation verification tools

Long Distance Alerting does not use translation verification tools.

SERVORD

Options LDSO and LDSA can be added and deleted through SERVORD using the ADO (add option) and the DEO (delete option) commands. Operating company personnel should be aware of the possible appearance of option LDSA in an end user's line options list due to activation of LDSA by the end user (*49).

SERVORD limitations and restrictions

Long Distance Alerting has no SERVORD limitations and restrictions.

SERVORD prompts

The following table shows the SERVORD prompts used to add Long Distance Alerting to a line.

SERVORD prompts for Long Distance Alerting

Prompt	Valid input	Explanation
DN_OR_LEN	DN (up to 15 digits) or LEN	Specifies the directory number or line equipment number
OPTION	LDSA, LDSO	Specifies the line option to be added
Note: Tables LENLINES and IBNLINES are automatically datafilled when LDA is assigned using SERVORD.		

Long Distance Alerting (end)

SERVORD example for adding Long Distance Alerting

The following SERVORD example shows how Long Distance Alerting is added to a line using the ADO command.

SERVORD example for adding Long Distance Alerting in prompt mode

```
> ADO
SONUMBER:      NOW  99 9 15 AM
>
DN_OR_LEN:
> 6211040
OPTION:
> LDSA
OPTION:
> LDSO
OPTION:
 >$
COMMAND AS ENTERED:
ADO NOW 94 9 15 AM 6211040 (LDSA) (LDSO) $
 >Y
```

SERVORD example for adding Long Distance Alerting in no-prompt mode

```
> ADO $ 6211040 LDSA LDSO $ Y
```

Long Distance Alerting Enhancement (LDAE)

Ordering codes

Functional group ordering code: RES00002

Functionality ordering code: RES00059

Release applicability

DMSCNA06 and up

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

Long Distance Alerting Enhancement (LDAE) extends the LDA feature by providing the following functionalities:

- The operating company can define the duration of the time-out for call-waited calls by use of office parameter LDS_CWT_TIMEOUT.
- The operating company can specify whether distinctive alerting is provided when no Calling Line ID (CLID) is delivered by use of office parameter LDS_ALERT_NO_CLID.
- The operating company can use SERVORD to selectively provide LDA subscribers with either distinctive ringing when their line is idle (Option LDSR) or a distinctive tone when their line is busy (Option LDST).

The following table summarizes the effect of line options LDSR, LDST and LDSO on terminating line behavior with LDAE.

Terminating line behavior with LDAE

Terminating line state	Line options			LDS_RINGING_ENABLED	
	LDSR	LDST	LDSO	Y	N
Idle	X			LDA ring	standard ring
		X		standard ring	standard ring
			X	LDA ring	standard ring
Busy	X			no tone	no tone

Long Distance Alerting Enhancement (LDAE) (continued)

Terminating line behavior with LDAE

Terminating line state	Line options			LDS_RINGING_ENABLED	
	LDSR	LDST	LDSO	Y	N
		X		LDA tone	LDA tone
			X	LDA tone	LDA tone

Operation

This section documents the operating company's control capabilities for LDAE and then describes the functionality operation.

Software Optionality Control (SOC)

The SOC utility is used to enable or disable LDA and LDAE. For each switch, a right-to-use (RTU) password is required from Northern Telecom to activate the features included in any SOC option.

For operating companies who purchased LDA prior to NA006, the functionality ordering code is RES00038. After the One Night Process (ONP), RES00038 remains enabled and includes the LDA enhancements. In NA006 and later the ordering code for LDA and LDAE is RES00059.

The operating company can pre-enter data necessary for the functioning of the LDA and LDAE features prior to SOC activation. The SOC states supported by LDA and LDAE are IDLE and ON.

LDA/LDAE (RES00038 or RES00059) SOC state is IDLE

In this state the LDA/LDAE feature is not functional. A “feature not present" treatment is returned if the end-user dials the feature code.

Datafilling and OM pegging is allowed, enabling the operating company to enter data necessary for the functioning of the feature.

LDA/LDAE (RES 000038 or RES00059) SOC state is ON

In this state, the feature is fully functional; both the LDA base and the NA006 enhancement are available.

Datafill existing prior to a change in the feature's SOC state from ON to IDLE is preserved.

Long Distance Alerting Enhancement (LDAE) (continued)

Long Distance Alerting functionality

When an incoming call activates the LDA functionality, the calling party receives audible ring back while the called party is notified of the incoming toll call. The LDA functionality can notify the called party of an incoming call by one of two methods:

- If the terminating station is idle, the called party is notified by distinctive power ringing.
- If the terminating station is engaged and a call can be call waited on the station, the called party is notified by a distinctive call waiting tone.

If a call cannot be call waited on the engaged terminating station, the LDA functionality is not activated and the calling party receives the busy treatment that is active on the station. A call cannot be call waited for LDA if the called station is involved in any call configuration other than a regular two-port call. Examples of situations when the called station is not available for call waiting are:

- another call is already waiting on the called station
- the called party is originating a call
- another call has terminated on the called station and has not yet been answered
- the called station is involved in a multi-party conference or call transfer or call hold configuration and the controller is on the same switch as the called party

Long Distance Alerting Enhancement (LDAE) functionality

Long Distance Alerting Enhancement (LDAE) expands LDA by providing the following parameters and options.

Long Distance Alerting call waiting time-out

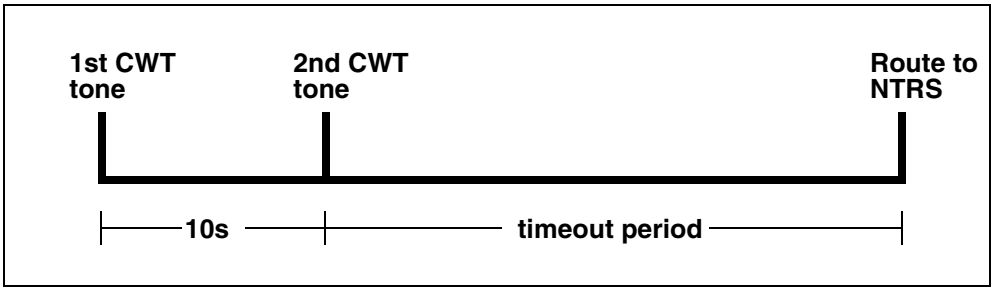
The office parameter LDS_CWT_TIMEOUT provides the operating company with the ability to force a long distance call that has call waited for more than a specified duration to be routed to No Terminal ReSponding (NTRS) treatment. The operating company can now specify a time-out period of 10-316 seconds. A value of 0 signifies that no time-out is required. The LDA call waiting time-out is selectable on a per office basis.

The timer is started only after the final CWT tone has been applied to the called party's line. The minimum time before routing to NTRS treatment is such that the distinctive call waiting tone is applied twice with a ten second interval between CWT tones and the LDAE timer. A call routed to NTRS treatment is no longer waiting on the called station and cannot be accessed by the called party.

Long Distance Alerting Enhancement (LDAE) (continued)

The following figure shows the relationship between CWT tones and the LDAE time-out.

Time-out before routing to NTRS



Distinctive alerting with no CLID delivery

The office parameter LDS_ALERT_NO_CLID allows the operating company to specify whether distinctive alerting is provided to the terminating line when the CLID is not delivered with the incoming call. The only exception applies to PBX (P2, PX, and PRA) trunks, that are not influenced by this parameter, and access table TOLLTRKS for an alerting indication. If LDS_ALERT_NO_CLID is set to `N', the feature does not provide distinctive alerting by default, and continues feature processing by checking table TOLLTRKS for an alerting indication.

Line options

Long Distance Alerting Enhancement (LDAE) adds line options LDSR (Long Distance Signal Ring) and LDST (Long Distance Signal Tone). The addition of options LDSR and LDST allows the operating company to use either option LDSO, LDSR, or LDST to assign the LDA functionality on a per-line basis.

The end user receives different alerting signals depending on the option assigned to their line.

- LDSR provides the end user with distinctive ringing when their line is idle. No LDA tone interruptions occur on voice and/or data lines.
- LDST provides the end user with distinctive tones when their line is busy.
- LDSO provides the end user with both distinctive ringing and distinctive tones.

Translations table flow

For an incoming call to trigger LDA and LDAE on the terminating line, the incoming call must be recognized as a toll call and the terminating line must be eligible for LDA functionality.

Long Distance Alerting Enhancement (LDAE) (continued)

The Long Distance Alerting Enhancement (LDAE) translations tables are described in the following list:

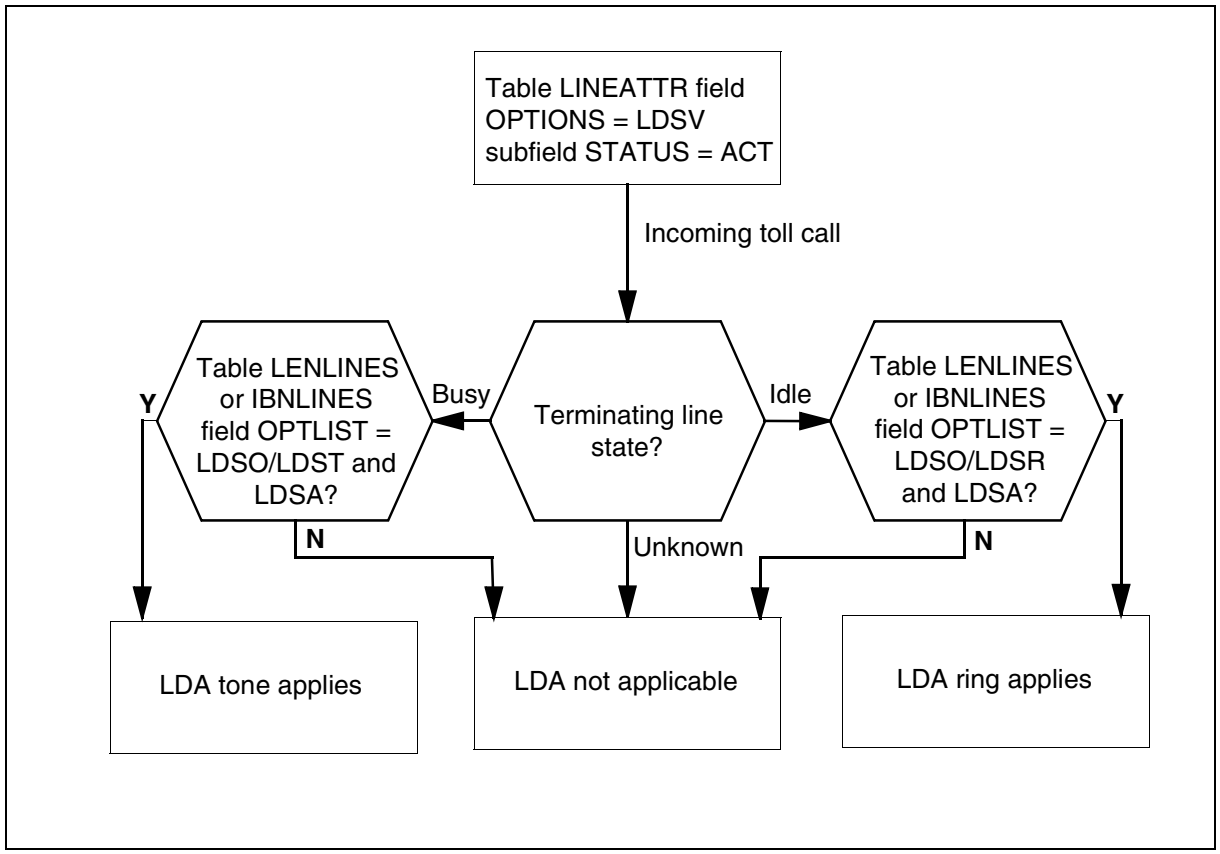
- Table LINEATTR (Line Attribute) assigns line attributes stations. The line attribute option LDSV must be assigned to the terminating line and set to active.
- Table LENLINES (Line Assignment) contains (for each datafilled line) the site name assigned to the remote location (if the line is remote), the line equipment number (LEN), the party to which the DN is assigned, the DN, the signal type, the index into table LINEATTR, and options assigned to the line. An LDA line option (LDSR, LDST, or LDSO) is assigned to the terminating line through SERVORD. Applicable line class codes (LCC) without RES-specific options are datafilled here.
- Table IBNLINES (IBN Line Assignments) contains (for each datafilled line) the site name assigned to the remote location (if the line is remote), the line equipment number (LEN), the party to which the DN is assigned, the DN, the signal type, the index into table LINEATTR, and options assigned to the line. Applicable LCCs with RES-specific options are datafilled here.
- Table OFCENG (Office Engineering) contains data on engineering parameters for the office. Refer to “Datafilling office parameters" for how LDA affects office parameters.

Note: Refer to “Long Distance Alerting" in this document for more information on datafilling the LDA functionality prior to reviewing the following Long Distance Alerting Enhancement (LDAE) translation process.

The Long Distance Alerting Enhancement (LDAE) translation process is shown in the flowchart that follows.

Long Distance Alerting Enhancement (LDAE) (continued)

Table flow for Long Distance Alerting Enhancement (LDAE)



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

Datafill example for Long Distance Alerting Enhancement (LDAE)

Datafill table	Example data
LINEATTR	0 1FR NONE NT NSCR 0 001 NPRT NLCA NONE 0 NIL NILSFC NILLATA 0 NIL NIL 00 N LCABILL HOT LDSV ACT $
LENLINES	01 0 07 07 S 0 5551212 DT 0 (GLTC) LDSA LDSAR $
IBNLINES	01 0 07 07 0 DT STN RES 5551212 100 (ACB LDSA LDSR) $

Long Distance Alerting Enhancement (LDAE) (continued)

Limitations and restrictions

The following limitations and restrictions apply to Long Distance Alerting Enhancement (LDAE):

- The terminating line must be served by an end office where either the LDA base SOC state is ON or the LDA Enhancement SOC state is ON and the office parameter LDS_ENABLED is set to Y.
- LDA and LDAE are available to single-line residential subscribers and small business subscribers who reside on a DMS-100 or DMS-100/200 switch with the following line class codes (LCC): one-party flat rate (1FR), one-party message rate (1MR), zero minus denied (ZMD), zero minus zero plus allowed (ZMZPA), and RES (field RESINFO of table LINEATTR is set to Y).
- LDA and LDAE autoprovisioning is not available during image dumps.
- Options LDSR, LDST and LDSO are incompatible and cannot be simultaneously assigned to a given line.

Interactions

The following interaction is introduced by Long Distance Alerting Enhancement (LDAE).

Answering Devices

Answering devices that are located on the end-user's premises can be affected by the distinctive ringing provided by LDA. If devices are triggered based on the number of successive rings, the LDA pattern can trigger the device within the first LDA ring, causing the device to answer the call before the subscriber.

Activation/deactivation by the end user

Long Distance Alerting Enhancement (LDAE) requires no activation or deactivation by the end user. For a complete description of activation and deactivation of Long Distance Alerting, refer to the features translation section of this document.

Billing

Long Distance Alerting Enhancement (LDAE) does not affect billing.

Station Message Detail Recording

Long Distance Alerting Enhancement (LDAE) does not affect Station Message Detail Recording.

Long Distance Alerting Enhancement (LDAE) (continued)

Datafilling office parameters

The following table shows the office parameters used by Long Distance Alerting Enhancement (LDAE). For more information about office parameters, refer to *Office Parameters Reference Manual.*

Office parameters used by Long Distance Alerting Enhancement (LDAE)

Table name	Parameter name	Explanation and action
OFCENG	LDS_CWT_TIME OUT	This parameter provides the operating company with the capability of selecting the duration of the LDA call waiting time-out. It controls the time frame during which the LDA subscriber can flash the switchhook to accept a long distance call that is waiting. This parameter is in seconds and it takes a value of 0 or any integer value between 10 and 316. If a time-out range of 1-9s is entered, the following message appears: `Warning: A time-out in the range of 1-9s defaults to a minimum internal time-out of 10s.` The parameter default value is 0.
OFCENG	LDS_ALERT_NO_ CLID	This parameter allows the operating company to specify whether distinctive alerting is provided to the terminating line when the CLID is not delivered with the incoming call. The values are Y and default N.

Datafill sequence

The following table lists the tables that require datafill to implement Long Distance Alerting Enhancement (LDAE).

Datafill tables required for Long Distance Alerting Enhancement (LDAE)

Table	Purpose of table
OFCENG	Office Engineering. This table contains data on engineering parameters for the office. Refer to “Datafilling office parameters" for how LDAE affects office parameters.
LINEATTR	Line Attribute. This table assigns line attributes to stations. Option LDSV must be assigned to the terminating line and set to active.
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.	

Long Distance Alerting Enhancement (LDAE) (continued)

Datafill tables required for Long Distance Alerting Enhancement (LDAE)

Table	Purpose of table
LENLINES (Note)	Line Assignment. This table contains (for each datafilled line) the site name assigned to the remote location (if the line is remote), the LEN, the party to which the DN is assigned, the DN, the signal type, the index into table LINEATTR, and options assigned to the line.
IBNLINES (Note)	IBN Line Assignments. This table contains (for each datafilled line) the site name assigned to the remote location (if the line is remote), the line equipment number (LEN), the party to which the DN is assigned, the DN, the signal type, the index into table LINEATTR, and options assigned to the line.
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.	

SERVORD

Options LDSR and LDST can be added and deleted through SERVORD using the ADO (add option) and the DEO (delete option) commands. Operating company personnel should be aware of the possible appearance of option LDSA in an end user's line options list due to activation of LDSA by the end user (*49).

SERVORD limitations and restrictions

Long Distance Alerting Enhancement (LDAE) has no SERVORD limitations and restrictions.

SERVORD prompts

The following table shows the SERVORD prompts used to add Long Distance Alerting Enhancement (LDAE) to a line.

SERVORD prompts for Long Distance Alerting Enhancement (LDAE)

Prompt	Valid input	Explanation
DN_OR_LEN	DN (up to 15 digits) or LEN	Specifies the directory number or line equipment number
OPTION	LDSR, LDST, or LDSO	Specifies the line option to be added

Note: Tables LENLINES and IBNLINES are automatically datafilled when LDA is assigned using SERVORD.

Long Distance Alerting Enhancement (LDAE) (end)

SERVORD example for adding option LDSR

The following SERVORD example shows how option LDSR is added to a line using the ADO command.

SERVORD example for adding option LDSR in prompt mode

```
> ADO
SONUMBER:      NOW  99 9 15 AM
>
DN_OR_LEN:
> 6211040
OPTION:
> LDSR
OPTION:
> LDSA
OPTION:
 >$
COMMAND AS ENTERED:
ADO NOW 96 9 15 AM 6211040 (LDSA) (LDSR) $
 >Y
```

SERVORD example for adding option LDSR in no-prompt mode

```
> ADO $ 6211040 LDSR LDSA $
```

Long Distance Indicator (LDI)

Ordering codes

Functional group ordering code: RES00002

Functionality ordering code: RES00008

Release applicability

BCS30 and up

Prerequisites

To operate, Long Distance Indicator (LDI) has the following prerequisites:

- BAS Generic, BAS00003
- MDC Minimum, MDC00001
- MDC Standard, MDC00003
- RES Service Enablers, RES00006

Network configuration

Common Channel Signaling No. 7 (CCS7) connectivity is required for network (interoffice) configuration of Long Distance Indicator. The following prerequisites are required for CCS7 connectivity:

- SS7 Trunk Signaling, SS700001
- TEL CCS7 Base, TEL00008
- BAS Generic, BAS00003

Description

The Long Distance Indicator (LDI) feature identifies long distance calls and provides information to the subscriber about them. The feature works with Custom Local Area Signaling Services (CLASS) display features that use the multiple data message (MDM) format. Calling Number Delivery (CND), Calling Name Delivery (CNAMD), and Dialable Number Delivery (DDN) use the MDM format.

When a long distance call reaches the subscriber set, LDI evaluates the call. LDI derives the long distance status using two steps:

- The status is derived from the number of digits in the dialable DN. Once calling digits are received, LDI uses reverse translations to evaluate the dialable DN and derive its long distance status. For example, a call is deemed long distance if the dialable DN's first digit is 1 and it has a total of 11 or 8 digits. Calls must use CSS7 trunks to route though the

Long Distance Indicator (LDI) (continued)

originating office for this method to work. Refer to “Dialable Number Delivery (DDN)".

- The status is derived from the trunk group identification. If the first step fails for any reason (for example, if no calling digits are received from the network, the office is not equipped with reverse translations software, or reverse translations is unsuccessful), the call is evaluated if toll terminating calls and non-toll terminating calls arrive in the terminating office on separate trunk groups (such as intertoll [IT] or TI/T2 trunks).

Table TOLLTRKS stores the common language location identifiers (CLLI) of all trunk groups carrying incoming toll completing traffic, and LDI evaluates the CLLI name to determine the long distance status.

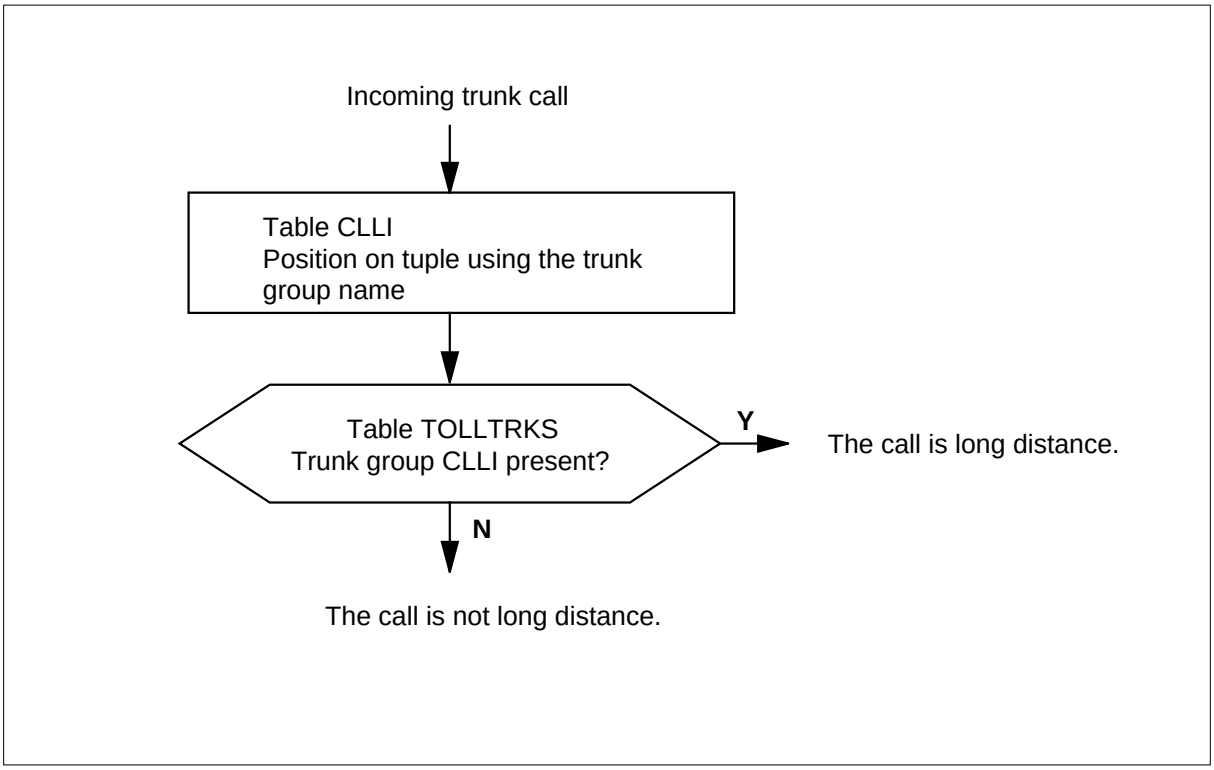
Next, the system delivers the LDI, time, date, and any other required information (such as a directory number [DN], the reason the DN is absent, the call qualifier, or the name). Because the system call only provides 40 bytes of data, it can only transmit a limited amount of information. The system provides information between the first two rings if the terminating set remains on-hook. The LDI is displayed as the character L.

Translations table flow

The following flowchart shows how the LDI feature accesses and interprets tables. If the dialable DN cannot be evaluated, the LDI is provided through trunking translations.

Long Distance Indicator (LDI) (continued)

Table flow for Long Distance Indicator (LDI)



Limitations and restrictions

The following limitations and restrictions apply to Long Distance Indicator (LDI):

The system provides an LDI if any of the following conditions are met:

- the terminating set receives an incoming toll completing call
- the call terminates to a line with a CLASS display feature that uses the MDM format
- there is enough space in the message sent to include the call qualifier parameter

If any of these conditions are met, the LDI is sent to the terminating set as part of the call setup message.

If non-toll calls complete to a terminating office on trunks normally selected for toll completing calls (for example, the calls overflow from regular trunk groups) and the trunk group is datafilled in table TOLLTRKS, these non-toll calls may be erroneously identified as toll calls to a subscriber with a CLASS

Long Distance Indicator (LDI) (continued)

display feature. Therefore, trunks that can carry both toll and non-toll calls should not be datafilled in table TOLLTRKS.

Interactions

Refer to “Feature interactions" in “Calling Name Delivery Blocking (CNAMD)" for information on interactions with LDI.

Activation/deactivation by the end user

Long Distance Indicator (LDI) requires no activation or deactivation by the end user.

Billing

Long Distance Indicator (LDI) does not affect billing.

Station Message Detail Recording

Long Distance Indicator (LDI) does not affect Station Message Detail Recording.

Datafilling office parameters

Long Distance Indicator (LDI) does not affect office parameters.

Datafill sequence

The following table lists the tables that require datafill to implement Long Distance Indicator (LDI). The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Long Distance Indicator (LDI)

Table	Purpose of table
TOLLTRKS	Toll Trunks. This table stores the Common Language Location Identifier (CLLI) of all trunk groups carrying incoming toll completing traffic.

Datafilling table TOLLTRKS

Table TOLLTRKS (Toll Trunks) contains the CLLIs of all trunk groups carrying incoming toll completing traffic. The key to the table is a CLLI name; no other data is included in the table. Therefore, tuples can be added or deleted, but never modified. This information is used to evaluate the LDI when the reverse translations approach fails.

Field CLLI is the same as the key to table TRKGRP. The value represents the trunk common language location identifier. The range of values permitted

depends on the status of table TRKGRP; that is, any value must already have been datafilled in table TRKGRP.

Note: Trunks that are to be removed from table TRKGRP must first be removed from table TOLLTRKS.

The following table shows the datafill specific to Long Distance Indicator (LDI) for table TOLLTRKS. Only those fields that apply directly to Long Distance Indicator (LDI) are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table TOLLTRKS

Field	Subfield or refinement	Entry	Explanation and action
CLLI		alphanumeric (1 to 16 characters)	Common language location identifier. This field specifies the trunk over which long distance calls can come into an office. Enter a CLLI from table TRKGRP (1 to 16 characters).

Datafill example for table TOLLTRKS

The following example shows sample datafill for table TOLLTRKS

MAP display example for table TOLLTRKS

```
CLLI
_____________________________________________________________

TOLLIBN
```

Translation verification tools

Long Distance Indicator (LDI) does not use translation verification tools.

SERVORD

Long Distance Indicator (LDI) does not use SERVORD.

MDC Warm Line

Ordering codes

Functional group ordering code: RES00002

Functionality ordering code: not applicable

Release applicability

BCS31

Prerequisites

To operate, MDC Warm Line has the following prerequisites:

- BAS Generic, BAS00003
- RES & MDC Warm Line, RES00018
- MDC Minimum, MDC00001

Description

MDC Warm Line supports option WML for Meridian Digital Centrex (MDC) and Subscriber Services (SS) lines. Prior to MDC Warm Line, option WML was only available to plain old telephone service (POTS) lines.

When a caller with MDC Warm Line goes off-hook and does not dial within a specified time frame, a call is automatically set up to a predesignated directory number (DN), called a warm line DN. If the caller begins dialing before the timer expires, standard call or feature processing continues.

MDC Warm Line provides callers with normal telephone access in an emergency situation that requires little physical effort, such as lifting the telephone handset. Two potential applications of this service are medical care facilities and security stations.

Operation

MDC Warm Line starts a timer when the caller goes off-hook. This timer is defined by the operating company. If the caller does not dial before the timer expires, a call is automatically set up to the warm line DN. The caller can expedite the call to the warm line DN by pressing the octothorpe (#) key once or twice, which terminates the warm line timer and immediately sets up a call to the warm line DN. If the caller dials digits before the timer expires, the timer is canceled, and normal call processing or feature processing continues. All digits received are translated.

When MDC Warm Line is disabled, no calls are automatically set up to the warm line DN.

User modification of MDC Warm Line

CAUTION

For emergency applications, the end user should try a call to check that the warm line DN is programmed to the correct destination.

The DMS switch accepts any warm line DN that can translate to a routable number, including feature access codes and DNs that route to announcements.

MDC Warm Line can be modified in subfield CUSTMOD of Tables IBNFEAT (IBN Line Feature) and KSETFEAT (Business Set and Data Unit Feature). If this subfield is set to Y, MDC Warm Line can be turned on and off and the warm line DN can be modified from the telephone set by the caller. If this subfield is set to N, MDC Warm Line can be turned on and off and the warm line DN can be modified by the operating company.

If subfield CUSTMOD is set to Y, the caller can turn MDC Warm Line on and off. To turn the feature off, the caller dials the warm line access code defined in Table IBNXLA (IBN Translation). This disables the feature so that no calls are automatically set up to the warm line DN. To turn the feature back on, the caller dials the warm line access code, receives special dial tone, and enters the warm line DN. The DMS-100 switch checks the DN to ensure that it is a valid DN and provides confirmation tone. If the DN is not valid, the caller receives negative acknowledgement (NACK) treatment, and the feature remains off.

A warm line DN is accepted as valid if it translates to a routable number. For example, it is possible to program a feature access code or a DN that routes to an announcement. The DMS switch accepts these as valid numbers because they are routable.

If subfield CUSTMOD is set to N, callers who dial the warm line access code receive NACK treatment. Callers who dial the warm line access code but do not have the MDC Warm Line feature, receive feature not allowed (FNAL) treatment.

User interface

MDC Warm Line modifies query commands QLEN (query line equipment number) and QDN (query directory number) to display warm line data.

The following figure shows an example MAP (maintenance and administration position) display of the QLEN command for MDC Warm Line.

MDC Warm Line (continued)

MAP display of the QLEN command for MDC Warm Line

```
CI:
>QLEN 0 0 8 5
-------------------------------------------------
------
LEN: HOST 00 0 08 05
TYPE: SINGLE PARTY LINE
SNPA: 919
DIRECTORY NUMBER:   5551212
LINE CLASS CODE:   PSET (WITH DISPLAY)
CUSTGRP:  IBNTST  SUBGRP: 0  NCOS: 0  RING: Y
ADDONS: NONE    EXTENSION: N
CARDCODE: 6X21AA  GND: N  PADGRP: SPPHN  BNV: NL
MNO: Y
PM NODE NUMBER :    24
PM TERMINAL NUMBER  :    262
OPTIONS:
MSB
ACDNR
WML Y Y 5551212 5 CXR CTALL N STD LOB SCF PF USER
GENERAL
LANG ENGLISH LOCK $

    KEY   DN
     1    DN   5551212
     2    DN   5551214
     3    DN   5551215
     4    DN   5551216

    KEY   FEATURE
     1    WML Y Y 5551212 5
     3    ACDNR
     4    MSB $
     5    CXR  CTALL N STD
     6    LOB
     7    SCS
     8    PF USER GENERAL LANG ENGLISH LOCK
-------------------------------------------------
```

The following figure shows an example MAP display of the QDN command for MDC Warm Line.

Example MAP display of the QDN command for MDC Warm Line

```
CI:
>QDN 551212
------------------------------------------------------
---
DN:  551212
TYPE: SINGLE PARTY LINE
SNPA: 919  SIG: N/A  LNATTIDX:   N/A
LINE EQUIPMENT NUMBER:   HOST 00 1 09 24
LINE CLASS CODE:   PSET (WITH DISPLAY)
KEY:  1
CUSTGRP:  COMKODAK  SUBGRP: 0  NCOS: 0  RING: Y
CARDCODE: 6X21AC  GND: N  PADGRP: PPHON  BNV: NL MNO:
Y
PM NODE NUMBER :    80
PM TERMINAL NUMBER  :    313
OPTIONS:
MSB
ACDNR
WML Y Y 5551212 5 CXR CTALL N STD LOB SCS PF USER
GENERAL LANG ENGLISH LOCK
------------------------------------------------------
```

Translations table flow

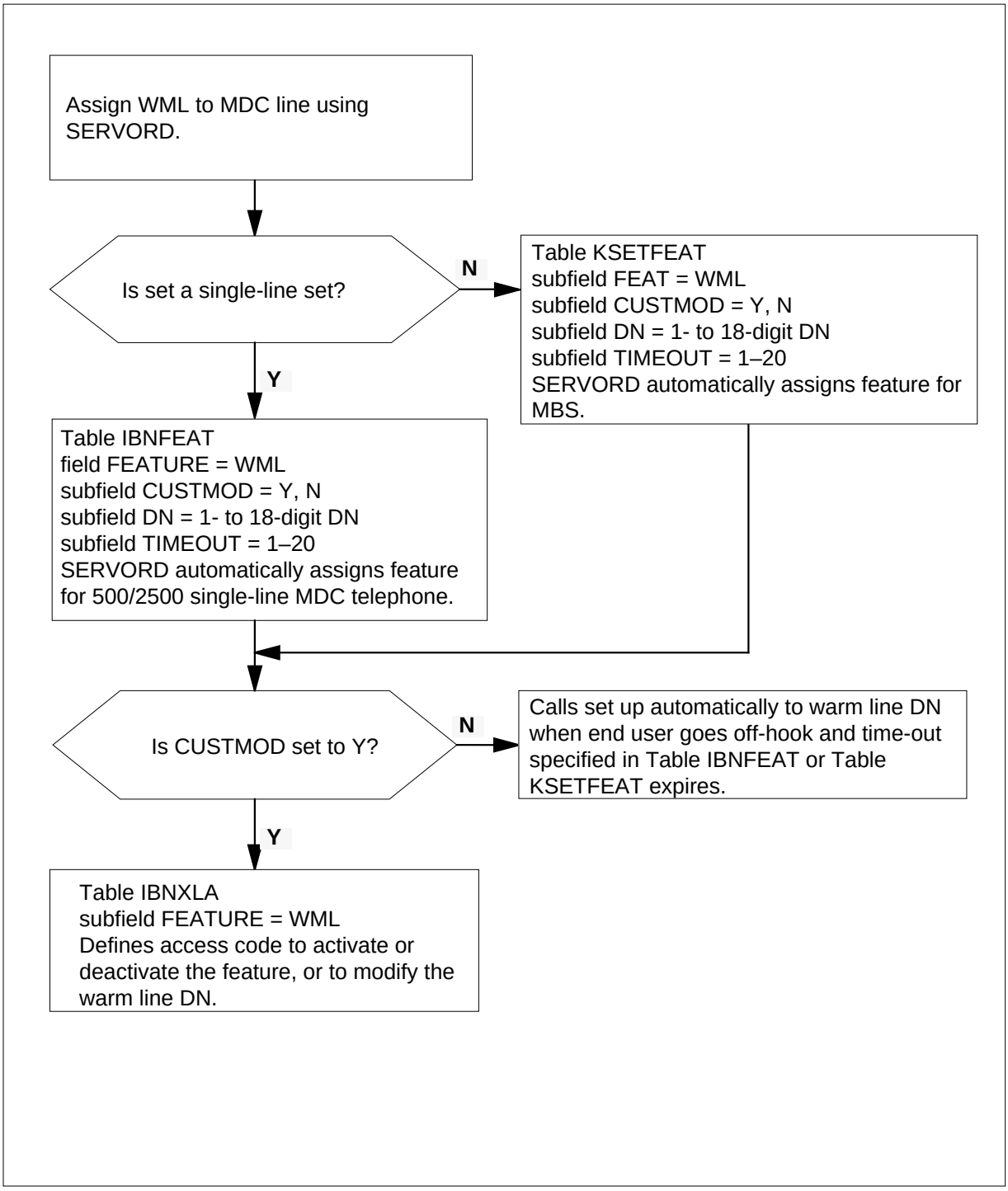
The MDC Warm Line translations tables are described in the following list:

- Table IBNXLA (IBN Translation) defines the translations for dialed digits including feature access codes. For MDC Warm Line, this table defines the access code that allows callers to turn option WML on and off and to modify the warm line DN. This access code is only required if the operating company offers callers this capability. This capability is only in affect if subfield CUSTMOD set to Y (yes) for the line.
- Table IBNFEAT (IBN Line Feature) assigns MDC Warm Line to a 500/2500 set.
- Table KSETFEAT (Business Set and Data Unit Feature) assigns MDC Warm Line to a line on a Meridian business set (MBS).

The MDC Warm Line translation process is shown in the flowchart that follows. The flowchart and data show how MDC Warm Line is enabled with subfield CUSTMOD set to Y.

MDC Warm Line (continued)

Table flow for MDC Warm Line



MDC Warm Line (continued)

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

Datafill example for MDC Warm Line

Datafill table	Example data
IBNXLA	`CUSTGRP1  89  FEAT N N N WML`
IBNFEAT	`HOST 00 1 18 08   WML  WML   N   Y   6211234   6`
KSETFEAT	`HOST 00 1 18 10  1 WML  WML  Y   Y  6214321   7`

Limitations and restrictions

The following limitations and restrictions apply to MDC Warm Line:

- When the end user programs a warm line DN, the DN is accepted as valid if it translates to a routable number. For example, it is possible to program a feature access code or a DN that routes to an announcement. The DMS switch accepts these as valid numbers because they are routable. It is important to note that if MDC Warm Line is used for emergency service, the end user should try a call to check that the warm line DN is programmed correctly.
- A maximum of 30,000 lines in each office can be assigned MDC Warm Line or Automatic Line (AUL), or both.
- MDC Warm Line cannot be assigned to attendant consoles (AC), nor can MDC Warm Line be modified by ACs. However, an AC DN can be a warm line DN. An attendant who dials the warm line access code receives NACK treatment.
- The warm line time-out period should never be greater than the permanent signal (PSIG) time-out for the office.
- The warm line DN is only verified as a translatable number when the end user programs it. It is not verified when it is entered through SERVORD into Table IBNFEAT or Table KSETFEAT. In any case, the end user should check that calls are routing to the proper destination.
- There is a limitation for lines that have the octothorpe translator datafilled in Table CUSTHEAD (Customer Group Head) or Table NCOS (Network Class of Service). If option WML is assigned to these lines, pressing the octothorpe key initiates MDC Warm Line, and octothorpe translations are

MDC Warm Line (continued)

ignored. If MDC Warm Line is inactive, octothorpe translations are ignored, and the call is sent to NACK treatment.

- MDC Warm Line cannot be assigned to lines with the following features:
  - — Automatic Line (AUL)
  - — Manual Line (MAN)
  - — Multiparty Bridging (MPB)
  - — Group Intercom (GIC)

Interactions

The following paragraphs describe the interactions between MDC Warm Line and other functionalities.

Basic 911 Emergency Service (B911),

Enhanced 911 Emergency Service (E911)

The warm line DN can be a 911 public safety answer position (PSAP).

Denied Origination

Denied Origination (DOR) takes precedence over MDC Warm Line if they are both assigned to the same line.

Last Number Redial

For lines that have Last Number Redial (LNR) and MDC Warm Line, the octothorpe key terminates the warm line timer and immediately sets up a call to the warm line DN rather than activates LNR. The end user can initiate LNR on lines with MDC Warm Line by dialing the LNR feature code datafilled in Table IBNXLA.

POTS Warm Line

The MDC and SS feature access codes for MDC Warm Line are datafilled in Table IBNXLA. The POTS feature access code for POTS Warm Line is datafilled in Table OFCVAR (Variable Office) as WML_ACCESS_CODE. Parameter WML_ACCESS_CODE has a value ranging from 20 to 99. The default value is 77. If the serving telephone office has POTS Warm Line service, the MDC Warm Line feature access codes should be the same as the POTS Warm Line feature access code to eliminate confusion for customers who enhance their lines from POTS to SS.

Three-Way Calling

MDC Warm Line can be used to originate the second leg of a three-way call. When the caller flashes and presses the octothorpe key twice for the second leg of a three-way call, the call routes immediately to the warm line DN. If the caller flashes only or flashes and presses the octothorpe key once, the call routes to the warm line DN after the PSIG timer expires (approximately 20s).

The second leg of a three-way call cannot be used to modify the MDC Warm Line status or the warm line DN.

Activation/deactivation by the end user

The following procedure lists the steps an MDC or SS caller executes to activate MDC Warm Line.

Activation/deactivation of MDC Warm Line by the end user

At your telephone:

1 Go off-hook.

Response:

Warm line timer starts.

2 Begin dialing.

Response:

MDC Warm Line is canceled.

OR

Press the octothorpe (#) key once or twice.

Response:

Call is automatically set up to warm line DN immediately.

OR

Allow warm line timer to expire.

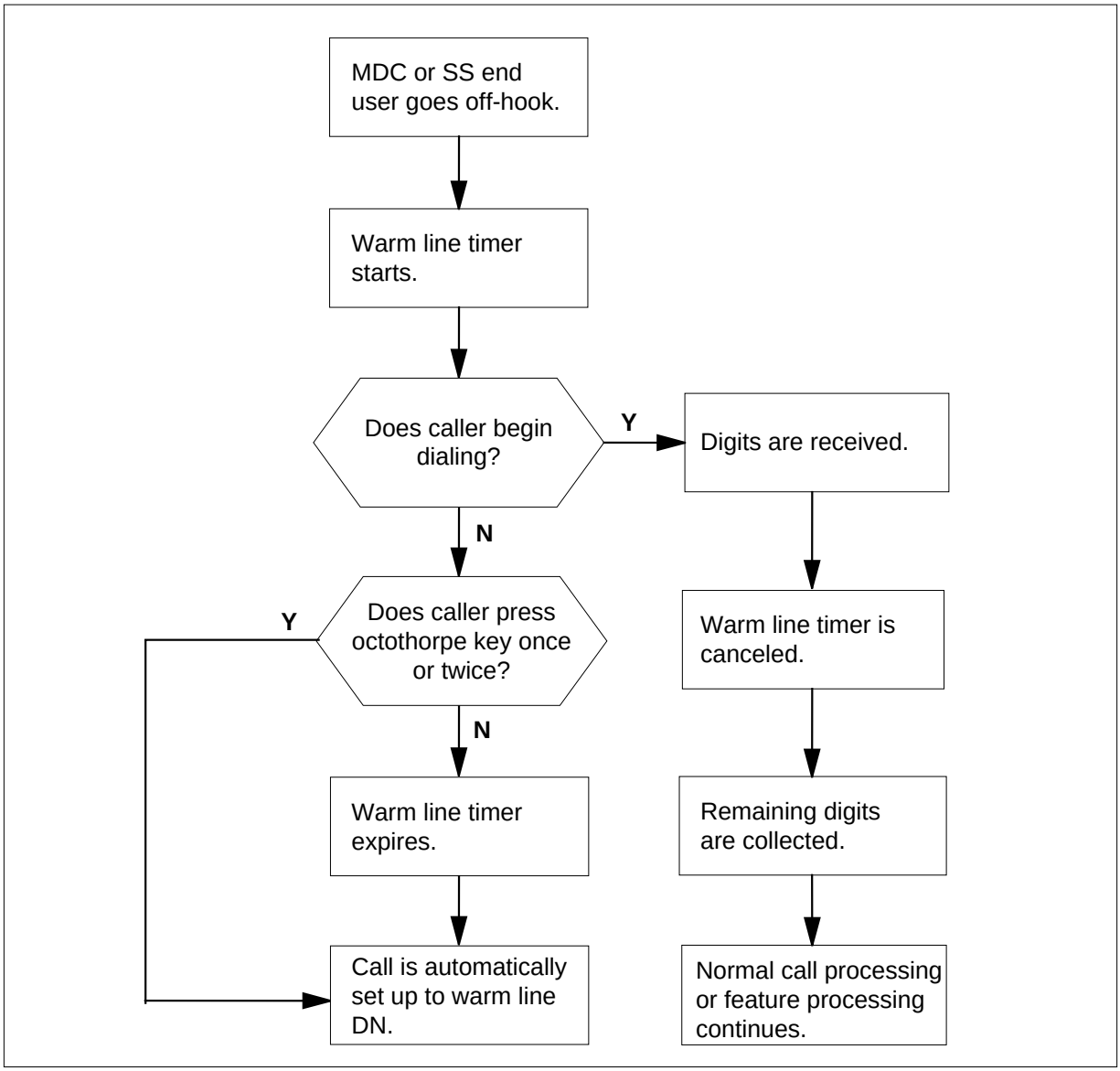
Response:

Call is automatically set up to warm line DN.

The following figure shows end user activation and deactivation for MDC Warm Line.

MDC Warm Line (continued)

End user activation and deactivation of MDC Warm Line



Billing

MDC Warm Line does not affect billing.

Station Message Detail Recording

MDC Warm Line does not affect Station Message Detail Recording.

Datafilling office parameters

The following table shows the office parameter used by MDC Warm Line. For more information about office parameters, refer to *Office Parameters Reference Manual.*

Office parameters used by MDC Warm Line

Table name	Parameter name	Explanation and action
OFCVAR	WLN_DEFAULT_TIMEOUT	This parameter specifies the default timeout value, in 1 s intervals, for MDC Warm Line. The default value is 5.

Datafill sequence

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

Datafill tables required for MDC Warm Line

Table	Purpose of table
IBNXLA	IBN Translation Table. This table stores data for the digit translation of calls from an IBN station, attendant console, incoming IBN trunk group, or incoming side of a two-way IBN trunk group.
IBNFEAT (Note)	IBN Line Feature Table. This table lists line features that are assigned to the IBN lines listed in table IBNLINES.
KSETFEAT (Note)	Business Set and Data-Unit Feature Table. This table lists the line features that are assigned to the business sets and data units (DU) listed in table KSETLINE, and also the Meridian digital telephone sets and DUs listed in table IVDINV.
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 (IBN Translation) defines the translations for dialed digits including feature access codes. For MDC Warm Line, this table defines the access code that allows the end user to turn option WML on and off and to modify the warm line DN. This access code is only required if the operating company offers end users this capability. This capability is only in effect if subfield CUSTMOD set to Y for the line.

Note: The warm line access code for POTS lines is defined in Table OFCVAR in parameter WML_ACCESS_CODE. To ensure that POTS end users who upgrade to SS lines do not have to learn a new access code, set

MDC Warm Line (continued)

the SS warm line access code in Table IBNXLA equal to the POTS warm line access code. If Table IBNXLA is datafilled with a different access code, a warning message is displayed.

The following table shows the datafill specific to MDC Warm Line for table IBNXLA. Only those fields that apply directly to MDC Warm Line are shown. 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		see subfields	Key This field consists of subfields XLANAME and DGLIDX.
	XLANAME	1- to 8-characters	Translator Name This subfield specifies the translator name. Enter the 1- to 8-character name assigned to the translator in Table XLANAME (List of Translator Names).
	DGLIDX	1- to 18-digits	Digilator Index This subfield specifies the access code. Enter the 1- to 18-digit number assigned as the access code.
RESULT		see subfields	Result This field consists of subfields TRSEL, ACR, SMDR, and FEATURE.
	TRSEL	FEAT	Translator Selector This subfield specifies the translator selector. Enter FEAT.
	ACR	Y or N	Account Code Entry This subfield specifies whether an account code entry is to be required. Enter Y or N.
	SMDR	Y or N	Station Message Detail Recording This subfield specifies whether all calls from a customer group station or an AC in the block of station numbers are to be recorded. Enter Y or N.
	FEATURE	WML	Feature This subfield specifies the name of the feature. Enter WML.

Datafill example for table IBNXLA

The following example shows sample datafill for table IBNXLA.

MAP display example for table IBNXLA

```
TABLE: IBNXLA
  KEY                                RESULT
_____________________________________________________________
CUSTGRP1    89                   FEAT N N  N WML
```

Translation verification tools

MDC Warm Line does not use translation verification tools.

SERVORD

MDC Warm Line is assigned to a line using the Service Order System (SERVORD). SERVORD commands ADO (add option), DEO (delete option), NEW (establish service), and CHF (change feature information for preexisting feature) can be used with MDC Warm Line. The following table shows the SERVORD prompts used to assign MDC Warm Line to a line, delete MDC Warm Line from, or change MDC Warm Line on a line.

SERVORD limitations and restrictions

MDC Warm Line has no SERVORD limitations and restrictions.

SERVORD prompts

The following table shows the SERVORD prompts used to implement MDC Warm Line on a line.

SERVORD prompts for MDC Warm Line (Sheet 1 of 2)

Prompt	Valid input	Explanation
OPTION	WML	Specifies the option to be added, deleted, or changed. Enter WML.
CUSTMOD	Y, N	Specifies whether the end user can modify the feature to turn it on and off or change the warm line DN. Enter Y or N.
ACTIVE	Y, N	Specifies whether the option is active. Enter Y or N.

MDC Warm Line (continued)

SERVORD prompts for MDC Warm Line (Sheet 2 of 2)

Prompt	Valid input	Explanation
WMLDN	1- to 18-digit DN	Specifies the DN to which the call is routed when the warm line timer expires. Enter a 1- to 18- digit DN. This number can be any number that can be properly translated by the switch (for example, an extension number or the number dialed to reach the attendant).
TIMEOUT	1 to 20	Specifies the number of seconds in the warm line timer. Enter a value from 1 to 20. This number should never be greater than the PSIG time-out for the office.

Note: Tables IBNFEAT and KSETFEAT are automatically datafilled when MDC Warm Line is assigned using SERVORD.

SERVORD example for implementing MDC Warm Line

The following service order example shows how MDC Warm Line is added to an MBS line using the ADO command.

SERVORD example for adding MDC Warm Line to an existing line using SERVORD in prompt mode

```
SO
>ADO
SONUMBER:  NOW 90 1 2AM
>
DN_OR_LEN:
> 0 0 8 6
OPTION:
> WML
CUSTMOD:
> Y
ACTIVE:
> Y
WMLDN:
> 6212000
TIMEOUT:
> 5
OPTION:
>$
```

MDC Warm Line (end)

SERVORD example for adding MDC Warm Line to an existing line using SERVORD in no-prompt mode

```
> ADO $ 0 0 8 6 WML Y Y 6212000 5 $
```

Meridian Wake-up Service

Ordering codes

Functional group ordering code: RES00002

Functionality ordering code: RES00014

Release applicability

BCS33 and up

Prerequisites

To operate, Meridian Wake-up Service has the following prerequisites:

- BAS Generic, BAS00003
- MDC Minimum, MDC00001
- MDC MBS Minimum, MDC00007

Description

Meridian Wake-up Service (WUCR) provides a wake-up call service for Subscriber Services (RES) and MDC lines. WUCR is assigned as a line option and is activated and deactivated by the end user through the use of access codes. Upon activation of WUCR, a wake-up call request is programmed by the end user to ring the end user's line at a particular time within the next 24 hours. The end user can deactivate the feature and cancel the wake-up call request at any time after it is programmed.

Note: Meridian Wake-up Service was previously called Wake-up Call Reminder (WUCR).

Operation

WUCR is activated by the end user through an activation code. At the time of activation, the end user programs the time at which the service is to ring the end user's line with the wake-up call. The time must be entered as four consecutive digits, in military time, ranging from 0000 to 2359. The time entered must be no less than 10 min and no more than 23 h and 45 min from the present time. The wake-up call is then generated at the next occurrence of that time.

The time at which the wake-up call is received is accurate to within 5 min of the specified time. Each wake-up call request is placed into a 5-min time slot. All wake-up call requests for times 1210, 1211, 1212, 1213, and 1214, for example, are placed in the time slot beginning at 1210 and ending at 1214 and are processed beginning at 1210. A maximum of 100 requests in a 5-min time slot are allowed. A maximum of 10,000 total active requests are allowed.

Meridian Wake-up Service (continued)

Only one wake-up call request can be pending on a line at any given time. To change the specified time of a wake-up call request, the end user must first deactivate WUCR using a separate access code, discarding the current wake-up call request, and then reactivate WUCR and program a new wake-up call request. A wake-up call is not automatically repeated after 24 h; if another wake-up call is desired, a new request must be programmed by the end user. A wake-up call request can be programmed only by the end user and applies only to the line from which it is programmed.

When servicing a wake-up call request, the central office switch rings the end user's phone within the 5-min time slot into which the request was placed and provides an administration-defined announcement upon answer. Standard ringing is used to apply physical ringing to the end user's phone; there is no special ringing cadence for a wake-up call. If the call is not answered or fails for any reason, a first retry is attempted within approximately 5 min. If the first retry is not answered or fails, a second retry is attempted. If the second retry is not answered or fails, the wake-up call request is discarded, and the event is recorded.

Ringing time-out

The number of times the phone rings (the ringing time-out value) can be defined by the end user. The value must be entered immediately after the wake-up call time, in a two-digit format, ranging from 02 to 05. For example, a wake up call for 7:35 a.m. with a ringing value of 5 would be entered as 073505.

The ringing time-out value is an approximation. The value is converted to seconds based on the standard 6-s ringing cycle. If a wake-up call is programmed for 5 rings, the time-out value is 30 s.

If the ringing time-out is not specified, the value is taken from office parameter WUCR_RINGING_TIMEOUT in Table OFCENG (Engineered Office). If the ringing time-out is specified, the programmed ringing time-out must be less than or equal to the value of office parameter WUCR_RINGING_TIMEOUT.

Restarts

Wake-up call requests survive warm, cold, and reload restarts. If a request is not complete before a restart occurs, it cannot survive the restart. Wake-up calls scheduled for generation during the restart may be lost.

Switch of activity (SWACT) in the peripherals affects wake-up calls like other calls. A warm SWACT is transparent, and a cold SWACT brings the call down.

Meridian Wake-up Service (continued)

Journal files

All additions and deletions of WUCR are recorded in the journal file and are recoverable. Activation and deactivation of wake-up call requests are not recorded in the journal file.

BCS applications

During a batch change supplement (BCS) application, wake-up call requests must be transferred to the inactive BCS side. The requests can be transferred by moving the internal WUCR table from the active BCS side to the inactive side through dump and restore procedures.

Time and date changes

A time or date change affects wake-up call requests. Requests are lost if the time or date is advanced or set back. Active wake-up call requests may be discarded and logged.

The most common time change occurs when daylight savings time goes into effect. When the switch is advanced one hour, one hour of wake up calls is lost. Recovering the lost requests would affect the performance of WUCR. Since daylight savings time occurs once a year, the potential cost of accounting for the lost hour is not justified.

Datafill for WUCR announcements

WUCR must have an announcement defined in order to work properly. To set up an announcement, the following tables must be datafilled and an announcement recorded. Refer to *Digital Recorded Announcement Machine Maintenance Reference Manual* for more information on datafilling for announcements.

Note: If the following tables are not datafilled to provide a wake-up call announcement for WUCR, reorder tone is used as a default.

Table CLLI

Table CLLI (Common Language Location Identifier) contains the common language location identifier (CLLI) codes, which uniquely identify each announcement, tone, or trunk group. This table must be datafilled to identify the announcement to be applied to wake-up calls. For more information on this table, refer to the customer data schema section of this document.

Meridian Wake-up Service (continued)

MAP display example for table CLLI

```
CLLI         ADNUM   TRKGRSIZ                      ADMININF
_____________________________________________________________
SAMPLEWUCR   3       0                          SAMPLE_FOR_WUCR
DRAMCLLI     10      2                          DRAM_CLLI
```

Table ANNS

Table ANNS (Announcements) contains data for each announcement assigned in a switching unit. This table must be datafilled to associate the data with the announcement that is applied to wake-up calls. For more information on this table, refer to the customer data schema section of this document.

MAP display example for table ANNS

```
CLLI        ANTYPE   TRAFSNO    MAXCONN    CYTIME      MAXCYC
_____________________________________________________________
SAMPLEWUCR  STND     99          15          10         2
```

Table ANNMEMS

Table ANNMEMS (Announcement Members) contains the memory assignments for each member assigned to the announcements listed in Table ANNS. For more information on this table, refer to the customer data schema section of this document.

MAP display example for table ANNMEMS

```
ANNMEM                HDWTYPE         CARD
                                                MEMINFO
_____________________________________________________________
SAMPLEWUCR 0          DRAM            DRA
                                          ( 0 MTM 0 5 ) $
```

Table DRAMS

Table DRAMS (Digital Recorded Announcement Machines) contains information for the trunk cards that constitute a digital recorded announcement machine (DRAM). This table must be datafilled to identify the DRAM that contains the prerecorded announcement that is to be applied to wake-up calls. For more information on this table, refer to the customer data schema section of this document.

Meridian Wake-up Service (continued)

MAP display example for table DRAMS

```
DRAMCARD     TMTYPE     TMNO    TMCKT   CARDCODE
                                                CARDINFO
_____________________________________________________________
0 1          MTM        0       5       1X75AA
                                                CTLR DRAMCLLI
```

Table DRAMTRK

Table DRAMTRK (Digital Recorded Announcement Machine Track) lists the names assigned to the phrases that are assigned to each track or announcement. For more information on this table, refer to the customer data schema section of this document.

MAP display example for table DRAMTRK

```
ANNTRACK                                          PHSLIST
_____________________________________________________________
SAMPLEWUCR 0                    (                 SILENCE )
```

Table TMTCNTL.TREAT

Table TMTCNTL.TREAT (Treatments) defines the tones, announcements, and states to be returned to the originator of a call when a specified treatment code is encountered during translations. The confirmation (CONF) and negative acknowledgment (NACK) treatments are used. For more information on this table, refer to the customer data schema section of this document.

MAP display example for table TMTCNTL.TREAT

```
TREATMT      LOG                                  FSTRTE
_____________________________________________________________
CONF          Y     S                            T120
NACK         Y     S                             T120
```

Table OFRT

Table OFRT (Office Route) is used when an originating call is being translated and a preceding stage identifies a route reference index. For more information on this table, refer to the customer data schema section of this document.

Meridian Wake-up Service (continued)

MAP display example for table OFRT

```
RTE                          RTELIST
_____________________________________________________________
22                           TRMT NACK $
```

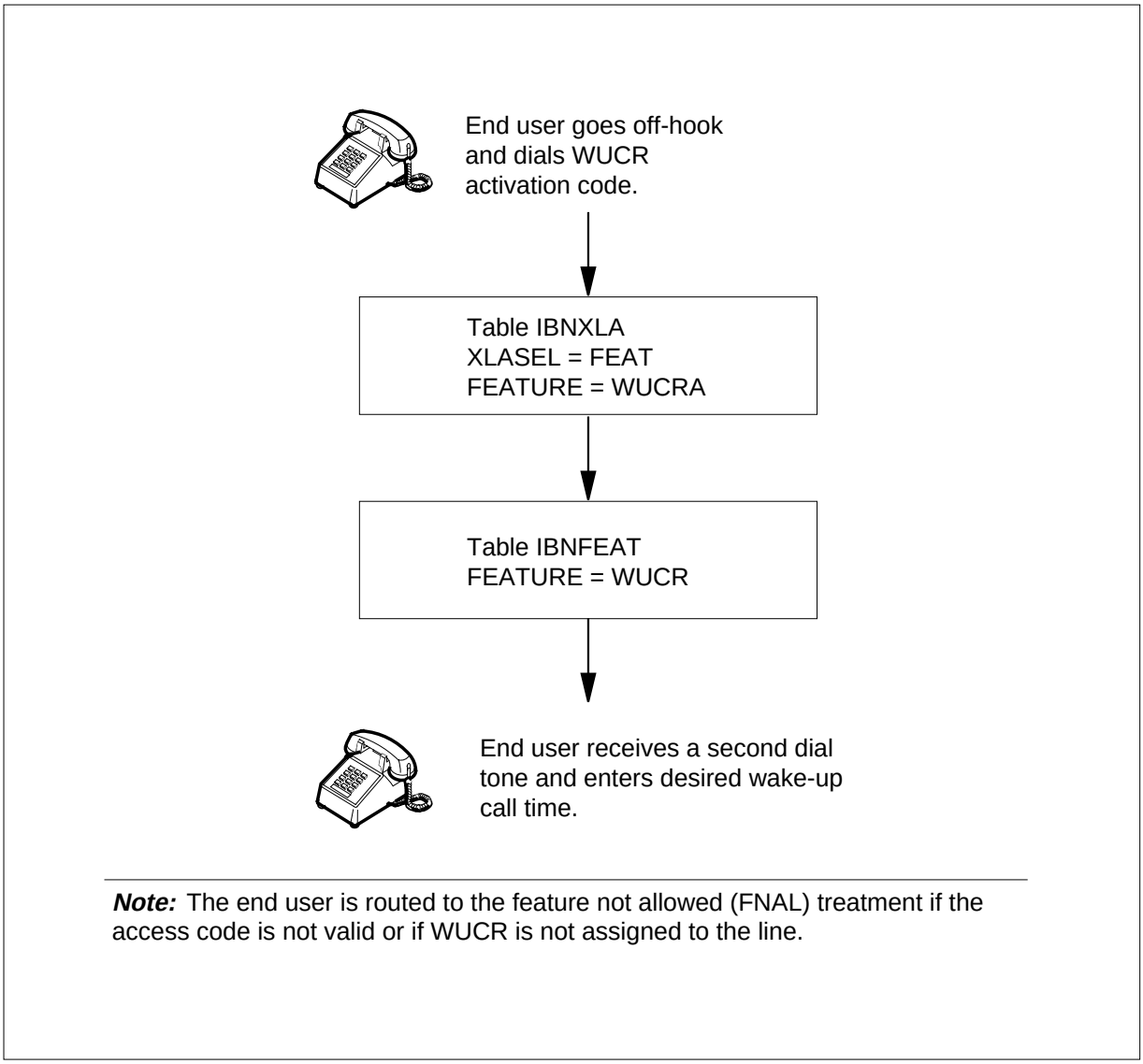
Translations table flow

Meridian Wake-Up Service activation

The Meridian Wake-up Service translations process is shown in the first flowchart. The flowchart and data show the order in which tables are accessed during the activation process for a 2500 set. The flowchart for a Meridian business set (MBS) is identical, except that Table KSETFEAT (Business Set and Data Unit Feature) is accessed instead of Table IBNFEAT (IBN Line Feature).

Meridian Wake-up Service (continued)

Table flow for Meridian Wake-up Service (2500 set)



Note: The end user is routed to the feature not allowed (FNAL) treatment if the access code is not valid or if WUCR is not assigned to the line.

The following items show datafill examples for Meridian Wake-up Service activation:

- Activation code - 67
- LEN - HOST 00 0 00 11.

Meridian Wake-up Service (continued)

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

Datafill example for Meridian Wake-up Service

Datafill table	Example data
IBNXLA	CX50B 67 FEAT N N N WUCRA
IBNFEAT	HOST 00 0 00 11 0 WUCR WUCR

Meridian Wake-up Service deactivation

The Meridian Wake-up Service translations process is shown in the second flowchart. The flowchart and data show the order in which tables are accessed during the deactivation process for an MBS.

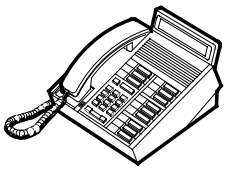
The Meridian Wake-up Service translations tables for an MBS re described in the following list:

- Table KSETFEAT (Business Set and Data Unit Feature) assigns the Meridian Wake-up Service to business sets. Table KSETFEAT is accessed using the LEN.
- Table IBNXLA (IBN Translation) stores the deactivation code for Meridian Wake-up Service. Table IBNXLA is accessed using the translator name and digits dialed by the caller. The FEAT translations selector is used.

The Meridian Wake-up Service translation process for an MBS is shown in the flowchart that follows.

Meridian Wake-up Service (continued)

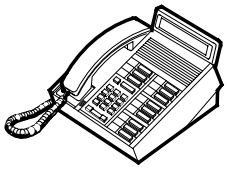
Table flow for Meridian Wake-up Service (MBS)



End user goes off-hook and dials WUCR deactivation code.

Table IBNXLA
XLASEL = FEAT
FEATURE = WUCRD

Table KSETFEAT
FEATURE = WUCR



End user receives a confirmation tone.

Note: The end user is routed to the feature not allowed (FNAL) treatment if the access code is not valid or if WUCR is not assigned to the line.

The following items show datafill examples for Meridian Wake-up Service activation:

- Deactivation code - 68
- LEN - HOST 00 0 00 22.

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

Datafill example for Meridian Wake-up Service

Datafill table	Example data
IBNXLA	CX50B 68 FEAT N N N WUCRD
KSETFEAT	HOST 00 0 00 22 0 WUCR WUCR

Limitations and restrictions

The following limitations and restrictions apply to Meridian Wake-up Service:

- WUCR cannot be assigned to integrated services digital network (ISDN) lines.
- WUCR cannot be assigned to secondary directory numbers (SDN).
- WUCR applies only to the primary directory number (PDN) of an MBS.
- Only one outstanding wake-up call request at a time is permitted on a line.
- Only 100 outstanding wake-up call requests within a single 5-min time slot are permitted on a switch.
- Only 10,000 total outstanding wake-up call requests at a time are permitted on a switch.
- A wake-up call request cannot be programmed less than 10 min or more than 23 h 45 min from the current time.
- End users can activate or deactivate a wake-up call request only for their own line.
- Operating company administrators can only query wake-up call requests; they cannot activate, deactivate, or change them.
- Wake-up call requests can be lost during time or date changes, restarts lasting more than 5 min, and reboots and through the use of the Service Order System (SERVORD) CHG (change) and CLN (change LEN) commands.
- Three passes are made through each time slot to attempt to process the wake-up call requests for that time slot. Any requests that cannot be handled during these three passes are discarded as overdue the next time the time slot is processed. Retries (calls being handled on the second and third passes) are given priority and are processed before other requests in that time slot.
- Time zones are ignored by WUCR; the time of day is considered to be the time at the switch.

Meridian Wake-up Service (continued)

- Wake-up calls terminating to a peripheral utilize resources on that peripheral. Therefore, if there is heavy traffic on a particular peripheral, wake-up calls terminating to that peripheral can prevent other calls from terminating to the peripheral.
- WUCR is not intended to be used as a wake-up facility of a large hotel or motel; the following limitations make the option ineffective in such an environment:
  - — WUCR is incompatible with the Hotel Motel Line (HOT) feature.
  - — Third-party activation and deactivation of WUCR are not supported.
  - — The limit of only 100 wake-up call requests for each 5-min time slot is a switch-wide limitation.
  - — Ring generator limitations limit the number of lines a line concentrating device, such as a line concentrating module (LCM), can ring simultaneously.
- Only the original end-user-programmed request time is displayed by the QDN and QLEN commands; the time is not updated to reflect subsequent wake-up call retries.
- WUCR cannot coexist in the same office with international feature AE0240, Wake-up Call.

Interactions

The following paragraphs describe the interactions between Meridian Wake-up Service and other functionalities.

- Automatic Answer Back (AAB). AAB does not automatically answer wake-up calls.
- Automatic Call Back (ACB). ACB cannot be invoked on a wake-up call.
- Automatic Call Distribution (ACD). A line in the ACD queue cannot activate or deactivate WUCR.
- Automatic Dial (AUD). The wake-up call programming sequence cannot be abbreviated. Only the wake-up call activation and deactivation codes can be programmed.
- Automatic Line (AUL). A line with the AUL option cannot activate or deactivate WUCR.
- Automatic Recall (AR). A line cannot activate AR on a wake-up call.
- Automatic Set Relocate (ASR). ASR is transparent to WUCR. Wake-up call data is restored by an ASR-IN procedure. When a line with an outstanding wake-up call request does an ASR-OUT procedure, the line is

treated as out of service, and the wake-up call request obeys the rules for unanswered first attempts.

- Busy Lamp Field (BLF). A line engaged in a wake-up call is busy.
- Call Coverage (CCV). A line cannot activate CCV on a wake-up call.
- Call Forward Busy (CFB), Call Forward Don't Answer (CFD), and Call Forward Universal (CFU). There is no interaction if activation or deactivation of WUCR is attempted on a set that is call forwarded. WUCR cannot forward; if a wake-up call attempts to call an end user who has Call Forwarding active, the wake-up call is treated as if it were not answered, and WUCR follows the rules for unanswered first attempts.
- Call Park (PRK). A wake-up call cannot be parked.
- Call Pickup (CPU, DCPU, DCBI). There is no interaction with any of the Call Pickup features when activating or deactivating WUCR. A wake-up call cannot be picked up.
- Call Waiting (CWT). A call a line engaged in a wake-up call is connected to a treatment; therefore, the line cannot have a call waiting. A wake-up call does not wait on an engaged line. The line is treated as busy, and the wake-up call is tried later.
- Cancel Call Waiting (CCW). WUCR and CCW are compatible; the two features do not interact.
- Coin lines. WUCR is incompatible with Coin lines.
- Conference (CONF6, CONF3, PRESET, MEETME). A line engaged in a wake-up call cannot initiate a conference call. A line engaged in a conference call cannot flash and program a wake-up call.
- Customer Originated Trace (COT). COT cannot be activated on a wake-up call.
- Denied Origination (DOR). A line assigned the DOR option cannot activate or deactivate a wake-up call.
- Denied Termination (DTM). A line assigned the DTM option cannot receive a wake-up call.
- Do Not Disturb (DND). A line with DND activated cannot receive a wake-up call. The wake-up call treats the line as busy. The DND treatment is not followed.
- Dial pulse (DP) lines. WUCR is compatible with DP lines.
- Dual-tone multifrequency (DTMF) lines. WUCR is compatible with DTMF lines.

Meridian Wake-up Service (continued)

- Executive Busy Override (EBO). A line that is activating, deactivating, or answering a wake-up call cannot be overridden by the EBO option.
- Flash (FLS). A line answering a wake-up call cannot flash.
- Free Number Terminating (FNT). WUCR is compatible with FNT; the two features do not interact.
- Hotel Motel Line (HOT). WUCR is not compatible with HOT lines.
- Hunt groups (CIR, DLH, DNH, MLH). WUCR is not compatible with hunt groups.
- Last Number Redial (LNR). The wake-up call activation sequence cannot be retrieved by LNR.
- Make Set Busy (MSB). A line with MSB activated cannot receive a wake-up call. The wake-up call treats the line as busy.
- Malicious Call Trace (MCT). A line engaged in a wake-up call cannot activate MCT.
- Message Waiting (MWT, EMW). Message Waiting cannot be activated by WUCR and is therefore not supported by WUCR.
- Multiple Appearance Directory Number (MADN). WUCR is not compatible with MADN.
- Multiple party lines (2FR, 4FR, 8FR, 10FR). WUCR is not compatible with multiple party lines.
- No Double Connect (NDC). WUCR is compatible with NDC; the two features do not interact.
- Plug Up (PLP). A line with PLP cannot program or receive a wake-up call.
- Power Features. WUCR does not support Power Features.
- Query Time and Date (QTD). QTD can be invoked while a wake-up call is engaged.
- Restricted Sent Paid (RSP). WUCR is incompatible with RSP.
- Ring Again (RAG). WUCR does not interact with RAG.
- Speed Call (SCS/SCL). The wake-up call programming sequence cannot be abbreviated. Only the wake-up call activation and deactivation codes can be programmed.
- Suspended Service (SUS). A line with SUS cannot program or receive a wake-up call.
- Three-Way Calling (3WC). A line engaged in a wake-up call cannot initiate a three-way call. A line engaged in a three-way call cannot flash and program a wake-up call.

- Uniform Call Distribution (UCD). A line can activate or deactivate a wake-up call while in the UCD queue.
- Warm Line (WML). A line with WML active can program a wake-up call.

For display features, dialed digits are echoed to the display during end user activation and deactivation of WUCR.

Activation/deactivation by the end user

Activation

Meridian Wake-up Service can be activated only by the end user and only for the end user's own line. The end user uses the following sequence to activate WUCR and generate a wake-up call request.

Activation of Meridian Wake-up Service by the end user

At your telephone:

1 Lift the handset.

Response:

Listen for a dial tone.

2 Enter the 2-digit WUCR end user activation code.

Response:

Listen for a second dial tone.

3 Enter the time the wake-up call is to be returned.

Response:

Listen for a confirmation tone or a negative acknowledgment tone.

4 Replace the handset.

Response:

None

The WUCR end user activation code is datafilled in Table IBNXLA. The time for the wake-up call is entered as four consecutive digits, in military time, ranging from 0000 to 2359. After the time is entered, a confirmation tone is received if the request can be accommodated; otherwise, a negative acknowledgment tone is received. A negative acknowledgment tone is returned if any of the following occurs:

- An invalid time of day is specified.
- An invalid programming sequence is dialed.
- The wake-up call is requested for a time that is less than 10 min or more than 23 h 45 min from the current time.

Meridian Wake-up Service (continued)

- The end user has an outstanding request for a wake-up call.
- The maximum number of outstanding requests for the specified time period (100) has been reached.
- The maximum number of outstanding requests for the entire switch (10,000) has been reached.

Deactivation

Meridian Wake-up Service can be deactivated only by the end user and only for the end user's own line. The end user uses the following sequence to deactivate WUCR and cancel an outstanding wake-up call request.

Deactivation of Meridian Wake-up Service by the end user

At your telephone:

1 Lift the handset.

Response:

Listen for a dial tone.

2 Enter the 2-digit WUCR end user deactivation code.

Response:

Listen for a confirmation tone or a negative acknowledgment tone.

3 Replace the handset.

Response:

None

A confirmation tone is returned after the deactivation code is entered if the deactivation code is valid and the sequence is dialed correctly; otherwise, a negative acknowledgment tone is returned. A confirmation tone is returned following a correct dialing sequence regardless of whether the end user had an outstanding wake-up request at the time of deactivation.

The QDN (query directory number) and QLEN (query line equipment number) commands display information about WUCR. Specifically, the commands indicate whether WUCR is assigned to a line and whether WUCR is active or inactive. If the feature is active, the time of the wake-up call request is displayed as follows.

```
CI:
>QDN 6215001
-----------------------------------------------
DN:     6215001
TYPE: SINGLE PARTY LINE
SNPA: 613   SIG: DT    LNATTIDX:   32
LINE EQUIPMENT NUMBER:     HOST 00 0 08 01
LINE CLASS CODE:     1FR
LINE TREATMENT GROUP:    0
CARDCODE:  6X17AA   GND: N  PADGRP: STDLN  BNV: NL MNO: N
PM NODE NUMBER     :   24
PM TERMINAL NUMBER :   258
OPTIONS:
DGT NAME PUBLIC DAVID WUCR A 0615
-----------------------------------------------
```

Note: Only the end-user-programmed time appears in QDN and QLEN displays. If the initial call does not complete and subsequent calls are generated, the times of the subsequent calls do not appear in the displays.

The QWUCR (query WUCR) command queries the active wake-up call requests within a particular time period. The command provides information only; wake-up call requests cannot be modified with QWUCR. The command accepts two optional parameters that limit the time period queried. The first parameter is the start time of the query, and the second parameter is the stop time. If only the first parameter is specified, only the requests for that single time slot are displayed. If no parameter is specified, all outstanding wake-up call requests are displayed. The syntax of the QWUCR command is as follows:>**QWUCR <start time> <end time>**

where:

start time
specifies the hour and minute of the start time (0000 to 2359)

end time
specifies the hour and minute of the end time (0000 to 2359)

Both the start time and the end time must be entered as four consecutive digits (that is, military time). For example, to query the wake-up call requests active for 5:00 a.m., enter 0500 as the start time.

Meridian Wake-up Service (continued)

An example MAP display of the QWUCR command follows.

```
>QWUCR 0500 1500

ACTIVE WAKE–UP REQUESTS
–––––––––––––––––––––––

TIME: 05:00 – 05:04
DNS:
      7221234 7225678
COUNT: 2

TIME: 06:15 – 06:19
DNS:
      7222345 7223456 7224567 7225678 7226789 7221011
7222011
      7223000 7220345 7220056 7220560
COUNT: 11

TIME: 14:15 – 14:19
DNS:
      7220001 7220002 7220666
COUNT: 3

TOTAL NUMBER OF REQUESTS: 16
```

Time slots are specified by 5-min boundary times such as 0500 or 1605. If the time specified in one of the parameters of the QWUCR command does not fall on a 5-min boundary (0513, for example), that time is converted to the 5-min boundary time of the time slot in which it falls. For example, entering **QWUCR 0503 1502** would result in a display of time slots 0500 through 1500, exactly as in the preceding example.

Note: Time slots containing no active requests are not displayed, even if they fall within the range of time slots being queried.

Billing

Meridian Wake-up Service does not affect billing.

Station Message Detail Recording

Meridian Wake-up Service does not affect Station Message Detail Recording.

Datafilling office parameters

Datafill procedure for WUCR_RINGING_TIMEOUT

WUCR creates office parameter WUCR_RINGING_TIMEOUT in Table OFCENG.

Note: The value of WUCR_RINGING_TIMEOUT must always be less than the ringing time-out value for the office, which is controlled by office parameter RNG_TIMEOUT_NO_OF_SECS, except when RNG_TMEOUT_NO_OF_SECS has a value of '0'.

The following table shows the office parameters used by Meridian Wake-up Service. For more information about office parameters, refer to *Office Parameters Reference Manual.*

Office parameters used by Meridian Wake-up Service

Table name	Parameter name	Explanation and action
OFCENG	WUCR_RINGING_TIMEOUT	Specifies the length of time in seconds physical ringing is applied to an end user's phone during a wake-up call. Enter a value from 12 to 54. The default value is 30.

Note: A line concentrating device can ring only a limited number of lines at a time; keeping the ringing time of wake-up calls to a minimum reduces the possibility of blocked ringing requests at the peripheral.

Datafill sequence

The following table lists the tables that require datafill to implement Meridian Wake-up Service. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Meridian Wake-up Service

Table	Purpose of table
IBNFEAT (Note)	IBN Line Feature Table
KSETFEAT (Note)	Business Set and Data-Unit Feature Table
IBNXLA	IBN Translation Table
Note: This table is datafilled through SERVORD; therefore, no datafill procedure is provided.	

Meridian Wake-up Service (continued)

Datafilling table IBNXLA

Table IBNXLA (IBN Translation) stores the data for the digit translation of a call from an IBN station, attendant console, or incoming side of a two-way IBN trunk group. WUCRA and WUCRD are added to the range of values for subfield FEATURE of field RESULT to allow datafill for the activation and deactivation codes for WUCR.

The following table shows the datafill specific to Meridian Wake-up Service for table IBNXLA. Only those fields that apply directly to Meridian Wake-up Service are shown. 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
RESULT		see subfields	Result. This field consists of subfields TRSEL, ACR, SMDR, and FEATURE.
	TRSEL	FEAT	Translations Selector. This subfield specifies the translation selector. Enter FEAT.
	ACR	Y or N	Account Code Entry. This subfield specifies whether an account code is necessary. Enter Y or N.
	SMDR	Y or N	Station Message Detail Recording. This subfield specifies whether calls will be recorded by SMDR. Enter Y or N.
	FEATURE	WUCRA or WUCRD	Feature. This subfield specifies the feature for activation or deactivation. Enter WUCRA for WUCR activation. Enter WUCRD for WUCR deactivation.

Datafill example for table IBNXLA

The following example shows sample datafill for table IBNXLA. This example shows two tuples in Table IBNXLA that assign to a translator activation and deactivation codes for WUCR.

MAP display example for table IBNXLA

```
          KEY
                                                  RESULT
_____________________________________________________________
CX50B      67
                                        FEAT N N N   WUCRA
CX50B      67
                                        FEAT N N N   WUCRD
```

Translation verification tools

Meridian Wake-up Service does not use translation verification tools.

SERVORD

The operating company administrator can add or delete the WUCR option to or from a line with the SERVORD ADO (add option) or DEO (delete option) command. WUCR is added to a line with an inactive status. When WUCR is deleted from a line, any active wake-up call request against that line is also deleted.

WUCR can also be added to a line at the time the line is established through the use of the SERVORD NEW (establish line service) command. If a line is taken out of service through the use of the SERVORD OUT (remove line service) command, WUCR is removed from the line, and any active wake-up call request for that line is discarded.

Because the only data associated with WUCR is the time of an active wake-up call request and because that data is controlled by the end user and not the operating company, the SERVORD CHF (change feature information for preexisting feature) command cannot be used on the WUCR feature.

If the SERVORD CHG (change translation/routing information) and CLN (change LEN) commands are used on a line that has WUCR active, the active wake-up call request is lost.

Table IBNFEAT

Table IBNFEAT (IBN Line Feature) assigns Meridian Wake-up Service to MDC lines. Table IBNFEAT is accessed using the line equipment number (LEN).

Table IBNXLA

Table IBNXLA (IBN Translation) stores the activation code for Meridian Wake-up Service. Table IBNXLA is accessed using the translator name and digits dialed by the caller. The feature (FEAT) translations selector is used.

Meridian Wake-up Service (end)

SERVORD limitations and restrictions

Meridian Wake-up Service has no SERVORD limitations and restrictions.

SERVORD prompts

The following table shows the SERVORD prompts used to assign Meridian Wake-up Service to a line.

SERVORD prompts for Meridian Wake-up Service

Prompt	Valid input	Explanation
OPTION	WUCR	Specifies the option to be added to or deleted from a line. Enter WUCR.
Note: Table IBNFEAT or KSETFEAT is automatically datafilled when Meridian Wake-up Service is assigned using SERVORD.		

SERVORD example for adding Meridian Wake-up Service

The following SERVORD example shows how Meridian Wake-up Service is added to an existing line using the ADO command.

SERVORD example for adding Meridian Wake-up Service to an existing line in prompt mode

```
SO:
> ADO
SONUMBER:  NO 90 1 2 AM
>
DN_OR_LEN:
> 6215005
OPTION:
> WUCR
OPTION:
> $
```

SERVORD example for adding Meridian Wake-up Service to an existing line in no-prompt mode

```
> ADO $ 6215005 WUCR $
```

Remote Call Forwarding without Unique PIN

Ordering codes

Functional group ordering code: RES00002

Functionality ordering code: not applicable

Release applicability

BCS33 and up

Prerequisites

To operate, Remote Call Forwarding without Unique PIN has the following prerequisites:

- BAS Generic, BAS00003
- MDC Minimum, MDC00001
- RES Service Enablers, RES00006

Description

Remote Call Forwarding without Unique PIN supplements Call Forwarding - Remote Access, which allows an MDC end user with call forwarding universal (CFU), call forwarding intragroup (CFI), or call forwarding fixed (CFF) to deactivate these options from a remote line. Remote Call Forwarding without Unique PIN introduces the following features:

- nonunique Call Forwarding Remote Access (CFRA) personal identification numbers (PIN)
- Station Programmable PIN (SPP), which allows users to change their PIN from their own phone.

Note: Remote Call Forwarding without Unique PIN and Call Forwarding - Remote Access are mutually exclusive packages. They cannot exist on the same load.

The focus of this feature is SPP. While it is packaged with CFRA, the two should be used separately. SPP is an option assigned to a customer group, and service providers can chose not to provide SPP with Remote Call Forwarding without Unique PIN.

CFRA in Remote Call Forwarding without Unique PIN is nearly identical to CFRA in Call Forwarding - Remote Access except for nonunique PINs. If SPP is not deployed, the setup is identical with for one exception: With Remote Call Forwarding without Unique PIN, tables AUTHPART (Authorization

Remote Call Forwarding without Unique PIN (continued)

Partition) and AUTHCDE (Authorization Code) are not used to datafill CFRA PINs.

This section describes the datafill and setup to install Remote Call Forwarding without Unique PIN, focusing on SPP. It supplements Call Forwarding - Remote Access, which describes most of the CFRA datafill. If installing remote call forwarding for the first time, refer to Call Forwarding - Remote Access. If upgrading from Call Forwarding - Remote Access to Remote Call Forwarding without Unique PIN, refer to “Conversion" later in this section.

Operation

CFRA operation (Call Forwarding - Remote Access)

CFRA allows end users to program Call Forwarding (CFW) on their phones from a remote location by a direct inward system access (DISA) number for interswitch calls (incoming trunks) and intraswitch calls (lines). MDC and Subscriber Services (RES) lines perform CFRA by using the CFRA feature access code defined for the base station customer group in table IBNXLA.

CFRA uses authorization codes as PINs. The PINs are assigned to each end user's line on a unique basis. (*Unique* means that only one PIN value is assigned to an end user's line. All PINs are different.) In the datafill, a CFRA partition is defined in table AUTHPART. Table AUTHCDE is indexed by the partition name and a unique PIN to retrieve the associated directory number (DN) of an end user.

Nonunique PINs (Remote Call Forwarding without Unique PIN)

Nonunique PINs allow end users to change their PINs from their own phone by dialing the SPP feature access code. SPP can only be performed from the end user's phone, thus enhancing the security of SPP. The use of SPP is optional on a customer group basis and datafilled in table CUSTSTN (Customer Group Station Option).

End users of SPP are required to change their PIN before the first use of CFRA if the option SPP is datafilled in table CUSTSTN for the customer group. When accessing or changing a PIN, the end user is given a limited number of retry attempts to enter a correct PIN. If the end user fails to enter the correct PIN within the set number of retries, the end user receives feature reorder treatment. Every time the retry count is exceeded, during any part of the SPP function, log report IBN136 is generated. Refer to *Log Report Reference Manual* for more information on log report IBN136.

Remote Call Forwarding without Unique PIN, with SPP, provides the operating company with enhanced PIN security and simplified service order methods. A random assignment of PINs to an end user's DN makes PIN

compromise more difficult, thus enhancing security. Service order methods are simplified because the operating company does not have to ensure the uniqueness of the PIN when assigning an initial value.

The operating company is responsible for the initial PIN assignment. After a PIN is changed by the end user, the operating company is not able to query or view the PIN. If an end user forgets a PIN, it is recommended that option CFRA be changed with the SERVORD CHF (change feature information for preexisting feature) command.

DISA

Since CFRA with Remote Call Forwarding without Unique PIN finds the base station through translations, it is necessary to ensure that the DISA number in table DNROUTE (Directory Number Route) can translate on the N-digit base DN dialed by the CFRA end user. This is best done using the DISA option NCOSOPT with an network class of service (NCOS) assigned that is identical to the CFRA base station NCOS.

Intragroup CFRA attempts do not need to use the DISA option. The customer group CFRA feature access code should be used for intragroup CFRA attempts.

Note: For more information on the use of NCOS with DISA, consult table DNROUTE and table NCOS (Network Class of Service) in the data schema section of this document.

Looparound trunks for ISUP and ISDN to DISA with CFRA

Calls that terminate to a DISA DN through an incoming integrated services digital network user part (ISUP) trunk require a looparound trunk on a line trunk controller (LTC) or digital trunk controller (DTC) to utilize the CFRA feature. ISDN sets using an intra-office terminator to the CFRA DISA number will also require the loopback trunk. This is necessary to facilitate subsequent digit collection during CFRA. Looparound trunk circuits must be used with ISUP/CFRA calls regardless of incoming ISUP trunk peripheral type or digit reception hardware type. Peripherals utilizing either universal tone receivers (UTR) or Digitone receivers require looparound trunks.

Remote Call Forwarding without Unique PIN (continued)

The following table lists an example of possible the datafill content.

Datafill example for looparound trunks for ISUP to DISA with CFRA

Datafill table	Example data
CLLI	INCOMLPBK 30 3 INCOMING_LOOPBACK
	OUTGOLPBK 31 3 OUTGOING_LOOPBACK
TRKGRP	INCOMLPBK LPBK 0 ELO NCRT IC P621 613
	OUTGOLPBK LPBK 0 ELO NCRT OG INCOMLPBK LPBK
TRKSGRP	DP IM N 30 30 NO NO N N Y C
	DP IM 0 0 NO NO N N Y 70
TRKMEM	INCOMLPBK 1 0 DTC 0 6 2
	INCOMLPBK 2 0 DTC 0 6 3
	INCOMLPBK 3 0 DTC 0 6 4
	OUTGOLPBK 1 0 DTC 1 5 2
	OUTGOLPBK 2 0 DTC 1 5 3
	OUTGOLPBK 3 0 DTC 1 5 4
LPBKMEM	OUTGOLPBK 1 INCOMLPBK 1
	OUTGOLPBK 2 INCOMLPBK 2
	OUTGOLPBK 3 INCOMLPBK 3

Announcements

Announcements are necessary to prompt the end user during SPP use. Announcements are custom recorded by the operating company and are datafilled in table DRMUSERS (Digital Recorded Announcement Machine Users).

The following announcement is recommended for CFRA first-time use: “Access to this feature is prohibited until you change your PIN number. The PIN number change must be made from your own phone." The phrase name in table DRMUSERS is CFRAFRST.

Remote Call Forwarding without Unique PIN (continued)

The following announcements are recommended for SPP announcements. They correspond directly to the phrase names in table DRMUSERS. For example, announcement 1 is recommended for phrase SPPANNC1.

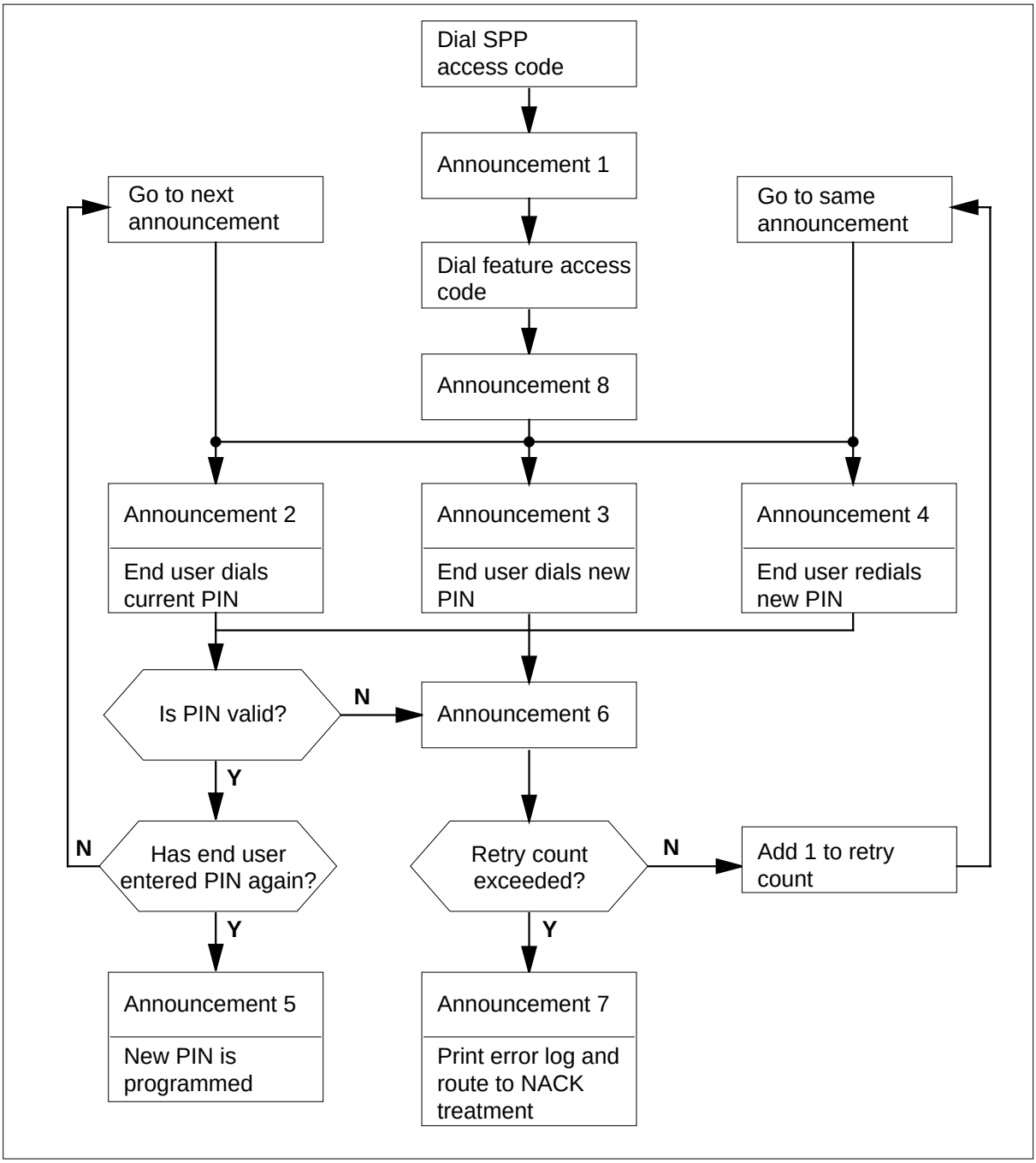
SPP announcements

announcement 1	SPPANNC1	“Please enter the feature access code for the PIN you wish to change."
announcement 2	SPPANNC2	“Please enter your PIN number."
announcement 3	SPPANNC3	“Please enter your new PIN number."
announcement 4	SPPANNC4	“Please reenter the new PIN number."
announcement 5	SPPANNC5	“The new PIN number has been updated."
announcement 6	SPPANNC6	“You have entered an incorrect PIN number."
announcement 7	SPPANNC7	“You have exceeded the number of retries. Please hang up and try again."
announcement 8	SPPANNC8	“Call forwarding remote access."

The following flowchart shows how SPP processes each call.

Remote Call Forwarding without Unique PIN (continued)

Call processing using SPP



Conversion from Call Forwarding - Remote Access

Sites can upgrade from Call Forwarding - Remote Access to Remote Call Forwarding without Unique PIN There are two procedures; one to exclude the

Remote Call Forwarding without Unique PIN (continued)

SPP portion of Remote Call Forwarding without Unique PIN in the upgrade, and one to include the SPP portion of Remote Call Forwarding without Unique PIN in the upgrade.

SPP excluded

No action is required. Conversion will automatically occur during One Night Process (ONP), which will install the new software. End users do not have to change their PINs and can still use their unique PINs. After the ONP, PINs for new CFRA users can be nonunique.

SPP included

Use the following steps to include SPP when upgrading from Call Forwarding - Remote Access to Remote Call Forwarding without Unique PIN. CFRA should be installed and running on site.

1. Record the SPP announcements, as described in “Announcements".

   Eight announcements should be recorded, using the DRAMREC facility resident on the DMS. The SPP phrase names are the actual internal names to be used when recording the announcement phrases. These phrase names were introduced into the DMS database with feature package NTXN75AA, and they are used in table DRMUSERS.

2. Record CFRAFRST phrase using DRAMREC.

   This phrase is also used in table DRMUSERS. Refer to “Limitations and restrictions" for more information on the CFRAFRST phrase.

   The CFRAFRST phrase is played when CFRA users in customer groups datafilled for SPP use CFRA for the first time. SPP is datafilled as an option in table CUSTSTN.

3. Datafill the SPP announcements for the following tables:

   - CLLI
   - ANNS
   - ANNMEMS
   - DRMUSERS

4. Add the CFRAFRST phrase tuple to table DRMUSERS.

   Its index is similar to the other CFRA phrases. The index is a two-part key in table DRMUSERS consisting of the announcement CLLI and phrase number. The phrase number for the CFRAFRST phase is “7," i.e., if the CFRA announcement CLLI is CFRAANN, then add the tuple “CFRAAN 7 (CFRAFRST)" to table DRMUSERS for the CFRAFRST phrase.

Remote Call Forwarding without Unique PIN (continued)

5. Add the SPP option as a customer group option into table CUSTSTN for all customer groups that will have SPP active.
6. Datafill the SPP_MAX_PROGRAMMERS tuple in table OFCENG. Refer to the “Datafilling office parameters" section of this feature description.

Translations table flow

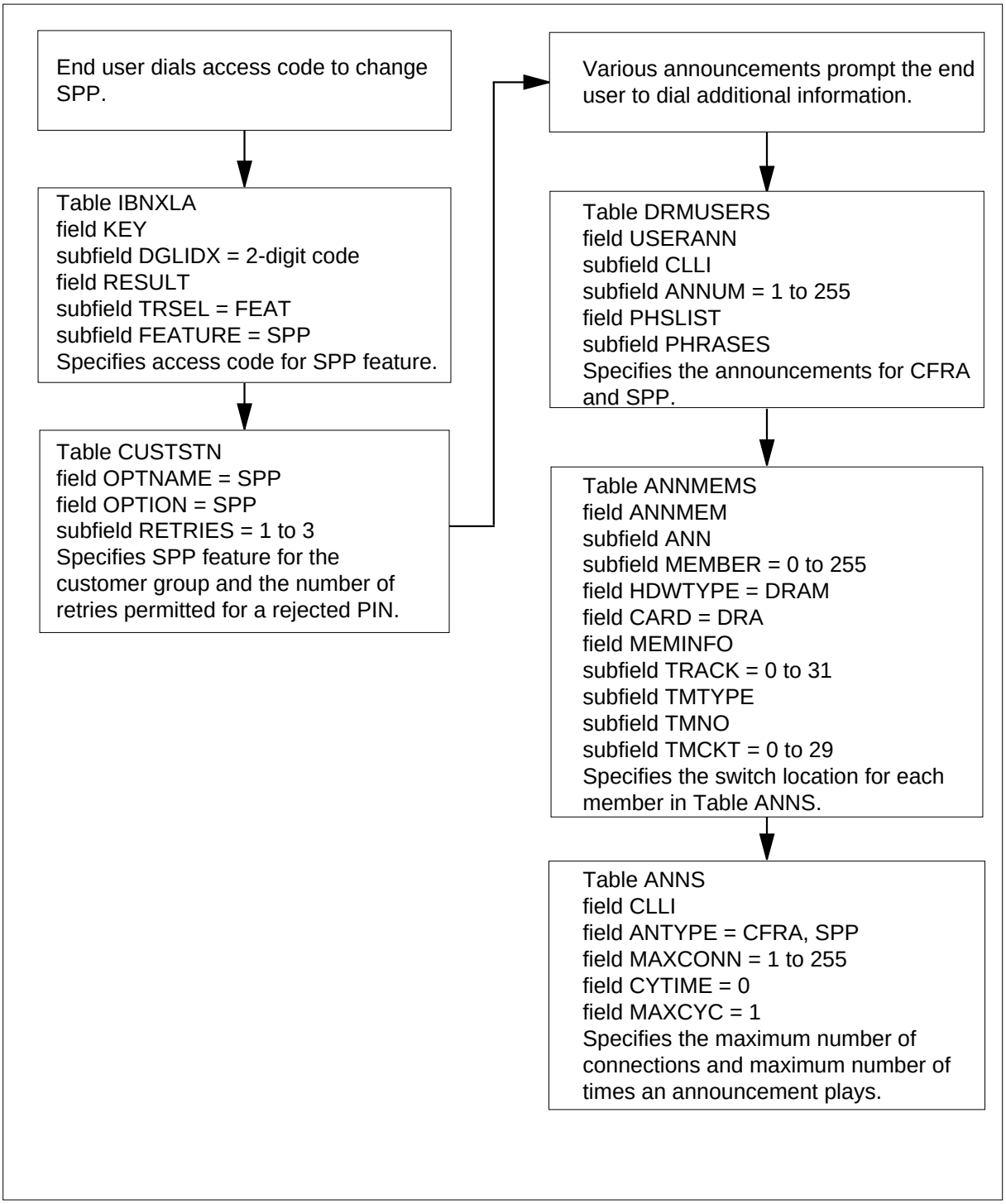
The Remote Call Forwarding without Unique PIN translations tables are described in the following list:

- Table IBNXLA (IBN Translation) contains the data for the digit translation of calls from an IBN station. This table specifies the access code for SPP.
- Table CUSTSTN (Customer Group Station Option) specifies the station options assigned to each customer group. The station option for this feature is SPP.
- Table DRMUSERS (Digital Recorded Announcement Machine Users) specifies all the announcements required by an end user and allows the facility for the operating company to specify the primary language for announcements.
- Table ANNMEMS (Announcement Members) specifies the assignments for each member assigned to the announcement CLLI (common language location identifier) in Table ANNS (Announcements). Table ANNMEMS specifies the location in the switch and number of channels for SPP announcements.
- Table ANNS (Announcements) specifies the data for each announcement (analog and digital) assigned in the switching unit. Field ANTYPE is set to SPP in Remote Call Forwarding without Unique PIN.

The Remote Call Forwarding without Unique PIN translation process for SPP is shown in the flowchart that follows. The flowchart and data show the tables accessed when the end user dials the access code to change the PIN.

Remote Call Forwarding without Unique PIN (continued)

Table flow for SPP in Remote Call Forwarding without Unique PIN



Remote Call Forwarding without Unique PIN (continued)

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

Datafill example for SPP in Remote Call Forwarding without Unique PIN

Datafill table	Example data
IBNXLA	CXLA 74 FEAT N N N SPP
CUSTSTN	MDCGRP1 SPP SPP 2
DRMUSERS	SPPANNC 1 (SPPANNC1) $
ANNMEMS	SPPANNC 1 DRAM DRA (0 MTM 1 2 1 MTM 1 3) $
ANNS	SPPANNC SPP 25 1 0 1

Limitations and restrictions

The following limitations and restrictions apply to Remote Call Forwarding without Unique PIN:

- When recording the CFRAFRST announcement, the announcement must be stored on a digital recorded announcement machine (DRAM) or electrically erasable programmable read-only memory (EEPROM) card in the same maintenance trunk module (MTM) as the CFRA programmable read-only memory (PROM) card NT1X76AM.
- The SPP function can only be performed from the end user's own phone.
- When changing a PIN, the end user must enter a number different from the current PIN. If the end user enters the current PIN, the PIN value is considered an incorrect entry, and the end user is prompted to reenter a different PIN, if the retry limit has not been exceeded.
- SPP end users must wait for announcement prompts to enter the digits for PIN feature access code and current, new, and reentered new PIN entries. The following announcements do not allow digit entry:
  - — PIN feature prompt announcement—“Call forwarding remote access."
  - — Incorrect PIN announcement—“You have entered an incorrect PIN number."
  - — Exceeded retry announcement—“You have exceeded the number of retries. Please hang up and try again."
  - — CFRAFRST announcement—“Access to this feature is prohibited until you change your PIN number. The PIN number change must be made from your own phone."
- End users can speed up the SPP process by entering an octothorpe (#) after the digits have been entered. If an end user dials an octothorpe while

entering the DISA number, the octothorpe may be interpreted as the first attempt to dial the base station DN and PIN. For this reason, the number of PIN retries should be at least three.

- Intergroup access to the base station when attempting CFRA through a DISA number is not supported by Remote Call Forwarding without Unique PIN.

  For example, an end user in customer group B calls the DISA DN for customer group A to access CFRA. When the end user enters a DN and PIN of a base station in customer group B, the end user is denied entry.

- This feature is not compatible with Call Forwarding Usage Sensitive Pricing (CFWU).
- This feature does not provide capabilities to remotely access Call Forwarding Busy (CFB) or Call Forwarding Don't Answer (CFDA).
- If an end user activates or deactivates CFRA from a remote station while trying to forward a call at the base station, the attempts are processed as they occur.
- It is recommended that invalid forward-to digit entry attempts be routed to vacant treatment. Table CUSTHEAD should be datafilled with option VACTRMT if table IBNTREAT index uses the TRMT selector to route to VACT. Do not use an S selector in table IBNTREAT to route calls to a vacant treatment announcement. If an announcement is to be used for vacant treatment, use table TMTCNTL (Treatment Control).
- Tables TMTCNTL and TMTMAP (Cause to Treatment Map) require datafill to ensure CONF tone for calls that terminate to a DISA DN through an incoming ISUP trunk to utilize the CFRA feature.

Interactions

The following paragraphs describe the interactions between Remote Call Forwarding without Unique PIN and other functionalities with SPP installed.

Business Sets

SPP performed on any business set DN automatically updates all PINs for all the DNs on the set that have CFU, CFF, or CFI.

Note: This allows the end user to maintain the same PIN for all DNs on a set. Only primary MADNs or single appearance DNs can have CFU, CFF, or CFI.

Call Waiting

If the remote station has Call Waiting (CWT), attempts to call wait are denied while the station is being used for remote access.

Remote Call Forwarding without Unique PIN (continued)

Call Waiting, Call Waiting Intragroup

CWT or Call Waiting Intragroup (CWI) calls are not allowed during activation of SPP or CFRA.

Directory Number Hunt

Directory number hunt (DNH) groups can use SPP. CFRA can be assigned to all members of a DNH group.

Multiline Hunt, Distributed Line Hunt

Multiline hunt (MLH) and distributed line hunt (DLH) groups cannot use SPP. These types of hunt groups can have CFRA assigned to the pilot only.

Multiple Appearance Directory Number

SPP cannot be activated from a secondary multiple appearance directory number (MADN) SCA/EXB member. Bridging is not allowed if the primary MADN SCA member has SPP active.

Speed Call Short, Speed Call Long

If the base station has Speed Call Short (SCS) or Speed Call Long (SCL), the end user can enter a cell number instead of a forward number during the activation process. If the caller enters a cell number that is empty or the base station does not have SCS or SCL, the cell number is played back in error announcement:

Station Controlled Conference

SPP cannot be activated during a conference call.

Three-Way Calling

If the remote station has Three-Way Calling (3WC), attempts to flash to initiate a three-way call are denied once the remote access has started. SPP is not allowed during a 3WC call.

Activation/deactivation by the end user

Programming by the end user

SPP can only be programmed from the end user's own phone. This restriction improves security.

The following procedure shows how to activate SPP in Remote Call Forwarding without Unique PIN.

Activation of SPP in Remote Call Forwarding without Unique PIN by the end

Remote Call Forwarding without Unique PIN (continued)

user

At your telephone:

1 Dial SPP feature access code.

Response:

End user is prompted by an announcement to dial feature access code of feature requiring a PIN change (for CFRA, end user dials CFRA access code).

Note: PINs exist on an individual line and individual feature basis; therefore, it is necessary to determine which feature requires a PIN change. A PIN change is only *required* the first time an end user uses the PIN

2 Dial CFRA feature access code.

Response:

If end user dials an invalid feature access code, additional retries are allowed. The number of additional attempts allowed is datafilled in subfield RETRIES of table CUSTSTN. End users who exceed retry count receive reorder treatment.

Following are examples of invalid feature access codes:

- no digits
- a feature access code for a non-PIN feature
- digits that do not activate an MDC

If feature access code is valid, end user hears an announcement providing name of PIN feature for which access code was dialed. End user is then prompted by an announcement to enter current PIN.

Note: The retry count is a customer group option that determines the number of times an end user is able to reenter a rejected PIN during the SPP function. The retry count value is used for each part of the SPP function: current PIN entry, new PIN entry, and new PIN reentry. The value of this option ranges from 1 to 3 and is datafilled by the operating company.

3 Dial current PIN to be changed.

Response:

PIN entered is verified against PIN currently stored for end user's phone. If PIN is not valid (numbers do not match), end user is prompted by an announcement to reenter PIN, if retry count has not been exceeded. If retry count has been exceeded, an error announcement is given, and an IBN136 log report is generated indicating excessive PIN entry attempts. After error announcement, end user is routed to feature reorder treatment.

If current PIN entry is successful, end user is prompted to enter a new PIN.

4 Dial new PIN.

Response:

New PIN length is verified; however, if length is incorrect, end user is prompted by an announcement to reenter new PIN, if retry count has not

Remote Call Forwarding without Unique PIN (continued)

been exceeded. If retry count has been exceeded, an error announcement is given and call is routed to feature reorder treatment.

Note: End users are not allowed to enter a new PIN that equals the current PIN. This is considered an invalid new PIN entry, and the end user is prompted to reenter the new PIN, if the retry count has not been exceeded.

Once length is verified, end user is prompted to reenter new PIN (reentered PIN is verified against first entry).

5 Redial new PIN.

Response:

Reentered new PIN is verified against first entry. If a mismatch occurs, end user is prompted by an announcement to reenter new PIN if retry count has not been exceeded. An error announcement is given if retry count is exceeded, and end user is routed to feature reorder treatment.

If end user successfully reenters new PIN, an announcement confirms successful PIN change.

Programming by the operating company

The operating company implements a random numbering method when assigning an initial PIN. This input is made through the Service Order System (SERVORD). Refer to “Service orders" for more information.

Recording announcement recordings

The following commands are used to datafill announcement recordings using the DRAMREC facility.

The following command records 7 s of announcement data (announcement 1) for the SPPANNC1 phrase with nopad:

- **>DRAMREC** <return>
- **>DRAM:** (enter DRAMREC facility)
- **>CONNECT 0 HSET 0** <CR> (connect DRAM 0 to HSET trunk). The operating company needs to ensure the DRAM number is set according to site specific datafill in table DRAMS.
- **>RECORD SPPANNC1 7 NOPAD** <return> (record the first SPPANNC phrase)

  After hearing three tone bursts, the operating company records a phrase similar to: “Please enter the feature access code for the PIN you wish to change."

The following command is used for all 4-s announcements. Refer to “Announcements" in this feature description for more information.

- **>RECORD SPPANNC2 4 NOPAD** <CR> (record the second SPPANNC phrase)
- After hearing three tone bursts, record a phrase similar to: “Please enter your PIN number."

Since each EEPROM or RAM card stores a total of 31 s of phrase data, plan for announcement lengths and distribution among DRAM memory cards accordingly.

Additional commands for use within the DRAMREC session are as follows:

- **>PLAYBACK 0 SPPANNC1** <return> (plays back first announcement)
- **>DISPLAY 0 1** <return> (displays announcement phrases recorded on DRAM 0 1)
- **>DISCONNECT** <return> (disconnect HSET trunk)

Limitations and restrictions

The following limitations and restrictions apply to Remote Call Forwarding without Unique PIN:

- When recording the CFRAFRST announcement, the announcement must be stored on a digital recorded announcement machine (DRAM) or electrically erasable programmable read-only memory (EEPROM) card in the same maintenance trunk module (MTM) as the CFRA programmable read-only memory (PROM) card NT1X76AM.
- The SPP function can only be performed from the end user's own phone.
- When changing a PIN, the end user must enter a number different from the current PIN. If the end user enters the current PIN, the PIN value is considered an incorrect entry, and the end user is prompted to reenter a different PIN, if the retry limit has not been exceeded.
- SPP end users must wait for announcement prompts to enter the digits for PIN feature access code and current, new, and reentered new PIN entries. The following announcements do not allow digit entry:
  - — PIN feature prompt announcement—“Call forwarding remote access."
  - — Incorrect PIN announcement—“You have entered an incorrect PIN number."

Remote Call Forwarding without Unique PIN (continued)

  - — Exceeded retry announcement—"You have exceeded the number of retries. Please hang up and try again."
  - — CFRAFRST announcement—"Access to this feature is prohibited until you change your PIN number. The PIN number change must be made from your own phone."

- End users can speed up the SPP process by entering an octothorpe (#) after the digits have been entered. If an end user dials an octothorpe while entering the DISA number, the octothorpe may be interpreted as the first attempt to dial the base station DN and PIN. For this reason, the number of PIN retries should be at least three.
- Intergroup access to the base station when attempting CFRA through a DISA number is not supported by Remote Call Forwarding without Unique PIN.

  For example, an end user in customer group B calls the DISA DN for customer group A to access CFRA. When the end user enters a DN and PIN of a base station in customer group B, the end user is denied entry.
- This feature is not compatible with Call Forwarding Usage Sensitive Pricing (CFWU).
- This feature does not provide capabilities to remotely access Call Forwarding Busy (CFB) or Call Forwarding Don't Answer (CFDA).
- If an end user activates or deactivates CFRA from a remote station while trying to forward a call at the base station, the attempts are processed as they occur.
- It is recommended that invalid forward-to digit entry attempts be routed to vacant treatment. Table CUSTHEAD should be datafilled with option VACTRMT if table IBNTREAT index uses the TRMT selector to route to VACT. Do not use an S selector in table IBNTREAT to route calls to a vacant treatment announcement. If an announcement is to be used for vacant treatment, use table TMTCNTL (Treatment Control).
- Tables TMTCNTL and TMTMAP (Cause to Treatment Map) require datafill to ensure CONF tone for calls that terminate to a DISA DN through an incoming ISUP trunk to utilize the CFRA feature.

Billing

Remote Call Forwarding without Unique PIN does not affect billing.

Station Message Detail Recording

Remote Call Forwarding without Unique PIN does not affect Station Message Detail Recording.

Remote Call Forwarding without Unique PIN (continued)

Datafilling office parameters

Datafill procedure for SPP_MAX_PROGRAMMERS

Office parameter SPP_MAX_PROGRAMMERS in table OFCENG (Engineered Office) is required for a switching unit with SPP and specifies the maximum number of end users who can simultaneously do a PIN change using the SPP function. This office parameter adds one word of data store. The value should be equal to the number of SPP announcement members datafilled in table ANNMEMS. This should be determined by the number of available Digitone receivers and UTRs that can be used for SPP simultaneously.

The following table shows the office parameters used by Remote Call Forwarding without Unique PIN. For more information about office parameters, refer to *Office Parameters Reference Manual.*

Office parameters used by Remote Call Forwarding without Unique PIN

Table name	Parameter name	Explanation and action
OFCENG	SPP_MAX_PROGRAMMERS	This parameter is required for a switching unit with the SPP feature and specifies the maximum number of end users who can simultaneously change a PIN using the SPP function. Enter a value from 0 to 127. The default value is 0. ***Note:*** The value of this parameter should not exceed the number of Digitone receivers or UTRs in the switching unit. Using the default value of 0 does not allow any SPP use. An accurate value should be determined based on number of available Digitone receivers and UTRs using SPP.

Remote Call Forwarding without Unique PIN (continued)

Datafill sequence

The following table lists the tables that require datafill to implement Remote Call Forwarding without Unique PIN. The tables are listed in the order in which they are to be datafilled.

Note: This sequence implements Remote Call Forwarding without Unique PIN with SPP.

Datafill tables required for SPP in Remote Call Forwarding without Unique PIN

Table	Purpose of table
IBNXLA	IBN Translation Table. This table stores data for the digit translation of calls from an IBN station, attendant console, incoming IBN trunk group, or incoming side of a two-way IBN trunk group.
CUSTSTN	Customer Group Station Option Table. This table is required for a switching unit with North American translations and the Meridian Digital Centrex (MDC) or the feature AG0508 (Residential Enhanced Services) (RES) and lists the station options assigned to each of the customer groups.
ANNS	Announcements Table. This table contains data for each announcement (analog and digital) assigned in the switching unit and adds a new announcement type for an SPP announcement. ***Note:*** Table CLLI must be datafilled prior to datafilling table ANNS.
ANNMEMS	Announcement Members Table. This table contains the assignments for each member assigned to the announcement CLLI in table ANNS and must be datafilled to define the number of channels to be used for SPP announcements.
DRMUSERS	Digital Recorded Announcement Machine Users Table. This table contains all announcements required by an end user and allows the facility for the operating company to specify the primary language for announcements.

Datafilling table IBNXLA

Table IBNXLA (IBN Translation) contains the data for the digit translations of calls from an IBN station, attendant console, incoming trunk group, or incoming side of a two-way IBN trunk group. This table specifies the access code for SPP.

The following table shows the datafill specific to Remote Call Forwarding without Unique PIN for table IBNXLA. Only those fields that apply directly

Remote Call Forwarding without Unique PIN (continued)

to Remote Call Forwarding without Unique PIN are shown. 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		see subfield	Key This field consists of several subfields. Only subfield DGLIDX pertains to this feature.
	DGLIDX	2-digits	Digilator Index This subfield specifies the digit or digits assigned to the index. Enter a 2-digit access code. This access code is used to activate the SPP function.
RESULT		see subfields	Result This field consists of several subfields. Only subfields TRSEL and FEATURE pertain to this feature.
	TRSEL	FEAT	Translation Selector This subfield specifies the translation selector. Enter FEAT.
	FEATURE	SPP	Feature This subfield specifies the feature assigned to the access code. Enter SPP.

Datafill example for table IBNXLA

The following example shows sample datafill for table IBNXLA.

MAP display example for table IBNXLA

```
 TABLE: IBNXLA
 KEY                                                  RESULT
_____________________________________________________________
CXLA              74                    FEAT N   N   N   SPP
```

Datafilling table CUSTSTN

Table CUSTSTN (Customer Group Station Option) contains the station options assigned to each customer group. Table CUSTSTN adds new customer group option SPP.

The following table shows the datafill specific to Remote Call Forwarding without Unique PIN for table CUSTSTN. Only those fields that apply directly

Remote Call Forwarding without Unique PIN (continued)

to Remote Call Forwarding without Unique PIN are shown. 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	Customer Group Name This field specifies a customer group name. Enter the 1- to 16-character alphanumeric name.
OPTNAME		SPP	Option Name This field specifies the feature option. Enter SPP.
OPTION		SPP	Option This field specifies the option. Enter SPP.
If OPTION is set to SPP, subfield RETRIES requires datafill.			
	RETRIES	1 to 3	Retries This subfield specifies the number of attempts allowed the end user when reentering the PIN during the SPP process. Enter a value from 1 to 3. This value does not include the first try.

Datafill example for table CUSTSTN

The following example shows sample datafill for table CUSTSTN .

MAP display example for table CUSTSTN

```
 TABLE: CUSTSTN
CUSTNAME     OPTNAME                                  OPTION
_____________________________________________________________
IBNTST           SPP                                SPP  2
```

Datafilling table ANNS

Table ANNS (Announcements) contains data for each announcement (analog and digital) assigned in the switching unit. Table ANNS adds a new announcement type for an SPP announcement.

Note: Table CLLI must be datafilled prior to datafilling Table ANNS.

The following table shows the datafill specific to Remote Call Forwarding without Unique PIN for table ANNS. Only those fields that apply directly to

Remote Call Forwarding without Unique PIN (continued)

Remote Call Forwarding without Unique PIN are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table ANNS

Field	Subfield or refinement	Entry	Explanation and action
CLLI		CLLI	Announcement CLLI Key This field specifies the CLASS announcements in table CLLI. Enter the announcement CLLI.
ANTYPE		SPP	Announcement Type This field specifies the type of announcement. Enter SPP.
MAXCONN		0 to 255	Maximum Connections This field specifies the maximum number of simultaneous connections permitted for the announcement. Enter a value from 0 to 255.
CYTIME		0 to 18	Cycle Time This field specifies the time, in seconds, for one announcement cycle on one channel. Enter a value from 0 to 18. A value of 0 indicates that this field is ignored.
MAXCYC		0 to 255	Maximum Cycles This field specifies the maximum number of times the complete announcement is heard before the call is advanced to the next route in the route list. Enter a value from 0 to 255.

Datafill example for table ANNS

The following example shows sample datafill for table ANNS.

MAP display example for table ANNS

```
TABLE: ANNS
CLLI        ANTYPE     TRAFSNO     MAXCONN    CYTIME    MAXCYC
_____________________________________________________________
SPPANNC        SPP          25           1         0         1
```

Datafilling table ANNMEMS

Table ANNMEMS (Announcement Members) contains the assignments for each member assigned to the announcement CLLI in table ANNS. Table ANNMEMS must be datafilled to define the number of channels to be used for SPP announcements.

Remote Call Forwarding without Unique PIN (continued)

The following table shows the datafill specific to Remote Call Forwarding without Unique PIN for table ANNMEMS. Only those fields that apply directly to Remote Call Forwarding without Unique PIN are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table ANNMEMS (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
ANNMEM		see subfields	Announcement Member Key This field consists of subfields ANN and MEMBER.
	ANN	alphanumeric	Announcement This subfield specifies the code that represents the announcement group in table CLLI. If the trunk circuit is the first in the trunk list for the announcement member, enter the announcement code. If the trunk circuit is other than the first in the trunk list, leave this subfield blank.
	MEMBER	0 to 255	Member This subfield specifies the code that represents the announcement group in table CLLI. If the trunk circuit is the first in the trunk list for the announcement member, enter the member code, which is a value from 0 to 255. If the trunk circuit is other than the first, leave this field blank.
HDWTYPE		DRAM	Hardware Type This field specifies the hardware type. Enter DRAM to indicate that the recorded announcement is digital.
CARD		DRA	Card Code This field specifies the card code. Enter DRA to indicate that the trunk member is digital.
MEMINFO		see subfields	Member Information This field consists of the subfields TRACK, PMTYPE, TMNO, and TMCKT.
	TRACK	0 to 31	Track Number This subfield specifies the track number assigned to the trunk card. Enter a value from 0 to 31.

Datafilling table ANNMEMS (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	PMTYPE	TM8, MTM, or STM	Peripheral Module Type This subfield specifies the type of peripheral module to which the trunk circuit is assigned. Enter TM8, MTM, or STM. If the announcement is digital, enter MTM or STM.
	TMNO	0 to 2047	Trunk Module Number This subfield specifies the trunk module number of the trunk module assigned to the trunk circuit. Enter a value from 0 to 2047. For offices with DRAMs, the trunk circuit consists of an assignment to one of the channels on the MTM in which the DRAM is located. A trunk circuit cannot be assigned to TM circuit number 0.
	TMCKT	0 to 29	Trunk Module Circuit Number This subfield specifies the trunk module circuit number assigned to the trunk circuit. Enter a value from 0 to 29.

Datafill example for table ANNMEMS

The following example shows sample datafill for table ANNMEMS.

MAP display example for table ANNMEMS

```
 TABLE: ANNMEMS
ANNMEM       HDWTYPE CARD
                                                        MEMINFO
_____________________________________________________________________
SPPANNC  1         DRAM    DRA
                                        ( 0 MTM 1 2 1 MTM  1 3)$
```

Datafilling table DRMUSERS

Table DRMUSERS (Digital Recorded Announcement Machine Users) contains all announcements required by an end user and allows the facility for the operating company to specify the primary language for announcements.

The following table shows the datafill specific to Remote Call Forwarding without Unique PIN for table DRMUSERS. Only those fields that apply directly to Remote Call Forwarding without Unique PIN are shown. For a

Remote Call Forwarding without Unique PIN (continued)

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

Datafilling table DRMUSERS

Field	Subfield or refinement	Entry	Explanation and action
USERANN		see subfields	User Announcement This field consists of subfields CLLI and ANNNUM.
	CLLI	alphanumeric	Common Language Location Identifier This subfield specifies the name associated with the CFRA announcements specified in table CLLI. Enter the CLLI.
	ANNNUM	1 to 255	Announcement Number This subfield specifies the number assigned to the SPP. Enter a value from 1 to 255.
PHSLIST		see subfield	Phrase List This field consists of subfield PHRASES.
	PHRASES	SPPANNC1, SPPANNC2, SPPANNC3, SPPANNC4, SPPANNC5, SPPANNC6, SPPANNC7, SPPANNC8, or CFRAFRST	Phrases This subfield defines the phrases for SPP end user announcements. Enter SPPANNC1, SPPANNC2, SPPANNC3, SPPANNC4, SPPANNC5, SPPANNC6, SPPANNC7, SPPANNC8, or CFRAFRST.

Datafill example for table DRMUSERS

The following example shows sample datafill for table DRMUSERS.

Remote Call Forwarding without Unique PIN (continued)

MAP display example for table DRMUSERS

```
TABLE: DRMUSERS
   ANNCLLI           PHSLIST
_____________________________________________________________________
SPPANNC  1       (SPPANNC1)$
SPPANNC  2       (SPPANNC2)$
SPPANNC  3       (SPPANNC3)$
SPPANNC  4       (SPPANNC4)$
SPPANNC  5       (SPPANNC5)$
SPPANNC  6       (SPPANNC6)$
SPPANNC  7       (SPPANNC7)$
SPPANNC  8       (SPPANNC8)$
CFRAANN  7      (CFRAFRST)$
```

Translation verification tools

The following example shows the output from TRAVER when it is used to verify Remote Call Forwarding without Unique PIN.

Note: In this example, TRAVER is used to verify translations when dialing the SPP feature access code from the CFRA base station.

Remote Call Forwarding without Unique PIN (continued)

Traver output example for Remote Call Forwarding without Unique PIN with SPP

```
Line    Output

        >TRAVER L 6211233 'B74' B
1       TABLE IBNLINES
2          HOST 00 0 09 07 0 DP STN RES 6211233 0 $
3       TABLE LINEATTR
4          0 1FR NONE NT FR01 0 613 P621  L613 TSPS 10 NIL NILSFC
5                   LATA1 0 NIL NIL 00 Y  RESGRP 0 2
6          LCABILL OFF – BILLING DONE ON  BASIS OF CALLTYPE
7       TABLE DNATTRS
8       TUPLE NOT FOUND
9       TABLE DNGRPS
10      TUPLE NOT FOUND
11      TABLE NCOS
12      RESGRP 2 0 0 RNCOS2 ( XLAS RXCMN2  NXLA RES ) $
13      TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA,
14      VACTRMT, AND DIGCOL
15      RESGRP NXLA RESXLA RXCFN 0 RES
16      TABLE DIGCOL
17         RES SPECIFIED: RES DIGIT COLLECTION
18      NCOS FEAT XLA NAME IS NIL.  GO TO  NEXT XLA NAME.
19      TABLE IBNXLA: XLANAME RXCFN
20         RXCFN 74 FEAT N N N SPP
21
22      ++ TRAVER: SUCCESSFUL CALL TRACE ++
23
```

SERVORD

SERVORD is used to add the SPP option to, delete the SPP option from, and change the SPP option on a line.

SERVORD limitations and restrictions

Remote Call Forwarding without Unique PIN has no SERVORD limitations and restrictions.

SERVORD prompts

The following table shows the SERVORD prompts used to assign Remote Call Forwarding without Unique PIN to a line. If an end user forgets a PIN, it is recommended that the operating company use the DEO (delete option)

command to remove the feature and then add the feature again with the ADO (add option) command.

SERVORD prompts for Remote Call Forwarding without Unique PIN

Prompt	Valid input	Explanation
OPTION	CFRA	Specifies the option to be assigned to the line. Enter CFRA.
CFRAPIN	2- to10-digit PIN	Specifies the initial PIN assigned to the line by the operating company. Enter the 2- to10-digit PIN.
FIRSTUSE	Y or N	This field indicates whether or not the user still needs to change the PIN before using CFRA for the first time when option SPP is datafilled in table CUSTSFN. This field should be set to Y to require the user to change their PIN using SPP before the first time.

SERVORD example for implementing Remote Call Forwarding without Unique PIN

The following SERVORD example shows how Remote Call Forwarding without Unique PIN is added to a line using the ADO command.

SERVORD example for Remote Call Forwarding without Unique PIN in prompt mode

```
SO:
> ADO
SONUMBER:   NOW 93 1 1 AM
>
DN_OR_LEN:
> 0 0 1 21
OPTION:
> CFRA
CFRAPIN:
> 123
OPTION:
> $
```

SERVORD example for Remote Call Forwarding without Unique PIN in no-prompt mode

```
> ADO $ 0 0 1 21 CFRA 123 $
```

RES Feature Set Expansion 1 (CPU)

Ordering codes

Functional group ordering code: RES00002

Functionality ordering code: not applicable

Release applicability

BCS26 and up

Prerequisites

To operate, RES Feature Set Expansion 1 (CPU) has the following prerequisites:

- BAS Generic, BAS00003
- MDC Standard, MDC00003
- MDC Minimum, MDC00001
- RES Service Enablers, RES00006

Description

The RES Feature Set Expansion 1 (CPU) feature allows a Subscriber Services subscriber to pick up calls within a predefined pickup group by dialing an access code. The Call Pickup (CPU) feature permits a station to answer calls incoming to another station within the same pickup group. The CPU feature is provided on an individual station basis within a particular customer group.

Note: The RES Feature Set Expansion 1 in the feature package RES Features, NTXA94AA, also contains Call Transfer (CXR) and Make Set Busy (MSB). Refer to CXR and MSB in later feature descriptions in this chapter.

Operation

Refer to "Translations table flow" for information on operation.

Translations table flow

The CPU translations process is shown in the following figure. The flowchart shows the table flow for CPU activation.

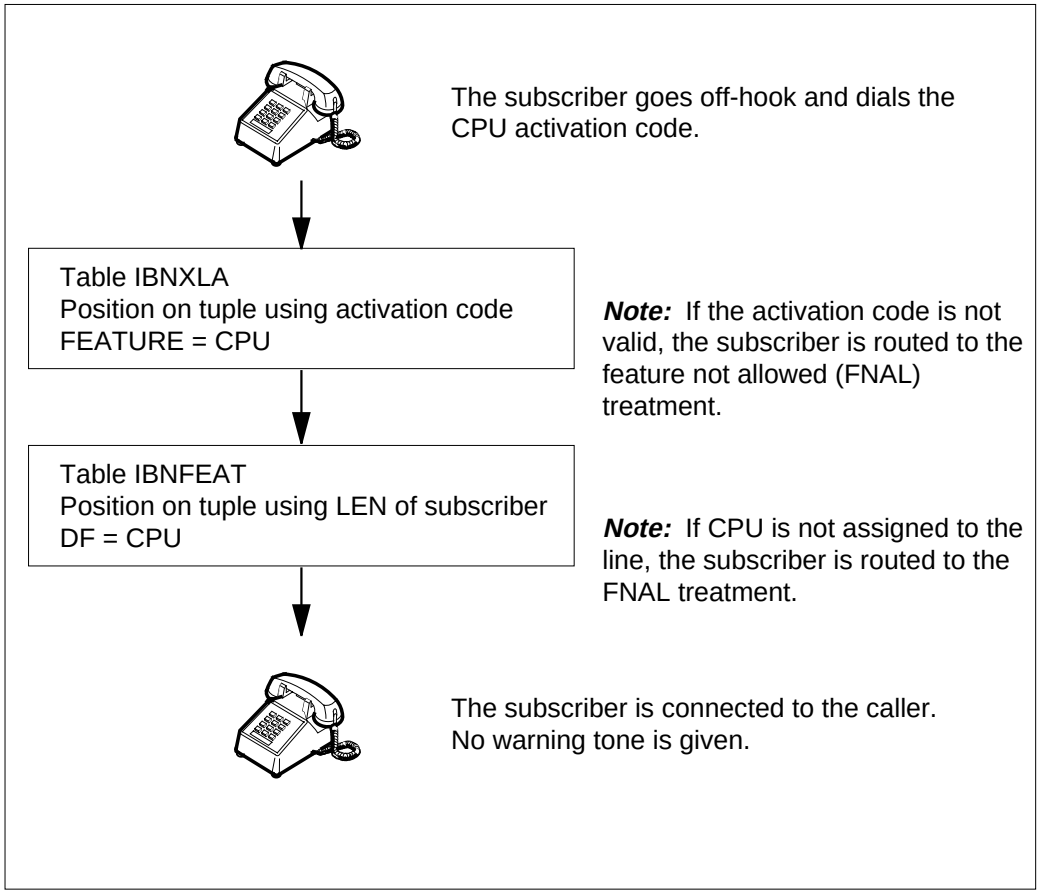
Table IBNXLA provides the name of the feature associated with an activation code.

Table IBNFEAT lists the features assigned to a line equipment number (LEN).

RES Feature Set Expansion 1 (CPU) (continued)

The RES Feature Set Expansion 1 (CPU) translation process is shown in the flowchart that follows.

Table flow for RES Feature Set Expansion 1 (CPU)



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

Datafill example for RES Feature Set Expansion 1 (CPU) (Sheet 1 of 2)

Item	Example data
CPU activation code	77
LEN of subscriber	HOST 00 02 0 05
Datafill table	Example data

RES Feature Set Expansion 1 (CPU) (continued)

Datafill example for RES Feature Set Expansion 1 (CPU) (Sheet 2 of 2)

Item	Example data
IBNXLA	RXCFN 77 FEAT N N N CPU
IBNFEAT	HOST 00 02 0 05 0 CPU CPU HOST 00 02 0 03 26

Limitations and restrictions

The following limitations and restrictions apply to RES Feature Set Expansion 1 (CPU):

- Members of a pickup group must belong to the same customer group; however, it is possible to override this restriction by setting up a customer group family. Members of the pickup group can then belong to different customer groups within the same customer group family.
- The CPU access code can be any two- to seven-digit number. The first digit cannot be the same as a single-digit access code that requires the return of second dial tone. The CPU access code can also be an asterisk (*) plus two digits (YX), where Y is dependent on the speed calling long list assignment. The *YX is the preferred access code method.
- When a station is busy on a call, the station must terminate or put the first call on hold to pick up an incoming call to a station within the preset pickup group.
- The ability for a station to pick up a particular call is not subject to station line restrictions. The customer group is responsible for arranging the CPU groups in such a manner that the stations within the group have the same line attributes. If there are several incoming calls to a group, and a station dials the CPU access code, the order of pickup is dependent on the linking of directory numbers (DN) within the pickup group.
- A station can only pick up calls within the same pickup group.
- The recommended maximum number of members (DNs) in a pickup group is 75. The absolute maximum number is 100. If a pickup group has a large number of multiple appearance directory numbers (MADN), the maximum number of members should be reduced.
- The following calls cannot be picked up using CPU:
  - — Call Waiting calls
  - — camp-on calls

Interactions

The following paragraphs describe the interactions between RES Feature Set Expansion 1 (CPU) and other functionalities.

RES Feature Set Expansion 1 (CPU) (continued)

The CPU feature does not update the incoming memory slot (IMS) used for Custom Local Area Signaling Services (CLASS) features. As a result, the Customer Originated Trace (COT) and Automatic Recall (AR) features do not apply to calls answered by using the CPU feature.

Activation/deactivation by the end user

To activate or pick up a call within the preset pickup group, the subscriber goes off-hook, listens for dial tone, and dials the assigned access code used for CPU. Once the access code is translated, the ringing station within the preset pickup group is answered from the remote or distant station within the group.

When a station dials the CPU access code to answer another station's incoming call, an immediate connection is made between the pickup station and the incoming call. No warning tone or other tone is provided.

To end a call and answer another ringing line, the subscribergoes on-hook for more than 0.5 s, listens for dial tone, dials the CPU access code (such as *77), and answers the call.

Note: Holding the switchhook for longer than 0.5 s disconnects the subscriber from the call.

To hold a call and answer another ringing station, the subscriber flashes the switchhook (presses firmly for less than 0.5 s), listens for recall dial tone, dials the CPU access code, and listens for confirmation tone (two short tones) followed by dial tone. Once the confirmation tone is received, the subscriber must immediately dial the CPU access code.

To return to the held call, the subscriber hangs up. Once the telephone is placed on the switchhook, it immediately rings, and the subscriber answers.

To alternate between the held calls, the subscriber can flash the switchhook, listen for recall dial tone, dial the CPU access code, and talk to the held caller. The procedure can be repeated.

Billing

RES Feature Set Expansion 1 (CPU) does not affect billing.

Station Message Detail Recording

RES Feature Set Expansion 1 (CPU) does not affect Station Message Detail Recording.

Datafilling office parameters

RES Feature Set Expansion 1 (CPU) does not affect office parameters.

RES Feature Set Expansion 1 (CPU) (continued)

Datafill sequence

The following table lists the tables that require datafill to implement RES Feature Set Expansion 1 (CPU). The tables are listed in the order in which they are to be datafilled.

Datafill tables required for RES Feature Set Expansion 1 (CPU)

Table	Purpose of table
IBNFEAT	IBN Line Feature Table. Table IBNFEAT defines the features assigned to each Subscriber Services line. ***Note:*** This table is datafilled through SERVORD; therefore, no datafill procedure or example is provided.
IBNXLA	IBN Translation Table. Table IBNXLA contains the data for the digit translations of calls from an MDC station, attendant console, incoming trunk group, or incoming side of a two-way MDC trunk group.

Datafilling table IBNXLA

Table IBNXLA (IBN Translations) contains the data for the digit translations of calls from an MDC station, attendant console, incoming trunk group, or incoming side of a two-way MDC trunk group.

The following table shows the datafill specific to RES Feature Set Expansion 1 (CPU) for table IBNXLA. Only those fields that apply directly to RES Feature Set Expansion 1 (CPU) 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		see subfields	This field consists of the subfields XLANAME and DGLIDX. These subfields are described below and must be entered in succession.
	XLANAME	RXCFN	Translator name. This subfield specifies the 1- to 8-character name assigned to the translator as the access code. Enter RXCFN.
	DGLIDX	alphanumeric	Digilator index. This subfield specifies the digit or digits assigned to the index as the access code. Enter the access code assigned to the CPU feature.

Datafilling table IBNXLA (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
RESULT		see subfields	Result. This field consists of the subfields TRSEL, ACR, SMDR, and FEATURE. These subfields are described below.
	TRSEL	FEAT	Translation selector. This subfield specifies the translation selector. Enter FEAT.
	ACR	Y or N	Account code entry. This subfield specifies whether or not an account code entry is required for all calls to the special feature access code. Enter Y or N.
	SMDR	N	Station message detail recording. This subfield specifies whether or not SMDR is required for calls originated by a customer group station or an attendant console. Enter N.
	FEATURE	CPU	Feature. This subfield specifies the name of the feature to which the code is assigned. Enter CPU.

Datafill example for table IBNXLA

The following example shows sample datafill for table IBNXLA.

MAP display example for table IBNXLA

```
Table IBNXLA

KEY                        RESULT
_____________________________________________________________________

RXCFN   77                 FEAT  N  N  Y CPU
```

Translation verification tools

The following example shows the output from TRAVER (translations verification) command when it is used to verify RES Feature Set Expansion 1 (CPU).

RES Feature Set Expansion 1 (CPU) (continued)

TRAVER output example for RES Feature Set Expansion 1 (CPU)

```
>TRAVER  L  6211233  'B77' B
TABLE IBNLINES
   HOST 00 0 09 07 0 DP STN RES 6211233 0 $
TABLE LINEATTR
   0 1FR NONE NT FR01 0 613 P621 L613 TSPS 10 NIL NILSFC
LATA1 0 NIL NIL 00 Y RESGRP 0 2
   LCABILL OFF – BILLING DONE ON BASIS OF CALLTYPE
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
TUPLE NOT FOUND
TABLE NCOS
RESGRP 2 0 0 RNCOS2 ( XLAS RXCMN2 NXLA RES ) $
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND
DIGCOL
RESGRP NXLA RESXLA RXCFN 0 RES
TABLE DIGCOL
   RES SPECIFIED: RES DIGIT COLLECTION
NCOS FEAT XLA NAME IS NIL.  GO TO NEXT XLA NAME.
TABLE IBNXLA: XLANAME RXCFN
   RXCFN 77 FEAT N N N CPU

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

SERVORD

RES Feature Set Expansion 1 (CPU) does not use SERVORD.

SERVORD limitations and restrictions

SERVORD can be used to create a new pickup group or to add individual Subscriber Services lines to an existing pickup group.

SERVORD prompts

The following table shows the SERVORD prompts used to assign RES Feature Set Expansion 1 (CPU) to a line.

SERVORD prompts for RES Feature Set Expansion 1 (CPU)

Prompt	Valid input	Explanation
CPULEN	Any valid LEN	Specifies the LEN associated with a DN that has option CPU

RES Feature Set Expansion 1 (CPU) (end)

SERVORD example for adding RES Feature Set Expansion 1 (CPU)

The following SERVORD example shows how RES Feature Set Expansion 1 (CPU) is added to an existing pickup group using the ADO command.

SERVORD example for RES Feature Set Expansion 1 (CPU) in prompt mode

```
> SERVORD
SO:
> ADO
SONUMBER:  NOW 89 09 12 AM
>
DN_OR_LEN:
> 00 0 09 16
OPTION:
> CPU
CPU_LEN:
> 00 0 09 12
OPTION:
> $
COMMAND AS ENTERED:
ADD NOW 89 09 12 AM HOST 00 0 00 16 (CPU 00 0 09 12) $
ENTER Y TO CONFIRM, N TO REJECT E TO EDIT
> Y
```

SERVORD example for RES Feature Set Expansion 1 (CPU) in no-prompt mode

```
> ADO $ CPU 00 0 09 16 00 0 09 12 $ Y
```

RES Feature Set Expansion 1 (CXR)

Ordering codes

Functional group ordering code: RES00002

Functionality ordering code: not applicable

Release applicability

BCS26 and up

Prerequisites

To operate, RES Feature Set Expansion 1 (CXR) has the following prerequisites:

- BAS Generic, BAS00003
- MDC Standard, MDC00003
- MDC Minimum, MDC00001
- RES Service Enablers, RES00006

Description

The Call Transfer (CXR) feature allows a subscriber to transfer either of the following types of calls to a third party:

- a party who has called
- a party who has been called

Note: The RES Feature Set Expansion 1 in the feature package RES Features, NTXA94AA, also contains Call Pickup (CPU) and Make Set Busy (MSB). Refer to CPU and MSB in other feature descriptions in this chapter.

Operation

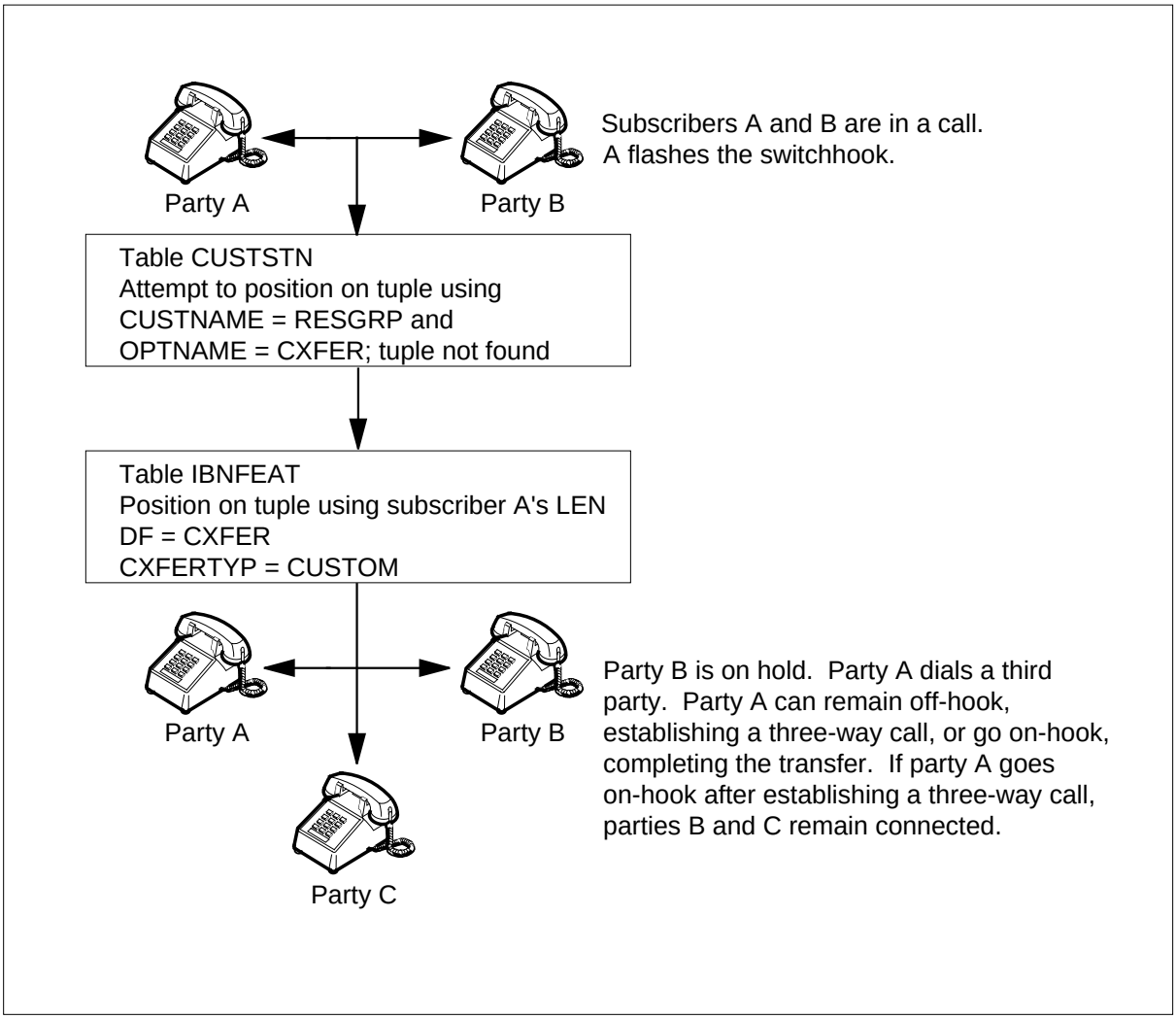
Detailed operational information is found in the “Limitations and restrictions", “Interactions", and “Activation/deactivation by the end user" sections of this document.

Translations table flow

The RES Feature Set Expansion 1 (CXR) translation process is shown in the flowchart that follows.

RES Feature Set Expansion 1 (CXR) (continued)

Table flow for RES Feature Set Expansion 1 (CXR)



Note: Table CUSTSTN is also checked for the call transfer option. For RES, call transfer should be turned off in Table CUSTSTN.

Limitations and restrictions

RES Feature Set Expansion 1 (CXR) has no limitations or restrictions.

The following limitations and restrictions apply to RES Feature Set Expansion 1 (CXR):

- Denied Origination (DOR)
- Automatic Line (AUL)
- No Double Connect (NDC)

RES Feature Set Expansion 1 (CXR) (continued)

Interactions

The following paragraph describes the interactions between RES Feature Set Expansion 1 (CXR) and other functionalities.

Flash Ignore and Automatic Flash Ignore

The Flash Ignore (FIG) and Automatic Flash Ignore (AFIG) features are added to a Subscriber Services line if the line does not have features requiring flashes. If CXR is added to a line with FIG and AFIG assigned, these features are automatically deleted from the line.

Activation/deactivation by the end user

RES Feature Set Expansion 1 (CXR) requires no activation or deactivation by the end user.

Activation/deactivation of RES Feature Set Expansion 1 (CXR) by the end user

At your telephone

1 A two-port call is established between parties A and B.

2 Party A flashes the switchhook.

Response:

Party B is now on hold. Party A hears a special dial tone.

Note: If party A puts a call on hold and misdials the number to which the call should be transferred, party A can flash the switchhook once to reconnect with party B (the party on hold). This applies only if time-out has not occurred. If time-out has occurred, party A must flash the switchhook twice to reconnect to party B (on hold).

3 Party A dials party C.

Response:

Party A hears a ringback tone.

4 Party A performs one of the following actions:

1. Party A goes on-hook.

   Response:

   Party B (the party on hold) is transferred to C.

2. Party A waits for C to answer, talks privately with C, then flashes the switchhook.

   Response:

   Parties A, B, and C are in a three-way conference.

3. Party A flashes the switchhook.

   Response:

   Parties A and B can talk to each other and hear ringback.

5 After establishing a three-way conference, party A can do either of the following:

1. Party A flashes the switchhook.

   Response:

   Party C (the last party to be added to the call) is dropped.

2. Party A goes on-hook.

   Response:

   Party B (the party on hold) connects with party C (the party that was called by A).

Billing

RES Feature Set Expansion 1 (CXR) does not affect billing.

Station Message Detail Recording

RES Feature Set Expansion 1 (CXR) does not affect Station Message Detail Recording.

Datafilling office parameters

RES Feature Set Expansion 1 (CXR) does not affect office parameters.

Datafill sequence

The following table lists the tables that require datafill to implement RES Feature Set Expansion 1 (CXR). The tables are listed in the order in which they are to be datafilled.

Datafill tables required for RES Feature Set Expansion 1 (CXR)

Table	Purpose of table
CUSTSTN	Customer Group Station Option. Table CUSTSTN contains the station options assigned to each customer group.
IBNFEAT	IBN Line Feature. Table IBNFEAT defines the features assigned to each Subscriber Services line. ***Note:*** This table is datafilled through SERVORD; therefore, no datafill procedure or example is provided.

Datafilling table CUSTSTN

Table CUSTSTN (Customer Group Station Option) contains the station options assigned to each customer group.

The following table shows the datafill specific to RES Feature Set Expansion 1 (CXR) for table CUSTSTN. Only those fields that apply directly to RES

RES Feature Set Expansion 1 (CXR) (continued)

Feature Set Expansion 1 (CXR) are shown. 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		RESGRP	Customer group name. This field specifies the name of the customer group. (1 to 16 characters). Enter RESGRP.
OPTNAME		CXFER	Option name. This field specifies the option name. Enter CXFER.
OPTION		see subfields	Option. This field consists of the subfields OPTION, CXTYPE, ORGINTER, ORGINTRA, TRMINTER, TRMINTRA, XFERRCL, and METHOD. These subfields are described below.
	OPTION	CXFER	Option. This subfield specifies the option name. Enter CXFER.
	CXTYPE	CUSTOM	Call transfer type. This subfield specifies the call transfer type. Enter CUSTOM.
	ORGINTER	NOCXFER	Originating intergroup. This subfield specifies that Call Transfer is not allowed for originating intergroup calls. Enter NOCXFER.
	ORGINTRA	NOCXFER	Originating intragroup. This subfield specifies that Call Transfer is not allowed for originating intragroup calls. Enter NOCXFER.
	TRMINTER	NOCXFER	Terminating intergroup. This subfield specifies that Call Transfer is not allowed for terminating intergroup calls. Enter NOCXFER.
	TRMINTRA	NOCXFER	Terminating intragroup. This subfield specifies that Call Transfer is not allowed for terminating intragroup calls. Enter NOCXFER.
	XFERRCL	N	Transferred call. This subfield specifies that transferred calls cannot recall the transferring station when the recall timer expires. Enter N.
	METHOD	STD or DIAL	Method. This subfield specifies the method of call transfer. Enter either STD for standard, or DIAL for dial.

Datafill example for table CUSTSTN

The following example shows sample datafill for table CUSTSTN. In this example, the use of CXR is denied when the subscriber is:

- the originator of an intergroup call
- the originator of an intragroup call
- the terminator of an intergroup call
- the terminator of an intragroup call

MAP display example for table CUSTSTN

```
Table CUSTSTN

CUSTNAME        OPTNAME     OPTION
_____________________________________________________________

RESGRP  CXFER   CXFER CUSTOM NOCXFER NOCXFER NOCXFER
                NOCXFER  N  STD
```

Translation verification tools

RES Feature Set Expansion 1 (CXR) does not use translation verification tools.

SERVORD

SERVORD can be used to assign the CXR feature to individual Subscriber Services lines. If service orders are used, it is unnecessary to datafill Table IBNFEAT; however, Table CUSTSTN must still be datafilled to deny CXR at the customer group level.

SERVORD limitations and restrictions

RES Feature Set Expansion 1 (CXR) has no SERVORD limitations and restrictions.

RES Feature Set Expansion 1 (CXR) (continued)

SERVORD prompts

The following table shows the SERVORD prompts used to assign RES Feature Set Expansion 1 (CXR) to a line.

SERVORD prompts for RES Feature Set Expansion 1 (CXR)

Prompt	Valid input	Explanation
OPTION	CXR	Specifies the service to be established, modified, or deleted
CXFERTYP	CTALL	Specifies call transfer type
RECALL	N	Specifies recall ringing

SERVORD example for adding RES Feature Set Expansion 1 (CXR)

The following SERVORD example shows how RES Feature Set Expansion 1 (CXR) is added to a line with DN 6216052 using the ADO command.

Note: In the example, CTALL specifies that there is no restriction on the type of calls being transferred, and N specifies that the CXR recall option is not allowed.

SERVORD example for RES Feature Set Expansion 1 (CXR) in prompt mode

```
> SERVORD
SO:
> ADO
SONUMBER:  NOW 89 90 12 AM
>
DN_OR_LEN:
> 6216052
OPTION:
> CXR
CXFERTYP:
> CTALL
CXRRCL:
> N
METHOD:
> STD
OPTION:
> $
COMMAND AS ENTERED:
ADO NOW 89 90 12 AM 6216052 (CXR CTALL N STD) $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
> Y
```

RES Feature Set Expansion 1 (CXR) (end)

SERVORD example for RES Feature Set Expansion 1 (CXR) in no-prompt mode

```
> ADO $ 6216052 CXR CTALL N STD $ Y
```

RES Feature Set Expansion 1 (MSB)

Ordering codes

Functional group ordering code: RES00002

Functionality ordering code: not applicable

Release applicability

BCS26 and up

Prerequisites

To operate, RES Feature Set Expansion 1 (MSB) has the following prerequisites:

- BAS Generic, BAS00003
- MDC Standard, MDC00003
- MDC Minimum, MDC00001
- RES Service Enablers, RES00006

Description

The Make Set Busy (MSB) feature is a terminating feature that allows subscribers to make their lines busy to all incoming calls by dialing an access code. Incoming calls to a line with the MSB feature activated receive a busy tone.

Operation

When calls are diverted by MSB, a 0.5-s splash of ringing is applied to the subscriber set with the MSB feature active. The line can be made available again to incoming calls by dialing a deactivation code.

Note: The RES Feature Set Expansion 1 in the feature package RES Features, NTXA94AA, also contains Call Pickup (CPU) and Call Transfer (CXR). Refer to CPU and CXR in other feature descriptions in this chapter.

Compatible features

The following features are compatible with MSB when used for outgoing calls from a subscriber set while the MSB feature is active:

- Call Pickup (CPU)
- Ring Again (RAG)
- Three-Way Calling (3WC)
- Call Transfer (CXR)

- Speed Calling (SC1, SC2, SC3)
- Call Forward Universal (CFU)
- Do Not Disturb (DND)

Translations table flow

The MSB translations process is shown in the following figure . The flowchart shows the table flow for MSB activation.

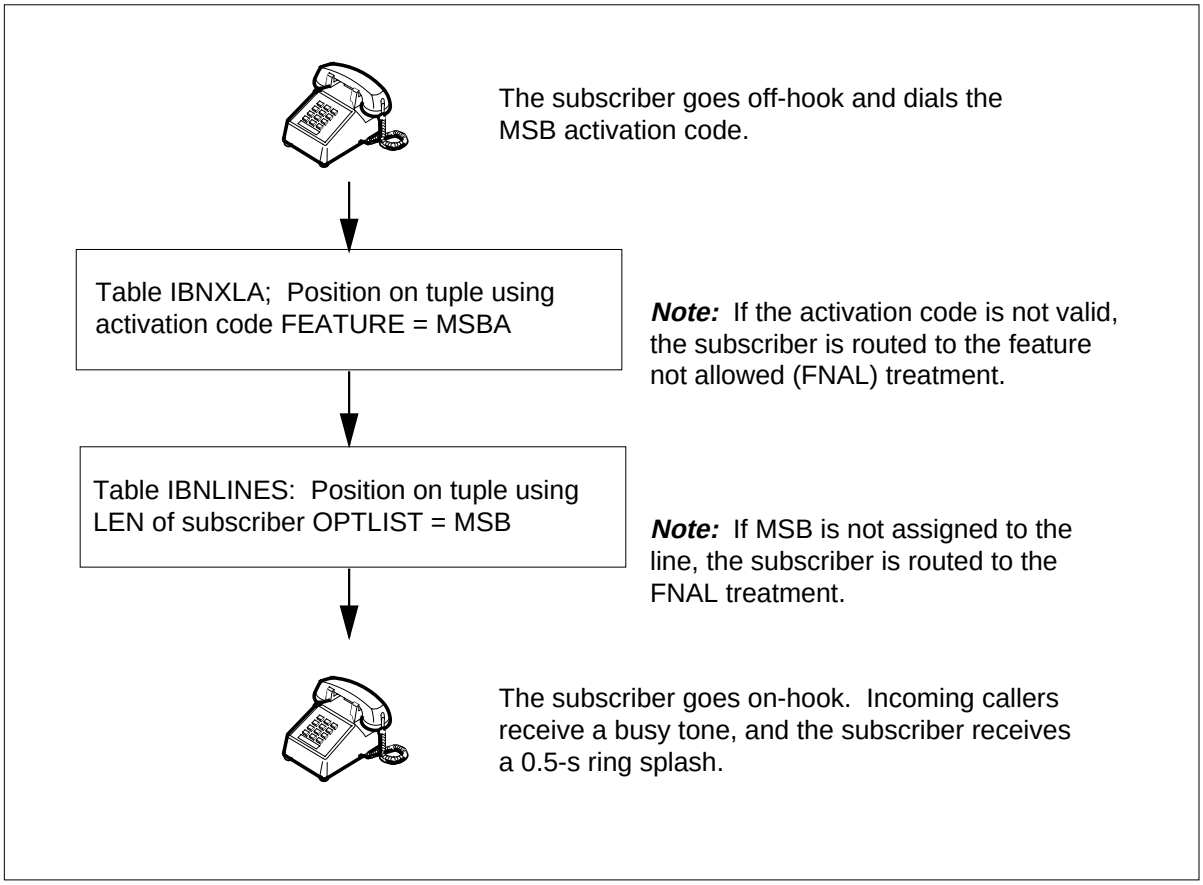
Table IBNXLA provides the name of the feature associated with an activation code.

Table IBNLINES lists the features assigned to a line equipment number (LEN).

The RES Feature Set Expansion 1 (MSB) translation process is shown in the flowchart that follows.

RES Feature Set Expansion 1 (MSB) (continued)

Table flow for RES Feature Set Expansion 1 (MSB)



The following table lists the datafill content used in the flowchart. MSB activation code = 47; LEN of subscriber = HOST 002 0 05.

Datafill example for RES Feature Set Expansion 1 (MSB)

Datafill table	Example data
IBNXLA	RXCFN 47 FEAT N N N MSBA
IBNLINES	HOST 00 02 0 05 0 DT STN RES 6210012 100 (MSB) $

RES Feature Set Expansion 1 (MSB) (continued)

Limitations and restrictions

The following limitations and restrictions apply to RES Feature Set Expansion 1 (MSB):

- Denied Termination (DTM)
- Denied Origination (DOR)
- Automatic Line (AUL)
- Multiple Appearance Directory Number (MADN)

Interactions

The following paragraphs describe the interactions between RES Feature Set Expansion 1 (MSB) and other functionalities.

Busy Verification Lines

The Busy Verification Lines (BVL) feature overrides MSB.

Call Hold

The Call Hold feature takes precedence over MSB in all situations.

Call Park

Call Park can be used to park a call against a directory number (DN) with MSB activated and to retrieve the parked call.

Call Pickup

Directed Call Pickup (CPU) is unaffected by MSB.

Call Request

Call Request can be activated from a line with MSB; the recall is not blocked by the MSB feature.

Call Waiting

If MSB is activated on a line, Call Waiting (CWT) cannot be activated on the line.

Conference calls

MSB interacts with conference calls in the following ways:

- A subscriber with MSB activated can use the Station Setup Conference feature.
- When a conference is being established with the Preset Conference feature, a line that has MSB activated is not included.

RES Feature Set Expansion 1 (MSB) (continued)

Do Not Disturb

Do Not Disturb (DND) is compatible with MSB; however, MSB takes precedence over DND in regard to the treatment given to a blocked call.

Executive Busy Override

Attempts by incoming calls to activate Executive Busy Override on a line with MSB are blocked.

Hunt Group

When a member of a hunt group (all types) has MSB activated, the member appears busy when the line is checked during hunting procedures, and the line is skipped. The caller does not receive MSB treatment, the skipped line does not receive MSB reminder ring splash, and the hunting continues.

Permanent Hold

The Permanent Hold feature is unaffected by MSB.

Ring Again

Ring Again (RAG) requests and call back queuing requests initiated from a line that has MSB activated are handled normally, while requests made from other lines against a line with MSB are blocked, and reorder tone is returned.

Uniform Call Distribution

Calls to a line with both Uniform Call Distribution (UCD) and MSB are blocked, but calls to a line with UCD only are not blocked.

Activation/deactivation by the end user

The following procedure shows how to activate and deactivate MSB.

Note: If MSB activation or deactivation is attempted on a line that has not been assigned MSB, the subscriber receives a reorder tone.

RES Feature Set Expansion 1 (MSB) (continued)

Activation/deactivation of RES Feature Set Expansion 1 (MSB) by the end user

At your telephone:

1. The subscriber can activate MSB in two ways:

   If the subscriber is not involved in a call, the subscriber goes off-hook, receives dial tone, and dials the MSB activation code.

   Response:

   A confirmation tone is heard if the MSB feature activation is successful. If MSB is already active when the access code is dialed, confirmation tone is heard anyway, and the MSB feature remains active.

   Once the confirmation tone is heard, the subscriber goes on-hook.

2. If the subscriber is involved in a call and wishes to activate MSB:

   a. The subscriber flashes the switchhook to place the call on hold.

   b. The subscriber dials the MSB activation code.

   c. The subscriber can then perform one of two options:

      - Flash the switchhook again and continue the call with the party on hold. The MSB feature remains active after the call is terminated.
      - Go on-hook and terminate the call on hold. The MSB feature remains active.

3. To deactivate the MSB feature, the subscriber dials the MSB deactivation code.

   Response:

   A confirmation tone is heard if feature deactivation is successful.

   If MSB is not active when the deactivation code is dialed, confirmation tone is returned anyway and MSB remains inactive.

Billing

RES Feature Set Expansion 1 (MSB) does not affect billing.

Station Message Detail Recording

RES Feature Set Expansion 1 (MSB) does not affect Station Message Detail Recording.

Datafilling office parameters

RES Feature Set Expansion 1 (MSB) does not affect office parameters.

RES Feature Set Expansion 1 (MSB) (continued)

Datafill sequence

The following table lists the tables that require datafill to implement RES Feature Set Expansion 1 (MSB). The tables are listed in the order in which they are to be datafilled.

Note: For the Subscriber Services offering of MSB, it is recommended that no treatment be datafilled in table CUSTSTN. Intragroup and intergroup calls then receive the same treatment (busy tone).

Datafill tables required for RES Feature Set Expansion 1 (MSB)

Table	Purpose of table
IBNLINES	Table IBNLINES (IBN Line Assignment) contains the line assignments for Subscriber Services station numbers. ***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 these tables.
IBNXLA	Table IBNXLA (IBN Translations) contains the data for the digit translations of calls from an Integrated Business Network (IBN) station, attendant console, incoming trunk group, or incoming side of a two-way MDC trunk group.

Datafilling table IBNXLA

Table IBNXLA (IBN Translations) contains the data for the digit translations of calls from an Integrated Business Network (IBN) station, attendant console, incoming trunk group, or incoming side of a two-way MDC trunk group.

The following table shows the datafill specific to RES Feature Set Expansion 1 (MSB) for table IBNXLA. Only those fields that apply directly to RES Feature Set Expansion 1 (MSB) are shown. Refer to the data schema section of this document 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 the subfields XLANAME and DGLIDX. These subfields are described below and must be entered in succession.
	XLANAME	RXCFN	Translator name. This subfield specifies the 1- to 8-character name assigned to the translator. Enter RXCFN.

RES Feature Set Expansion 1 (MSB) (continued)

Datafilling table IBNXLA (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	DGLIDX	assigned access code	Digilator index. This subfield specifies the digit or digits assigned to the index as the access code. Enter the access code assigned to MSB.
RESULT		see subfields	Result. This field consists of the subfields TRSEL, ACR, SMDR, and FEATURE. These subfields are described below.
	TRSEL	FEAT	Translation selector. This subfield specifies the translation selector. Enter FEAT.
	ACR	Y or N	Account code entry. This subfield specifies whether or not an account code entry is required for all calls to the special feature access code. Enter Y or N.
	SMDR	Y or N	Station message detail recording. This subfield specifies whether or not SMDR is required for calls originated by a customer group station or an attendant console. Enter Y or N.
	FEATURE	MSBA, MSBD	Feature. This subfield specifies the name of the feature to which the code is assigned. Enter MSBA if subfield DGLIDX contains an MSB access code; enter MSBD if subfield DGLIDX contains an MSB deactivation code.

Datafill example for table IBNXLA

The following example shows sample datafill for table IBNXLA.

In this example, a feature activation code of 47 is assigned to the MSB feature.

MAP display example for table IBNXLA

```
KEY                          RESULT
_____________________________________________________________
RXCFN    47          FEAT  N  N  N  MSBA
RXCFN    49          FEAT  N  N  N  MSBD
```

Translation verification tools

The following example shows the output from TRAVER when it is used to verify RES Feature Set Expansion 1 (MSB).

RES Feature Set Expansion 1 (MSB) (continued)

TRAVER output example for RES Feature Set Expansion 1 (MSB)

```
>TRAVER  L  6211233  'B47' B
TABLE IBNLINES
   HOST 00 0 09 07 0 DP STN RES 6211233 0 $
TABLE LINEATTR
   0 1FR NONE NT FR01 0 613 P621 L613 TSPS 10 NIL NILSFC
LATA1 0 NIL NIL 00 Y RESGRP 0 2
   LCABILL OFF – BILLING DONE ON BASIS OF CALLTYPE
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
TUPLE NOT FOUND
TABLE NCOS
RESGRP 2 0 0 RNCOS2 ( XLAS RXCMN2 NXLA RES ) $
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND
DIGCOL
RESGRP NXLA RESXLA RXCFN 0 RES
TABLE DIGCOL
   RES SPECIFIED: RES DIGIT COLLECTION
NCOS FEAT XLA NAME IS NIL.  GO TO NEXT XLA NAME.
TABLE IBNXLA: XLANAME RXCFN
   RXCFN 47 FEAT N N N MSBA

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

SERVORD

SERVORD is used to assign the MSB feature to Subscriber Services lines. If service orders are used, it is unnecessary to datafill table IBNLINES; however, table IBNXLA must be datafilled to define the MSB activation and deactivation codes.

Table IBNLINES (IBN Line Assignment) is datafilled by SERVORD and contains the line assignments for Subscriber Services station numbers.

SERVORD limitations and restrictions

RES Feature Set Expansion 1 (MSB) has no SERVORD limitations and restrictions.

RES Feature Set Expansion 1 (MSB) (end)

SERVORD prompts

The following table shows the SERVORD prompts used to assign RES Feature Set Expansion 1 (MSB) to a line.

SERVORD prompts for RES Feature Set Expansion 1 (MSB)

Prompt	Valid input	Explanation
OPTION	MSB	Specifies the service to be established, modified, or deleted

SERVORD example for adding RES Feature Set Expansion 1 (MSB)

The following SERVORD example shows how RES Feature Set Expansion 1 (MSB) is added to an existing line using the ADO command.

SERVORD example for RES Feature Set Expansion 1 (MSB) in prompt mode

```
> SERVORD
SO:
> ADO
SONUMBER:  NOW 89 09 12 AM
>
DN_OR_LEN:
> 7333400
OPTION:
> MSB
OPTION:
> $
COMMAND AS ENTERED:
ADO NOW 89 09 12 AM 7333400 (MSB) $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
> Y
```

SERVORD example for RES Feature Set Expansion 1 (MSB) in no-prompt mode

```
>ADO $ 7333400 MSB $ Y
```

RES Message Waiting/Reminder

Ordering codes

Functional group ordering code: RES00002

Functionality ordering code: not applicable

Release applicability

BCS33 and up

Prerequisites

To operate, RES Message Waiting/Reminder has the following prerequisites:

- BAS Generic, BAS00003
- MDC Standard, MDC00003
- MDC Minimum, MDC00001
- RES Service Enablers, RES00006
- RES I/F Functionality, RES00004

Description

RES Message Waiting/Reminder provides option PRN for Message Waiting (MWT) subscribers. Without this feature, MWT has three types of subscriber notification: stuttered dial tone, message waiting lamp, and Custom Local Area Signaling Services (CLASS) message waiting indicator (CMWI). Each line with MWT can be assigned one type of notification. RES Message Waiting Reminder adds a fourth type of notification called periodic ring notification (PRN).

Option PRN is a combination of the following types of notification:

- Stuttered dial tone is set when a message is queued. The length of time the subscriber hears stuttered dialtone for message waiting indication is set in one second intervals from one to seven seconds.
- Immediate ring notification (IRN) is a 0.5-second ring splash that can be given once for each message in the queue. The ring splash can only be given when a subscriber is on-hook.
- IRN can be specified for off-hook subscribers only or for both off-hook and on-hook subscribers. When IRN is specified for both off-hook and on-hook subscribers, only, an immediate ring is given only if the subscriber is off-hook when a message is added to the queue, and the ring is applied when the subscriber goes on-hook. One ring splash is given, even if more than one message is added to the queue while the subscriber is off-hook. When IRN is specified for both off- and on-hook subscribers, an

immediate ring is given regardless of the state of the subscriber's switchhook. Off-hook subscribers are handled in the same way as off-hook-only IRN.

- PRN is a single 0.5-second ring splash that is given after a message is queued against a line.

Operation

Two types of notification can be specified for IRN: OFFHOOK and ALWAYS. With OFFHOOK notification, subscribers receive notification only if they are off-hook when a message is queued against their lines, and notification is given when they go on-hook. If subscribers are on-hook when messages are queued, no immediate ring notification is given.

With ALWAYS notification, on-hook subscribers receive immediate notification, while off-hook subscribers receive notification when they go on-hook.

Translations table flow

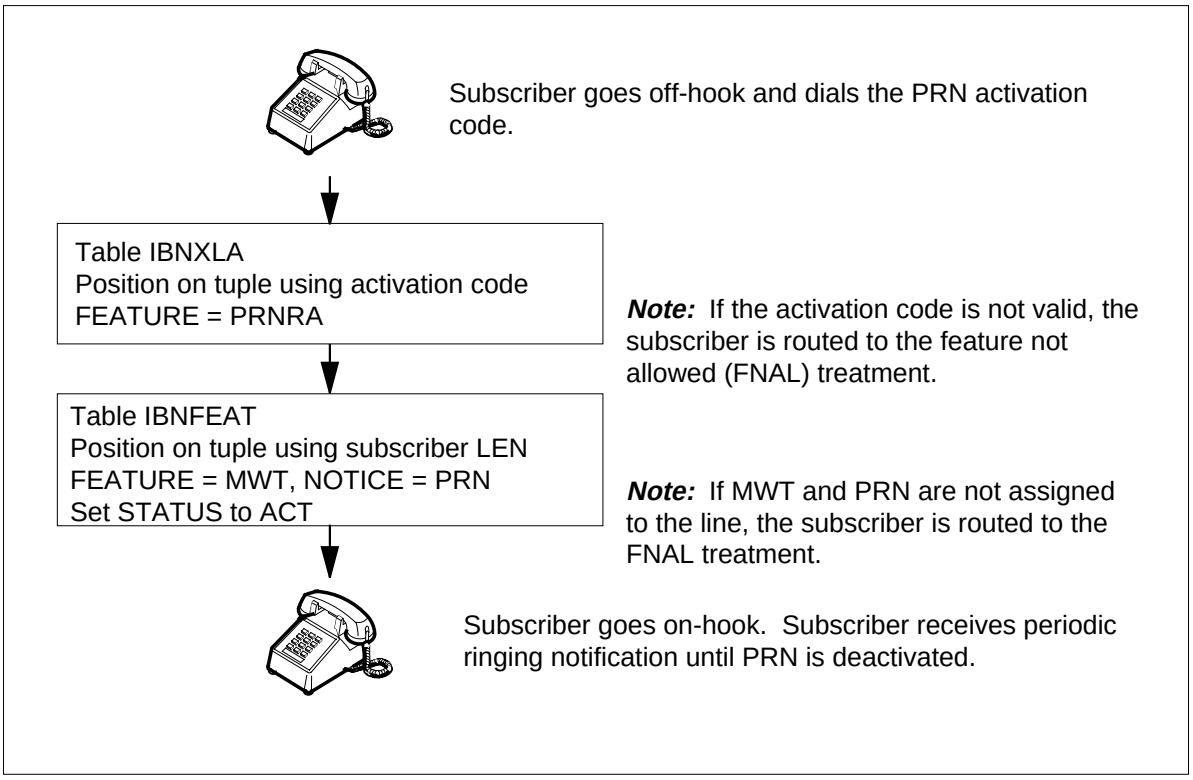
The RES Message Waiting/Reminder translations tables are described in the following list:

- Table IBNXLA provides the feature associated with the dialed access code.
- Table IBNFEAT associates options with a line. MWT with PRN notification is assigned to the subscriber line.

The RES Message Waiting/Reminder translation process is shown in the flowchart that follows.

RES Message Waiting/Reminder (continued)

Table flow for RES Message Waiting/Reminder



The following table lists the datafill content used in the flowchart. The PRN activation code is 43, and the LEN of the subscriber is HOST 00 02 18.

Datafill example for RES Message Waiting/Reminder

Datafill table	Example data
IBNXLA	RXCFN 43 FEAT N N N PRNRA
IBNFEAT	HOST 00 0 2 18 0 MWT MWT PRN OFFHOOK 15 (2 10) $ ACT Y NO N

RES Message Waiting/Reminder (continued)

Limitations and restrictions

The following limitations and restrictions apply to RES Message Waiting/Reminder:

- PRN is not supported by feature groups. PRN cannot be assigned to a line that has option MWT as part of a feature group.
- PRN is not supported by Executive Message Waiting. PRN cannot be assigned to a line with the executive message waiting option.
- PRN cannot be used on lines with KSETs. MWT can be added to such lines, but no notification can be assigned.

Interactions

The RES Message Waiting/Reminder (PRN) interacts with other features in the same way as the CMWI and MWT features. Refer to “Feature interactions" in “CLASS Message Waiting Indicator (CMWI)" for information on CMWI.

Activation/deactivation by the end user

PRN and its refinements are assigned to lines through datafill. Once PRN is assigned, an end user is not required to activate or deactivate PRN. The user can do so by dialing access codes. The following procedure illustrates activating primary ringing. The procedure for deactivating primary ringing is identical, except that a deactivation code is entered instead of an activation code.

Activation/deactivation of RES Message Waiting/Reminder by the end user

At your telephone:

1. Go off-hook.

   Response:

   Receive dial tone.

2. Enter the PRN activation code. For dial pulse (DP) lines, the code is “11xx"; for dual-tone multifrequency (DTMF) lines, the code *xx, where xx is a 2-digit code datafilled in table IBNXLA.

   Response:

RES Message Waiting/Reminder (continued)

If the code passes, receive confirmation tone. Otherwise, receive FNAL treatment.

3. Go on-hook.

   Response:

   Periodic ringing is enabled.

Billing

RES Message Waiting/Reminder does not affect billing.

Station Message Detail Recording

RES Message Waiting/Reminder does not affect Station Message Detail Recording.

Datafilling office parameters

RES Message Waiting/Reminder does not affect office parameters.

Datafill sequence

The following table lists the tables that require datafill to implement RES Message Waiting/Reminder. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for RES Message Waiting/Reminder

Table	Purpose of table
IBNFEAT	IBN Line Feature Table. Table IBNFEAT defines the features assigned to each Subscriber Services line. ***Note:*** This table is datafilled through SERVORD; therefore, no datafill procedure or example is provided.
IBNXLA	IBN Translations Table. Table IBNXLA contains the data for the digit translations of calls from an MDC station, attendant console, incoming trunk group, or incoming side of a two-way MDC trunk group. Specifically, the feature translator defines feature access codes on a customer-group basis. This table must be datafilled to assign activation and deactivation codes for PRN.
FTRGOPTS	Feature Group Options Table. Table FTRGOPTS is used to assign line options to all feature groups defined in an office. It is also used to specify the characteristics of individual feature group options. ***Note:*** This table is affected by RES Message Waiting/ Reminder (PRN), but the table is not datafilled.

Datafilling table IBNXLA

Table IBNXLA (IBN Translations) contains the data for the digit translations of calls from an MDC station, attendant console, incoming trunk group, or incoming side of a two-way MDC trunk group. Specifically, the feature translator defines feature access codes on a customer-group basis. This table must be datafilled to assign activation and deactivation codes for PRN.

The following table shows the datafill specific to RES Message Waiting/Reminder for table IBNXLA. Only those fields that apply directly to RES Message Waiting/Reminder 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	Entry	Explanation and action
KEY		see subfields	Key. This field consists of the subfields XLANAME and DGLIDX. These subfields are described below and must be entered in succession.
	XLANAME	alphanumeric (1 to 8 characters)	Translator name. This field specifies the 1-to 8-character name assigned to the translator. Enter the translator name.
	DGLIDX	alphanumeric	Digilator index. This field specifies the digit or digits assigned to the index as the access code. Enter the access code assigned to the digilator index.
RESULT		see subfields	Result. This field consists of the subfields TRSEL, ACR, SMDR, and Feature. These subfields are described below.
	TRSEL	FEAT	Translation selector. This subfield specifies the translation selector. Enter FEAT.
	ACR	Y or N	Account code entry. This subfield specifies whether or not an account code entry is required. Enter Y or N.

RES Message Waiting/Reminder (continued)

Datafilling table IBNXLA (Sheet 2 of 2)

Field	Subfield	Entry	Explanation and action
	SMDR	N	Station message detail recording. This subfield specifies whether or not SMDR is required for calls originated by a customer group station or an attendant console. Enter N.
	FEATURE	PRNRA or PRNRD	Feature. This subfield specifies the name of the feature to which the code is assigned. Enter PRNRA to datafill the activation access code; enter PRNRD to datafill the deactivation access code.

Datafill example for table IBNXLA

The following example shows sample datafill for table IBNXLA.

> ***Note:*** In the example, the activation and deactivation access codes assigned are 43 and 44, respectively.

MAP display example for table IBNXLA

```
            KEY                                RESULT
_____________________________________________________________

RXCFN       43                   FEAT N N N PRNRA
RXCFN       44                   FEAT N N N PRNRD
```

Datafilling table FTRGOPTS

Table FTRGOPTS (Feature Group Options) is used to assign line options to all feature groups defined in an office. It is also used to specify the characteristics of individual feature group options.

Option PRN is added to field NOTICE of table FTRGOPTS. Even though MWT is supported for feature groups, PRN is not supported. Option PRN appears when a range is performed on the table; however, it is not valid for feature groups.

Datafill example for table FTRGOPTS

The following example shows sample datafill for table FTRGOPTS.

MAP display example for table FTRGOPTS

```
FTRGRP                  OPTION    OPTION              OPTVAR
_____________________________________________________________

BNR051BN                  3WCPUB  3WCPUB            Y  STAR
BNR061BT                   MWT      MWT     PRN    Y  ALL   Y
```

Translation verification tools

The following example shows the output from TRAVER (translations verification) command when it is used to verify RES Message Waiting/Reminder.

TRAVER output example for RES Message Waiting/Reminder

```
TRAVER L 6215004 'B43' B
TABLE IBNLINES
HOST 00 0 09 20 0 DT STN RES 6215004 0 $
TABLE LINEATTR
0 1FR NONE NT FR01 0 613 P621 L613 TSPS 10 NIL NILSFC LATA1 0 NIL NIL
00 Y RESGRP 0 2
LCABILL OFF – BILLING DONE ON BASIS OF CALLTYPE
TABLE DNATTRS
613 621 5004
   ( PUBLIC ( NONUNIQUE ) $ ) $ $
TABLE DNGRPS
TUPLE NOT FOUND
TABLE NCOS
RESGRP 2 0 0 RNCOS2 ( XLAS RXCMN2 NXLA RES ) $
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND
DIGCOL
RESGRP NXLA RESXLA RXCFN 0 RES
TABLE DIGCOL
RES SPECIFIED: RES DIGIT COLLECTION
NCOS FEAT XLA NAME IS NIL.  GO TO NEXT XLA NAME.
TABLE IBNXLA:  XLANAME  RXCFN
RXCFN  43  FEAT  N  N  N  PRNRA

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

RES Message Waiting/Reminder (continued)

Note: TRAVER does not follow translations further than Table IBNXLA because TRAVER does not support the PRNRA access code.

SERVORD

SERVORD is used to assign PRN to lines with MWT. PRN is a value for the NOTICE prompt. This section describes how to add each option to lines through SERVORD.

SERVORD limitations and restrictions

RES Message Waiting/Reminder has no SERVORD limitations and restrictions.

SERVORD prompts

The following table shows the SERVORD prompts used to assign RES Message Waiting/Reminder to a line.

SERVORD prompts for RES Message Waiting/Reminder (Sheet 1 of 2)

Prompt	Valid input	Explanation
DN_OR_LEN	DN (up to 15 digits) or LEN	Specifies the directory number or line equipment number
OPTION	MWT	Specifies the option assigned to the line.
NOTICE	PRN, STD, MWL, and CMWI	PRN assigns primary ring notification to a line with MWT. Other notifications that can be assigned are STD, MWL, and CMWI.
IRN	OFFHOOK ALWAYS	Specifies the type of immediate ring notification. With OFFHOOK, an immediate ring is given only if the subscriber is off-hook when a message is queued against the subscriber line. The ring is applied to the line when the subscriber goes on-hook. With ALWAYS, an immediate ring is given whether or not the subscriber is off-hook. In either case, the ring is applied when the subscriber goes on-hook.
STATUS	ACT, INACT	This field specifies the status of primary ringing. This field is updated when subscribers activate and deactivate PRN or CMWI by dialing an access code.

RES Message Waiting/Reminder (continued)

SERVORD prompts for RES Message Waiting/Reminder (Sheet 2 of 2)

Prompt	Valid input	Explanation
CAR	Y, N	Specifies whether or not lines are able to make and receive call requests
CRRCFW	NO, ALL, DISPLAY	Specifies how call forwarding is handled if a subscriber activates CRR. With NO, the CRR call is never forwarded. With ALL, the CRR call can be forwarded. With DISPLAY, the CRR call is forwarded only if the subscriber activating CRR has a display set.
CRX	Y, N	Specifies whether or not the line is exempt from receiving call requests.

SERVORD example for adding RES Message Waiting/Reminder

The following SERVORD example shows how RES Message Waiting/Reminder is added to a line with MWT using the ADO command.

RES Message Waiting/Reminder (end)

SERVORD example for RES Message Waiting/Reminder in prompt mode

```
>SERVORD
SO:
> ADO
SONUMBER:   NOW 99 4 16 AM
>
DN_OR_LEN:
> 6211234
OPTION:
> MWT
NOTICE:
> PRN
IRN:
> ALWAYS
STATUS:
> ACT
CAR:
>Y
CRRCFW:
> NO
CRX:
> N
OPTION:
> $
COMMAND AS ENTERED:
ADO NOW 91 4 16 AM 6211234 ( MWT PRN ALWAYS ACT Y NO N )
$
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
> Y
```

SERVORD example for RES Message Waiting/Reminder in no-prompt mode

```
> ADO $ 6211234 MWT PRN ALWAYS  ACT Y NO N $ Y
```

RES Simultaneous Ringing

Ordering codes

Functional group ordering code: RES00002

Functionality ordering code: RES00081

Release applicability

NA010 and up

RES Simultaneous Ringing was introduced in NA010.

Prerequisites

This document includes all the data table information for this functionality. Complete use of this functionality can require software or hardware not described in this document.

Description

RES Simultaneous Ringing (SimRing) allows simultaneous incoming call notification for the members of a user-defined SimRing group. A SimRing group contains a single pilot directory number (PDN) and up to four non-pilot member DNs (NPMDN). The simultaneous notification occurs when the SimRing group PDN receives a call. The first notified DN that answers the call connects to the calling party. When the calling party connects to a member DN, the other notified member DNs stop ringing.

Operation

SimRing terminology

This document uses the following terminology:

- *SimRing group* refers to a user-defined group that contains a single PDN and up to four NPMDNs.
- *Member DN* (MDN) refers to any member of a SimRing group including the PDN.
- *Pilot DN* (PDN) refers to the SimRing group MDN that first receives a call. When the PDN receives a call, all the group members including the PDN receive simultaneous notification of the call. A SimRing group can contain a single PDN. With software optionality control (SOC) RES00085, a virtual DN (VDN) can serve as the PDN.
- *Non-pilot member DN* (NPMDN) refers to any SimRing group MDN except the PDN. A SimRing group can contain up to four NPMDNs.
- *Virtual DN* (VDN) refers to a DN that exists only in software and has no physical line card appearance or hardware associated with it. A SimRing

RES Simultaneous Ringing (continued)

VDN pilot (PDN) does not function as a physical line. It does not ring, cannot be answered, and cannot originate calls. When the SimRing VDN pilot is called, only the four NPMDNs are alerted.

- *Audible ringing* refers to the treatment a calling party receives while the called party is receiving notification of the call.
- *Busy MDN* and *idle MDN* refer to the state of a line from the view of the calling party. For example, parties A and B are in a two-way call, and party A has the Call Waiting (CWT) feature. If party C calls party A, party C finds party A to be idle, not busy.

SimRing service

The SimRing feature is a terminating end-office feature. All SimRing group MDNs receive simultaneous notification when the PDN receives a call. The first MDN that answers the call connects to the caller, and the other MDNs stop ringing. The caller does not know that the called DN is a SimRing group PDN. The caller also does not know that all the SimRing group MDNs have received notification of the call.

SimRing groups are multi-user groups. A call to a SimRing group PDN only receives busy treatment when all reachable MDNs are busy. Otherwise, idle MDNs receive simultaneous notification, and the calling party receives audible ringing.

Note 1: An MDN is not reachable if a call cannot terminate to that MDN.

Note 2: Actual MDN notification (power ringing or CWT tones) may not be simultaneous. MDN notification depends on the amount of time required to establish a connection with the MDNs. A noticeable delay can occur, for example, for cellular NPMDNs.

Note 3: The SimRing VDN SOC (ordercode RES00085) must be active for call processing to function for SimRing VDN groups. The SOC must also be active in order to perform administrative changes to SimRing VDN groups through the SimRing user interface. However, the SOC is not required to perform Servord and table control manipulation of SimRing VDN data.

The SimRing subscriber uses the SimRing user interface to activate or deactivate the SimRing feature on the PDN and edit the NPMDN list. The subscriber has local access to the SimRing user interface from the PDN by dialing a feature access code. The subscriber has remote access to the SimRing user interface by dialing a Direct Inward System Access (DISA) DN. Remote access to the SimRing user interface can require a personal identification number (PIN). An office parameter in table OFCENG controls PIN

RES Simultaneous Ringing (continued)

prompting. With both local and remote access, a menu-driven user interface guides subscribers through the available operations.

The subscriber can perform a local SimRing PIN change from the PDN using a feature access code. The Station Programmable PIN (SPP) feature provides this functionality.

Note 1: Refer to the SPP section of “Remote Call Forwarding without Unique PIN" in the RES translations section of the Translations Guide for more information about the SPP feature.

Note 2: A VDN Pilot cannot originate calls, so the VDN cannot be used to make administrative changes to the SimRing group. Specifically, the VDN cannot be used to change the PIN number, add or remove NPMDNs, or activate or deactivate SimRing. All administrative changes must be done remotely through DISA.

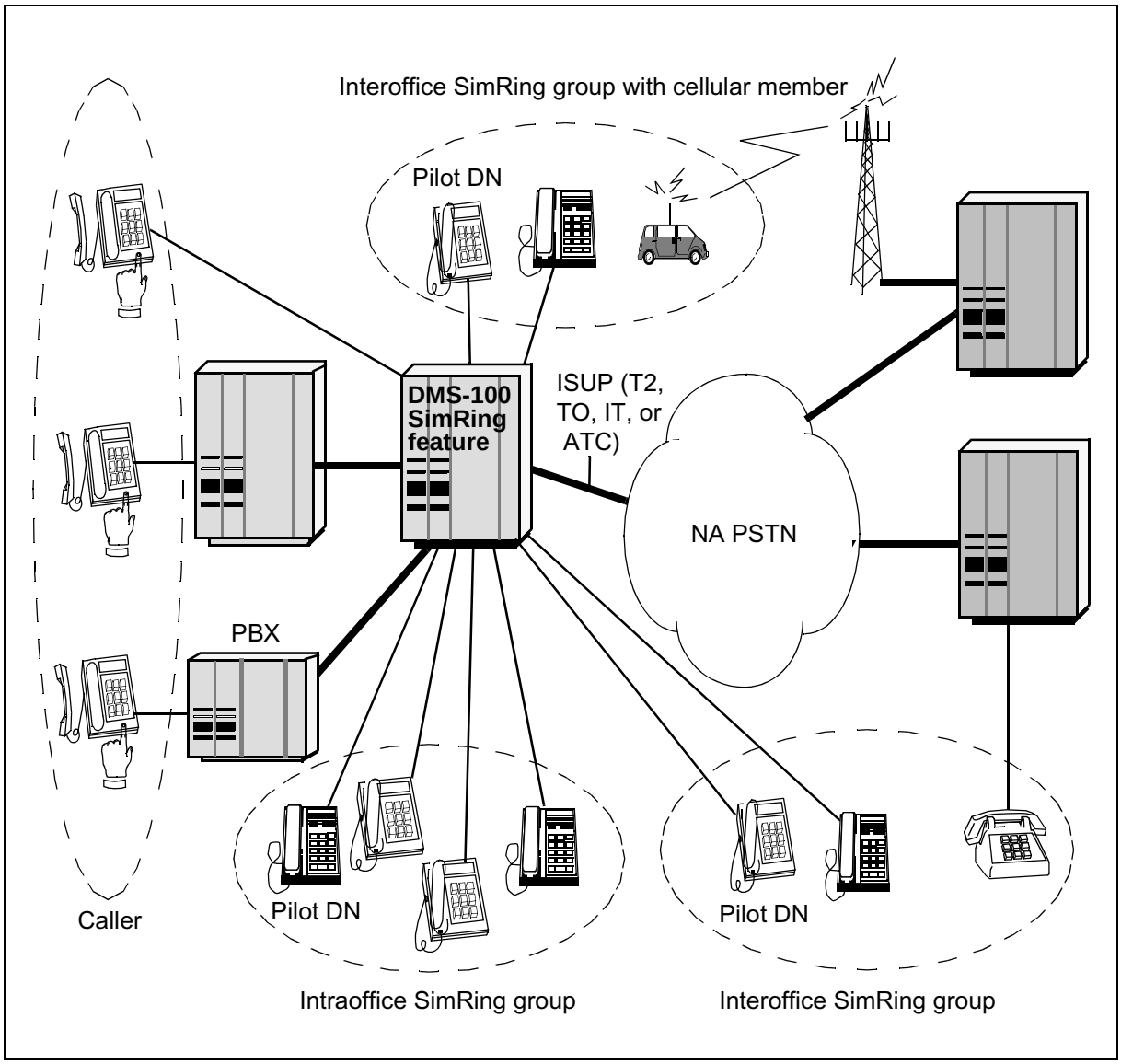
When the SimRing feature is inactive, any call to the SimRing group PDN notifies only the PDN. The NPMDNs do not receive notification of the call.

The SimRing group PDN must be on a DMS-100/200 switch. The NPMDNs can be any valid dialable DNs in the North American public switched telephone network (NA PSTN). (NPMDNs are subject to the restrictions discussed in “Screening" in this document.)

The following figure shows examples of SimRing group configurations.

RES Simultaneous Ringing (continued)

SimRing group configurations



Agent support

The SimRing feature supports the agents listed in the following sections.

Incoming agents

Calls to a SimRing group PDN can arrive from any type of trunk or line except an attendant console.

RES Simultaneous Ringing (continued)

PDN

A SimRing group PDN can have any of the following line class codes (LCC):

- RES (1FR or 1MR)
- IBN
- MBS primary DNs: M5xxx (key 1), except ISDN

The SimRing feature introduces two new office parameters in table OFCENG to control SimRing availability based on the supported LCC of the PDN. Refer to “SimRing activation/deactivation and PIN control" in this document for more information on these office parameters.

Intraswitch NPMDNs

NPMDNs on the same switch as the PDN can have any of the following LCCs:

- POTS (1FR or 1MR)
- RES (1FR or 1MR)
- IBN
- MBS DNs (M5xxx), data phones, except ISDN
- ISDN (NI1, NI2)

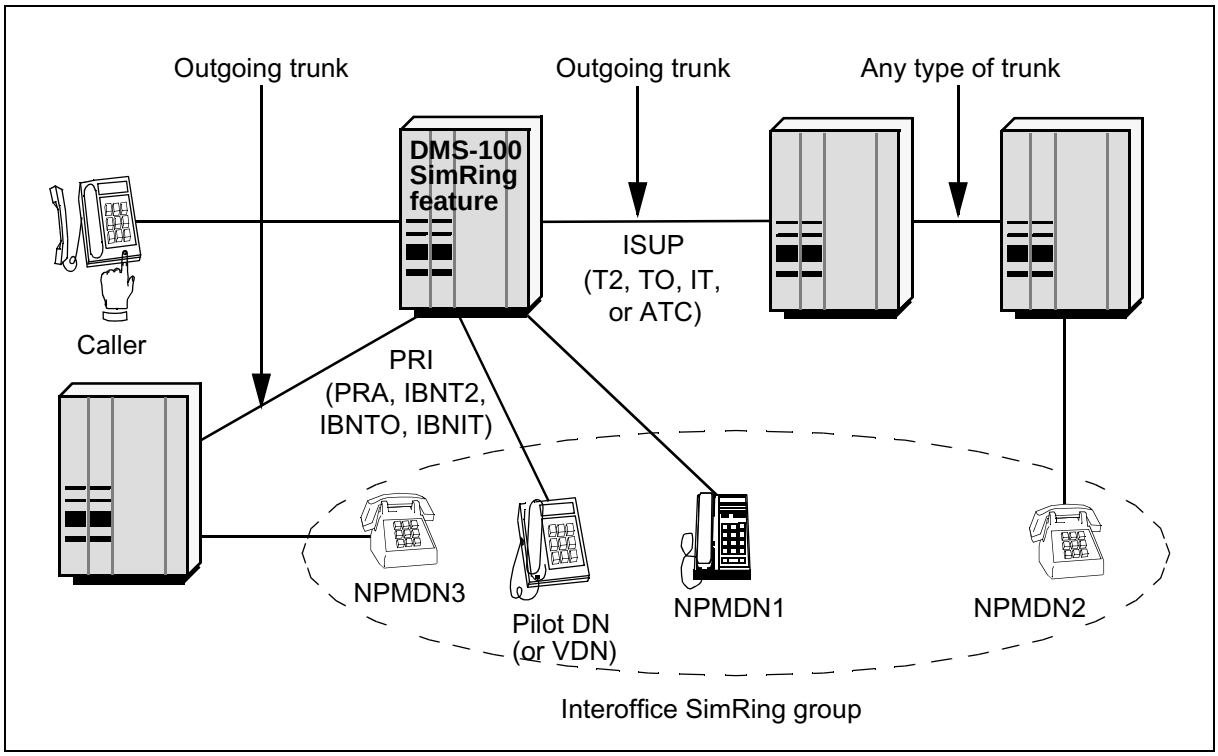
Interswitch NPMDNs

NPMDNs on a different switch from the PDN can be any agent. End-to-end ISUP connectivity between the PDN and NPMDNs is not necessary. Only the first outgoing trunk on the switch where the PDN exists must be ISUP (types T2, TO, IT, or ATC) or PRI (NTNA, NI) types PRA, IBNT2, IBNTO, and IBNIT.

If the first outgoing trunk is not an ISUP trunk, the switch releases the PDN-to-NPMDN call leg.

RES Simultaneous Ringing (continued)

SimRing interworking requirements



SimRing activation/deactivation and PIN control

The SimRing feature introduces the following two office parameters in table OFCENG. These parameters control the SimRing functionality provided to the PDN for an office.

- Office parameter SIMRING_RES_CONTROL controls SimRing functionality for RES lines in an office. This office parameter controls RES (1FR and 1MR) PDN agents.
- Office parameter SIMRING_CENTREX_CONTROL controls SimRing functionality for centrex lines in an office. This office parameter controls the following PDN agents:
  - — IBN
  - — MBS primary DNs: M5xxx (key 1), except ISDN

Note: The SimRing office parameters do not provide SimRing functionality to the NPMDNs or have any effect on the NPMDNs.

RES Simultaneous Ringing (continued)

Office parameters SIMRING_RES_CONTROL and SIMRING_CENTREX_CONTROL each contain the following boolean (Y/N) fields:

- The ENABLED field enables and disables SimRing functionality. The operating company can enable or disable SimRing functionality for an office by setting the ENABLED field to Y or N. For both office parameters, the default value is N (SimRing disabled).

  Note: The ENABLED field does not control the availability of the SimRing user interface.

- The PIN_REQUIRED field enables and disables PIN prompting during remote access to the SimRing user interface. The operating company can enable or disable SimRing PIN prompting for an office by setting the PIN_REQUIRED field to Y or N. For both office parameters, the default value is N (no PIN prompting required during remote access to the SimRing user interface).

Provisioning

The SimRing feature introduces line option SIMRING, which the operating company assigns to the SimRing group PDN. The Service Order System (SERVORD) prompts for the SimRing feature state (active or inactive), PIN, and NPMDNs during SimRing provisioning.

Table IBNFEAT or table KSETFEAT stores the SimRing feature state, group number, and PIN. The SimRing feature introduces table PILOTGRP, which stores the NPMDNs for each SimRing group. The maximum number of SimRing groups in table PILOTGRP is 10 000.

The SimRing feature performs screening before assigning the SIMRING line option to the PDN. If the PDN fails screening, the SimRing feature blocks assignment of the SIMRING line option.

The SimRing feature also performs screening on the list of NPMDNs before assigning them as SimRing group members.

Note: Refer to “Screening" in this document for more information on PDN and NPMDN screening.

Screening

The SimRing feature performs screening on the NPMDNs during use of table control, SERVORD, and the SimRing user interface and at run time. If a DN fails either type of screening, it does not become a SimRing group member.

RES Simultaneous Ringing (continued)

The SimRing feature performs screening on the list of NPMDNs during provisioning, if the NPMDN is ten digits. Only after screening can the NPMDNs become members of the SimRing group.

NPMDN screening occurs as listed in the following table. In this table, a “Y" entry indicates that screening is performed on the DN and that the DN can be rejected. For table control, SERVORD, and SimRing user interface screening, the DN is not allowed as a member of the SimRing group.

A DN can pass the table control, SERVORD, or SimRing user interface screening and become an NPMDN, but fail runtime screening. In this event, the switch generates a SIM600 log, and the DN does not receive notification of SimRing calls.

Note: Refer to “SIM600 log" in this document for more information on the SIM600 log.

SimRing NPMDN screening

DN type	Table control screening	SERVORD screening	SimRing user interface screening	Runtime screening
International DNs	N	N	Y	Y
Operator-assisted calls	N	N	Y	Y
DNs that begin with or contain *, #, b, or c	Y	Y	Y	N
Feature group B (FGB) DNs (1-950-Wxxx and 950-Wxxx)	N	N	Y	Y
DNs that contain fewer than 4 digits or more than 30 digits	Y	Y	Y	N
Non-supported intraswitch DNs	Y (Note 1)	Y (Note 1)	Y	Y (Note 2)

Note 1: The DN must contain ten digits (NPA-NXX-XXXX).

Note 2: The switch generates a SIM600 log. Refer to “SIM600 log" in this document for more information on this log.

RES Simultaneous Ringing (continued)

SimRing NPMDN screening

DN type	Table control screening	SERVORD screening	SimRing user interface screening	Runtime screening
DISA DNs	N	N	N	Y (Note 2)
DNs that route to a non-ISUP trunk	N	N	Y	Y (Note 2)
DNs for which translation finds no route	N	N	Y	Y (Note 2)
DNs that are PDNs of other SimRing groups on the same switch	N	N	N	Y

Note 1: The DN must contain ten digits (NPA-NXX-XXXX).

Note 2: The switch generates a SIM600 log. Refer to “SIM600 log" in this document for more information on this log.

As shown in the following table, SimRing also performs screening based on non-compatible options assigned to the PDN and NPMDNs. This screening occurs during provisioning and end-user programming and at run time. If the DN has any of these options assigned, the DN does not become an NPMDN.

Screening of non-compatible options on PDN and NPMDNs

Options	SERVORD screening	SimRing user interface screening	Runtime screening
ACD, UCD, hunt group options, CMG, DOR, and MADN (not compatible with PDN)	Y	Does not apply	Does not apply
ACD, UCD, hunt group options, DISA, meet-me conference, and MADN (not compatible with intraswitch NPMDNs)	N	Y	Y

RES Simultaneous Ringing (continued)

SimRing call setup

When a caller dials the SimRing group PDN, the call starts the SimRing feature. The SimRing feature validates the following:

- The SimRing feature is enabled for the office and is active on the PDN as defined by office parameter SIMRING_RES_CONTROL or SIMRING_CENTREX_CONTROL.
- The CPU capacity does not exceed the threshold value.
- The incoming call to the PDN is not a call that another SimRing group is establishing.

The switch completes the first leg of the SimRing call (the caller-to-PDN leg) using normal call processing. The SimRing feature then sets up calls to each NPMDN. The SimRing feature sets up these call legs using the properties of the PDN and the caller name/number. The SimRing feature uses an internal software framework to establish calls to the NPMDNs. This internal software framework is called Virtual Call Framework (VCF) and utilizes Clone Virtual Identifiers (CVIDs) to notify multiple NPMDNs in the SimRing group at the same time.

When the SimRing feature tries to terminate to a NPMDN, it requires a CVID to establish the NPMDN call. If no CVIDs are available, the SimRing feature does not establish the NPMDN call leg. Register SIMRFAIL of operational measurement (OM) group SIMRING increments. Office parameter NO_OF_CLONE_TIDS in table OFCENG controls the number of CVIDs available.

During NPMDN call leg setup, the SimRing feature generates a SIM600 log and releases the NPMDN call leg under the following conditions:

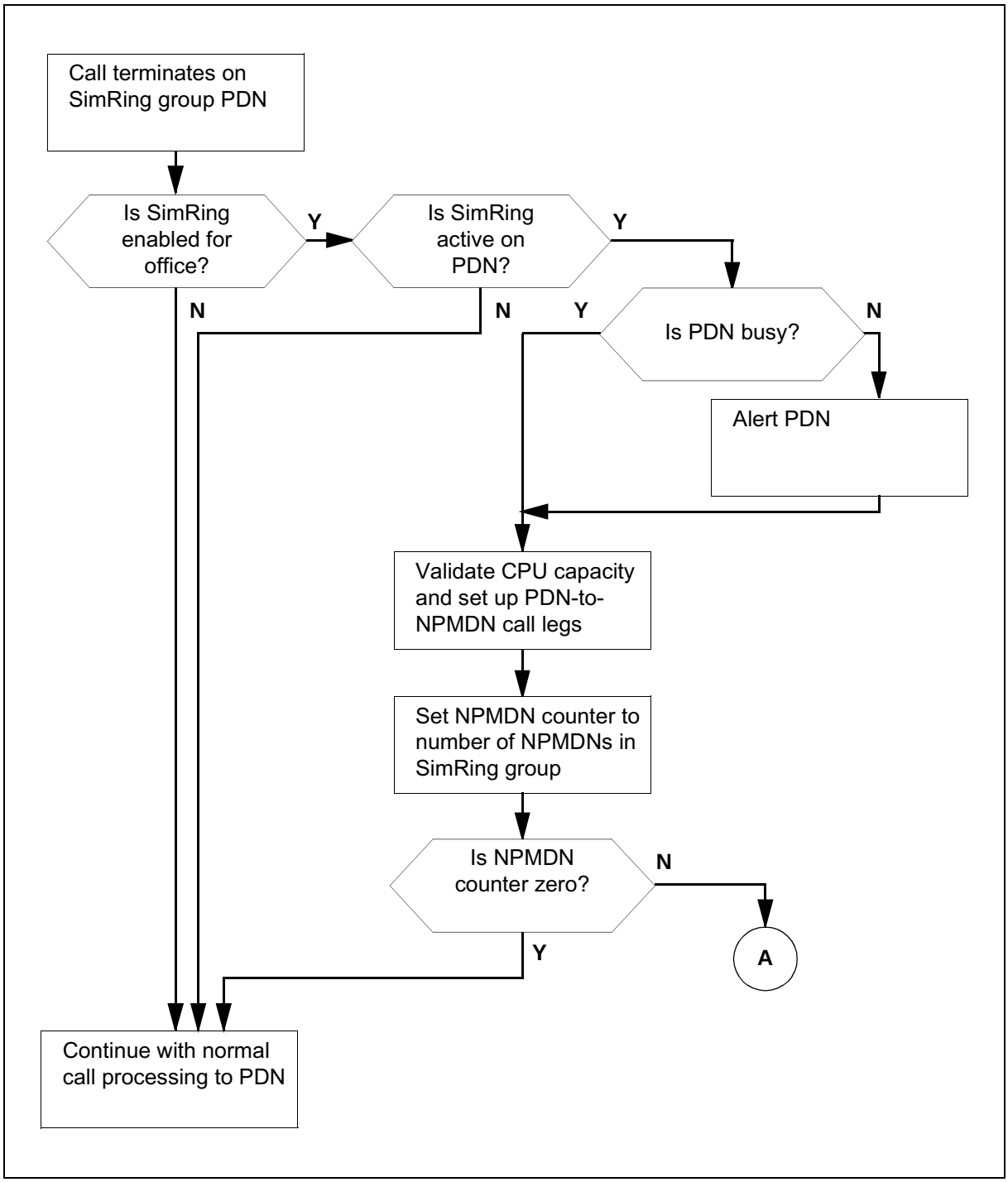
- a failure occurs during translation
- the call routes to a non-supported NPMDN

If the NPMDN is busy, the SimRing feature releases its call leg. If the NPMDN is reached and idle, the station receives notification of the call. The first MDN to answer connects to the caller; the other MDNs do not receive notification of the call.

The following figure provides a SimRing call flow diagram.

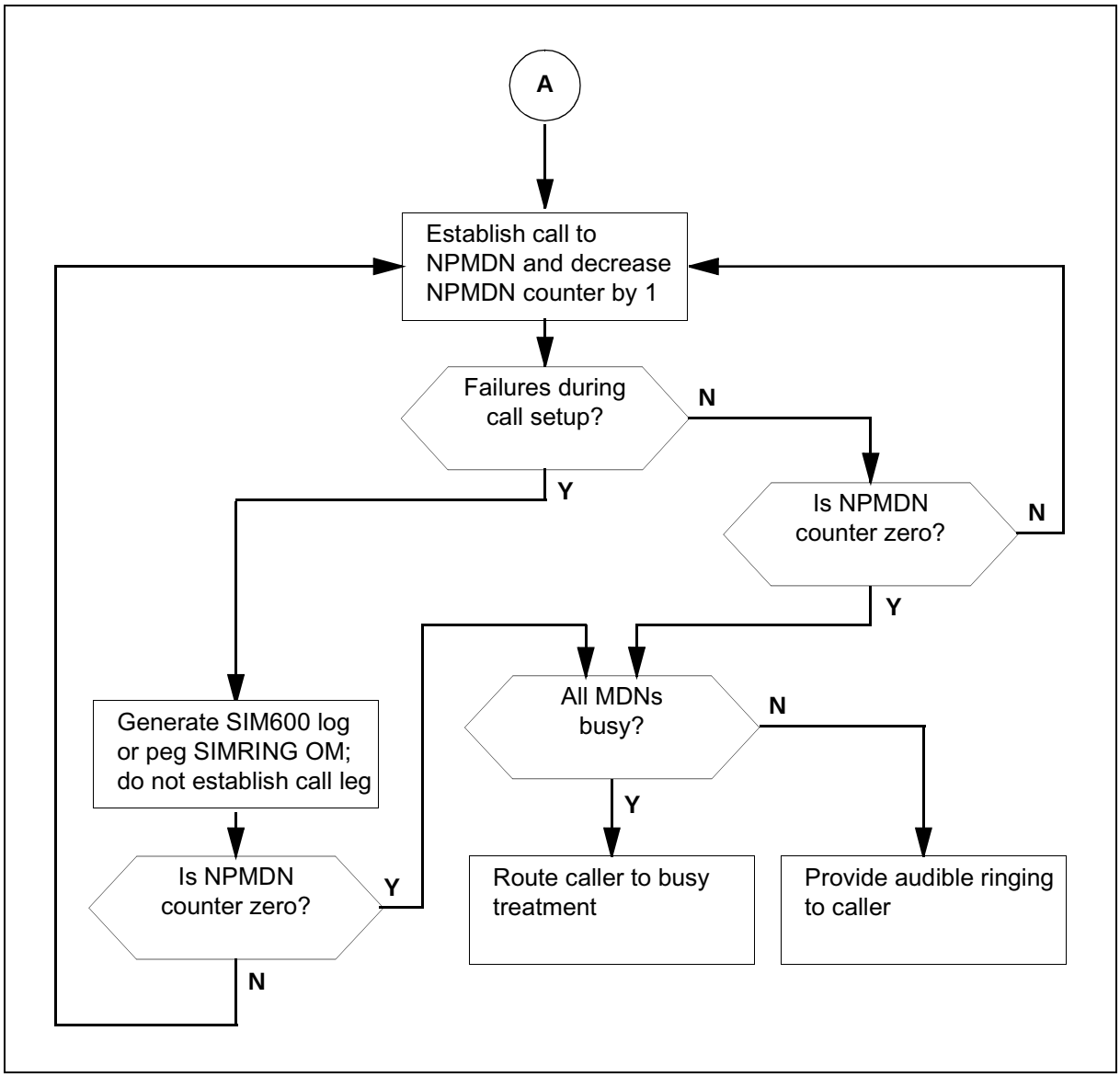
RES Simultaneous Ringing (continued)

SimRing call flow diagram



RES Simultaneous Ringing (continued)

SimRing call flow diagram (continued)



A multi-user group can occur when

- the first caller to the SimRing group is in a talking state with the MDN
- a second caller calls the SimRing group

The remaining idle MDNs receive notification, and the first MDN to answer connects to the second caller. In this event, two callers connect to two different MDNs of the same SimRing group.

The following special occurrences are possible:

- A caller calls a SimRing group PDN while some MDNs are receiving notification of another SimRing call. In this event, only the available MDNs receive notification of the new SimRing call.
- A SimRing group PDN is busy and a caller calls the PDN. The SimRing feature tries to establish the calls to each MDN. The caller receives silence (a maximum of 5 s) until SimRing determines the state of the group. This silence prevents providing ringing tone to the caller and then switching to busy tone. Once SimRing determines the state of the group, the caller receives the appropriate tone. If SimRing cannot determine the group state within the 5-s period, the caller receives busy treatment (as if the PDN were busy).
- While a caller to a SimRing group is receiving audible ringing, the MDNs become busy or unreachable because of feature interactions. In this event, the switch terminates audible ringing and routes the caller to no terminal responding (NTRS) treatment.

For example, all SimRing group MDNs are busy except for one MDN that has Call Forward Don't Answer (CFDA). The MDN with CFDA forwards the call to party B over an ISUP trunk, and party B is busy. The following occurs:

- Before the CFDA timer expires, the caller to the SimRing group receives audible ringing because the MDN with CFDA is idle.
- After the CFDA timer expires, the call routes to party B. Because party B is busy, the switch terminates audible ringing and routes the caller to NTRS treatment.

SimRing user interface

The SimRing subscriber accesses the SimRing user interface to do the following:

- add members to the SimRing group NPMDN list
- delete members from the SimRing group NPMDN list
- modify the SimRing group NPMDN list
- activate or deactivate the SimRing feature

The SimRing subscriber has local access to the SimRing user interface from the PDN. The SimRing subscriber has remote access to the SimRing user interface from any Digitone (DGT) line in the NA PSTN.

The SimRing user interface is based on the Screening List Editing (SLE) user interface. For the SimRing user interface to function, the operating company must provide both SLE user interface datafill and SimRing datafill.

RES Simultaneous Ringing (continued)

The SimRing feature introduces OM group SIMRING to monitor use of the SimRing user interface. Refer to “OM group SIMRING" in this document for more information on this OM group.

Note: The SimRing feature state (active or inactive) in an office has no effect on the availability of the SimRing user interface.

SLE editing commands

The following is a list of the editing commands provided by the SLE user interface. Note that for some commands, although the command is available in an office, the user interface does not provide instruction announcements for the use of the command. This section refers to these commands as “hidden" commands.

- List addition—Add a new entry to the current list.
- List deletion—Delete one or more entries from the list. If this command deletes the last NPMDN, the user interface session sets the SimRing group state to inactive when the session ends.
  - — Extension—This prefix, used in list addition or list deletion, indicates that the DN that follows is an extension.
  - — Last DN—This subcommand of list addition and deletion allows the subscriber to add or delete the last calling DN.
- List Review—Review all entries currently in the list. After a deletion the subscriber moves to the previous entry.

  Note: The SimRing user interface does not support the extension and last DN subcommands. If the subscriber tries to use these subcommands, the user interface displays an invalid command error message.

- List review—Review all non-private entries in the list. After a deletion, this command positions the subscriber on the previous entry.
  - — Delete entry—This command deletes the current DN from the list. List review continues with the next entry.
  - — First entry—This command allows the subscriber to continue immediately to the first entry in the list. List review then continues from this entry.
  - — Next entry—This command allows the subscriber to continue to the next entry in the list. This command prevents the subscriber from having to wait for the system to time out before continuing to the next entry.

RES Simultaneous Ringing (continued)

— Previous entry—This command allows the subscriber to return to the previous entry in the list, if it exists. List review then continues from this entry.

— Current entry—This command allows the subscriber to review the current entry again before continuing with the list review.

- Delete all entries—Delete all entries in the list. This “hidden" command is actually a subcommand of list deletion and is not included in the instruction announcement.
- Delete all private entries—Delete all private entries in the list. This “hidden" command is actually a subcommand of list deletion and is not included in the instruction announcement.

  Note: The SimRing user interface does not support the delete all private entries command. If the subscriber tries to use this command, the user interface displays an invalid command error message.

- Change status—Activate or deactivate the service, depending on the current status.
- Activate service—This “hidden" command activates the service.
- Deactivate service—This “hidden" command deactivates the service.
- Program remote DN—Program a (new) remote DN (for Selective Call Forwarding service).

  Note: The SimRing user interface does not support the program remote DN command. If the subscriber tries to use this command, the user interface displays an invalid command error message.

- Query service—Provide a summary of the current status of the service and size of the list.
- Cancel command—This “hidden" command cancels the current transaction and returns to the previous command level.

  Note: This command is not available at the list editing level.

- Help—This command provides context-sensitive help information to the subscriber. The output depends on the current state and the set of valid commands and possible user input data.

  Note: This command is only available in a limited number of states in the Bellcore version. This command results in repeating the original instruction message.

RES Simultaneous Ringing (continued)

Local access to SimRing user interface

The SimRing subscriber can access the SimRing user interface by dialing the SimRing feature access code. At this point, the user interface session performs validation. The subscriber receives FNAL treatment if one of the following validation failures occurs. If the validation is successful, the subscriber continues with the user interface session.

- The subscriber tries to dial the SimRing feature access code from any DN except the PDN.
- The SLE tuple does not exist for the customer group of the PDN.
- The SLE tuple exists, but the customer group of the PDN has SLE disabled.

After the validation checks have passed, the subscriber hears the feature state level announcement. This announcement tells the subscriber the SimRing feature state and the number of list entries, if any.

After the feature state level announcement, the subscriber continues to the list editing level commands. The list editing level instruction announcement provides the subscriber with the following possible operations. Refer to “SLE editing commands" in this document for more information on these operations.

- List addition
- List deletion
- List review
- Change status

The SLE retry and time-out counters count the number of consecutive errors and reprompts before the subscriber receives negative acknowledgment (NACK) treatment. Subfields INVINPUT and TIMEOUTS in the SLE tuple in table CUSTSTN contain the SLE retry count and time-out count values.

Refer to “SimRing user interface announcements" in this document for more information on the new announcements that the SimRing feature adds to the SLE announcement set.

The SimRing feature performs screening on each subscriber-entered NPMDN. Refer to “Screening" in this document for more information.

RES Simultaneous Ringing (continued)

Remote access to SimRing user interface

The SimRing subscriber can dial a DISA DN for remote access to the SimRing user interface.

> ***Note:*** The SimRing subscriber has remote access to the SimRing user interface from any DGT line in the NA PSTN. Remote access does not support dial pulse (DP) lines.

If there is more than one feature associated with the DISA DN, an announcement prompts the subscriber to enter a feature access code. If there is a single feature associated with the DISA DN, the subscriber does not receive this announcement.

An announcement prompts the subscriber for the SimRing group PDN. If the subscriber enters the correct PDN, an announcement prompts for the PIN (if required). The SimRing feature introduces two new announcements to prompt the subscriber for the PDN and PIN if required. Office parameter SIMRING_RES_CONTROL or SIMRING_CENTREX_CONTROL in table OFCENG controls PIN prompting.

For remote access, the SimRing subscriber always hears the announcements provisioned for the primary language. The SL (secondary language) option, if assigned to the subscriber line, has no effect on the announcement language.

If the subscriber enters an invalid PDN or PIN and exceeds the SLE retry and time-out values, the subscriber receives NACK treatment. The SLE retry and time-out values apply to the customer group of the DISA DN and not the PDN.

After the subscriber enters the correct PDN, followed by the correct PIN (if required), the user interface session performs validation. The subscriber receives FNAL treatment if one of the following validation failures occurs. If the validation is successful, the subscriber continues with the user interface session.

- The SLE tuple does not exist for the customer group of the DISA DN.
- The SLE tuple exists, but the customer group of the DISA DN has SLE disabled.
- The subscriber-entered DN does not have the SIMRING line option assigned.

After the PDN, PIN, and validation checks have passed, the subscriber hears the feature state level announcement. This announcement tells the subscriber the SimRing feature state and the number of list entries, if any. From this point, the editing session continues as with local access.

RES Simultaneous Ringing (continued)

Refer to “SimRing user interface announcements" in this document for more information on the new announcements that the SimRing feature adds to the SLE announcement set.

ISUP/ISDN access to DISA DN The subscriber can dial a DISA DN for remote access to the SimRing user interface. Any feature that requires calls to terminate to a DISA DN through incoming ISUP trunks requires loopback trunks. Remote access to the SimRing user interface from an ISDN line also requires loopback trunks. The loopback trunks facilitate digit collection during SimRing remote access.

Exiting the SimRing user interface session

When the subscriber hangs up or the system terminates the SimRing user interface session, the session validates the SimRing feature state. If the SimRing feature is active, the session determines if the list of NPMDNs is not empty. If the list of NPMDNs is empty, the session sets the SimRing feature state to inactive. If the list of NPMDNs is not empty, the SimRing feature remains active.

Required datafill for SLE user interface

For correct operation of the SLE user interface, the following tables require datafill. Refer to “Screening List Editing (SLE)" in the RES translations section of the *Translations Guide* for detailed information on SLE datafill.

- OFCENG
- OFCVAR
- CUSTSTN
- XLANAME
- IBNXLA
- DRAMS
- CLLI
- ANNS
- ANNMEMS
- DRMUSERS
- EDRAMINV

The following examples show sample datafill for the SLE user interface in tables OFCENG, OFCVAR, CUSTSTN, XLANAME, and IBNXLA.

Note: Tables DRAMS, CLLI, ANNS, ANNMEMS, DRMUSERS, and EDRAMINV contain announcement datafill. Refer to “SimRing

announcement datafill" in this document for datafill examples for these tables.

MAP display example for table OFCENG

```
PARMNAME                      PARMVAL
------------------------------------------------------------
SLE_ITEMS_IN_SEGMENT          1024
SLE_MAX_PROGRAMMERS           20
SLE_MAX_SEGMENT_COUNT         5
SLE_TCAP_RESPONSE_TIME        3
SLE_TRANSACTION_THRESHOLD     32767
SLE_WAKEUP_TIME               1 37
```

MAP display example for table OFCVAR

```
PARMNAME                      PARMVAL
------------------------------------------------------------
SLE_LANGUAGE                  LANG1 LANG2
SLE_VOICEBACK_PUBLIC_ICM      Y
```

MAP display example for table CUSTSTN

```
CUSTNAME   OPTNAME                                    OPTION
------------------------------------------------------------
RESG274 SLE SLE 30 1 0 SLEXLA2 NXLA 2 Y LISTADD LISTDEL Y
3 50 50 50 50 50 50 30 11 7 11 N 30
```

MAP display example for table XLANAME

```
XLANAME                     DEFAULT       MAXDIG
------------------------------------------------------------
SLEXLA1                      $            9
SLEXLA2 (SLE T SLEXLA1)      $            9
```

RES Simultaneous Ringing (continued)

MAP display example for table IBNXLA

```
KEY     RESULT
-------------------------------------------------------
SLEXLA1 0 SLE C HELP
SLEXLA1 1 SLE C LISTREV
SLEXLA2 01 SLE C LASTDN
SLEXLA2 02 SLE C EXTN
SLEXLA2 03 SLE C CANCEL
SLEXLA2 04 SLE C QSERVICE
SLEXLA2 05 SLE C ACTIVATE
SLEXLA2 06 SLE C DEACTIVATE
SLEXLA2 07 SLE C DELETE
SLEXLA2 08 SLE C DELALL
SLEXLA2 09 SLE C DELPRIV
SLEXLA2 11 SLE C LISTDEL
SLEXLA2 12 SLE C LISTADD
SLEXLA2 13 SLE C CURRDN
SLEXLA2 14 SLE C NEXTDN
SLEXLA2 15 SLE C PREVDN
SLEXLA2 16 SLE C FIRSTDN
SLEXLA2 3 SLE C CHGSTATUS
```

PIN change

SimRing subscribers can perform local PIN changes from the PDN using the SPP feature. The operating company must have the SPP feature provisioned in order for the SimRing PIN change to function.

> ***Note:*** Refer to the SPP section of “Remote Call Forwarding without Unique PIN" in the RES translations section of the *Translations Guide* for detailed information on the SPP feature.

After the subscriber dials the SPP feature access code, an announcement prompts the subscriber to dial the feature activation code. The subscriber enters the SimRing feature access code, which is identical to the access code for the SimRing user interface. If the subscriber dials an invalid feature access code, the feature allows additional retries. The retry count field of the SPP tuple in table CUSTSTN indicates the number of additional retries allowed.

If the subscriber exceeds the retry count value, the subscriber hears an error announcement. The same retry count value applies to several steps of the SPP function. These steps are feature access code entry, current PIN entry, new PIN entry, and new PIN re-entry.

RES Simultaneous Ringing (continued)

After the subscriber enters the correct SimRing feature access code, an announcement states the SimRing feature name.

An announcement then prompts the subscriber to enter the current PIN. SimRing checks the PIN entered against the PIN currently stored for the subscriber's SimRing group PDN. If the PIN is not correct and the subscriber exceeds the retry count, an announcement prompts for PIN re-entry.

If the subscriber exceeds the retry count, the subscriber hears an error announcement. The switch generates an IBN136 log indicating too many PIN entry retries.

If the current PIN entry is successful, an announcement prompts the subscriber to enter a new PIN. The SimRing feature checks that the new PIN contains 2 to 10 digits. If the PIN length is not correct and the subscriber exceeds the retry count, an announcement prompts for PIN re-entry. If the subscriber exceeds the retry count, an error announcement plays.

The subscriber cannot enter a new PIN that is identical to the current PIN. The SimRing feature considers this an invalid new PIN entry.

The subscriber must re-enter the new PIN for validation against the first entry. If a mismatch occurs and the subscriber does not exceed the retry count, an announcement prompts for re-entry of the new PIN.

If the subscriber correctly re-enters the new PIN, an announcement confirms the successful PIN change, followed by T120 (reorder) treatment.

Note: The SPP feature does not validate that the SimRing feature is enabled for the office or active on the PDN.

SPP announcements

The SPP feature has a set of suggested announcements. Refer to the SPP section of "Remote Call Forwarding without Unique PIN" in the RES translations section of the *Translations Guide* for detailed information on these announcements and their datafill.

The announcements are necessary to prompt the subscriber during SimRing and SPP use. The operating company records the announcements and provides their datafill in table DRMUSERS.

Nortel recommends the following announcement for the SimRing feature: "Simultaneous Ringing." The phrase name in table DRMUSERS is SPPANNC10, and the announcement number is 10.

RES Simultaneous Ringing (continued)

SPP datafill

The following tables require datafill for the SPP feature. Refer to the SPP section of “Remote Call Forwarding without Unique PIN" in the RES translations section of the *Translations Guide* for complete information on SPP datafill.

- OFCENG
- IBNXLA
- CUSTSTN
- CLLI
- ANNS
- ANNMEMS
- DRAMS
- DRMUSERS

The following examples show sample datafill for the SPP feature in tables OFCENG, IBNXLA, and CUSTSTN.

MAP display example for table OFCENG

```
PARMNAME                    PARMVAL
-----------------------------------------------------------
SLE_MAX_PROGRAMMERS         20
```

MAP display example for table IBNXLA

```
KEY     RESULT
-----------------------------------------------------------
RXCFNXXX 88 FEAT N N SPP
```

MAP display example for table CUSTSTN

```
CUSTNAME   OPTNAME                                   OPTION
-----------------------------------------------------------
RESG271 SPP SPP 2
```

RES Simultaneous Ringing (continued)

Journal files

When the SimRing user interface results in a change of the SimRing group data, the user interface generates journal file entries. These entries occur when the subscriber has modified either of the following:

- the SimRing feature state (stored in table IBNFEAT or table KSETFEAT)
- the NPMDNs (stored in table PILOTGRP)

The journal file does not record PIN changes using the SPP feature.

SimRing user interface announcements

Custom announcements such as SLE announcements contain one or more component phrases. The SimRing user interface introduces both new announcements and announcement phrases to the existing SLE announcement set.

The new SimRing announcements provide basic information about the following:

- the current state of the service
- PDN prompting
- PIN prompting (if required)
- list addition and deletion command instructions

SimRing uses these announcements with the existing SLE announcements.

For the list addition and deletion announcements, two sets exist: one for dual-tone multifrequency (DTMF) lines and the other for DP lines.

Packaging the new announcement phrases as part of the existing SLE announcement files is not necessary. However, the recording of the new announcement phrases should use the same or similar voice model as the existing SLE announcements. The operating company can provision the new announcement files on the same or separate digital trunk module (DTM) as the existing SLE announcement files. The new announcement phrases and the 1-s and 0.3-s pause phrases must exist on the same DTM.

Announcement phrases

This section lists the set of announcement phrases defined for SimRing. Table DRMUSERS uses the name assigned to each component to identify the phrases that make up a SimRing announcement.

RES Simultaneous Ringing (continued)

The following table lists the set of SimRing announcement phrases that provide basic information about the current SimRing state, list addition and deletion commands, and PDN and PIN prompting.

SimRing announcement phrases

Description	Phrase name
SimRing status of service	STATINFO
List summary	LISTINFO
General SLE instructions	INITSLE
Continue or hang up	CONTEXIT
SimRing list addition instructions	SIMLISTADD
SimRing list deletion instructions	SIMLISTDEL
PIN prompting only	PINPROMPT
PDN prompting only	DNPROMPT

The following table lists the set of composite SimRing announcements and their numbers and component phrases. Table DRMUSERS uses the announcement number and component phrase list to identify the phrases that make up the new announcements.

SimRing subscriber instructions

Announcement	Announcement number	Component phrase list
SimRing status of service	66	STATINFO
Enter SimRing session	67	LISTINFO INITSLE PAUSE3
Continue or hang up	68	CONTEXIT PROMPT
SimRing list addition instructions	69	SIMLISTADD
SimRing list deletion instructions	70	SIMLISTDEL

SimRing subscriber instructions

Announcement	Announcement number	Component phrase list
PDN prompting only	71	DNPROMPT
PIN prompting only	72	PINPROMPT

The following table lists the new SimRing user interface announcement phrases. The operating company uses the name associated with each phrase to assign the phrases on the digital recorded announcement machine (DRAM).

SimRing user interface announcement phrases

Phrase name	Announcement text	Announcement description
SIMENGON	Your Simultaneous Ringing service is now on.	SimRing active state
SIMENGOFF	Your Simultaneous Ringing service is now off.	SimRing inactive state
SIMENGADD	Dial the number to be added, then press the number sign key again. (0.3-s pause) Please dial now.	List addition instruction for DTMF lines
SIMENGDEL	Dial the number to be removed, then press the star key again. (0.3-s pause) Please dial now.	List deletion instruction for DTMF lines
SIMENGDPADD	Dial the number to be added. (0.3-s pause) Please dial now.	List addition instruction for DP lines
SIMENGDPDEL	Dial the number to be removed. (0.3-s pause) Please dial now.	List deletion instruction for DP lines
SIMENGPIN	Please enter your PIN number.	PIN prompting
SIMENGPDN	Please enter your ten-digit pilot directory number.	PDN prompting
SLEENG003	0.3-s pause	Silence
SLEENG002	1-s pause	Silence

Announcement files

For a complete list of announcement files, refer to “Screening List Editing (SLE)" in the RES translations section of the *Translations Guide*.

RES Simultaneous Ringing (continued)

SLE requires eight DRAM PROM cards for language and one controller for each DRAM. Because the announcements require eight double-density cards for each language, a minimum of two DRAMs are necessary for each language. PROM cards AP through AS and PROM cards AT through AW must be on separate DRAMs.

The following table lists the product engineering codes (PEC) for the SLE PROM cards for both English and French for DRAMs W, X, Y, and Z.

PECs for SLE PROM cards

Language	PEC	DRAM to be loaded
English	1X75BA	Controller
	1X76AP	W
	1X76AQ	W
	1X76AR	W
	1X76AS	W
	1X75BA	Controller
	1X76AT	X
	1X76AU	X
	1X76AV	X
	1X76AW	X
French	1X75BA	Controller
	1X76BP	Y
	1X76BQ	Y
	1X76BR	Y
	1X76BS	Y
	1X75BA	Controller
	1X76BT	Z
	1X76BU	Z

PECs for SLE PROM cards

Language	PEC	DRAM to be loaded
	1X76BV	Z
	1X76BW	Z

The following PECs support SLE list sizes from 13 to 31 on a third DRAM: 1X76GA, 1X67GB, and 1X76GC.

The operating company can record a set of custom SLE feature names. The operating company can record the new announcements on a new announcement file and load the announcements on a DTM (if room permits).

SimRing announcement datafill

To set up an announcement, tables CLLI, ANNS, ANNMEMS, DRAMS, DRMUSERS, and EDRAMINV require datafill. The operating company can record the announcements using the DRAMREC recording utility. Refer to *Digital Recorded Announcement Machine DRAM and EDRAM Guide*, 297-1001-527, for more information on announcement datafill.

This section provides an example of SimRing announcement datafill for a single-language office.

Table CLLI requires the addition of one new common language location identifier (CLLI) for each language. The following examples show sample datafill for SimRing announcements in table CLLI.

MAP display example for table CLLI

```
CLLI      ADNUM    TRKGRSIZ    ADMININF
-------------------------------------------------------
SLEENG3   997      2           SLE_ENGLISH_ANNCS
```

Note: If Screen List Editing is datafilled to support list sizes of 13 to 31, SimRing announcements cannot use CLLI SLEENG3. A new CLLI value, SLEENG4, has to be created for the SimRing announcement, as shown in the following example. The rest of the datfill is the same. The only difference is that SLEENG3 is changed to SLEENG4.

RES Simultaneous Ringing (continued)

MAP display example for table CLLI

```
CLLI      ADNUM    TRKGRSIZ    ADMININF
-------------------------------------------------------
SLEENG4  997       2            SLE_ENGLISH_ANNCS
```

Table ANNS contains the new CLLIs and their corresponding announcement types. The following example shows sample datafill for SimRing announcements in table ANNS.

MAP display example for table ANNS

```
CLLI      ANTYPE      TRAFSNO  MAXCONN  CYTIME  MAXCYC
-------------------------------------------------------
SLEENG3   SLEENG         25      1        0       1
```

Table ANNMEMS contains datafill for announcement circuits and corresponding announcement members. The following example shows sample datafill for SimRing announcements in table ANNMEMS.

MAP display example for table ANNMEMS

```
ANNMEM     HDWTYPE   CARD     MEMINFO
-------------------------------------------------------
SLEENG3 0   DRAM     DRA      0 MTM 8 1
SLEENG3 1   DRAM     DRA      0 MTM 8 2
```

Table DRAMS connects a logical card number within the logical DRAM with the card location slot in the maintenance trunk module (MTM) or DTM. Note that SimRing requires at least one virtual DRAM card for the new announcements. The following example shows sample datafill for SimRing announcements in table DRAMS.

MAP display example for table DRAMS

```
DRAMCARD  TMTYPE   TMNO   TMCKT   CARDCODE   CARDINFO
-------------------------------------------------------
4 0       MTM       8      0     1X75BA     CTLR DRAM4
4 1       MTM       8      2     1X76AJ     PROM 0 1 $
```

RES Simultaneous Ringing (continued)

Table DRMUSERS connects the phrases for each announcement with an announcement member. The SLEENG3 announcements must correspond to the DRAMs with the PROM cards containing the new SimRing announcements. Also, subfield ANNUM in table DRMUSERS must contain the corresponding value. The following example shows sample datafill for SimRing announcements in table DRMUSERS.

MAP display example for table DRMUSERS

```
USERANN   PHSLIST
-----------------------------------------------------------
SLEENG3   66 STATINFO
SLEENG2   67 LISTINFO INITSLE PAUSE3
SLEENG2   68 CONTEXIT PROMPT
SLEENG3   69 SIMLISTADD
SLEENG3   70 SIMLISTDEL
SLEENG3   71 SIMENGPIN
SLEENG3   73 SIMENGPDN
```

Table EDRAMINV contains load file information for enhanced DRAMs (EDRAM). Each EDRAM has up to eight single-density load files; each load file can represent a different set of announcements. This table requires datafill if SimRing announcements are in announcement files. The following example shows sample datafill for SimRing announcements in table EDRAMINV. In this example, two announcement files, SIMRING1 and SIMRING2, contain SimRing announcements.

MAP display example for table EDRAMINV

```
EDRAMNM     TUPINFO
-----------------------------------------------------------
MTM 8 1     ANN SIMRING1
MTM 8 2     ANN SIMRING2
```

The DRAMREC utility assigns the logical phrase names to the phrases in the PROM, RAM, or EEPROM cards in an MTM or DTM. The ASSIGN command within the DRAMREC utility assigns the phrase names to the location on a logical DRAM. Note that all phrase names assigned to an announcement must exist within the scope of the same DRAM controller. The following is an example of the ASSIGN command.

RES Simultaneous Ringing (continued)

```
> ASSIGN      0 SIMENGON 5 0 4
> ASSIGN      0 SIMENGOFF 7 0 5
> ASSIGN      0 SIMENGADD 9 0 6
> ASSIGN      0 SIMENGDEL 5 0 7
> ASSIGN      0 SIMENGDPADD 9 0 3
> ASSIGN      0 SIMENGDPDEL 5 0 10
> ASSIGN      0 SIMENGPIN 4 0 8
> ASSIGN      0 SIMENGPDN 4 0 9
> ASSIGN      0 SLEENG002 0 0 1
> ASSIGN      0 SLEENG003 3 0 2
```

Simultaneous data access

The SimRing feature blocks simultaneous access to the same SimRing group data. One subscriber can access the data at a time. This restriction applies because it is possible to modify the SimRing group data using either the SimRing user interface, SPP, SERVORD, or table control.

Behavior on system restarts

All restarts have no effect on the SimRing datafill.

PRESWACT

The NPMDNs in table PILOTGRP are transferred during the PRESWACT step. The GRPKEY field is transferred during TABXFR of table IBNFEAT or table KSETFEAT.

RETROFIT

RETROFIT is the process of upgrading a SuperNode to a SuperNode SE (or upgrading an NT40 to a SuperNode). The RETROFIT process supports the new table PILOTGRP.

SIM600 log

The SimRing feature introduces log subsystem SIM containing the SIM600 log. The SimRing feature generates the SIM600 log when one of the following failures occurs during PDN-to-NPMDN call setup:

- The NPMDN routes to a non-supported agent.
- The NPMDN fails translation.

The SIM600 log contains the following fields:

- the call identification number of the caller-to-PDN call
- the SimRing group PDN

- the NPMDN that the PDN was trying to reach when the failure occurred
- the failure type (either non-supported agent or translation failure)

Following is an example of the SIM600 log.

```
MTLEN08AP SIM600 MAI10 12:30:55 3800 INFO SIMRING
CallID:     6789 7654
Pilot DN:   6136211500
Member DN:  6131234567
Reason:     Translation Failure
```

Data schema

The SimRing feature introduces two new office parameters in table OFCENG: SIMRING_RES_CONTROL and SIMRING_CENTREX_CONTROL. The SimRing feature also uses office parameter NO_OF_CLONE_TIDS in table OFCENG. Refer to “Datafilling office parameters" in this document for more information on these office parameters.

The SimRing feature introduces one new table (PILOTGRP) and modifies seven existing tables: OFCENG, IBNFEAT, KSETFEAT, IBNXLA, DNROUTE, OPTOPT, and LCCOPT. Refer to “Datafill sequence" in this document for more information on the changes to these tables.

The SimRing VDN feature (RES00085) modifies table DNROUTE to add the SimRing VDN functionality. The data for the SimRing VDN tuple is added to table DNROUTE through Servord when a VDN is entered as a SimRing pilot using the NEWDN command. The user should not manually enter this data in table DNROUTE.

OM group SIMRING

The SimRing feature introduces OM group SIMRING to monitor use of the SimRing user interface. This OM group contains one tuple for each office, and contains the following registers:

- Register SIMRACT counts subscriber attempts to activate the SimRing feature.
- Register SIMRDACT counts subscriber attempts to deactivate the SimRing feature.
- Register SIMREATT counts subscriber attempts to start the SimRing user interface.

RES Simultaneous Ringing (continued)

- Register SIMREDEN counts subscriber attempts to start SimRing list editing sessions that fail for any of the following reasons. The call routes to FNAL treatment.
  - — The line does not have the SimRing feature assigned.
  - — The SLE tuple does not exist, or the SLE tuple exists but the customer group does not have SLE enabled.
- Register SIMREOVF counts attempts to start SimRing list editing sessions that fail because of the following reasons:
  - — SimRing cannot start digit collection while collecting the user input (adding a new NPMDN through the user interface).
  - — SimRing cannot play announcements (at any point during the user interface session).
  - — System failures occur or not enough resources are available (at any point during the user interface session).
  - — The number of SLE sessions exceeds the allowed limit (SLE_MAX_PROGRAMMERS in table OFCENG) while starting a new session.

  If SIMREOVF increments because of the lack of hardware resources, the call routes to no service circuits (NOSC) treatment. If SIMREOVF increments because of the lack of software resources, the call routes to no software resources (NOSR) treatment.
- Register SIMRINV counts attempts to add an invalid NPMDN (for example, an intraswitch POTS DN) during an editing session.
- Register SIMRFAIL counts attempts to establish PDN-to-NPMDN call legs that fail because not enough CVIDs are available.

RES Simultaneous Ringing (continued)

Translations table flow

The RES Simultaneous Ringing translations tables are described in the following list:

- Table OFCENG contains data on engineering parameters for the office. The SimRing feature adds the following two office parameters to table OFCENG:

  — SIMRING_CENTREX_CONTROL

  — SIMRING_RES_CONTROL

  The SimRing feature also uses office parameter NO_OF_CLONE_TIDS in table OFCENG.

- Table IBNFEAT lists line features assigned to RES and IBN lines. The SimRing feature adds option SIMRING as an input value for fields DF and FEATURE.

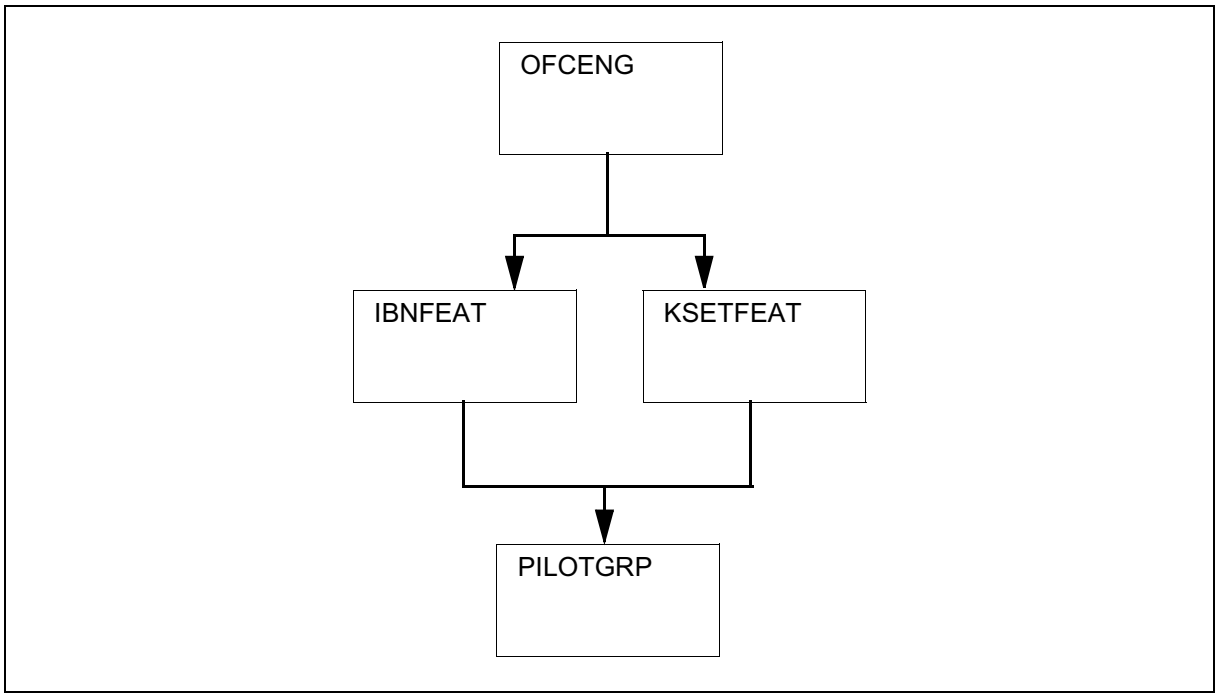
- Table KSETFEAT lists line features assigned to business sets and data units. The SimRing feature adds option SIMRING as an input value for fields FEAT and FEATURE.

- Table PILOTGRP lists information for all SimRing groups on the switch. The SimRing feature introduces table PILOTGRP.

The RES Simultaneous Ringing translation process is shown in the flowchart that follows.

RES Simultaneous Ringing (continued)

Table flow for RES Simultaneous Ringing



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

Datafill example for RES Simultaneous Ringing

Datafill table	Example data
OFCENG	NO_OF_CLONE_TIDS 123SIMRING_CENTREX_CONTROL N NSIMRING_RES_CONTROL N N
IBNFEAT	HOST 00 0 03 03 0 SIMRING SIMRING 7 ACT $
KSETFEAT	HOST 00 0 02 03 0 SIMRING SIMRING 8 ACT $
PILOTGRP	6136216076 2558 7236055 $

Limitations and restrictions

The following limitations and restrictions apply to RES Simultaneous Ringing:

- SimRing requires ISUP trunks of types T2, TO, IT, or ATC on the first leg of PDN-to-NPMDN calls.
- SimRing requires PRI (NTNA, NI) trunk types PRA, IBNT2, IBNTO, and IBNIT on the first leg of PDN to NPMDN calls.

- SimRing cannot detect the presence of CFBL/CFB on an NPMDN if the connection between the PDN and the NPMDN is not ISUP-all-the-way.
- Remote access to the SimRing user interface does not support DP lines.
- SimRing does not support PDN-to-NPMDN intraswitch calls where the NPMDNs are non-supported agents.
- The following intraswitch chaining occurrences are possible:
  - — The PDN of SimRing group A is an MDN in group B, and the PDNs of groups A and B are on the same switch. If the PDN of group B receives a call, only the NPMDNs of group B receive notification. The NPMDNs of group A do not receive notification.
  - — The switch does not alert the NPMDNs of group A.
  - — The PDNs of SimRing groups A and B are on different switches (interswitch). If the PDN of group B receives a call, the MDNs of both groups receive notification.
- The end user cannot make administrative changes to a SimRing VDN group without having the SimRing SLE announcement package and associated datafill available.
- The end user cannot change a SimRing VDN PIN without operating company assistance. The operating company can change the PIN using the Servord CHF command.

Engineering hardware information

If existing EDRAM/DRAM cards can hold the new SimRing announcements, the operating company does not need to provision additional cards.

The purpose of the SimRing feature is for local and local/toll end offices. When SimRing is active, the operating company must provision office parameters that control system resources for the following data structures.

NO_OF_CLONE_TIDS

The operating company must provision office parameter NO_OF_CLONE_TIDS in table OFCENG so that enough CVIDs are available for SimRing calls. The SimRing feature uses CVIDs for PDN-to-NPMDN calls. The CVIDs remain active from call initialization until an NPMDN answers the call or the switch releases the call.

The operating company can use the following formula to provision the total number of CVIDs in an office:

NO_OF_CLONE_TIDS = (N × T × P)

RES Simultaneous Ringing (continued)

where:

- N = average number of NPMDNs in SimRing group (the recommended value is 4)
- T = average SimRing call answer time in seconds (approximately 10 s)
- P = percentage of lines in the switch with the SimRing feature

Call condense block (CCB)

Each PDN-to-NPMDN call requires a new CCB. Because a SimRing call can initiate up to N PDN-to-NPMDN calls, the maximum impact for each SimRing call is the addition of N CCBs. SimRing holds the CCBs for the ringing stage of the call, and releases the CCBs after an NPMDN answers the call.

The following formula estimates the normal provisioning of the number of CCBs (NCCB) in an office:

NCCBs = (1.62 × BHCA × ACH) / 3600

where:

- NCCB = number of CCBs
- BHCA = average busy hour call attempts
- ACH = average call holding time (the average time a call is up)

When an office uses SimRing, the operating company must increase the number of CCBs. This increase is necessary because of the increase in the number of initiated calls. This increase corresponds to the actual number of calls a SimRing call can initiate and the number of CVIDs required. The following formulas calculate this increase:

- new NCCBs = NCCBs + [N × T × Π × (1.62 × BHXA)] / 3600
- new NCCBs = NCCBs + (N × T × P × NXXBσ) / AXH
- percent increase in CCBs = (new NCCBs - NCCBs) × NCCBs
- percent increase in CCBs = (N × T × P) / ACH

Call data block (CDB)

Each time a PDN-to-NPMDN call initiates, requires a single CDB. Each SimRing call can initiate up to N PDN-to-NPMDN calls. Therefore, the increase in the number of CDBs is identical to the increase in the number of CCBs. The following formula estimates the increase in the number of CDBs:

(N × T × P) / ACH

RES Simultaneous Ringing (continued)

Feature control block (FCB)

Each time a PDN-to-NPMDN call initiates, requires a single FCB. Each SimRing call can initiate up to N PDN-to-NPMDN calls. The following formula estimates the increase in the number of FCBs:

$(N \times T \times P) / ACH$

Feature data block (FDB)

Each time a PDN-to-NPMDN call initiates, requires a single small FDB. Each SimRing call can initiate up to N PDN-to-NPMDN calls. The following formula estimates the increase in the number of FDBs:

$(N \times T \times P) / ACH$

History control block (HCB)

Each time a PDN-to-NPMDN call initiates, requires a single HCB. Each SimRing call can initiate up to N PDN-to-NPMDN calls. The following formula estimates the increase in the number of HCBs:

$(N \times T \times P) / ACH$

History data block (HDB)

Each time a PDN-to-NPMDN call initiates, requires a redirection HDB. The PDN-to-NPMDN call can also attach a CLID HDB and NAME HDB. The redirection HDB and NAME HDB are both of regular HDB size. The CLID HDB is of large HDB size.

The following formula estimates the increase in the number of regular HDBs:

$(2 \times N \times T \times P) / ACH$

The following formula estimates the increase in the number of large HDBs:

$(N \times T \times P) / ACH$

Medium feature data block (MFDB)

Each call to a busy NPMDN requires one MFDB.

Example

This section includes an example of provisioning office parameter NO_OF_CLONE_TIDS and other software resources for the SimRing feature.

RES Simultaneous Ringing (continued)

For N = 4, T = 10 s, ACH = 120 s, and P = 10%, the calculations are as follows:

- NO_OF_CLONE_TIDS = $4 \times 10 \times 10 = 400$
- percent increase in CCBs = $(4 \times 10 \times 10) / 120 = 3.33\%$
- percent increase in CDBs = $(4 \times 10 \times 10) / 120 = 3.33\%$
- percent increase in FCBs = $(4 \times 10 \times 10) / 120 = 3.33\%$
- percent increase in small FDBs = $(4 \times 10 \times 10) / 120 = 3.33\%$
- percent increase in HDBs = $(4 \times 10 \times 10) / 120 = 3.33\%$
- percent increase in regular HDBs = $(2 \times 4 \times 10 \times 10) / 120 = 6.66\%$
- percent increase in large HDBs = $(4 \times 10 \times 10) / 120 = 3.33\%$

Up to four NPMDNs can receive notification when the SimRing group NPMDN receives a call and SimRing is active on the line. Each NPMDN call uses the following:

- 1 CCB = 220 words
- 1 CDB = 300 words
- 1 FCB = 182 words
- 1 FDB (small) = 8 words
- 1 HCB = 41 words
- 3 HDB (2 regular + 1 large) = (2 × 38 words) + 80 words = 156 words

The total memory required for one PDN-to-NPMDN call is as follows:

220 + 300 + 182 + 8 + 41 + 156 = 907 words

The maximum memory store used for one SimRing call is as follows:

907 words for each PDN-to-NPMDN call × 4 PDN-to-NPMDN calls = 3628 words

CPU overload

Before initiating simultaneous calls to the group members, SimRing monitors the CPU occupancy. In a SuperNode office, the maximum CPU occupancy for call processing is 77%. If call processing has been using all its CPU share (77%) for the last 5 s, SimRing aborts and the call continues normally. In a BNR reduced instruction set computer (BRISC) office, the same algorithm applies, except that call processing CPU occupancy can increase to 100%.

Interactions

The following paragraphs describe the interactions between RES Simultaneous Ringing and other functionalities.

Additional Call Offering Unconditional (ACOU)

The ACOU (NI2) option notifies users that a call for the DN is present at the switch. A SimRing NPMDN assigned the ACOU option can be in the talking state and the switch can notify a SimRing NPMDN of a call initiated to the PDN of a SimRing group.

Addition Functional Calls (AFC)

The AFC (NI1) option notifies users that a call for the DN is present at the switch. A SimRing NPMDN assigned the AFC option can be in the talking state and the switch can notify a SimRing NPMDN of a call initiated to the PDN of a SimRing group.

Advanced Intelligent Network (AIN 0.0, AIN 0.1, and AIN 0.2)

This section uses the following terminology:

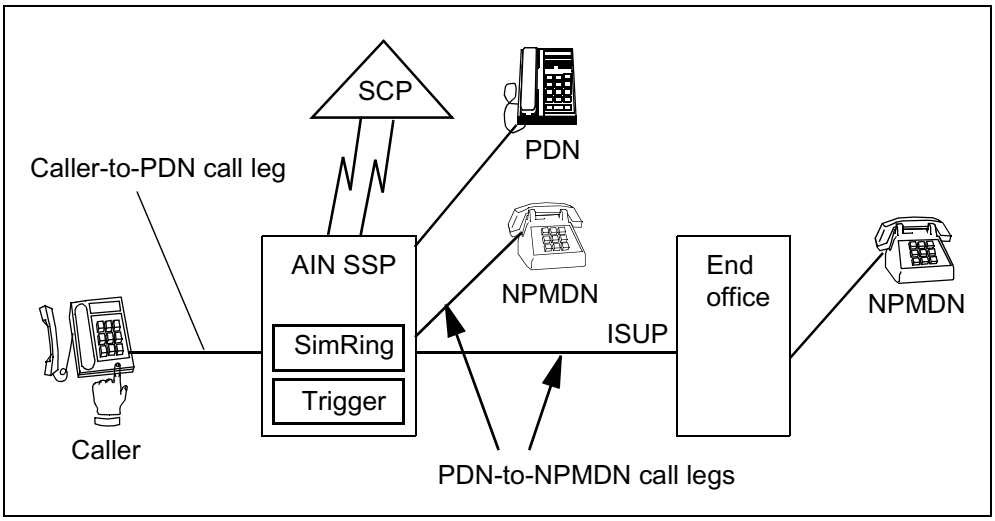
- *Supported trigger/event* means that the trigger/event is hit and invoked.
- *Non-supported trigger/event* means that the trigger/event is never hit.

Advanced intelligent network (AIN) software allows the operating company to provide service logic programs placed at the service control points (SCP). The service logic determines how AIN calls continue for additional call processing.

As shown in the following figure, AIN interactions with the SimRing feature include two call legs. The first call leg is between the caller and the PDN. The second call leg is between the PDN and the NPMDNs.

RES Simultaneous Ringing (continued)

AIN interactions with SimRing



SimRing supports AIN 0.0 during caller-to-PDN call legs. SimRing does not support AIN 0.0 during PDN-to-NPMDN call legs.

AIN interactions on caller-to-PDN call leg

For AIN interactions on the caller-to-PDN call leg, SimRing supports all the triggers/events for the first call leg.

The Terminating Busy trigger/event requires the state of the SimRing group; SimRing supports this trigger/event as follows. This event, if activated on the PDN, has priority over SimRing and continues regardless of the SimRing group state. The event bases its processing on the PDN state only.

Triggers/events that require the state of the called line consider the SimRing group state instead of the PDN state only. These triggers/events are as follows:

- Originating Called Party Busy trigger
- Originating Called Party Busy event

The following events occur when any MDN including the PDN answers:

- Originating Answer event
- Terminating Answer event

AIN 0.1 and AIN 0.2 interactions on PDN-to-NPMDN call leg

For AIN 0.1 and AIN 0.2 interactions on the PDN-to-NPMDN call leg, SimRing supports the following triggers/events:

- Shared Interoffice Trunk trigger
- N11 trigger
- Customized Dial Plan trigger (access code and extension only)
- Specific Digit String trigger
- Automatic Flexible Routing trigger
- Originating Called Party Busy trigger
- Originating No-Answer trigger
- Termination Attempt trigger
- Terminating Answer event
- Network Busy event
- Originating Called Party Busy event
- Originating No-Answer event
- Originating Answer event
- Terminating Busy event and trigger
- Terminating No-Answer event and trigger

Refer to *AIN Essentials*, 297-5161-021, for additional information on the AIN call model.

AIN responses

For the supported triggers/events, the SCP response interacts with SimRing on both call legs as shown in the following table. The entry “call continues

RES Simultaneous Ringing (continued)

normally" means that the call processes the parameters contained in the SCP response.

SimRing interactions with AIN responses

SCP response	Caller-to-PDN call leg	PDN-to-NPMDN call leg
Analyze Route	If SCP response is PDN, SimRing activation occurs	Call continues normally
Continue	In no-answer case, notification of the SimRing group continues In busy case (T_busy), SimRing initiation does not occur	Call continues normally
Authorize Termination	Call terminates on PDN and group receives notification	Call continues normally
Forward Call	If SCP response is PDN, SimRing activation occurs	Call continues normally
Disconnect	If SCP response occurs during SimRing group notification, notification stops	Switch releases call
Send to Resource	If SCP response occurs during SimRing group notification, for ONA trigger, notification stops	Switch releases call
Cancel Resource	Does not apply	Switch releases call
Collect Information	Call continues normally	Switch releases call

AIN display text

The AIN0.1 DisplayText service subscriber is assigned the Termination Attempt (TAT) trigger against their DN at the Service Switching Point (SSP). The subscriber's DN is tagged as a Display Text service subscriber at the Service Control Point (SCP).

When the subscriber's DN is called, the TAT trigger criteria is validated. If the criteria is met, a TAT query is launched from the SSP to the SCP. In response, the SCP sends an Authorize Termination response. This response contains the

DisplayText parameter which can be used to extract the following to be displayed on the subscriber's display:

- calling name
- calling number
- time-related information

The AIN0.1 DisplayText functionality is not a group feature of the SimRing group. The SimRing feature handles each of the calls to the members (the PDN and the NPMDN) as independent calls. The SimRing feature supports TAT trigger on each of the member calls but does not support TAT trigger as a group functionality.

Member interaction with the AIN0.1 DisplayText requires subscription to the AIN TAT trigger.

Automatic Call Back (ACB)

The Automatic Call Back (ACB) feature allows a subscriber to automatically call back a busy line when the called line becomes idle.

The SimRing feature has no effect on ACB functionality on SimRing group NPMDNs.

If a call to a SimRing group PDN is busy, the caller can activate ACB to monitor the PDN state. The calling party can connect to the PDN or an MDN when the PDN becomes idle.

The busy treatment applied on the original call means that all SimRing group MDNs are busy. However, the ACB indication that the PDN has become free is based on the PDN state only. ACB only monitors the state of the PDN. When the PDN becomes free, ACB notifies the calling party, and a new call attempt to the PDN is possible. This new call triggers normal SimRing functionality; any idle SimRing group MDN can answer the call.

If a SimRing group PDN activates ACB, ACB notifies only the PDN and not the NPMDNs when the called party becomes idle.

Automatic Call Distribution (ACD) and Uniform Call Distribution (UCD)

The Automatic Call Distribution (ACD) and Uniform Call Distribution (UCD) feature allows calls to be evenly distributed to a number of predesignated stations knows as ACD/UCD group members by dialing an ACD-UCD number.

A SimRing group PDN cannot be an ACD/UCD number or group member.

RES Simultaneous Ringing (continued)

SimRing NPMDNs can be ACD/UCD group memers, but ACD/UCD primary numbers cannot be NPMDNs.

The primary number of an ACD/UCD group can be terminated by a SimRing call. For example, a call can forward (such as CFDA) from either a PDN or an NPMDN to an ACD/UCD group. This is true for both intra switch and inter switch calls.

Automatic Message Accounting Test (AMATEST)

The AMATEST line option allows the generation of an AMAB200 log when the line makes a billing call. The AMATEST line option on a line modifies the study indicator in billing records.

The AMATEST line option does not affect calls with feature SimRing.

Automatic Recall (AR)

The Automatic Recall (AR) feature allows a subscriber to automatically call the last station that called the subscriber. The automatic recall can occur for both answered and non-answered calls.

SimRing transfers the calling party ID to the MDNs when trying to notify them. An MDN can activate AR after a call to the SimRing group to recall the party that called the group.

Call Forward Busy Line (CFBL/CFB)

The CFBL/CFB feature allows the subscriber to forward an incoming call from a base station to another station when the base station is busy.

RES Simultaneous Ringing (continued)

Interactions are summarized as follows:

- If the PDN is idle, the calling party receives audible ringing treatment, the following occurs:
  - — Idle lines are alerted.
  - — Busy NPMDNs with the CFBL/CFB option forward the calling party to the NPMDNs CFBL/CFB forward-to DN.
  - — Busy NPMDNs without CFBL/CFB are not notified.
- If the PDN is busy without the CFBL/CFB option and at least one NPMDN has CFBL, the following occurs:
  - — The idle NPMDNs are alerted.
  - — Busy NPMDNs with the CFBL/CFB option forward the calling party to the NPMDNs CFBL/CFB forward-to DN.
  - — The busy NPMDNs without CFBL/CFB are not notified.
- If the PDN is busy with the CFBL/CFB option, the following occurs:
  - — The call is forwarded to the forward-to DN of the PDN and no members are called. CFBL/CFB takes precedence over the SimRing feature. When the call forwards from the PDN, then SimRing is not active for this call.

If the connectivity between the PDN and one of the NPMDNs is not ISUP-all-the-way, neither the busy status of this NPMDN nor the existence of the CFBL/CFB option can be detected. The CFBL/CFB requires Nortel-ISUP-all-the-way connection. As a consequence, the calling party always gets the Audible Ringing treatment.

- – If NPMDNx is idle, the group behaves normally and the following occurs:
  - – The first idle MDN that answers connects to the calling party and the switch releases all other calls.
  - – Busy NPMDNs do not receive notification.
  - – A busy PDN acts like an idle line if it has CFDA/CFD.
- – If NPMDNx is busy, the following occurs:
  - – The group behaves as if the NPMDNx were idle but never answered if NPMDNx does not have the CFBL/CFB option.
  - – The group behaves as if teh NPMDNx were idle if NPMDNx does have the CFBL/CFB option. If the CFBL/CFB forward-to

RES Simultaneous Ringing (continued)

DN is idle, this DN can answer the call. If the CFBL/CFB forward-to DN is busy, the group behavior is as if NPMDNx were idle.

When calls are forwarded to the PDN of a SimRing group, the SimRing feature on the PDN is triggered and the calling party is considered to be the original calling party (not the forwarding line(s)).

Call Forward Don't Answer (CFDA/CFD)

If a SimRing group PDN has CFDA or CFD (for centrex lines), CFDA/CFD forwards calls that terminate on the PDN. These calls forward to the forward-to DN if

- the SimRing group is idle and
- no MDN answers within the CFDA/CFD time-out period

When a SimRing PDN is called and the Pilot has CFD/CFDA assigned, all idle members will ring until the PDN's CFD timer expires. All members will then cease to ring once the call is forwarded. When a SimRing PDN is called and a member has CFD/CFDA assigned, all idle members will continue to ring even after the call has forwarded via CFD/CFDA until it is answered.

The subscriber should program the PDN CFDA/CFD time-out period to be shorter than the CFDA/CFD time-out period of the NPMDN. In a ring/no-answer condition, this programming makes sure that calls to the PDN trigger the PDN CFDA/CFD first.

A SimRing group PDN can receive forwarded calls. The switch triggers the SimRing feature on the PDN. The switch considers the calling party to be the original calling party (not the forwarding line(s)).

Call Forward Timed (CFT)

The Call Forward Timed (CFT) feature is an enhancement to Call Forward Busy (CFB) and Call Forward Don't Answer (CFD) for MDC lines. CFT routes non-answered, forwarded calls to treatment (tone or announcement) after a set time-out period.

If a SimRing group PDN is the forward-to DN, the forwarded call with CFT notifies all the MDNs. If no MDNs answer after the time-out period, the switch applies a treatment and releases all calls to MDNs.

RES Simultaneous Ringing (continued)

Call Forwarding (CFW), Universal CFW (UCFW), Selective CFW (SCF), CFW Intragroup (CFI), and CFW Universal (CFU)

If any of the following features is present on a SimRing group PDN, the feature applies to the whole group. These features forward calls that terminate on the PDN to a forward-to DN. None of the MDNs receive notification.

- Call Forwarding (CFW)
- Universal CFW (UCFW)
- Selective CFW (SCF)
- CFW Intragroup (CFI)
- CFW Universal (CFU)

For NPMDNs with these features, the state of the line on which an NPMDN call terminates determines the NPMDN state. A ring splash or ringing can occur on the NPMDN that forwards the call.

A SimRing group PDN can receive forwarded calls. The switch triggers the SimRing feature on the PDN. The switch considers the calling party to be the original calling party (not the forwarding line(s)).

Calling Number Delivery (CND), Dialable Directory Number (DDN), and Calling Name Delivery (CNAMD)

If a SimRing group NPMDN has any of the following features, the feature displays the information of the party calling the PDN:

- Calling Number Delivery (CND)
- Dialable Directory Number (DDN)
- Calling Name Delivery (CNAMD)

NPMDNs do not support the reason display information.

Call Pickup (CPU)

A SimRing group MDN can pick up a call to another DN in the same Call Pickup (CPU) group.

A DN in a CPU group can pick up any SimRing group MDN, if the MDN is part of the CPU group. SimRing processing stops, and the call goes to the DN that picked up the call.

Call Screening, Monitor, and Intercept (CSMI)

The Call Screening, Monitor and Intercept (CSMI) feature enhances voice messaging services. This feature improves incoming call management and

RES Simultaneous Ringing (continued)

message handling for residential and small business end users. The CSMI feature allows the monitoring and interception of messages handled by a VMS.

The CSMI feature applies after a call forwards to voicemail (or to another DN) and is answered. This feature has no interactions with the SimRing feature.

Call Transfer Recall (CXR)

The Call Transfer Recall (CXR) feature allows the subscriber to transfer a call to a third party. If this party does not answer after a set time-out period, the subscriber can receive a recall by normal or distinctive ringing.

If a SimRing group MDN (including the PDN) transfers an incoming call to a third party, the recall notifies this MDN.

If a CXR subscriber transfers a call to a SimRing PDN on the same office as the CXR subscriber, only the PDN is alerted. If the call is transferred to a SimRing PDN on a different office as the CXR subscriber, the members are alerted. Whichever MDN answers the call first is connected to the CXR controlling party.

Call Waiting (CWT)

The Call Waiting (CWT) feature notifies the connected, off-hook subscriber of an incoming call using CWT tones. The subscriber can put the current party on hold and answer the incoming call.

If any SimRing group MDN has CWT and is in the talking state, SimRing considers the MDN to be idle. The MDN can receive the CWT tone if the PDN receives a call.

If a SimRing group MDN goes on-hook after putting a calling party on hold, the MDN is recalled. Only the MDN receives notification, even if that MDN is the PDN.

CLASS screening features

The following CLASS screening features allow subscribers to screen out incoming calls for special treatment. For each call screening feature, the subscriber provisions a list of DNs identifying incoming calls for special treatment.

- Anonymous Call Rejection (ACRJ)
- Selective Call Rejection (SCRJ)
- Selective Call Acceptance (SCA)
- Distinctive Ringing/Call Waiting (DRCW)

RES Simultaneous Ringing (continued)

Triggering of these features on a SimRing group NPMDN depends on the ID of the party calling the PDN of the group.

Denied Origination (DOR)

If a line has the Denied Origination (DOR) feature, the subscriber can receive calls but cannot originate calls on the line.

The SimRing feature is not compatible with the DOR feature.

Denied Termination (DTM)

If a line has the Denied Termination (DTM) feature, the subscriber can originate calls but cannot receive calls on the line.

The DTM option on a SimRing group PDN has priority over the SIMRING option (no NPMDN receives call notification).

If DTM is present on any NPMDN, SimRing releases the PDN-to-NPMDN call leg as if it were a non-supported agent. The treatment that the calling party receives depends on the state of the other MDNs.

If SimRing cannot detect the presence of DTM on an NPMDN, SimRing considers the NPMDN to be idle. (This example can occur with non-ISUP-all-the-way connections between a PDN and NPMDN.) SimRing maintains the connection to the NPMDN until the call to the PDN terminates (the call answers or the originator hangs up). The calling party can receive ringing treatment if the other MDNs are busy.

Directed Call Pickup (DCPU)

A SimRing group MDN can pick up a call to another DN in the same Directed Call Pickup (DCPU) group.

A DN in a DCPU group can pick up any SimRing group MDN, if the MDN is part of the DCPU group. SimRing processing stops, and the call goes to the DN that picked up the call.

Distinctive Ring (DRING)

The Distinctive Ring (DRING) feature applies distinctive ringing to the called party based on the calling party ID.

If a SimRing group NPMDN has the DRING feature, DRING triggering is based on the PDN as the calling party. (DRING triggering is not based on the party that calls the PDN.)

RES Simultaneous Ringing (continued)

The DRING feature applies distinctive ringing to the PDN based on the calling party.

Dual Line Call Management (DLCM)

Dual Line Call Management (DLCM) service allows a DLCM associate line to answer a call directed to a DLCM subscriber line. The associate line can transfer the call back to the DLCM subscriber line. The DLCM feature provides simultaneous ringing, call pickup, and hold functionality.

A SimRing group PDN cannot be an DLCM group member. A SimRing group NPMDN can be a DLCM group member. Either of the following can occur:

- Both DLCM group members are SimRing group NPMDNs. SimRing provides call notification to the DLCM group members. DLCM failure to provide simultaneous distinctive ringing can occur for the following reason. The SimRing call terminates on the DLCM associate line during the small time interval before DLCM applies DLCM distinctive ringing. The DLCM lines receive notification and can answer, and the DLCM functionality is available to the subscriber.
- One DLCM member is a SimRing group NPMDN. The DLCM associate line receives distinctive notification according to DLCM behavior. If the DLCM associate line answers the call, the switch releases the calls to the remaining SimRing group MDNs.

Enhanced Busy Call Return (EBCR), Selective Call Messaging (SCM), SCM Access to ACB, and In-Session Activation (ISA)

The following features allow the operating company to provide call completion services under busy or no-answer conditions:

- Enhanced Busy Call Return (EBCR)
- Selective Call Messaging (SCM)
- SCM Access to ACB
- In-Session Activation (ISA)

These features are compatible with SimRing: a SimRing group PDN can also have one or more of these features. Triggering of these features can occur on an incoming call to a SimRing group PDN. Triggering of these features does not occur on the SimRing PDN-to-NPMDN call legs.

Feature Group Display (FTRGRP)

The feature group, FTRGRP, option allows a number of options, packaged in a feature group defined by the operating company, to be assigned to lines in a specific customer group or to lines in different customer groups.

NAMEDISP, CLID, CNAMD, and CND can be assigned to an NPMDN as part of a feature group option.

Flexible Calling (FC)

The FC (NI2) option allows a user to establish two or more calls and join them in conference.

A SimRing NPMDN assigned the FC option can be in the talking state and can conference in a call initiated to the PDN of a SimRing group.

On the second leg of a flexible call the switch does not start SimRing group. Once the user establishes the conference the NPMDNs stop ringing. When party A calls the PDN of SimRing group, the PDM and the idle NPMDNs are ringing. Party A activates FC to call party B. Party B is in alert state. When Party A activates FC again to attempt in conference, the NPMDNs drop and only party B and the PDN can join in the conference.

Government Emergency Telecommunication Service (GETS)

The SimRing feature supports Government Emergency Telecommunication Service (GETS) on the caller-to-PDN call leg. The SimRing feature does not support GETS on the PDN-to-NPMDN call legs.

The GETS feature allows authorized users to originate a call with a higher probability of completion during periods of national emergencies.

The SimRing feature supports high probability of completion (HPC) trunk queuing on the caller-to-PDN call leg. The SimRing feature does not support HPC trunk queuing on PDN-to-NPMDN call legs.

Group Intercom (GIC)

The Group Intercom (GIC) feature allows GIC group members to call other group members by dialing an intercom member number. The SimRing feature does not support a GIC member as an NPMDN.

Hunt Groups (BNN, DNH, DLH, MLH, KSH, MPH)

The SimRing NPMDNs Intraswitch can be members of any of the following hunt group types:

- **Bridged Night Number (BNN):** The BNN hunt group has several BNNs that can be formed into a BNN hunt group. Hunting is sequential unless option CIR is assigned to the hunt group.
- **Directory Number Hunt (DNH):** Each line in the DNH hunt group has a unique DN. The hunt group can be accessed by dialing the main number (called the pilot DN) or by dialing the DN of one of the hunt group

RES Simultaneous Ringing (continued)

members. Hunting starts at the number dialed. The number of lines hunted to find an idle line is dependent on the hunting option assigned to the DNH group.

- **Distributed Line Hunt (DLH):** Only a pilot DN is associated with the DLH hunt group. To access this group, the pilot must be dialed. Hunting always starts on the subsequent line in the group.
- **Multiple Line Hunt (MLH):** Only a pilot DN is associated with the MLH hunt group. To access this group, the pilot must be dialed. Hunting starts with the pilot and ends at the last line, in a sequential fashion.
- **Key Short Hunt (KSH):** The KSH hunt group allows incoming calls to search a Meridian busines set (MBS) for an idle line if the original called DN is busy.
- **Multiple Position Hunt (MPH):** MPH with queue allows the distribution of calls evenly across multiple non-data-link attendant consoles. Calls are presented to the consoles in the order they arrive at the switch. Calls that cannot be presented to any console are queued in the switch until a console is available to serve that call.

When a call terminates on a hunt group member, the feature hunts (searches) for the first idle member in the group. If the switch finds a free member, it terminates the call on that member. The hunting method varies depending on the different variations of the feature.

SimRing PDN is incompatible with hunt groups. As of NA013, SimRing PDN is compatible with KSH. When a call is presented to a meridian business set that is the PDN of a SimRing group and also has been assigned key Short Hunt, it will act in the following manner:

- If the SimRing PDN is idle, all members associated with the SimRing group will be alerted by a call to the PDN.
- If the SimRing PDN is busy, the call will follow the KSH list and terminate to the first idle DN in the list.
- If the SimRing PDN is busy and all KSH members are busy, the caller will receive treatment. The treatment given is assigned after all KSH hunt lines have been exhausted, such as voicemail, busy tone, etc.

The following option can be assigned to a hunt group:

- Call forwarding group do not answer feature (CFGDA) for hunt groups is an enhancement to hunting for IBN and RES hunt groups. This feature allows the CFGDA feature to be assigned to a hunt group so that calls to idle hunt groups stations are forwarded if the station is not answered within

a certain amount of time. The call can be forwarded to a directory number outside the hunt group or the next station in the hunt sequence.

The CFGDA can be assigned to the following types of hunt groups:

- Directory Number Hunt (DNH)
- Distributed Line Hunt (DLH)
- Multi Line Hunt (MLH)

Local Number Portability (LNP)

The Local Number Portability (LNP) feature allows subscribers to keep their DNs when they change their location, service provider, or service.

The SimRing and LNP features are compatible.

Local Service Provider (LSP)

Local Service Providers (LSP) are Local Exchange Carriers (LEC) which lease lines or switching capacity from an Incumbent LEC (ILEC). SimRing allows LSPs to administer the telecommunications services and billing for their own subscribers.

The SimRing feature does not effect billing records generated by LSP. The switch generates LSP billing records correctly when feature SimRing is present.

Long Distance Alert (LDA)

The Long Distance Alert (LDA) feature applies distinctive ringing or CWT patterns to the called party when the incoming call is a toll call.

LDA triggering on a SimRing group MDN depends on the ID of the party calling the SimRing group PDN.

Make Set Busy All Calls (MSB)

The Make Set Busy All Calls (MSB) feature allows subscribers to make their lines busy to all incoming calls. The subscriber dials an MSB activation code to activate the MSB feature.

If a SimRing group PDN has MSB, the whole SimRing group appears busy to an incoming call. The calling party receives busy treatment, and no MDN receives notification of the call.

If a SimRing group NPMDN has MSB, SimRing behavior is identical to SimRing behavior when the NPMDN is busy.

RES Simultaneous Ringing (continued)

MBG Feature Networking Control

The MBG Feature Networking Control feature allows the operating company to disable customer group access to the following network features:

- network name display (NAME)
- network number/reason display (CLID)

The addition of option MBGDENY to table CUSTNTWK allows control of the CLID and NAME display features for a customer group. Option MBGDENY has two suboptions: CLID and NAME.

The SimRing feature does not support MBG during the PDN-to-NPMDN call legs. The SimRing feature supports MBG calls to the PDN.

Multiple Appearance Directory Number (MADN)

The Multiple Appearance Directory Number (MADN) feature allows association of a single DN with a group of subscriber lines. When a call terminates to a MADN group, all group members receive the call at the same time. All MADN group members reside on the same switch.

SimRing is not compatible with any MADN type. The MADN types are as follows:

- Single Call Arrangement (SCA)
- Multiple Call Arrangement (MCA)
- Extension Bridging (EXB)
- Call Appearance Call Handling (CACH)

SimRing group PDNs and intraswitch NPMDNs cannot be members of MADN groups.

Preset Conference

The subscriber starts a preset conference by dialing a predefined conference DN. The Preset Conference feature originates calls to a maximum of 50 DNs at the same time.

If the Preset Conference feature originates a call to a SimRing group PDN, only the PDN receives notification. The NPMDNs do not receive notification.

Redirecting information

Any set with display capability can display redirecting information.

Any SimRing group PDN or NPMDN set that supports display can display the redirecting number. For SimRing, the redirecting reason only displays on the PDN set (it does not display on the NPMDN sets).

For example, a call forwarded to a SimRing group PDN displays the correct redirecting number and reason on the PDN. The call only displays the redirecting number on the supported NPMDNs.

Residential Call Hold (RCHD)

The Residential Call Hold (RCHD) feature allows a subscriber to place a call on hold for up to 3 min. The call can be either a call that the subscriber originated or a call that the subscriber received.

This feature is active after a call answers. Option RCHD has no interactions with SimRing.

Ring Again (RAG)

The Ring Again (RAG) feature is identical to the ACB feature, but applies to business sets. The SimRing interaction with the RAG feature is identical to the SimRing interaction with the ACB feature.

Service Analysis (SA)

The Service Analysis (SA) system measures the quality of operating company service. Service to measure is based on call classes, such as direct distance dialing (DDD) outgoing and direct dial overseas (DDO).

The SA system can appraise calls during the SimRing caller-to-PDN call leg. The SA system cannot appraise calls during the PDN-to-NPMDN call legs.

Simplified Message Desk Interface (SMDI)

SMDI integrates call forwarding, message waiting, and uniform call distribution and allows a user to forward incoming calls to the message desk. The SMDI contains a group of UCD agents that receive information on incoming calls on a dedicated data link interface.

An SMDI message has the following format:

MDaaabbbbiffffffffff ccccccccc

Where:

MD = Message Desk
aaa = Message Desk number (001-999)
bbbb = Message Desk terminal (0001-2047)

RES Simultaneous Ringing (continued)

fffffff = Forward from DN (7 or 10 digits)
ccccccc = Calling Station DN (7 or 10 digits)
i = D (Direct Call), A (forward All calls),
B (forward Busy calls), N (forward No answer calls)

For example, if a call CFDAs from the PDN of a SimRing group to UCD/SMDI, the fffffff digits should be of the PDN. When a call CFDAs from an NPMDN, the fffffff digits should be that of the NPMDN.

Refer to NTP 297-2051-104 (MDC SMDI Setup and Operation) for further details.

The Speed Call feature allows the subscriber to store a series of DNs in a database for quick dialing.

Speed calling codes cannot be SimRing group NPMDNs.

Spontaneous Call Waiting Identification (SCWID) and Deluxe Spontaneous Call Waiting Identification (DSCWID)

The Spontaneous Call Waiting Identification (SCWID) feature uses CWT tones to notify a subscriber already engaged in a call of an incoming call. The SCWID feature displays the name and DN of the incoming call on the subscriber's display set. The display appears between the first and second CWT tones. The subscriber can accept or ignore the incoming call based on the information provided by the display.

The Deluxe Spontaneous Call Waiting Identification (DSCWID) feature provides the subscriber with a set of disposition options to handle incoming calls. This feature uses the Analog Display Services Interface (ADSI) protocol to display the disposition options as softkeys on an ADSI set.

DSCWID provides the subscriber with the following softkey disposition options:

- Take New—Switch between the talking party and the calling party.
- Hold—Play an announcement to the calling party (the DSCWID subscriber can take the call).
- Take Message—Route the call to the DSCWID subscriber's voicemail.
- Drop—Drop the party in talking state and connect to the calling party.
- Busy—Play an announcement and then disconnect the calling party.
- Conference—Conference the calling party and talking party.

The following table lists the interactions between DSCWID softkeys and SimRing group PDNs and NPMDNs.

DSCWID on SimRing group PDN and NPMDNs

Softkey	Assignment to SimRing group PDN	Assignment to SimRing group NPMDNs
Take New	Supported	Supported
Hold	Supported	Supported. The following occurs if an NPMDN with DSCWID is in a talking state and the PDN receives a call: • The NPMDN with DSCWID receives CWT tone and DSCWID activation occurs. • Other MDNs continue ringing. Other MDNs can take the call at any time. • No announcements play. • DSCWID has the option to use the Take New, Drop, or Conference key to handle the call.
Take Message	Supported	Supported
Drop	Supported	Supported
Busy	Supported	Supported. The following occurs if the NPMDN with DSCWID is in a talking state and the PDN receives a call: • Other MDNs continue ringing. Other MDNs can take the call at any time. • No announcements play. • SimRing drops the call leg to the NPMDN with DSCWID.
Conference	Supported	Supported

If a SimRing group NPMDN has SCWID or DSCWID, the NPMDN set displays the information of the party calling the PDN.

Station Controlled Conference (CNF)

The Station Controlled Conference (CNF) feature allows a station to set up a conference call of up to 30 parties without attendant support.

If a station tries to conference in a SimRing group PDN, only the PDN receives notification.

RES Simultaneous Ringing (continued)

Subscriber Activated Call Blocking (SACB)

The Subscriber Activated Call Blocking (SACB) feature allows the subscriber to either block or allow certain types of calls.

If a SimRing group PDN is an SACB subscriber, SimRing does not block the calls that SACB blocks.

Suspend Service (SUS) and Requested Suspend Service (RSUS)

The Suspend Service (SUS) and Requested Suspend Service (RSUS) features suspend originating and terminating service on lines.

These two features, if present on a SimRing group PDN, apply to the whole SimRing group. These features prevent the incoming call from notifying any MDN in the SimRing group.

If these features are present on an NPMDN, SimRing behavior is identical to SimRing behavior with the DTM feature.

Teen Service (SDN/ESDN)

The Teen Service feature allows assignment of multiple DNs to a single line. Different ringing patterns identify the called number.

If a DN has both the SIMRING and SDN (secondary DN) options, any call to the DN results in SimRing group notification. A call to any of the teen service DNs also results in SimRing group notification.

If a SimRing group PDN has the ESDN (enhanced SDN) option, only calls to the PDN result in SimRing group notification. Calls to the teen service DNs do not result in SimRing group notification.

Teen service DNs (SDN or ESDN) do not support the SIMRING option.

Three-Way Calling (3WC) and Usage Sensitive Three-Way Calling (U3WC)

The Three-Way Calling (3WC) feature allows the subscriber to place an existing call on hold, set up an inquiry call to another subscriber, and connect the two parties in a three-port conference call.

The second leg of a three-way call can be to a SimRing group PDN. The SimRing group receives notification. The MDN that answers the call first connects to the party controlling the conference call. If the PDN is on the same office as the 3WC controller, only the PDN receives notification.

On the second leg of a three-way call, the subscriber cannot access the SimRing user interface. (This restriction applies to both local and remote

access.) If the subscriber tries to access the SimRing user interface, the subscriber receives FNAL treatment.

If a PDN that is a three-way call controller goes on-hook while a party is on hold, the following occurs:

- The PDN receives a recall.
- Only the PDN receives notification.

Transaction Capabilities Application Part (TCAP) Calling Name Delivery for RES and MDC

TCAP Calling Name Delivery (TCAPNM) for RES and MDC provides RES and centrex called parties with the calling name retrieved from a central name database using TCAP. Activation of these features occurs directly from the end office where the call is terminating through a TCAP query to the central name database.

The SimRing feature supports TCAP Calling Name Delivery on both the PDN and NPMDNs. The TCAP Calling Name delivery is not a group feature to the SimRing group. SimRing treats each call to the members (PDN and NPMDN) as an independent call.

Activation/deactivation by the end user

The end user can activate or deactivate SimRing through the SimRing user interface. Refer to “SimRing user interface" in this document for more information.

Billing

RES Simultaneous Ringing does not affect billing.

Note: If a PDN-to-NPMDN call is toll, the operating company charges the PDN if the call terminates on the NPMDN. The billing records for a PDN-to-NPMDN toll call show the calling DN as the PDN. The billing records for a PDN-to-NPMDN toll call show the called DN as the NPMDN.

Station Message Detail Recording

RES Simultaneous Ringing does not affect Station Message Detail Recording.

RES Simultaneous Ringing (continued)

Datafilling office parameters

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

Office parameters used by RES Simultaneous Ringing

Table name	Parameter name	Explanation and action
OFCENG	NO_OF_CLONE_ TIDS	Number of CVIDs. This parameter defines the number of CVIDs available in the office. SimRing uses CVIDs to establish calls between the PDN and the NPMDNs. The default value for this parameter is 0.
OFCENG	SIMRING_ CENTREX_ CONTROL	SimRing centrex control. This parameter determines the availability of SimRing functionality for centrex agents in an office. This parameter contains the following two boolean (Y/N) fields. The default value for both fields is N. • The ENABLED field enables and disables SimRing functionality for centrex agents in an office. • The PIN_REQUIRED field enables and disables PIN prompting during remote access to the SimRing user interface.
OFCENG	SIMRING_RES_ CONTROL	SimRing RES control. This parameter determines the availability of SimRing functionality for RES agents in an office. This parameter contains the following two boolean (Y/N) fields. The default value for both fields is N. • The ENABLED field enables and disables SimRing functionality for RES agents in an office. • The PIN_REQUIRED field enables and disables PIN prompting during remote access to the SimRing user interface.

Datafill sequence

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

Note: For complete access to SimRing functionality, the operating company must provide datafill for the SLE, DISA, and SPP features. Refer

to “SimRing user interface" and “PIN change" in this document for more information on this datafill.

Datafill tables required for RES Simultaneous Ringing

Table	Purpose of table
OFCENG	Office Engineering. This table contains data on engineering parameters for the office. Refer to “Datafilling office parameters" in this document for information on how the SimRing feature affects office parameters.
LCCOPT (Note 1)	Line Class Code Compatible Options. This table contains information about line options that are compatible with each LCC. The SimRing feature adds SIMRING option information to this table.
OPTOPT (Note 1)	Non-compatible Options. This table contains information about line options that are not compatible with other line options. The SimRing feature adds SIMRING option information to this table.
DNROUTE	Directory Number Route. This table defines both inward wide area telephone service (INWATS) and DISA DNs. The SimRing feature modifies this table to include SIMRING as a possible DISA option. The SimRing VDN feature (RES00085) adds the tuple that allows a VDN to be assigned as the PDN for a SimRing group.
IBNXLA	IBN Translation. This table stores data for the digit translation of calls from an IBN station, attendant console, incoming IBN trunk group, or incoming side of a two-way IBN trunk group. The SimRing feature modifies this table to include SimRing as a feature that can have an associated access code.
KSETFEAT (Note 2)	Business Set and Data Unit Feature. This table lists the line features assigned to the business sets and data units (DU) listed in table KSETLINE and to the Meridian digital telephone sets and DUs listed in table IVDINV. The SimRing feature modifies this table to support the SIMRING line option, group number, feature state, and PIN. (The PIN value does not display.)
IBNFEAT (Note 2)	IBN Line Feature. This table lists the line features assigned to the IBN lines listed in table IBNLINES. The SimRing feature modifies this table to support the SIMRING line option, group number, feature state, and PIN. (The PIN value does not display.)
PILOTGRP	Pilot Groups. This table contains the list of NPMDNs for each SimRing group PDN on the switch. The SimRing feature introduces this table.

Note 1: This table is a read-only table that the operating company cannot modify. Therefore, this document does not provide a datafill procedure or example for this table.

Note 2: The operating company uses SERVORD to datafill this table. This document does not provide a datafill procedure or example for this table. Refer to “SERVORD" in this document for an example of using SERVORD to datafill this table.

RES Simultaneous Ringing (continued)

Datafilling table PILOTGRP

Table PILOTGRP contains the list of NPMDNs for each SimRing group PDN on the switch. The SimRing feature introduces this table.

Note: The operating company cannot use the table editor to add or delete tuples in table PILOTGRP. The operating company must use SERVORD to perform these operations. The operating company can use the table editor to make changes to existing tuples in this table.

The following table shows the datafill specific to RES Simultaneous Ringing for table PILOTGRP.

Datafilling table PILOTGRP

Field	Subfield	Entry	Explanation and action
GRPKEY		0 to 9999	Group key. SERVORD creates a tuple in table PILOTGRP during provisioning of the SIMRING line option. The SIMRING line option uses the associated GRPKEY index for subsequent references.
MEMBERS		Up to 4 members, each ranging from 4 to 30 digits	List of NPMDNs. This field stores the list of all the NPMDNs of the SimRing group defined by this tuple. The list can contain up to 4 members.

Datafill example for table PILOTGRP

The following example shows sample datafill for table PILOTGRP.

MAP display example for table PILOTGRP

```
GRPKEY    MEMBERS
------------------------------------------------------
1         6136216076 2558 7236055 $
2         8196246082 $
4         6137217146 8197217164 96211234 $
6         8196221100 6221214 7224065 16136216076
```

Datafilling table DNROUTE

Table DNROUTE defines both INWATS and DISA DNs. The SimRing feature modifies this table to include SIMRING as a possible DISA option.

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

Datafilling table DNROUTE

Field	Subfield	Entry	Explanation and action
DNRESULT		see subfield	Directory number results. This field includes subfield DISAOPT.
	DISAOPT	SIMRING	DISA option. This field indicates the DISA option accessed with the corresponding DISA DN.

Datafill example for table DNROUTE

The following example shows sample datafill for table DNROUTE.

MAP display example for table DNROUTE

```
AREACODE OFCCODE STNCODE                              DNRESULT
--------------------------------------------------------------
613 621 1000 FEAT DISA RESG200 0 Y Y Y Y (SIMRING) $
```

Datafilling table IBNXLA

Table IBNXLA stores data for the digit translation of calls from an IBN station, attendant console, incoming IBN trunk group, or incoming side of a two-way IBN trunk group.

The SimRing feature modifies this table to include SimRing as a feature that can have an associated access code.

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

Datafilling table IBNXLA

Field	Subfield	Entry	Explanation and action
RESULT		see subfield	Results. This field includes subfield FEATURE.
	FEATURE	SIMRING	Feature. This field indicates the feature that can have additional translation datafill.

RES Simultaneous Ringing (continued)

Datafill example for table IBNXLA

The following example shows sample datafill for table IBNXLA.

MAP display example for table IBNXLA

```
KEY RESULT
-----------------------------------------------------------
RXCFNXXX 88 FEAT N N SIMRING
```

Translation verification tools

RES Simultaneous Ringing does not use translation verification tools.

SERVORD

The SimRing feature introduces line option SIMRING. The operating company must use SERVORD to add the SIMRING option to or remove the option from a line.

Supported SERVORD commands

The following SERVORD commands support the SIMRING line option:

- The NEWDN (new directory number) creates a SimRing VDN pilot.
- The OUTDN (remove directory number) removes a SimRing VDN pilot.
- The ADO (add option) command adds the SIMRING option to a line and sets the SimRing PIN. The line becomes the PDN of the new SimRing group. The operating company cannot use this command to add new NPMDNs to a SimRing group.
- The DEO (delete option) command deletes the SIMRING option from a line and removes the SimRing group from table PILOTGRP.
- The CHF (change feature information for pre-existing feature) command changes the SimRing feature state (active or inactive) on a line. This command also changes the SimRing PIN. The operating company cannot use the CHF command to add the SIMRING option to a line.

  Note: The SimRing group keeps the existing PIN if the operating company enters a dollar sign character ($) at the PIN prompt.

- The ADD (add line to existing group) command adds one or more NPMDNs to an existing SimRing group (GROUPTYPE = SIMRING). This command adds a DN as a SimRing group NPMDN if
  - — the DN is a valid DN
  - — addition of the DN does not exceed the maximum number of NPMDNs (four for each SimRing group)

  The operating company must enter the LEN when prompted for the PDN.

  The operating company cannot use the ADD command to add the SIMRING option to a line.
- The DEL (delete line from existing group) command deletes one or more NPMDNs from an existing SimRing group (GROUPTYPE = SIMRING). When the operating company deletes the last SimRing group NPMDN, a warning message indicates that the feature state will change to inactive.

To change a SimRing group NPMDN, the operating company must do the following:

- delete the NPMDN using the DEL command
- add the new NPMDN to the group using the ADD command

  The operating company must enter the LEN when prompted for the PDN.
- The EST (establish new group) command adds the SIMRING option to a line. The line becomes the PDN of the new SimRing group. This command also allows the operating company to define
  - — the SimRing feature state (active or inactive)
  - — the SimRing group PIN
  - — up to four associated NPMDNs

    The operating company must enter the LEN when prompted for the PDN.

    The NEW (establish service) command places a new DN in service. The operating company can use the NEW command to add the SIMRING option to a new DN and set the SimRing PIN.
  - — The OUT (remove service) command removes a DN from service and removes the SimRing group from table PILOTGRP.

The SERVORD ADO, CHF, EST, and NEW commands prompt for the SimRing PIN. The setting of field PIN_REQUIRED of office parameter SIMRING_RES_CONTROL or SIMRING_CENTREX_CONTROL has no effect on SERVORD PIN prompting. Refer to “SimRing

RES Simultaneous Ringing (continued)

activation/deactivation and PIN control" in this document for more information on these office parameters.

The operating company cannot use the following commands on a line that has the SIMRING option assigned:

- CHG (change translation/routing information)
- CKLN (change keyset LEN)

SERVORD generates warning and error messages if the operating company tries to enter any of the following:

- an invalid PIN, NPMDN, or feature state
- a command that the SimRing feature does not support

Supported SERVORD query commands

QSIMR command

The SimRing feature introduces the QSIMR (query SimRing group) command. The QSIMR command output includes the SimRing feature state (active or inactive) and the SimRing group NPMDNs. The operating company can enter either of the following to display the SimRing group information using the QSIMR command:

- the seven- or ten-digit PDN of the SimRing group
- the LEN of the SimRing group PDN

QDN, QLEN, QDNWRK, and QLENWRK commands

The QDN (query directory number) and QLEN (query line equipment number) command output indicates if a line has the SIMRING option. However, these commands do not display the SimRing group NPMDNs. This information also applies to the QDNWRK (query working [assigned] DN) and QLENWRK (query working [hardware and software assigned] LEN) query commands.

The QDN and QLEN commands display the SIMRING option assigned to the line, the SimRing feature state, and the SimRing group number. The group number is used to access the list of NPMDNs associated with this PDN in table PILOTGRP.

RES Simultaneous Ringing (continued)

The QDN and QLEN command output does not include the SimRing group PIN. To change the PIN, the operating company must do one of the following:

- Use the CHF command.
- Use the DEO command to delete the SIMRING from the line. Use the ADO command to add the SIMRING option to the line and assign a different PIN.

SERVORD limitations and restrictions

The following SERVORD limitations and restrictions apply to RES Simultaneous Ringing:

- The SIMRING option is not compatible with the following features:
  - — Automatic Call Distribution (ACD)
  - — Dual Line Call Management (DLCM) (CMG option)
  - — Denied Origination (DOR)
  - — Distributed Line Hunt (DLH)
  - — Directory Number Hunt (DNH)
  - — Key Short Hunt (KSH)
  - — Multiple Appearance Directory Number (MDN)
  - — Multiline Hunt (MLH)
  - — Multiple Position Hunt (MPH)
  - — Uniform Call Distribution (UCD)
- RES Simultaneous Ringing does not support the following SERVORD commands:
  - — CHG (change translation/routing information)
  - — CKLN (change keyset LEN)

RES Simultaneous Ringing (continued)

SERVORD prompts

The following table shows the SERVORD prompts associated with the SIMRING option.

SERVORD prompts for RES Simultaneous Ringing

Prompt	Valid input	Explanation
OPTION	SIMRING	Option(s) associated with a service to establish, modify, or delete.
SIMRING_ MEMBER_DN	4 to 30 digits	An NPMDN (a member of the SimRing group other than the PDN). Calls to the PDN ring all the NPMDNs at the same time. This prompt appears only with the ADD, EST, and DEL commands.
SIMRING_PILOT_ LEN_OR_DN	a logical terminal group name (1 to 8 alphanumeric characters), followed by a space and a terminal number (1 to 1022) or 10-digit DN	The PDN of the SimRing group. When the PDN receives a call, all the members of the SimRing group receive simultaneous notification. A SimRing group can contain a single PDN. The PDN can be either a valid LEN or a virtual DN (VDN). This prompt appears only with the ADD, EST, and DEL commands.
SIMR_PIN	2 to 10 digits	The PIN assigned to the SimRing group. The PIN is assigned for security reasons, when the user tries to access the interface remotely. This prompt appears only with the ADO, CHF, EST, and NEW commands.
SIMR_STATE	ACT or INACT	The state (active or inactive) of the SimRing feature on a line. The default state is INACT. This prompt appears only with the CHF and EST commands.

SERVORD example for adding SIMRING option

The following SERVORD example shows how the ADO command adds the SIMRING option to DN 621-8008. This DN becomes the PDN of the SimRing group. The ADO command also specifies the SimRing PIN (159).

RES Simultaneous Ringing (end)

SERVORD example for RES Simultaneous Ringing in prompt mode

```
> ADO
SONUMBER:   NOW 97 11 11 AM
> (CR)
DN_OR_LEN:
> 6218008
OPTION:
> SIMRING
SIMR_PIN:
> 159
OPTION:
> $
```

SERVORD example for RES Simultaneous Ringing in no-prompt mode

```
> ADO $ 6218008 SIMRING 159 $
```

History

SN06 (DMS)

Added entry POTS (1FR or 1MR) for Intraswitch NPMDNs under CR Q00715967.

History section added.

Residential Call Hold (RCHD)

Ordering codes

Functional group ordering code: RES00002

Functionality ordering code: not applicable

Release applicability

BCS31 and up

Prerequisites

To operate, Residential Call Hold (RCHD) has the following prerequisites:

- BAS Generic, BAS00003
- MDC Standard, MDC00003
- MDC Minimum, MDC00001
- RES Service Enablers, RES00006

Description

The Residential Call Hold (RCHD) feature allows a subscriber to place a call on hold for up to 3 minutes. The call can be one that the subscriber originated or one that the subscriber received.

Operation

The RCHD feature is assigned as a Subscriber Services line option using the service order system (SERVORD). Once option RCHD is assigned to a line, the subscriber activates call hold by flashing the switchhook, dialing a feature access code, and going on-hook. The call is reconnected when the subscriber goes off-hook again.

The call can be kept on hold for a maximum of 3 minutes (as defined by the operating company through office parameter SLVP_RCHD_TIMER), and the subscriber receives a periodic ring indicating that the call is on hold. (The time between rings is also operating company-defined through office parameter SLVP_RCHD_TIMER.)

The call remains on hold until one of the following events occurs:

- the subscriber goes off-hook or any extension associated with that line goes off-hook
- the held party hangs up
- a timer expires

Residential Call Hold (RCHD) (continued)

If the subscriber goes off-hook, the call is reconnected. If the held party hangs up or the timer expires, the held party goes through the normal disconnect procedure, and the call is abandoned.

Translations table flow

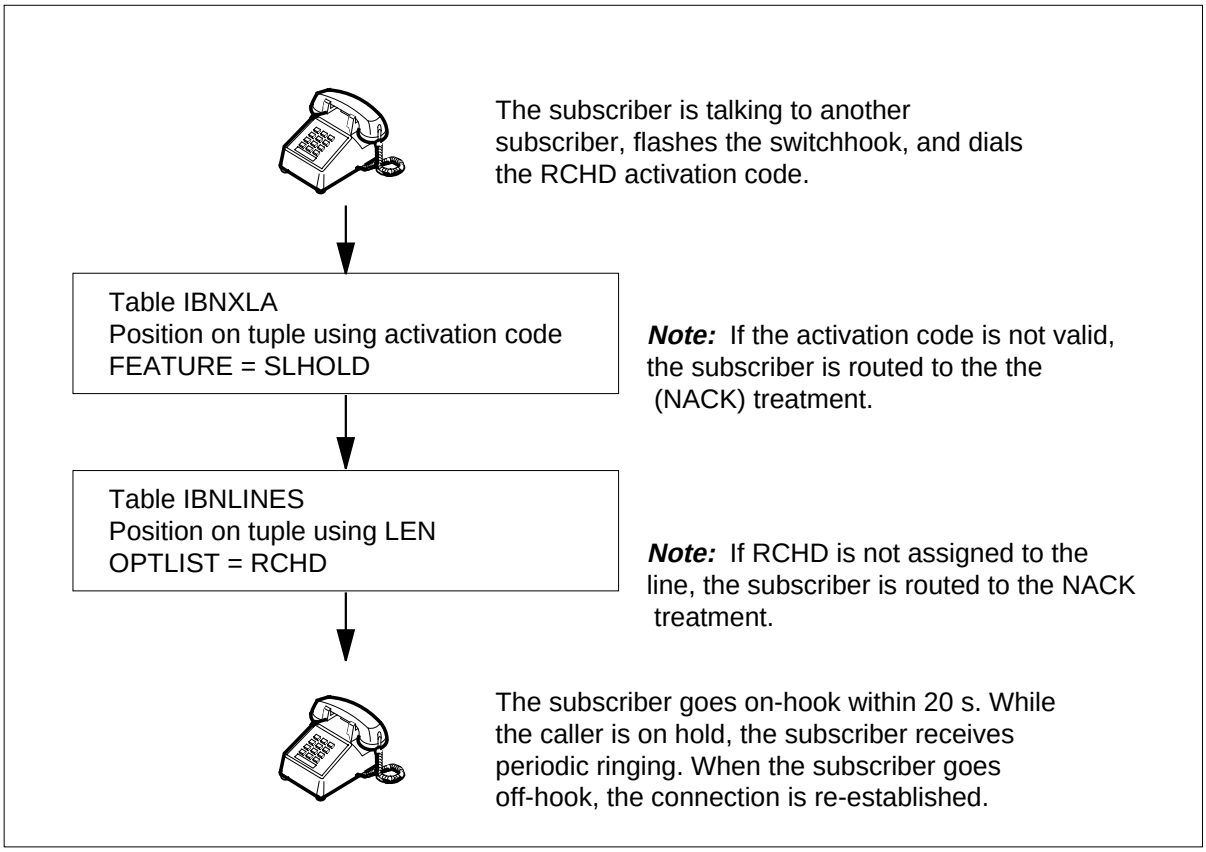
The Residential Call Hold (RCHD) translations tables are described in the following list:

- The RCHD translations process for RCHD activation is shown in the following flowchart .
- Table IBNXLA provides the name of the feature associated with an activation code.
- Table IBNLINES lists the features assigned to a line equipment number (LEN).

The Residential Call Hold (RCHD) translation process is shown in the flowchart that follows.

Residential Call Hold (RCHD) (continued)

Table flow for Residential Call Hold (RCHD)



Note: The call is disconnected if the on-hold party goes on-hook, or if the subscriber remains on-hook longer than the limit specified in office parameter SLVP_RCHD_TIMER in Table OFCVAR.

The following table lists the datafill content used in the flowchart. RCHD activation code is 78, and the LEN of subscriber is HOST 00 02 0 05.

Datafill example for Residential Call Hold (RCHD)

Datafill table	Example data
IBNXLA	RXCFN 78 FEAT N N N SLHOLD
IBNLINES	HOST 00 02 0 05 0 DT STN RES 6210012 100 (RCHD) $

Residential Call Hold (RCHD) (continued)

Limitations and restrictions

The following limitations and restrictions apply to Residential Call Hold (RCHD):

- The RCHD feature is incompatible with RES Inward WATS (INW) line class codes (LCC), multiparty, coin, and private branch exchange (PBX) lines, and any lines that exist in a hunt group.
- The RCHD feature is incompatible with the following line options:
  - AUL
  - DOR
  - SLVP
  - TERM
  - TFO
  - TLS
  - TME
  - TRMBOPT
  - PILOT
  - UCD
  - the following hunt group options:
    - BNN
    - CFGD
    - CFGDA
    - CIR
    - DLH
    - DNH
    - LDTPSAP
    - LINEPSAP
    - LOD
    - LOR
    - MLH
    - OFR
    - OFS

Interactions

The following paragraphs describe the interactions between Residential Call Hold (RCHD) and other functionalities.

Call Forwarding

The call forwarding feature has precedence over RCHD. If a call is on hold, the line appears to be busy, and any incoming calls during that time are forwarded.

Calling Name Delivery and Calling Number Delivery

If the line has the Calling Name Delivery (CNAMD) or Calling Number Delivery (CND) features assigned and RCHD is active, names and numbers are not displayed when the reminder ring is given.

Call Waiting

If a line has the Call Waiting (CWT) feature assigned and a call arrives while another call is on hold, the arriving call receives busy treatment. Once the held call is retrieved, the subscriber receives call waiting tone on an incoming call attempt.

Three-Way Calling

If a line is involved in a three-way call, RCHD service is not permitted.

Activation/deactivation by the end user

The following procedure shows how to activate and deactivate RCHD.

Activation/deactivation of Residential Call Hold (RCHD) by the end user

At your telephone:

1. Flash the switchhook to place the call on hold.

   Response:

   Receive second dial tone.

2. Enter the RCHD feature access code.

   Response:

   Receive confirmation tone followed by dial tone.

3. Go on-hook.

   Response:

Residential Call Hold (RCHD) (continued)

If the subscriber does not go on-hook within 20 s after receiving the third dial tone, the RCHD request is canceled, and the call is reconnected.

4. To deactivate RCHD, go off-hook

   Response:

   This deactivates RCHD and reconnects the calling party.

Billing

Residential Call Hold (RCHD) does not affect billing.

Station Message Detail Recording

Residential Call Hold (RCHD) does not affect Station Message Detail Recording.

Datafilling office parameters

The following table shows the office parameters used by Residential Call Hold (RCHD). For more information about office parameters, refer to *Office Parameters Reference Manual.*

Note 1: Due to timing limitations in the peripherals, it is possible that a reminder may ring the line with two short rings instead of one.

Note 2: Changes to MAX_RING_DURATION and INTER_RING_DELAY take effect immediately. Subscribers with RCHD may therefore notice a change in the frequency of their reminder rings. To avoid this situation, make changes to the SLVP_RCHD_TIMER office parameter during low traffic periods.

Note 3: Changing the value of the SLVP_RCHD_TIMER office parameter requires a cold restart.

Office parameters used by Residential Call Hold (RCHD)

Table name	Parameter name	Explanation and action
OFCVAR	SLVP_RCHD_TIMER	Max_ring_duration. This field determines the maximum length of time (in seconds) a call can remain on hold. Inter_ring_delay. This field specifies the amount of time (in seconds) between reminder rings when a call is on hold. After the last reminder ring, the originator has 15 s to retrieve the call before the call is taken down.

Datafill sequence

The following table lists the tables that require datafill to implement Residential Call Hold (RCHD). The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Residential Call Hold (RCHD)

Table	Purpose of table
OFCVAR	Variable Office Parameter Table. This table contains data on variable office parameters for the office. Refer to "Datafilling office parameters" for how RCHD affects office parameters.
OPTCTL	Option Control Table. This table allows the operating company to provide pricing for the RCHD feature on a line-by-line basis.
IBNLINES	IBN Line Assignment Table. This table contains the line assignments for Subscriber Services station numbers. ***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.
IBNXLA	IBN Translation Table. This table contains the data for the digit translations of calls from an MDC station, attendant console, incoming trunk group, or incoming side of a two-way MDC trunk group

Datafilling table OPTCTL

Table OPTCTL does not require any datafill by the operating company. This table is automatically datafilled when the NTXJ69AA feature package is added to the switch.

The addition of the NTXJ69 tuple to table OPTCTL, shown in the following example, allows the operating company to provide pricing for the RCHD feature on a line-by-line basis.

Datafill example for table OPTCTL

The following example shows sample datafill for table OPTCTL.

MAP display example for table OPTCTL

```
NTXPKG   LASTCHG    MAXCOUNT   ACTCOUNT   OPTLIST
_____________________________________________________
NTXJ69  1990/01/01  999999      0       (RCHD RES) $
```

Residential Call Hold (RCHD) (continued)

Datafilling table IBNXLA

Table IBNXLA (IBN Translations) contains the data for the digit translations of calls from an MDC station, attendant console, incoming trunk group, or incoming side of a two-way MDC trunk group. Option SLHOLD defines the access code for the RCHD feature.

The following table shows the datafill specific to Residential Call Hold (RCHD) for table IBNXLA. Only those fields that apply directly to Residential Call Hold (RCHD) 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		see subfields	Key. This field consists of the subfields XLANAME and DGLIDX. These subfields are described below and must be entered in succession.
	XLANAME	translator name	Translator name. This subfield specifies the 1- to 8-character name assigned to the translator as the access code. Enter the translator name.
	DGLIDX	2-digit access code	Digilator index. This subfield specifies the digit or digits assigned to the index. Enter a 2-digit access code.
RESULT		see subfields	Result. This field consists of the subfields TRSEL, ACR, SMDR, and FEATURE. These subfields are described below.
	TRSEL	FEAT	Translation selector. This subfield specifies the translation selector. Enter FEAT.
	ACR	Y or N	Account code entry. This subfield specifies whether or not an account code entry is required. Enter Y or N.

Residential Call Hold (RCHD) (continued)

Datafilling table IBNXLA (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	SMDR	Y or N	Station message detail recording. This subfield specifies whether or not SMDR is required for calls originated by a customer group station or an attendant console. Enter Y or N.
	FEATURE	SLHOLD	Feature. This subfield specifies the feature assigned to the access code. Enter SLHOLD.

Datafill example for table IBNXLA

The following example shows sample datafill for table IBNXLA.

MAP display example for table IBNXLA

```
KEY                          RESULT
_____________________________________________________________
RXCFN    78                    FEAT   N   N   N          SLHOLD
```

Translation verification tools

The following example shows the output from TRAVER when it is used to verify Residential Call Hold (RCHD).

Residential Call Hold (RCHD) (continued)

TRAVER output example for Residential Call Hold (RCHD)

```
TRAVER  L  6211233  'B78' B
TABLE IBNLINES
   HOST 00 0 09 07 0 DP STN RES 6211233 0 $
TABLE LINEATTR
   0 1FR NONE NT FR01 0 613 P621 L613 TSPS 10 NIL NILSFC
        LATA1 0 NIL NIL 00 Y RESGRP 0 2
   LCABILL OFF – BILLING DONE ON BASIS OF CALLTYPE
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
TUPLE NOT FOUND
TABLE NCOS
RESGRP 2 0 0 RNCOS2 ( XLAS RXCMN2 NXLA RES ) $
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA,
VACTRMT, AND DIGCOL
RESGRP NXLA RESXLA RXCFN 0 RES
TABLE DIGCOL
   RES SPECIFIED: RES DIGIT COLLECTION
NCOS FEAT XLA NAME IS NIL.  GO TO NEXT XLA NAME.
TABLE IBNXLA: XLANAME RXCFN
   RXCFN 78 FEAT N N N SLHOLD

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

SERVORD

The following table shows the service order prompts used to assign RCHD to a line.

Table IBNLINES (IBN Line Assignment) is datafilled by SERVORD and contains the line assignments for Subscriber Services station numbers.

SERVORD limitations and restrictions

Residential Call Hold (RCHD) has no SERVORD limitations and restrictions.

Residential Call Hold (RCHD) (end)

SERVORD prompts

The following table shows the SERVORD prompts used to assign Residential Call Hold (RCHD) to a line.

SERVORD prompts for Residential Call Hold (RCHD)

Prompt	Valid input	Explanation
OPTION	RCHD	Specifies the service to be added, modified, or deleted

SERVORD example for adding Residential Call Hold (RCHD)

The following SERVORD example shows how Residential Call Hold (RCHD) is added to a line using the ADO command.

SERVORD example for Residential Call Hold (RCHD) in prompt mode

```
>SERVORD
SO:
> ADO
SONUMBER: NOW 87 11 23 AM
>
DN_OR_LEN:
> 6215002
OPTION:
> RCHD
OPTION:
> $
COMMAND AS ENTERED:
ADO NOW 87 11 23 AM 6215002 (RCHD) $
ENTER Y TO CONFIRM, N TO REJECT AND E TO EDIT
> Y
```

SERVORD example for Residential Call Hold (RCHD) in no-prompt mode

```
>ADO $ 6215002 RCHD $ Y
```

RMI - Remote Message Indicator

Ordering codes

Functional group ordering code: RES00002

Functionality ordering code: RES00070

Release applicability

NA008 and up

RMI - Remote Message Indicator was introduced in NA008.

Prerequisites

To operate, RMI - Remote Message Indicator has the following prerequisites:

- NTX806AA - Base generic (Order Code: BAS00003)
- NTX106AA - CFD on Business Set (Order Code: MDC00007)
- NTX119AA - Message Waiting Indicator (Order Code: MDC00003)

Note: The NTX106AA functionality is optional, but it is required in order to offer the RMI feature to ISDN line subscribers.

Description

The Remote Message Indicator (RMI) feature enhances current residential voice messaging services by offering some of the advantages of Telephone Answering Devices (TAD). RMI allows subscribers to check for the existence of new messages in their Voice Messaging System (VMS) from a remote station. Subscribers call their home stations and receive an indication of whether or not there are any messages in their voice mailboxes based on the number of audible ringback cycles before the call is forwarded to their VMS. Subscribers can thus verify the existence of messages without connecting to the VMS and without incurring long distance charges when applicable.

Operation

When there are messages waiting on RMI subscriber's station, MWI messages are queued against the subscriber's line and any `local' notifications are in effect (stuttered dial tone, message waiting lamp or display, primary ringing, etc.). When a call terminates on the subscriber's line and RMI state is active, the Message Waiting Indicator (MWI) is verified in order to know whether there are any new messages in the VMS. If there are messages queued against the subscriber's line, the incoming call is forwarded to the CFDA/CFD/CFGDA forward-to number after a number of seconds defined by the MSG field of the new office parameter RMI_RING_TIMERS.

RMI - Remote Message Indicator (continued)

If there are no messages queued against the subscriber's line when a call terminates on the subscriber's line and RMI state is active, the incoming call is forwarded to the CFDA/CFD/CFGDA forward-to number after the no-message number of seconds. The value of the no-message timer is defined by the NOMSG field of the new office parameter RMI_RING_TIMERS.

Translations table flow

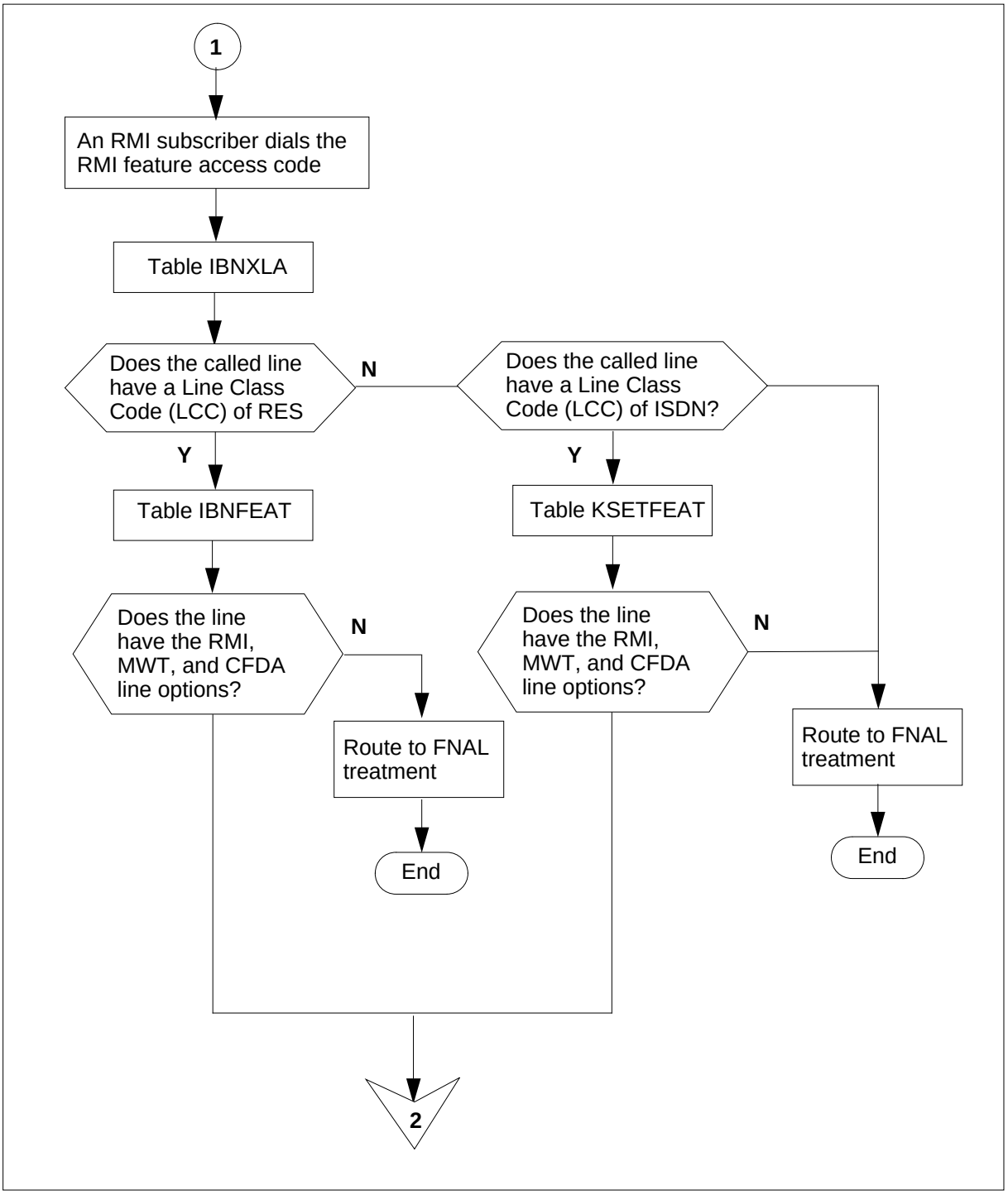
The RMI - Remote Message Indicator translations tables are described in the following list:

- Table IBNXLA
- Subtable TMTCNTL.TREAT
- Table IBNFEAT
- Table KSETFEAT
- Table OFCENG

The RMI - Remote Message Indicator translation process is shown in the flowchart that follows.

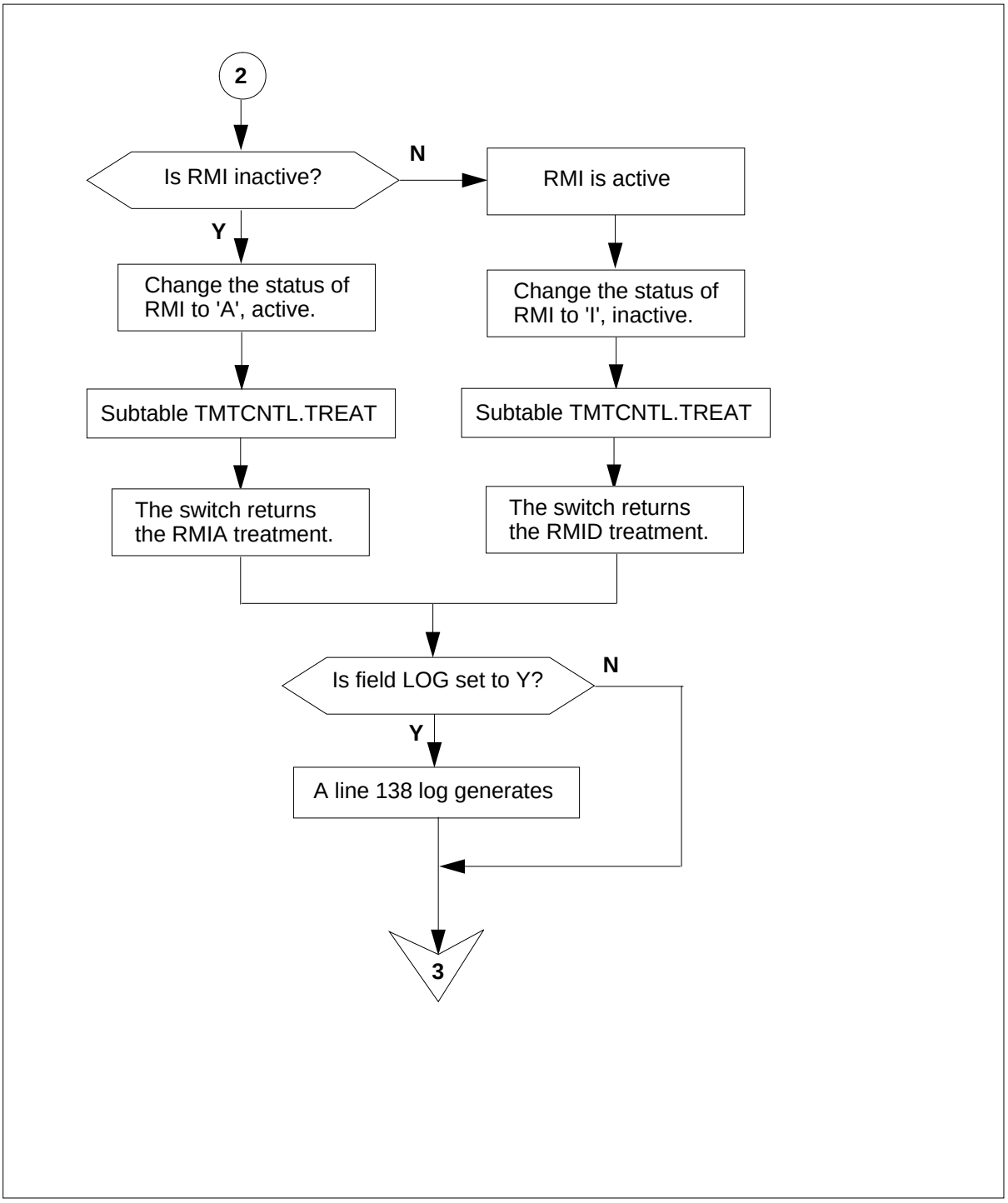
RMI - Remote Message Indicator (continued)

Table flow for RMI - Remote Message Indicator



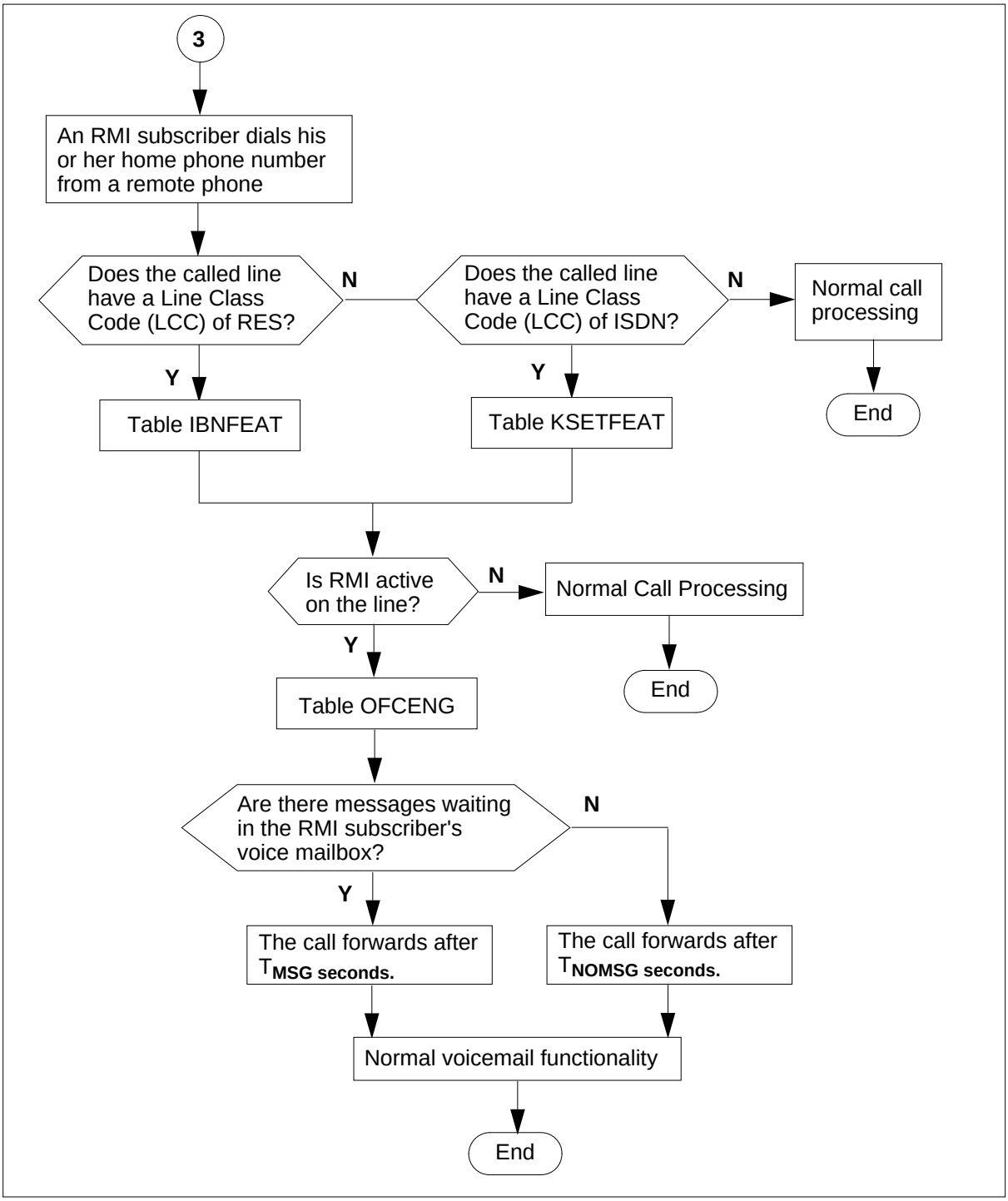
RMI - Remote Message Indicator (continued)

Table flow for RMI - Remote Message Indicator (continued)



RMI - Remote Message Indicator (continued)

Table flow for RMI - Remote Message Indicator (continued)



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

Datafill example for RMI - Remote Message Indicator

Datafill table	Example data
IBNXLA	RESXLA 97 FEAT N N RMICTRL
TMTCNTL. TREAT	RMIA Y T OFRT 910 RMID Y T OFRT 911
IBNFEAT	HOST 00 0 03 03 0 RMI RMI A
KSETFEAT	ISDN 101 1 RMI RMI A
OFCENG	12 24

Limitations and restrictions

The following limitations and restrictions apply to RMI - Remote Message Indicator:

- The RMI feature provides only an indication of the Message Waiting Indicator (MWI) message queue against the terminating line called. If the MWI message queue status in the Voice Messaging System (VMS) is out of synchronization with the DMS MWI message queue, then the RMI feature is not informed.
- The total number of audible ringbacks provided to the caller while calling an RMI subscribed station is equal to the number of audible ringbacks controlled by the RMI feature plus the number of audible ringbacks provided by the VMS before it answers the call. It is assumed that a guaranteed single audible ringback cycle is provided by the VMS before it answers. Should the VMS take more than one audible ringback cycle to answer, the call will bias the indication provided by the RMI feature.
- The target DMS platform for RMI is DMS-100 or DMS-100/200 BRISC.
- RMI supports only RES lines and ISDNKSET lines.
- 1FR, 1MR, ZMD and ZMZPA POTS lines are converted to RES when RMI is assigned.

Interactions

The following paragraphs describe the interactions between RMI - Remote Message Indicator and other functionalities.

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

AIN enhances the switch call processing capabilities to use centralized operating company provided service logic programs placed at Service Control

RMI - Remote Message Indicator (continued)

Points (SCP). The service logic determines how AIN calls should proceed for further call processing.

All AIN terminating triggers applicable on the call before T_Alerting Point in Call (PIC # 15) have precedence over the RMI feature. This requirement affects the current trigger implementation of AIN as follows:

- AIN 0.0
  - — There is no feature interaction between the RMI feature and AIN 0.0 because RMI cannot be assigned to a virtual DN.
- AIN 0.1
  - — Termination Attempt trigger has precedence over the RMI feature.
- AIN 0.2
  - — Termination Attempt trigger has precedence over the RMI feature.

Call Forward (CFW)

The Call Forward (CFW) feature enables subscribers to forward calls to defined locations inside and outside the customer group.

Call Forward has precedence over RMI. When CFW is active on a RMI subscriber's line it conflicts with the message indication provided by the feature. RMI subscribers will not receive message indication when they leave the house with CFW activated on their line.

Call Forward Don't Answer (CFDA/CFD)/ Call Forward Group Don't Answer(CFGDA)

The Call Forward Don't Answer (CFDA/CFD) feature allows an end user to specify a directory number (DN) to which calls are to be forwarded when the base station (dialed DN) does not answer within a specified time-out period.

The behavior of CFDA/CFD is modified when RMI is active. RMI affects CFDA/CFD as follows:

- When RMI and CFDA/CFD are active, RMI timers have precedence over the CFDA/CFD timer. When messages are queued against the subscriber's line, the RMI message timer is used. When there are no messages queued against the subscriber's line, the RMI no-message timer is used.
- When CFDA/CFD is active but RMI is inactive, the CFDA/CFD timer is in effect.
- The activation and deactivation of RMI affects the operation of the CFDA/CFD feature. Activation of RMI sets the state of CFDA/CFD to active if the CFDACNTL field is set to `F' (fixed activation). Deactivation

of RMI does not affect CFDA/CFD. The state remains active if it was previously activated or CFDA/CFD becomes inactive if that was the case.

- Activation of CFDA/CFD has no effect on RMI.
- Deactivation of CFDA/CFD does not affect the state of RMI, but the RMI feature is no longer in effect.

Call Forward Busy Line (CFBL/CFB)

The Call Forward Busy Line (CFBL/CFB) feature allows subscribers to forward incoming calls from a base station to another station when the base station is busy.

CFBL/CFB has precedence over RMI and conflicts with RMI functionality. When RMI is active and the subscriber's station is busy, CFBL/CFB immediately forwards any incoming calls. No indication is provided to the caller about the status of the mailbox.

CFBL/CFB applies to a RMI subscriber who also has CWT only under the following conditions:

- The subscriber has a call on hold due to CWT
- The subscriber is dialing an outgoing call
- The subscriber is the originator of a 3-way call
- The subscriber is involved in a 3-way call where the call's originator is in the same end office as the subscriber

Call Forward of CWT (CFCW)

RMI and CWT are compatible for subscribers who belong to a customer group with the CFCW option. CWT alerting tones are allowed and callers receive a message waiting indication when the call is not answered.

Call Waiting (CWT)

The Call Waiting (CWT) feature makes a busy line appear `idle' to the caller's perspective.

The CWT feature has precedence over the RMI feature. The exception is a subscriber who belongs to a customer group with the CFCW option. In this case, CWT alerting tones are allowed and callers receive a message waiting indication when the call is not answered.

Denied Termination (DTM)

A line with Denied Termination (DTM) can originate calls, but it cannot receive any calls. Calls which attempt to terminate to a line with the DTM option receive denied terminating (DNTR) treatment.

RMI - Remote Message Indicator (continued)

The DTM feature has precedence over the RMI feature.

Distinctive Ringing Call Waiting (DRCW)

The DRCW feature provides subscribers with distinctive ringing when toll calls terminate on their DNs. Distinctive call waiting tones are also provided when subscribers receive toll calls.

The DRCW feature has the same interaction with RMI as CWT does. The CWT feature has precedence over the RMI feature. The exception is a subscriber who belongs to a customer group with the CFCW option. In this case, CWT alerting tones are allowed and callers receive a message waiting indication when the call is not answered.

Hunt Groups (DNH, DLH, and MLH)

Hunt groups involve the association of several lines. An incoming call to a busy station in a hunt group searches for an idle line within the group.

The RMI functionality is not provided if there is a redirection (AIN, CFBL) before reaching an RMI subscriber who is part of a hunt group.

Only CFD is supported when an ISDN line is part of a hunt group.

The RMI feature is compatible with Distributed Line Hunt (DLH), Multiline Hunt (MLH), and Distributed Number Hunt (DNH) hunt groups.

DLH and MLH hunt groups

Only the pilot member of DLH or MLH hunt groups can activate or deactivate the RMI functionality for the hunt group. The pilot DN must have the RMI, MWT, and CFGDA line options present and active in order for the RMI feature to function. When these conditions are met, direct calls to the pilot DN forward to the CFGDA forward-to DN. The calls forward after Tmsg seconds when there are messages waiting and after Tnomsg seconds when there are no messages waiting.

DNH hunt group

The pilot DN of a DNH hunt group can have RMI functionality. In this case, the RMI feature works in the same manner as it does with DLH and MLH hunt groups.

RMI is also available to DNH hunt groups on a per member basis. A member requires the RMI, MWT, and CFD/CFDA line options present and active in order for the RMI feature to function. Members can activate or deactivate the RMI feature only for their own lines.

RMI - Remote Message Indicator (continued)

In-Session Activation (ISA)

The In-Session Activation (ISA) feature allows operating companies to offer callers a menu of call completion services when a call encounters a busy or no-answer condition. ISA enables in-session callers to activate a call completion service from DTMF or dial-pulse sets without the need to hang up and remember an activation code.

If a call is intra-office and the RMI subscriber is assigned either CFBL/CFB, CFDA/CFD, or both features, then there is no feature interaction with ISA feature. In this situation the ISA feature does not start.

If a call to a RMI subscriber is inter-office, the ISA feature's activation is dependent on the network conditions obtained - i.e. busy or ring-no-answer (RNA). When the RMI subscriber's line is busy, RMI is not offered and there is no feature interaction between RMI and ISA.

When a RNA network condition is detected, ISA starts after the RNA timer expires. The RNA timer should therefore be set to a time greater than the RMI no message timer in order to prevent ISA from being offered when RMI is activated on the terminating subscriber line.

Note: The ISA RNA timer can be set from 12 to 72 seconds.

Long Distance Signal (LDS)

The Long Distance Signal (LDS) feature provides subscribers with distinctive ringing when toll calls terminate on their DNs.

The LDS feature interacts with RMI only in the case of lines that have the LDS, CWT and RMI options. The CWT feature has precedence over the RMI feature. The exception is a subscriber who belongs to a customer group with the CFCW option. In this case, CWT alerting tones are allowed and callers receive a message waiting indication when the call is not answered.

Local Number Portability (LNP)

Local Number Portability allows subscribers to change location, service provider, or service while maintaining their directory numbers and access to advanced calling features.

There is no feature interaction between RMI and LNP as long as the set of features on the original line also exists on the line ported to the DN. A ported DN is a DN that is no longer served by the original switch and so requires an AIN SCP database query for routing information.

RMI - Remote Message Indicator (continued)

In this scenario, RMI should not have started because the call was not placed by directly dialing the pilot DN.

Multiple Appearance Directory Number (MADN)

The MADN feature allows a single directory number to be associated with a group of subscriber lines. A call that terminates to a MADN group is presented to all members simultaneously.

The RMI option can be assigned to the primary DN of a MDN group that has the type `EXB' (extension bridging). The RMI feature starts as usual.

Screening List Editing (SLE) features (SCA, SCRJ, ACRJ, SCF, DRCW)

The Screening List Editing (SLE) features provide screening lists to subscribers. A set of SLE audio announcements is used for all instructions and prompts. The subscriber enters a one or two-digit command sequence in order to select actions to be performed. The screening lists are made up of valid directory numbers (DN).

All SLE features (SCA, SCRJ, ACRJ, SCR and DRCW) have precedence over the RMI feature. When a remote caller places a call to a RMI station where a selective feature option is active on the caller's DN, then message waiting indication is no longer provided because the number of audible ringback cycles is no longer controlled by the RMI feature.

Spontaneous Call Waiting Identification (SCWID) / Deluxe Spontaneous Call Waiting Identification (DSCWID)

Spontaneous Call Waiting Identification (SCWID) behaves in the same fashion as CWT. Both features allow a subscriber with a busy line to accept an incoming call. SCWID differs from CWT because it delivers calling party information (name or number) and a call waiting tone to the subscriber's set when there is an incoming call.

SCWID interacts with RMI in the same manner as CWT, thus refer to sections on the interaction between RMI and CWT.

DSCID differs from SCWID because it allows the subscriber to dispose an incoming call while busy with another call. For example, the disposition function can force the incoming call to be immediately forwarded to the VMS. This disposition would confuse the caller as to the meaning of the indication normally provided by the RMI feature.

Secondary Directory Numbers (SDN, ESDN)

Secondary Directory Number (SDN) and Enhanced Secondary Directory Number provide the subscriber with an additional directory number that can

function independently of options assigned to the primary directory number (PDN).

RMI does not interact with SDN since an SDN number cannot subscribe to a messaging service other than the one already provided by to the PDN. In such a case, the SDN must be of type P: follow PDN forwarding options.

ESDN lines can support the CFDA/CFD features, but not the MWT line option. ESDN lines cannot currently support RMI.

Subscriber Programmable CFDA/CFD (SPRING)

Subscriber Programmable CFDA/CFD (SPRING) allows subscribers to modify the time before an unanswered incoming call is forwarded to the Voice Messaging System (VMS).

RMI interacts with SPRING as follows:

- SPRING modifies the CFDA/CFD timers.
- RMI timers are not modified by SPRING.
- When RMI is deactivated, the timer value previously set by SPRING becomes in effect.
- When RMI is active, SPRING can be used to change the CFDA/CFD timer.
- RMI is deactivated when SPRING is used.

Activation/deactivation by the end user

RMI subscribers can use a single star access code to toggle between activation and deactivation. The code is *97/1197 from a Dial Tone Multi-Frequency (DTMF) set and 1197 from a Dial Pulse (DP) set. The subscribers must dial the access code from their home stations. If the request is accepted, subscribers hear a treatment to confirm that the state of RMI was changed. Distinct confirmation tones can distinguish between activation and deactivation. Feature Not Allowed treatment (FNAL) is provided if a request for activation or deactivation is not accepted.

The following conditions must be fulfilled in order for the request to be accepted:

- The RMI SOC state must be set to ON.
- The vertical access code (*97/1197) must be dialed from the line that is subscribed to the RMI feature, for example the subscriber's home station or the pilot group member of a DLH, DNH or MLH hunt group. In DNH

RMI - Remote Message Indicator (continued)

hunt groups, RMI can be activated or deactivated from a subscribed member's line.

- The subscriber must have RMICTRL assigned as the FEAT translation selector for the line's customer group in table IBNXLA.
- MWT and CFDA/CFD/CFGDA must be assigned to the line.

When the CFDACNTL/CFDCNTL field is set to `F' (fixed activation) and CFDA/CFD is inactive before the subscriber activates RMI, it is automatically re-activated by the RMI feature. Deactivation of RMI does not affect CFDA/CFD and it stays active if it was previously active. Deactivation of CFDA/CFD does not affect RMI and RMI stays active if it was previously active.

SPRING deactivates RMI when a subscriber changes the number of rings of the SPRING service while RMI is active on the subscriber's line. If RMI is activated after SPRING, RMI timers take precedence.

A system image dump does not affect subscriber activation and deactivation of the RMI feature.

Billing

RMI - Remote Message Indicator does not affect billing.

Station Message Detail Recording

RMI - Remote Message Indicator does not affect Station Message Detail Recording.

Datafilling office parameters

The following table shows the office parameters used by RMI - Remote Message Indicator. For more information about office parameters, refer to *Office Parameters Reference Manual.*

Office parameters used by RMI - Remote Message Indicator

Table name	Parameter name	Explanation and action
OFCENG	RMI_RING_TIMERS	This parameter contains the two timers for the RMI feature, MSG and NOMSG.

RMI - Remote Message Indicator (continued)

Datafill sequence

The following table lists the tables that require datafill to implement RMI - Remote Message Indicator. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for RMI - Remote Message Indicator

Table	Purpose of table
IBNFEAT	Table IBNFEAT contains the information that defines IBN line features.
KSETFEAT	Table KSETFEAT contains the information that defines KEYSET line features.
IBNXLA	Table IBNXLA contains the information used to translate the digits for calls from IBN stations.
TMTCNTL. TREAT	Subtable TMTCNTL.TREAT defines the tones, announcements, or states sent to the originator of a call when a treatment code is encountered during translation.

Datafilling table IBNFEAT

The following table shows the datafill specific to RMI - Remote Message Indicator for table IBNFEAT. Only those fields that apply directly to RMI - Remote Message Indicator are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table IBNFEAT

Field	Subfield or refinement	Entry	Explanation and action
DF		RMI	Data feature. Enter RMI for the RMI feature.
FEATURE		RMI	Data feature. Enter RMI for the RMI feature.
DATA	RMISTATE	I or A	Feature State. The RMISTATE subfield indicates the status of RMI on a line. It is set to `I' when RMI is inactive and it is set to `A' when RMI is active. There is no default.

Datafill example for table IBNFEAT

The following example shows sample datafill for table IBNFEAT.

RMI - Remote Message Indicator (continued)

MAP display example for table IBNFEAT

```
LEN DNNO DF FEATURE DATA
------------------------------------------------------
HOST 00 0 03 03 0 RMI RMI I
```

Datafilling table KSETFEAT

The following table shows the datafill specific to RMI - Remote Message Indicator for table KSETFEAT

Datafilling table KSETFEAT (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 section to avoid unnecessary duplication. Refer to `Common entry field LEN' for a complete description of field LEN and associated subfields. For ISDN lines, field LEN consists of subfield LTID. For non-ISDN lines, field LEN consists of subfields SITE, FRAME, UNIT, DRAWER, or LSG, SHELF, SLOT, and CIRCUIT.
KEY		1 to 69	Physical key. Enter the number associated with the physical key to which the feature is being assigned.
FEAT		RMI	Feature. Enter RMI for the Remote Message Indicator feature.
FEATURE		RMI	Feature. Enter RMI for the Remote Message Indicator feature.

Datafilling table KSETFEAT (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
KVAR		see subfields	Key variable area. KVAR contains many subfields. Separate each with a space
	RMISTATE	I or A	Feature State. The RMISTATE subfield indicates the status of RMI on a line. It is set to `I' when RMI is inactive and it is set to `A' when RMI is active. There is no default value.

Datafill example for table KSETFEAT

The following example shows sample datafill for table KSETFEAT.

MAP display example for table KSETFEAT

```
FEATKEY FEATURE KVAR
--------------------------------------------------------
ISDN 101 1 RMI RMI I
```

Datafilling table IBNXLA selector FEAT

The following table shows the datafill specific to RMI - Remote Message Indicator for table IBNXLA selector FEAT.

Datafilling table IBNXLA selector FEAT (Sheet 1 of 3)

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 that is assigned to the translator.

RMI - Remote Message Indicator (continued)

Datafilling table IBNXLA selector FEAT (Sheet 2 of 3)

Field	Subfield or refinement	Entry	Explanation and action
	DGLIDX	vector of up to 18 digits	Digilator index. Enter the digit or digits assigned as an ambiguous code. The range of this field depends on field MAXDIG in table XLANAME. The DGLIDX can accept overdecadic digits. The allowable values for the digilator portion of DGLIDX of table IBNXLA are as follows: 9 digits 0 to 9 C digits 0 to 9 and B to C F digits 0 to 9 and B to F The allowable digit range for table IBNXLA digilator values is determined for each translator.
RESULT		see subfields	Result. This field consists of subfield TRSEL, ACR, SMDR, VCDR and FEATURE.
	TRSEL	FEAT	Translation selector. Enter the translation selector FEAT.
	ACR	Y or N	Account code entry. Enter Y (yes) if an account code entry is required for all calls to the special feature access code. Enter N (no) when the feature is equal to SCPL or SCPS (see field FEATURE).

RMI - Remote Message Indicator (continued)

Datafilling table IBNXLA selector FEAT (Sheet 3 of 3)

Field	Subfield or refinement	Entry	Explanation and action
	SMDR	Y or N	Station message detail recording. Enter Y if all calls from a customer group station or attendant console to any station in the block of station numbers are recorded. Enter N if no recording is required. ***Note:*** If field SMDR is set to Y, only the feature that originates a call is SMDR recorded. This field has no effect and no SMDR record is produced for features that do not originate calls. For dump and restore purposes, an N must be datafilled after the SMDR field if field TRSEL is datafilled with NET, ROUTE, TTTR, AMBI, EXTN, CUTTD, or FEAT. The Station Message Detail Recording fields SMDR and SMDRB [TRKSEL=NET] can only be set to Y if the switching unit has the option SMDR_OFFICE set to Y in table OFCOPT. SMDR bills each leg of the call. The option must be turned on in IBN translations to generate SMDR billing. Turning on the option for one leg of the call does not carry over to another leg of the call. For example, when using virtual Facility groups (VFG) for routing SMDR must be turned on for the leg of the call that requires billing and must be routed through IBN translations. Neither SMDR nor SMDRB can be turned on for calls from plain ordinary telephone service (POTS) VFGs.
FEATURE		SCPS, SCPL, CFWP, CPU, RAG, TAFAS, PRKS, PRKR, ..., PRNRA, PRNRD, XXRTIG, RMICTRL	Value RMICTRL is added to the range of values for the FEATURE field of table IBNXLA. There is no default.

RMI - Remote Message Indicator (continued)

Datafill example for table IBNXLA selector FEAT

The following example shows sample datafill for table IBNXLA selector FEAT

MAP display example for tableIBNXLA selector FEAT

```
KEYRESULT
------------------------------------------------------
RESXLA 97 FEAT N N RMICTRL
```

Datafilling table TMTCNTL.TREAT

The following table shows the datafill specific to RMI - Remote Message Indicator for subtable TMTCNTL.TREAT

Datafilling table TMTCNTL.TREAT (Sheet 1 of 2)

Field	Subfield or refinement	Entry	Explanation and action
TREATMT		alphanumeric (1 to 4 characters) UNDT, NOSC, PDIL, PSIG, INAC, CNDT, VACT, MSCA, MSLC,.....ISAX, LNPM, QRNF, RMIA, RMID	Treatment. The values RMIA and RMID are added to the range of values for the TREATMT field of the TREAT subtable in table TMTCNTL. There is no default. Enter the treatment name.
LOG		Y or N	Log. Enter Y to turn on generation of a LINE138 log every time a call is routed to RMIA and RMID treatments. Enter N to turn off generation of a LINE138 log every time a call is routed to RMIA and RMID treatments.
FSTRTE		see subfields	First route. This field consists of subfields FSTRTSEL, EXTRTEID, and KEY.
	FSTRTSEL	S, T	First route selector. Enter the first route selector T.

RMI - Remote Message Indicator (continued)

Datafilling table TMTCNTL.TREAT (Sheet 2 of 2)

Field	Subfield or refinement	Entry	Explanation and action
	EXTRTEID	OFRT, OFR2, OFR3, or OFR4	External Route ID. Enter OFRT.
	KEY	1 to 1023	Key. Enter the index into the office route table which defines the route list for the treatment. The operating company cannot datafill the entry zero (0). Enter 910 for the RMIA treatment and enter 911 for the RMID treatment.

Datafill example for table TMTCNTL.TREAT

The following example shows sample datafill for subtable TMTCNTL.TREAT

MAP display example for table TMTCNTL.TREAT

```
TREATMT LOG FSTRTE
------------------------------------------------------
RMIA Y T OFRT 910
RMID Y T OFRT 910
```

Error messages for the RMI option

The following error message is added by the RMI feature.

Error messages for RMI - Remote Message Indicator

Error message	Explanation and action
`RMI can not be assigned to this LCC`	Assign the RMI line option to a line whose LCC is not supported by the RMI feature.

Translation verification tools

RMI - Remote Message Indicator does not modify translation verification tools.

RMI - Remote Message Indicator (continued)

SERVORD

SERVORD limitations and restrictions

RMI - Remote Message Indicator has no SERVORD limitations and restrictions.

SERVORD prompts

The following table shows the SERVORD prompts used to assign RMI - Remote Message Indicator to RES and ISDNKSET lines.

SERVORD prompts for RMI - Remote Message Indicator

Prompt	Valid input	Explanation
ADO	RMI	Add Option
CHF	RMI	Change Feature
DEO	RMI	Delete Option
NEW	(directory number)	New directory number
EST	(hunt group type)	Establish hunt group
RMISTATE	A, I	State of the RMI feature; Active or Inactive

SERVORD example for adding RMI - Remote Message Indicator to RES and ISDNKSET lines

The following SERVORD example shows how RMI - Remote Message Indicator is added to lines with a LCC of RES and ISDNKSET lines using the ado command.

RMI - Remote Message Indicator (continued)

SERVORD example for RMI - Remote Message Indicator in prompt mode

```
>servord
SO:
> ado
SONUMBER:  NOW 95 11 14 PM
> $
DN_OR_LEN:
> HOST 00 0 03 03
OPTION:
> RMI
RMISTATE:
> I
OPTION:
> $
COMMAND AS ENTERED:
ADO NOW 95 11 14 PM HOST 00 0 03 03 (RMI I) $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
> y
```

SERVORD example for RMI - Remote Message Indicator in no-prompt mode

```
> ado $ HOST 00 0 03 03 RMI I $
```

RMI - Remote Message Indicator (end)

SERVORD example for RMI - Remote Message Indicator on an ISDNKSET line in prompt mode

```
>servord
SO:
> ado
SONUMBER:  NOW 95 11 14 PM
> $
DN_OR_LEN:
> ISDN  100
OPTKEY:
> 1
OPTION:
> RMI
RMISTATE:
> I
OPTKEY:
>$
COMMAND AS ENTERD:
ADO NOW 95 11 14 PM ISDN 100 1 (RMI I) $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
> y
```

SERVORD example for RMI - Remote Message Indicator on an ISDNKSET line in no-prompt mode

```
> ado $ ISDN 100 1 RMI I $
```

Service Order Simplification for MADN Extension Bridging

Ordering codes

Functional group ordering code: RES00002

Functionality ordering code: RES00054

Release applicability

NA008 and up

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

Multiple Appearance Directory Number (MADN) Extension Bridging (EXB) is a RES feature that allows operating company personnel to assign the same directory number and features to two or more different line equipment numbers (LENs) using only software commands.

One common use for this feature is broadband loop bridging. As the utilization of integrated digital loop carriers and broadband facilities has increased, the need and frequency of use of this feature has also increased significantly.

This feature allows simplification of the Service Order System (SERVORD) capability associated with the administration of MADN EXB.

Operation

This feature simplifies SERVORD provisioning by creating seven SERVORD commands. These commands change the ability of MADN EXB provisioning from single members to the group as a whole. Refer to the SERVORD section of this document for examples of operation.

Translations table flow

The Service Order Simplification for MADN Extension Bridging does not affect translations table flow.

Service Order Simplification for MADN Extension Bridging (continued)

Limitations and restrictions

The following limitations and restrictions apply to Service Order Simplification for MADN Extension Bridging:

- The MADN EXB Servord commands associated with the Service Order Simplification for MADN Extension Bridging feature are only supported for MADN EXB groups.
- This feature datafills lines in the same way as if they were added through existing SERVORD commands. Therefore, any restrictions/limitations imposed by SERVORD are imposed by the all of these commands.
- Only POTS (such as 1FR, 1MR, or others) or RES line class codes (LCCs) are allowed that are compatible with MADN EXB.
- For EXBEST and EXBADD commands, the customer group and other line information for the new member, such as the LCC, subgroup, NCOS, SNPA, LATA name, and LTG, are the same as the Primary member.
- Secondary LENs that are added through EXBEST or EXBADD must be Hardware Assigned Software Unassigned (HASU).
- EXBADO, EXBDEO, and EXBCHG do not allow the MDN option to be manipulated or an error message is displayed.
- MADN EXB group size is limited to the maximum MADN group size, currently 32 members.

Interactions

Service Order Simplification for MADN Extension Bridging has no functionality interactions.

Activation/deactivation by the end user

Service Order Simplification for MADN Extension Bridging requires no activation or deactivation by the end user.

Billing

Service Order Simplification for MADN Extension Bridging does not affect billing.

Station Message Detail Recording

Service Order Simplification for MADN Extension Bridging does not affect Station Message Detail Recording.

Datafilling office parameters

Service Order Simplification for MADN Extension Bridging does not affect office parameters.

Service Order Simplification for MADN Extension Bridging (continued)

Datafill sequence

This enhancement does not add items to any table.

Translation verification tools

Service Order Simplification for MADN Extension Bridging does not use translation verification tools.

SERVORD

SERVORD limitations and restrictions

These SERVORD commands provide an efficient administration of the features and members of a MADN EXB group (not SCA/MCA/CACH) by handling the group as a whole. All current MADN EXB feature limitations/restrictions still apply.

SERVORD prompts

The following table shows the SERVORD prompts used to manipulate Service Order Simplification for MADN Extension Bridging.

SERVORD prompts for Service Order Simplification for MADN Extension Bridging

Prompt	Valid input	Explanation
CHANGETYPE	OPTIONS or PRIMARY	For command EXBCHG, this specifies the options being changed. OPTIONS changes an option across the whole group. PRIMARY changes an existing secondary member to the primary.
COPY_OPTIONS	Y or N	For commands EXBADD and EXBEST, if Y is entered, then all options are copied to all secondary members. If N is entered, then all secondary members will have no features at all.
GROUP_DN	Group DN	For commands EXBADD, EXBADO, EXBCHG, EXBDELG, EXBDELM, and EXBDEO, must be an assigned MADN EXB group. For command EXBEST, the DN must be unassigned or a valid POTS or RES phone.
INTERCEPT	BLDN, UNDN, ANCT, OPRT, AINT, or CAN	For commands EXBEST and EXBDELG, must be the type of intercept for outed DN.

Service Order Simplification for MADN Extension Bridging (continued)

SERVORD prompts for Service Order Simplification for MADN Extension Bridging

Prompt	Valid input	Explanation
NEW_PRIMARY_LEN	New primary LEN that is assigned to an existing secondary LEN of the group	For command EXBCHG, this is prompted for assigning an existing LEN as a primary.
OPTION	CWR or CWT	For commands EXBADO, EXBCHG, and EXBDEO, specifies options associated with a service to be established, modified, or deleted. A maximum of 20 options can be specified in any single command.
OUT_PRIMARY	Y or N	For command EXBDELG, specifies whether the primary LEN will be outed along with all members of the group.,
PRIMARY_LEN	Type is EXT_LEN.	For command EXBEST, prompted only when a free GROUP_DN has been entered. Valid POTS or RES LENs are allowed.
RING	Y or N	Specifies whether a ring is required from the telephone speaker in addition to the call-waiting tone heard from the handset.
SECONDARY	Secondary LEN	For command EXBDELM, must be a valid secondary member of the group. For commands EXBADD and EXBEST, must be Hardware Assigned Software Unassigned (HASU). Will be assigned as secondary member of the EXB group.

SERVORD example for adding Service Order Simplification for MADN Extension Bridging

The following SERVORD example shows the EXBADD command, with a secondary LEN added to an existing group.

Service Order Simplification for MADN Extension Bridging (continued)

Example of the EXBADD command in prompt mode

```
> EXBADD
SONUMBER: NOW 97 1 1 AM
> $
GROUP_DN
> 6218001

GROUP MEMBER LIST:
   Primary LEN - HOST 0 1 8 21
   SECONDARY_LENS:
     HOST 0 1 9 1

SECONDARY:
> 0 1 9 0
RING:
> Y
SECONDARY:
> $
COPY_OPTIONS:
> Y
COMMAND AS ENTERED:
EXBADD NOW 97 1 1 AM 6218001 (HOST 0 1 9 0) Y $ Y
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
> Y
```

Example of the EXBADD command in no-prompt mode

```
>EXBADD $ 6218001 HOST 0 1 9 0  Y   $  Y  Y
```

Query Line Equipment Number (QLEN) example for identifying features assigned to LENs before SERVORD changes

The following example shows a QLEN, where the command is used to identify features assigned before changes are made to the LEN.

Service Order Simplification for MADN Extension Bridging (continued)

Example of the QLEN command used before SERVORD EXBADD is implemented

```
> qlen 0 1 9 0
------------------------------------------------------------
TYPE: HARDWARE ASSIGNED SOFTWARE UNASSIGNED
CARDCODE:  6X17AC    GND: N  PADGRP: STDLN  BNV: NL MNO:
Y
PM NODE NUMBER     :    41
PM TERMINAL NUMBER :    289
------------------------------------------------------------

> qlen 0 1 9 1
------------------------------------------------------------
TYPE: HARDWARE ASSIGNED SOFTWARE UNASSIGNED
CARDCODE:  6X17AC    GND: N  PADGRP: STDLN  BNV: NL MNO:
Y
PM NODE NUMBER     :    41
PM TERMINAL NUMBER :    290
------------------------------------------------------------
```

Query Line Equipment Number (QLEN) example for identifying features assigned to LENs after SERVORD changes

The following example shows a QLEN, where the command is used to identify features removed after changes are made to the LEN.

Service Order Simplification for MADN Extension Bridging (continued)

Example of the QLEN command used after SERVORD EXBADD is implemented

```
> qlen 0 1 9 0
------------------------------------------------------
LEN:     HOST  00 1 09 00
TYPE: MULTIPLE APPEARANCE DIRECTORY NUMBER
SNPA: 613
DIRECTORY NUMBER:     6218001     (NON-UNIQUE)
LINE CLASS CODE:      1FR
IBN TYPE:  MADN
MADN INFO - TYPE:EXB  PRIMARY:N  RING:ALWAYS
CUSTGRP:          RESGRP  SUBGRP:0  NCOS: 2
SIGNALLING TYPE:  DIGITONE
LINE TREATMENT GROUP:     0
LINE ATTRIBUTE INDEX:         0
CARDCODE:  6X17AC    GND: N  PADGRP: STDLN  BNV: NL MNO:
Y
PM NODE NUMBER     :    41
PM TERMINAL NUMBER :    289
OPTIONS:
3WC DGT
RES OPTIONS:
MDN EXB N Y
```

Service Order Simplification for MADN Extension Bridging (continued)

Example of the QLEN command used after SERVORD EXBADD is implemented (continued)

```
> qlen 0 1 9 1
------------------------------------------------------------
LEN:     HOST  00 1 09 01
TYPE: MULTIPLE APPEARANCE DIRECTORY NUMBER
SNPA: 613
DIRECTORY NUMBER:     6218001     (NON-UNIQUE)
LINE CLASS CODE:      1FR
IBN TYPE:  MADN
MADN INFO - TYPE:EXB  PRIMARY:N  RING:NEVER
CUSTGRP:         RESGRP  SUBGRP:0  NCOS: 2
SIGNALLING TYPE:  DIGITONE
LINE TREATMENT GROUP:     0
LINE ATTRIBUTE INDEX:        0
CARDCODE:  6X17AC    GND: N  PADGRP: STDLN  BNV: NL MNO:
Y
PM NODE NUMBER     :    41
PM TERMINAL NUMBER :    290
OPTIONS:
3WC DGT
RES OPTIONS:
MDN EXB N N
```

SERVORD example for adding Service Order Simplification for MADN Extension Bridging CWT and CWR features

The following SERVORD example shows the EXBADO command, with the CWT and CWR features added.

Service Order Simplification for MADN Extension Bridging (continued)

Example of the EXBADO command in prompt mode

```
> EXBADO
SONUMBER: NOW 97 1 1 AM
> $
GROUP_DN:
> 6218001

ADD OPTIONS TO:
   PRIMARY LEN - HOST 0 1 8 21
   SECONDARY_LENS:
     HOST 0 1 9 0, HOST 0 1 9 1

OPTION:
> CWT
OPTION:
> CWR
OPTION:
> $
COMMAND AS ENTERED:
EXBADO NOW 97 1 1 AM 6218001 (CWT) (CWR) $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
> Y
```

Example of the EXBADO command in no-prompt mode

```
>EXBADO $ 6218001 CWT CWR $ Y
```

SERVORD example for changing Service Order Simplification for MADN Extension Bridging secondary member to a primary member

The following SERVORD example shows the EXBCHG command, with a secondary member changed to a primary member.

Service Order Simplification for MADN Extension Bridging (continued)

Example of the EXBCHG command in prompt mode

```
> EXBCHG
SONUMBER: NOW 97 1 1 AM
> $
GROUP_DN:
> 6218001

GROUP MEMBERS LIST:
   PRIMARY LEN - HOST 0 1 8 21
   SECONDARY_LENS:
     HOST 0 1 9 0, HOST 0 1 9 1

CHANGETYPE:
> PRIMARY
NEW PRIMARY LEN:
> HOST 0 1 9 0
CHANGE PRIMARY FROM: HOST 0 1 8 21 TO: HOST 0 1 9 0
COMMAND AS ENTERED:
EXBCHG NOW 97 1 1 AM 6218001 PRIMARY HOST 0 1 9 0
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
> Y
```

Example of the EXBCHG command in no-prompt mode

```
>EXBCHG $ 6218001  PRIMARY HOST 0 1 9 0  Y
```

SERVORD example for deleting Service Order Simplification for MADN Extension Bridging secondary members

The following SERVORD example shows the EXBDELG command, with all secondary members deleted.

Service Order Simplification for MADN Extension Bridging (continued)

Example of the EXBDELG command in prompt mode

```
> EXBDELG
SONUMBER: NOW 97 1 1 AM
> $
GROUP_DN:
> 6218001

GROUP MEMBER LIST:
   PRIMARY LEN - HOST 0 1 8 21
   SECONDARY_LENS:
     HOST 0 1 9 0, HOST 0 1 9 1

OUT_PRIMARY:
> N
COMMAND AS ENTERED:
EXBDELG NOW 97 1 1 AM 6218001 N
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
> Y
```

Example of the EXBDELG command in no-prompt mode

```
> EXBDELG $ 6218001  N  Y
```

SERVORD example for deleting Service Order Simplification for MADN Extension Bridging secondary LENs

The following SERVORD example shows the EXBDELM command, with secondary LENs deleted.

Service Order Simplification for MADN Extension Bridging (continued)

Example of the EXBDELM command in prompt mode

```
> EXBDELM
SONUMBER: NOW 97 1 1 AM
> $
GROUP_DN:
> 6218001

GROUP MEMBER LIST:
   PRIMARY LEN - HOST 0 1 8 21
   SECONDARY LENS:
     HOST 0 1 9 0 , HOST 0 1 9 1

SECONDARY:
> 0 1 9 0
SECONDARY:
> $
COMMAND AS ENTERED:
EXBDELM NOW 97 1 1 AM 6218001 ( HOST 0 1 9 0 ) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
> Y
```

Example of the EXBDELM command in no-prompt mode

```
>EXBDELM $ 6218001 HOST 0 1 9 0 $ Y
```

SERVORD example for deleting Service Order Simplification for MADN Extension Bridging features from a group

The following SERVORD example shows the EXBDEO command, with features deleted from a group.

Service Order Simplification for MADN Extension Bridging (continued)

Example of the EXBDEO command in prompt mode

```
> EXBDEO
SONUMBER: NOW  97 1 1 AM
> $
GROUP_DN:
> 6218001

DELETE OPTIONS FROM :
   PRIMARY LEN - HOST 0 1 8 21
   SECONDARY LENS:
     HOST 0 1 9 0 , HOST 0 1 9 1

OPTION:
> CWR
OPTION:
> $
COMMAND AS ENTERED:
EXBDEO NOW 97 1 1 AM 6218001 (CWR ) $
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
> Y
```

Example of the EXBDEO command in no-prompt mode

```
>EXBDEO $ 6218001 CWR $ Y
```

SERVORD example for creating a MADN EXB group, adding secondary members, and copying primary LENS and adding those to secondary LENs for Service Order Simplification for MADN Extension Bridging

The following SERVORD example shows the EXBEST command, with a MADN EXB group created, secondary members added, and features from primary LENs copied and added to secondary LENs.

Service Order Simplification for MADN Extension Bridging (continued)

Example of the EXBEST command in prompt mode

```
> EXBEST
SONUMBER: NOW 97 1 1 AM
> $
GROUP_DN:
> 6218001

Primary LEN is HOST 00 1 8 21

SECONDARY:
> HOST 0 1 9 0
RING:
> N
SECONDARY:
> $
COPY_OPTIONS:
> Y
COMMAND AS ENTERED:
EXBEST NOW 97 1 1 AM 6218001 (HOST 0 1 9 0 N) (HOST 0 1 9
1 N) $ Y
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
> Y
```

Example of the EXBEST command in no-prompt mode

```
>EXBEST $ 6218001 HOST 0 1 9 0 N $ Y Y
```

SERVORD example for creating a MADN EXB group for Service Order Simplification for MADN Extension Bridging

The following is an example of the EXBEST command, with a MADN EXB group created and the DN given for GROUP_DN is free. Therefore the prompt PRIMARY_LEN is used to specify the existing POTS LEN that will be the primary for the group. In this example, the POTs original DN is sent to the treatment specified by the INTERCEPT_NAME prompt.

Service Order Simplification for MADN Extension Bridging (end)

Example of the EXBEST command in prompt mode

```
> EXBEST
SONUMBER: NOW  97 1 1 AM
> $
GROUP_DN:
>  6218001
PRIMARY_LEN:
>HOST  00 1 8 21
SECONDARY:
>0 1 9 0
RING:
> Y
SECONDARY:
> 0 1 9 1
RING:
>  N
SECONDARY:
 >$
COPY_OPTIONS:
> Y
INTERCEPT_NAME:
> BLDN
COMMAND AS ENTERED:
EXBEST NOW 97 1 1 AM 6218001 HOST 0 1 8 21 (HOST 0 1 9 0
Y) (HOST 0 1 9 1 N) $ Y BLDN
ENTER Y TO CONFIRM,N TO REJECT OR E TO EDIT
> Y
```

Example of the EXBEST command in no-prompt mode

```
>EXBEST $  6218001  HOST 00 1 8 21  0 1 9 0  Y 0 1 9 1  N  $  Y  BLDN  Y
```

Single Line Variety Package (SLVP)

Ordering codes

Functional group ordering code: RES00002

Functionality ordering code: not applicable

Release applicability

BCS31 and up

Prerequisites

To operate, Single Line Variety Package (SLVP) has the following prerequisites:

- BAS Generic, BAS00003
- MDC Standard, MDC00003
- MDC Minimum, MDC00001
- RES Service Enablers, RES00006

Description

The Single Line Variety Package (SLVP) feature provides for single party lines with multiple extensions sharing the same directory number (DN). Line option SLVP provides three different features, as follows:

- SLVP Intercom
- SLVP Transfer
- SLVP Hold

Four access codes have been defined for this feature.

SLVP Intercom

The SLVP Intercom feature allows the subscriber to dial an access code, ring all the extensions of that DN, and speak with anyone who picks up on these extensions.

The subscriber can dial any one of three access codes, depending on the type of ringing that is applied to the extensions.

SLVP Transfer

The SLVP Transfer feature allows the subscriber to transfer a non-SLVP call to one of the extensions.

The subscriber can dial any one of three access codes, depending on the type of ringing that is to be applied to the extensions.

SLVP Hold

The SLVP Hold feature allows the subscriber to place a non-SLVP call on hold by dialing an SLVP Hold access code. The call is reconnected when any one of the extensions goes off-hook.

Operation

Four access codes have been defined for this feature. The first three access codes are used to determine what type of distinctive ringing should be applied to the line for SLVP Intercom and SLVP Transfer feature activation. The fourth access code is used to activate the SLVP Hold feature.

SLVP Intercom

To activate the SLVP Intercom feature, the subscriber goes off-hook, dials the desired access code, hears confirmation tone followed by dial tone, and then goes on-hook.

After hearing dial tone, the subscriber has a maximum of 20 s to go on-hook; otherwise, the SLVP Intercom request is canceled.

When the subscriber goes on-hook, the extensions ring until one of the following events occurs:

- one of the extensions goes off-hook
- a timer expires (The time duration is determined by office parameter SLVP_RCHD_TIMER.)

Once an extension goes off-hook, ringing is removed from all extensions, and any other extension that goes off-hook thereafter can join the conversation. If no extensions go off-hook prior to the expiration of the timer, ringing is removed from the line, and the line is idled.

Once an SLVP Intercom transaction is complete, the line is idled only after every extension has gone on-hook.

SLVP Transfer

To activate the SLVP Transfer feature while an active non-SLVP call is on the line, the subscriber performs the following actions:

- Press the switchhook. (The party on the other end is temporarily placed on hold.)
- Receive dial tone.

Single Line Variety Package (SLVP) (continued)

- Dial one of the access codes.
- Hear confirmation tone followed by dial tone.
- Go on-hook.

Note: The non-SLVP call can be one that the subscriber originated or one that the subscriber received.

After hearing dial tone, the subscriber has a maximum of 20 s to go on-hook; otherwise, the SLVP Transfer request is canceled ,and the held party is reconnected to the line.

When the subscriber goes on-hook, the extensions ring and any extension that goes off-hook is connected to the transferred call.

The extensions continue ringing until one of the following events occurs:

- one of the extensions goes off-hook
- the party being transferred goes on-hook
- a timer expires (The time duration is determined by office parameter SLVP_RCHD_TIMER.)

Once an extension goes off-hook, ringing is removed from all the extensions. If no extensions go off-hook, or if the transferred party goes on-hook, ringing is removed from the line and the line is idled.

Once the call is transferred, normal disconnect methods are used upon release.

SLVP Hold

To activate the SLVP Hold feature for a non-SLVP call, the subscriber presses the switchhook, receives second dial tone, dials the SLVP Hold access code, hears confirmation tone followed by dial tone, and then goes on-hook. The subscriber has a maximum of 20 s to go on-hook; otherwise, the SLVP Hold request is canceled, and the held party is reconnected.

When a call is placed on hold, the extensions are rung periodically as a reminder that a call is on hold. The time between rings is determined by office parameter SLVP_RCHD_TIMER.

Single Line Variety Package (SLVP) (continued)

Once the subscriber goes on-hook, the call is held until one of the following events occurs:

- one of the extensions goes off-hook
- the held party goes on-hook
- a timer expires (The time duration is determined by office parameter SLVP_RCHD_TIMER.)

Once an extension goes off-hook, the held party is immediately reconnected. If no extensions go off-hook prior to expiration of the timer, or if the held party goes on-hook, the held party goes through the normal disconnect sequence, and the call is abandoned.

Translations table flow

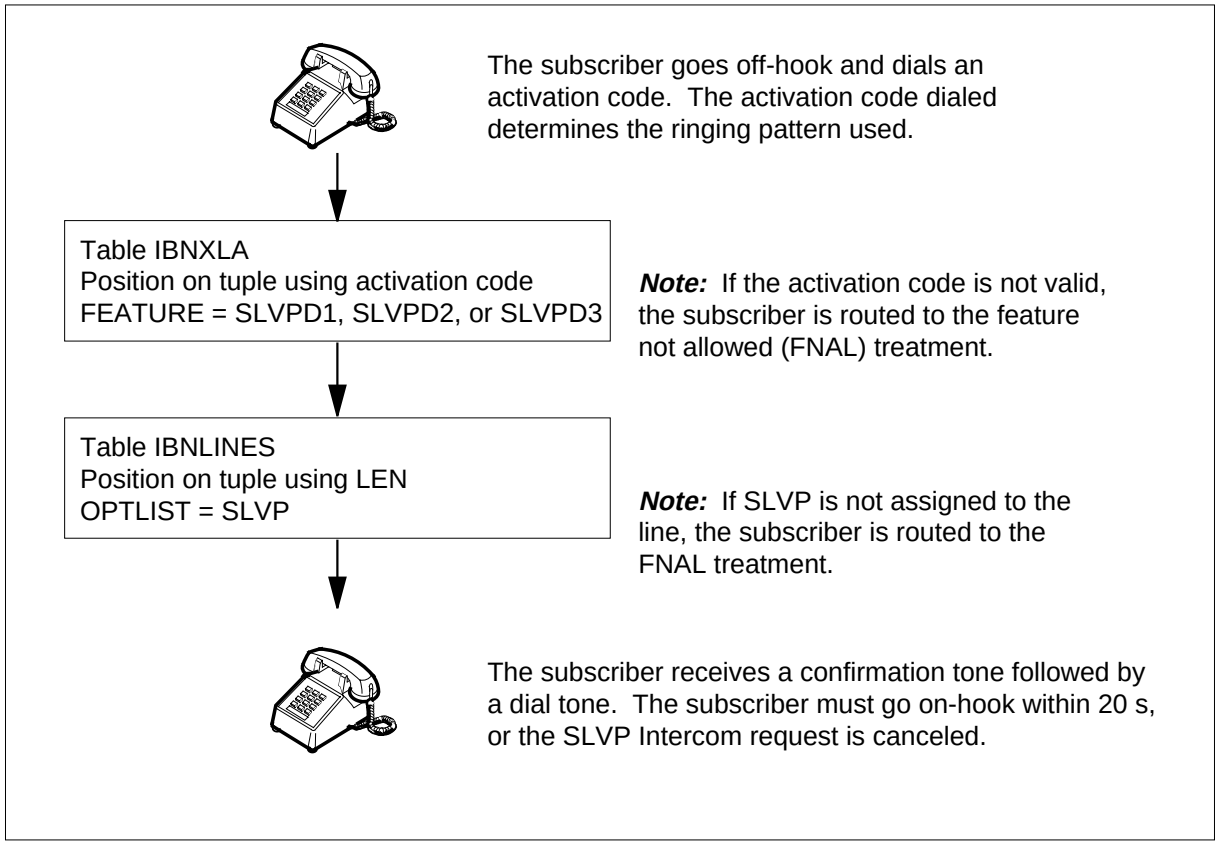
The Single Line Variety Package (SLVP) translations tables are described in the following list:

- Table IBNXLA provides the name of the feature associated with an activation code.
- Table IBNLINES lists the features assigned to a line equipment number (LEN).

The Single Line Variety Package (SLVP) Intercom translation process is shown in the flowchart that follows.

Single Line Variety Package (SLVP) (continued)

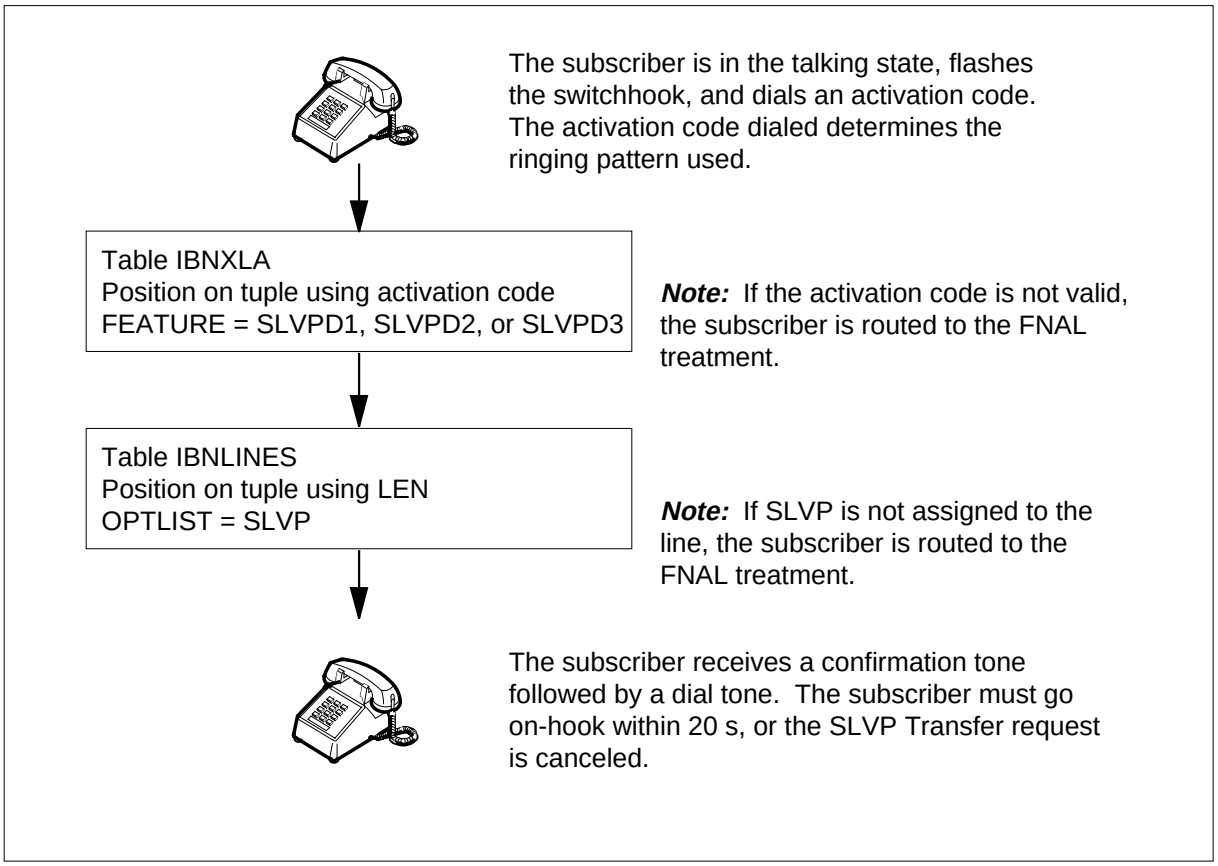
Table flow for Single Line Variety Package (SLVP)Intercom



The Single Line Variety Package (SLVP) Transfer translation process is shown in the flowchart that follows.

Single Line Variety Package (SLVP) (continued)

Table flow for Single Line Variety Package (SLVP)Transfer



The following table lists the datafill content used in the flowchart. The LEN of subscriber is HOST 00 02 0 05 and the SLVP activation codes are 75(SLVPD1), 76(SLVPD2), and 77(SLVPD3).

Datafill example for Single Line Variety Package (SLVP)

Datafill table	Example data
IBNXLA	RXCFN 75 FEAT N N N SLVPD1
	RXCFN 76 FEAT N N N SLVPD2
	RXCFN 77 FEAT N N N SLVPD3
IBNLINES	HOST 00 02 0 05 0 DT STN RES 6210012 100 (SLVP) $

Single Line Variety Package (SLVP) (continued)

Limitations and restrictions

The following limitations and restrictions apply to Single Line Variety Package (SLVP):

- The SLVP feature is supported only on Subscriber Services (RES) lines or on lines that can be converted to Subscriber Services lines and support flash options.
- The SLVP feature is incompatible with RES Inward WATS (INW) line class codes (LCC) or any multiparty, coin, and private branch exchange (PBX) lines, and lines that exist in a hunt group.
- The SLVP feature is incompatible with the following line options:
  - AUL
  - DOR
  - DTM
  - RCHD
  - the following hunt group options:
    - BNN
    - CFGD
    - CFGDA
    - CIR
    - DLH
    - DNH
    - LDTPSAP
    - LINEPSAP
    - LOD
    - LOR
    - MLH
    - OFR
    - OFS
    - TERM
    - TFO
    - TLS
    - TME

- TRMBOPT
- PILOT
- UCD

The SLVP feature uses distinctive ringing. This type of ringing has only limited support on line peripherals that use frequency selective ringing (FSR). For these peripherals, only the first ringing pattern (SLVPD1) is supported. In addition, distinctive ringing invoked via SLVP is not supported on line modules (LMs).

Lines with option SLVP cannot use the second and third ringing patterns normally offered to SLVP lines. The second and third ringing patterns can still be datafilled for SLVP lines, but the lines always receive the first ringing pattern regardless of the access code that is dialed.

Interactions

The following paragraphs describe the interactions between Single Line Variety Package (SLVP) and other functionalities.

Call Forwarding

SLVP does not affect the way Call Forwarding works. If the line has Call Forward Busy and the SLVP feature is active, calls to that line are forwarded. The same applies to Call Forward All.

Call Waiting

In order to receive a Call Waiting (CWT) tone, a line must be in the talking state with another directory number (DN). During an SLVP session, no other DN is involved. Therefore, CWT is not provided during the activation of SLVP Intercom, SLVP Transfer, or SLVP Hold.

Calling Name Delivery and Calling Number Delivery

During an SLVP session, names and numbers are not delivered, regardless of whether Calling Name Delivery (CNAMD) and Calling Number Delivery (CND) are available. Specifically, while SLVP Hold is active, names and numbers are not displayed when the reminder ring is given.

Teen Service

SLVP uses the same ringing pattern as Teen Service. Therefore, if the line has both these options, there is no way to determine which service is applying the ringing based on the ringing pattern only.

Three-Way Calling

Three-Way Calling (3WC) is not permitted during an SLVP Intercom session.

Single Line Variety Package (SLVP) (continued)

Activation/deactivation by the end user

SLVP Intercom, SLVP Transfer, and SLVP Hold activation sequences are described in this section.

Activation/deactivation of Single Line Variety Package (SLVP)Intercom by the end user

The following procedure shows how to activate SLVP Intercom.

At your telephone:

1. Go off-hook and dial the SLVP Intercom access code.

   Response:

   Receive confirmation tone followed by dial tone.

2. Go on-hook.

   Response:

   The Single Line Variety Package (SLVP) Intercom is activated.

Activation/deactivation of Single Line Variety Package (SLVP) Transfer by the end user

The following procedure shows how to activate SLVP Transfer.

At your telephone:

1. Press the switchhook.
2. Dial the SLVP Transfer access code.

   Response:

   Receive confirmation tone followed by dial tone.

3. Go on-hook.

   Response:

   The Single Line Variety Package (SLVP) Transfer is activated.

Activation/deactivation of Single Line Variety Package (SLVP) Hold by the end user

The following procedure shows how to activate SLVP Hold.

At your telephone:

1. Press the switchhook.

   Response:

   Receive a second dial tone.

2. Dial the SLVP Hold access code.

   Response:

   Receive confirmation tone followed by dial tone.

3. Go on-hook.

   Response:

   The Single Line Variety Package (SLVP) Hold is activated.

Billing

Single Line Variety Package (SLVP) does not affect billing.

Station Message Detail Recording

Single Line Variety Package (SLVP) does not affect Station Message Detail Recording.

Datafilling office parameters

Office parameter SLVP_RCHD_TIMER specifies the following:

- the maximum amount of time that the extensions can remain ringing before the feature request is canceled
- the amount of time between rings to remind the subscriber that a call is on hold

Note 1: Due to timing limitations in the peripherals, it is possible that a reminder may ring the line with two short rings instead of one.

Note 2: Note that changing the value of the SLVP_RCHD_TIMER office parameter requires a cold restart.

Note 3: Changes to MAX_RING _DURATION and INTER_RING_DELAY take effect immediately. Subscribers with SLVP may notice a change in the frequency of their reminder rings. To avoid this situation, make changes to the SLVP_RCHD_TIMER office parameter during low traffic periods.

Single Line Variety Package (SLVP) (continued)

The following table shows the office parameters used by Single Line Variety Package (SLVP). For more information about office parameters, refer to *Office Parameters Reference Manual*.

Office parameters used by Single Line Variety Package (SLVP)

Table name	Parameter name	Explanation and action
OFCVAR	SLVP_RCHD_TIMER	Max_ring_duration.This field determines the maximum amount of time (in seconds) that the extensions can ring when the SLVP Intercom or SLVP Transfer feature is activated or no extensions go off-hook. This field also determines the maximum amount of time (in seconds) that a call can remain on hold when the SLVP Hold feature is activated before the call is abandoned. Inter_ring_delay.This field specifies the amount of time (in seconds) between reminder rings when a call is on hold. After the last reminder ring, the originator has 15 s to retrieve the call before the call is taken down.

Datafill sequence

The following table lists the tables that require datafill to implement Single Line Variety Package (SLVP). The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Single Line Variety Package (SLVP)

Table	Purpose of table
OPTCTL	Option Control Table. Table OPTCTL does not require any datafill by the operating company. This table is automatically datafilled when the NTXF82AA feature package is added to the switch.
IBNLINES	IBN Line Assignment Table. Table IBNLINES contains the line assignments for Subscriber Services station numbers. ***Note:*** This table is datafilled through SERVORD; therefore, no datafill procedure or example is provided.
IBNXLA	IBN Translations Table. Table IBNXLA contains the data for the digit translations of calls from an MDC station, attendant console (AC), incoming trunk group, or incoming side of a two-way MDC trunk group.

Datafilling table OPTCTL

Table OPTCTL (Option Control) does not require any datafill by the operating company. This table is automatically datafilled when the NTXF82AA feature package is added to the switch.

The addition of the NTXF82 tuple to Table OPTCTL, shown in the following example, allows the operating company to provide pricing for the SLVP feature on a line-by-line basis.

The following table shows the datafill specific to Single Line Variety Package (SLVP) for table OPTCTL. Only those fields that apply directly to Single Line Variety Package (SLVP) are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table OPTCTL

Field	Subfield or refinement	Entry	Explanation and action
NTXPKG		NTXF82	NT package number. This field shows the feature package number.
LASTCHG		YYYY/MM/DD	Last changed. This field shows the date when this tuple was last changed.
MAXCOUNT		0 to 4294967295	Maximum count. This field specifies the maximum number of lines that can have one or more option and LCC pairs listed in the field OPTLIST, and is datafilled on a 100-line grouping basis. Default value is 999999.
ACTCOUNT		numeric	Actual count. This field specifies the number of lines assigned with one or more option and LCC pairs listed in field OPTLIST.
OPTLIST		see subfields	Option list. This field show the option and LCC for pricing control with the package. This field is made up of subfields OPT and LCC.
	OPT	SLVP	Line options. This subfield shows the line options used for pricing control.
	LCC	RES	Line class code. This subfield shows the line class codes used for pricing control.

Datafill example for table OPTCTL

The following example shows sample datafill for table OPTCTL.

Single Line Variety Package (SLVP) (continued)

MAP display example for table OPTCTL

```
NTXPKG      LASTCHG     MAXCOUNT     ACTCOUNT     OPTLIST
_____________________________________________________________

NTXF82     1990/01/01   999999         0       (SLVP RES) $
```

Datafilling table IBNXLA

Table IBNXLA (IBN Translations) contains the data for the digit translations of calls from an MDC station, attendant console (AC), incoming trunk group, or incoming side of a two-way MDC trunk group.

Table IBNXLA is modified to add the following selectors to field FEATURE:

- SLVPD1
- SLVPD2
- SLVPD3
- SLHOLD

The first three selectors are used by the SLVP Intercom and SLVP Transfer features to choose one of the three distinctive ringing patterns, which are determined by the access code dialed. The fourth selector, SLHOLD, is used for the SLVP Hold feature.

The following table shows the datafill specific to Single Line Variety Package (SLVP) for table IBNXLA. Only those fields that apply directly to Single Line

Single Line Variety Package (SLVP) (continued)

Variety Package (SLVP) are shown. 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		see subfields	Key. This field consists of the subfields XLANAME and DGLIDX. These subfields are described below and must be entered in succession.
	XLANAME	alphanumeric (1 to 8 characters)	Translator name. This subfield specifies the 1- to 8-character name assigned to the translator as the access code. Enter the translator name.
	DGLIDX	nn (2 digit numeric code)	Digilator index. This subfield specifies the digit or digits assigned to the index. Enter a 2-digit access code.
RESULT		see subfields	Result. This field consists of the subfields TRSEL, ACR, SMDR, and FEATURE. These subfields are described below.
	TRSEL	FEAT	Translation selector. This subfield specifies the translation selector. Enter FEAT.
	ACR	Y or N	Account code entry. This subfield specifies whether or not an account code entry is required. Enter Y or N.
	SMDR	Y or N	Station message detail recording. This subfield specifies whether or not SMDR is required for calls originated by a customer group station or an attendant console. Enter Y or N.
	FEATURE	SLHOLD, SLVPD1, SLVDP2, or SLVDP3	Feature. This subfield specifies the feature assigned to the access code. Enter SLHOLD, SLVPD1, SLVPD2, or SLVPD3.

Datafill example for table IBNXLA

The following example shows sample datafill for table IBNXLA.

Single Line Variety Package (SLVP) (continued)

MAP display example for table IBNXLA

```
KEY                          RESULT
_____________________________________________________________

  RXCFN    75     FEAT  N  N  N SLVPD1
  RXCFN    76     FEAT  N  N  N SLVPD2
  RXCFN    77     FEAT  N  N  N SLVPD3
  RXCFN    78     FEAT  N  N  N SLHOLD
```

SLVP distinctive ringing patterns

The SLVP distinctive ringing patterns are listed in the following table. These ringing patterns are supported on the following peripheral types: LM, RLM, LCM, and RLCM.

Ringing patterns associated with SLVP access codes using distinctive ringing

Selector	Ringing pattern
SLVPD1	2 long rings (For peripherals with Frequency Selective Ringing [FSR], this ringing pattern is 2 short rings.)
SLVPD2	2 short rings, 1 long ring
SLVPD3	1 short ring,1 long ring, 1 short ring

The ringing durations for each ringing pattern are listed below.

Ringing durations

Ringing Type	Long ring	Short ring	Inter-ring silence
Superimposed	0.92 s	0.46 s	0.46 s
Coded 20 Hz	1.00 s	0.50 s	0.50 s
Coded 30 Hz	0.90 s	0.45 s	0.45 s
FSR	N/A	0.60 s (first ring) 0.70 s (second ring)	0.65 s

Single Line Variety Package (SLVP) (continued)

Translation verification tools

The following example shows the output from TRAVER (translations verification) command when it is used to verify Single Line Variety Package (SLVP).

TRAVER command output example for Single Line Variety Package (SLVP)

```
TRAVER  L  6211233  'B77' B
TABLE IBNLINES
   HOST 00 0 09 07 0 DP STN RES 6211233 0 $
TABLE LINEATTR
   0 1FR NONE NT FR01 0 613 P621 L613 TSPS 0 NIL NILSFC
LATA1 0 NIL NIL 00 Y RESGRP 0 2
   LCABILL OFF – BILLING DONE ON BASIS OF CALLTYPE
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
TUPLE NOT FOUND
TABLE NCOS
RESGRP 2 0 0 RNCOS2 ( XLAS RXCMN2 NXLA RES ) $
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND
DIGCOL
RESGRP NXLA RESXLA RXCFN 0 RES
TABLE DIGCOL
   RES SPECIFIED: RES DIGIT COLLECTION
NCOS FEAT XLA NAME IS NIL.  GO TO NEXT XLA NAME.
TABLE IBNXLA: XLANAME RXCFN
   RXCFN 77 FEAT N N N SLVPD3

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

SERVORD

SERVORD is used to add or delete option SLVP to or from a Subscriber Services line.

SERVORD limitations and restrictions

Single Line Variety Package (SLVP) has no SERVORD limitations and restrictions.

Single Line Variety Package (SLVP) (end)

SERVORD prompts

The following table shows the SERVORD prompts used to add Single Line Variety Package (SLVP) to a line.

SERVORD prompts for Single Line Variety Package (SLVP)

Prompt	Valid input	Explanation
OPTION	SLVP	Specifies the service to be added, modified, or deleted

SERVORD example for adding Single Line Variety Package (SLVP)

The following SERVORD example shows how Single Line Variety Package (SLVP) is added to a line using the ADO command.

SERVORD example for Single Line Variety Package (SLVP) in prompt mode

```
>SERVORD
SO:
> ADO
SONUMBER:  NOW 87 11 23 AM
>
DN_OR_LEN:
> 6215002
OPTION:
> SLVP
OPTION:
>$
COMMAND AS ENTERED:
ADO NOW 87 11 23 AM 6215002 (SLVP) $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
> Y
```

SERVORD example for Single Line Variety Package (SLVP) in no-prompt mode

```
>ADO $ 6215002 SLVP $ Y
```

SPRING Enhancements

Ordering codes

Functional group ordering code: RES00002

Functionality ordering code: RES00037

Release applicability

SPRING Enhancements was introduced in NA005.

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

SPRING Enhancements supplies extended capabilities to Subscriber Programmable Ringing (SPRING) for CFDA that enables end users to determine the number of rings that occurs at their stations before an incoming call is forwarded to another directory number (DN). Refer to Subscriber Programmable Ringing for CFDA (SPRING).

SPRING Enhancements supports the following improvements:

- recorded announcements
- remote access
- 0 and 1 ring options
- operational measurements (OM)
- telephone operating company personnel control over the minimum ring value and the delivery of reminder ring on 0 ring option
- software optionality control (SOC)

Operation

SPRING Enhancements provides additional support to comply with Bellcore Specification GR-1520-CORE on ring control.

Recorded announcements

SPRING Enhancements enables telephone operating company personnel to control whether SPRING end users access announcements or their corresponding tones. Announcement type RCTL (ring control) is added to the range of values in table ANNS (Announcement) to specify SPRING.

SPRING Enhancements (continued)

The following table lists the announcements introduced by SPRING Enhancements.

SPRING recorded announcements

GR-1520-CORE announcement reference number	Purpose	Announcement	Corresponding tone
1	Prompts end user to enter a new ring control value	“Please enter the number of rings Call Forwarding Don't Answer should wait before forwarding calls."	Special dial tone
2	Prompts end user to enter a DN	“Please enter the telephone number for which the ring control value is to be changed."	Special dial tone
3	Indicates that an invalid ring control value has been entered	“The number of rings must be one of zero through nine."	Reorder tone
4	Indicates that an invalid DN has been entered	“The telephone number you have entered is not valid."	Reorder tone
5	Confirm change made by end user	“The number of rings has been changed."	Confirmation dial tone
6 (Note 1)	Not applicable	Not applicable	Not applicable
7 (Note 2)	Not applicable	Not applicable	Not applicable

Note 1: This announcement indicates that end user input digits have been cleared. (SPRING Enhancements does not support digit clearing.)

Note 2: This announcement indicates that a digit counter threshold has been exceeded. (SPRING Enhancements allows only one attempt to enter data correctly and, therefore, does not require an invalid digits counter.)

Remote access support

SPRING Enhancements enables an end user to change the ring count setting for a DN other than the one he or she is using. A feature selector, RCTL, is added to table DNROUTE (Directory Number Route) to enable SPRING remote access for end users. Refer to the “Activation/deactivation by the end user" section for details.

SPRING Enhancements (continued)

Support for 0 and 1 ring options

SPRING Enhancements enables end users to select the number of rings (from zero to nine) received at their stations before an incoming call is forwarded to another DN.

Operational measurements

SPRING Enhancements introduces operational measurements (OM) group SPRING, which contains the following OM registers. (For more information, refer to *Operational Measurements Reference Manual*.)

- RCTRLLA (Ring Control Local Activation) counts the number of times an end user dials the SPRING access code.
- RCTRLRA (Ring Control Remote Activation) counts the number of times an end user dials the SPRING remote access DN.
- RCTRLSLA (Ring Control Successful Local Activation) counts the number of times an end user successfully activates the SPRING feature using an access code.
- RCTRLSRA (Ring Control Successful Remote Activation) counts the number of times an end user successfully activates the SPRING feature using a remote access DN.
- RCTRLFA (Ring Control Failed Activation) counts the number of times an end user is denied local or remote access to the SPRING feature as a result of unavailable resources.

Note: SPRING Enhancements can cause call forward pegs, other than those for Call Forwarding Do Not Answer (CFDA), to be counted when office parameter RINGCTRL_ZERO_CAN_RING in table OFCENG is set to zero.

Ring control

SPRING Enhancements introduces office parameters RINGCTRL_MIN_VALUE and RINGCTRL_ZERO_CAN RING, which enable telephone operating company personnel to control the minimum ring value and the delivery of reminder ring on 0 ring option. Refer to the “Datafilling office parameters" section for details.

Software optionality control

SPRING Enhancements uses software optionality control (SOC) for activation. With SOC, SPRING Enhancements is either idle (that is, it is available, but not functional) or on (that is, it is fully functional). The default value is idle.

SPRING Enhancements (continued)

SPRING Enhancements can be activated or deactivated once the key code is received for the option and right to use (RTU), which has a setting of yes or no, is assigned to the feature.

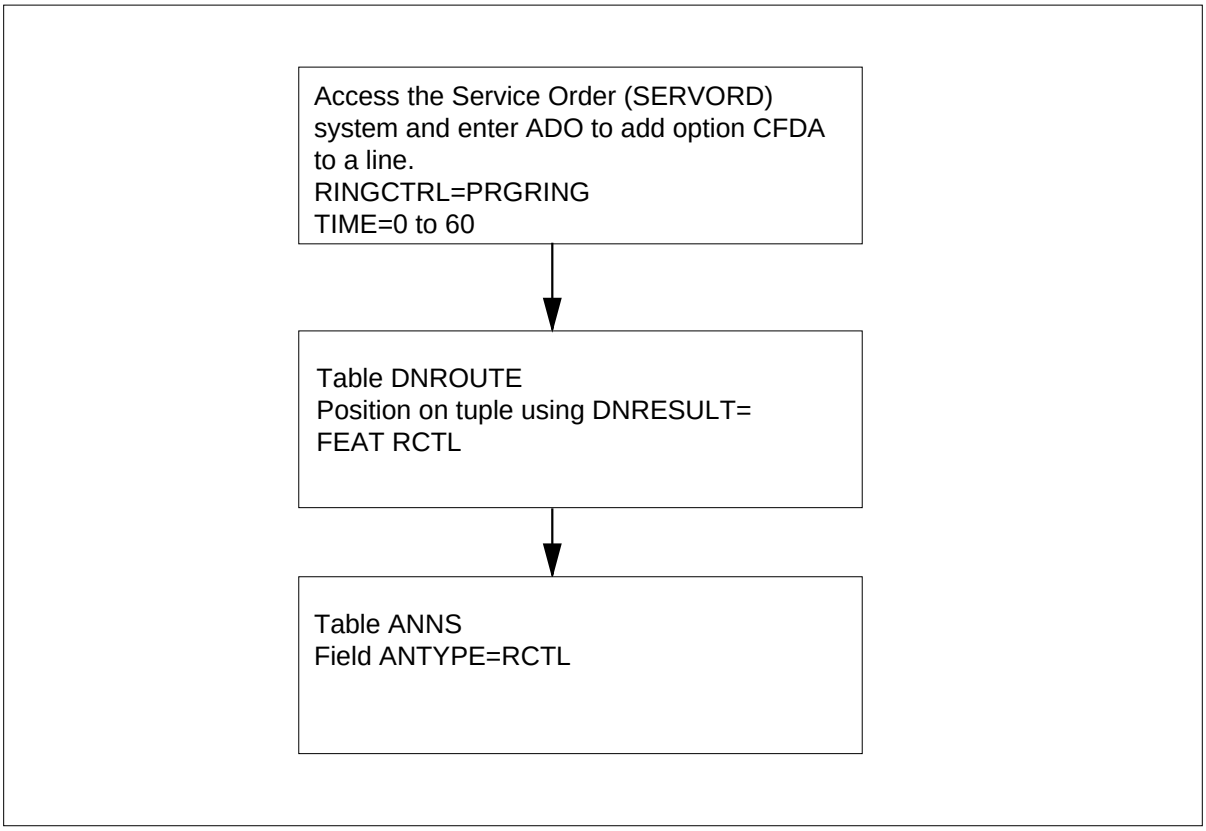
Translations table flow

The SPRING Enhancements translations tables are described in the following list:

- Table IBNFEAT specifies the minimum CFDA time-out value, 0 seconds.
- Table DNROUTE specifies the feature identifier, SPRING.
- Table ANNS (Announcement) contains the announcements provided when SPRING is accessed.

The SPRING Enhancements translation process is shown in the flowchart that follows.

Table flow for SPRING Enhancements



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

Datafill example for SPRING Enhancements

Datafill table	Example data
IBNFEAT	HOST 01 0 01 19 0 CFDVT CFDVT 12 PRGRING
DNROUTE	919 555 1234 FEAT RCTL
ANNS	RCTLANN RCTL 30 1 0 1

Limitations and restrictions

The following limitations and restrictions apply to SPRING Enhancements:

- SPRING is limited to RES lines and does not apply to POTS lines, cellular phones, MDC lines, multi-party lines, private branch exchange (PBX) lines, and trunks.
- Spring Enhancements does not provide access authorization on remote access for SPRING.
- If SPRING remote access is trunk originated, special dial tone and confirmation tone are not supported.
- Calls terminating to SPRING through an incoming ISDN user part (ISUP) trunk require datafill in tables TMTCNTL (Treatment Control) and TMTMAP (Treatment to Cause Map) to ensure a confirmation tone is provided.
- Datafill is required in table TMTMAP for the ISUP protocol to identify how the confirmation tone is applied. If no datafill is present in table TMTMAP, the DMS-100 switch uses a default tuple that assumes treatment has been applied non-locally, or at the originating office.
- To ensure that the terminating office provides a confirmation tone during a remote-access call, the necessary datafill needs to be in place in tables TMTCNTL, TMTMAP, and OFRT (Office Route).

Interactions

The following paragraphs describe the interactions between SPRING Enhancements and other functionalities.

Call Forward Don't Answer

If the time-out value is set to zero, the call is forwarded immediately with no reminder ring (office parameter RINGCTRL_ZERO_CAN_RING is set to N) or forwarded after a reminder ring is applied to the end user's line (office parameter RINGCTRL_ZERO_CAN_RING is set to Y).

SPRING Enhancements (continued)

Calling Line Identification Display

Calling Line Identification Display (CLID) data is not transmitted when the number of rings is set to zero. If the value is set to one ring, CLID data could be delivered (although there is no guarantee of delivery).

Call Waiting

If the CFDA time-out value assigned through programmable ringing is low, when an incoming call encounters a busy line and Call Waiting (CWT) is accessed, the period during which the end user can accept the incoming call is short.

If one ring is set for the time-out value, the end user receives only one CWT notification tone before the call is forwarded. If the time-out value is set to zero, the end user receives no indication that a call has been forwarded.

Hunt groups

A hunt group with option CFGDA (Call Forward Group Do Not Answer) can be set to a ring time-out of zero or one ring. However, the end user with the hunt group option assigned to his or her line does not receive a reminder ring if the minimum ring is set to 0 and the ring control is set to Y.

Spontaneous Call Waiting Identification with Disposition

Prior to the NA004 release, telephone operating company personnel had to set the Spontaneous Call Waiting Identification with Disposition (DSCWID)-T-default timer to its maximum (54 seconds) to avoid a timing problem (such as, a DSCWID-equipped telephone not displaying an available waiting call).

However, for releases NA004 and beyond, the DSCWID feature has its own timer that supplies a specified default treatment to the waiting call when the default time-out expires before a disposition has been entered. Therefore, a conflicting interaction between SPRING and DSCWID no longer exists.

Activation/deactivation by the end user

SPRING Enhancements can be activated either locally using an access code or remotely using a routing access DN.

SPRING Enhancements (continued)

Activation/deactivation of SPRING Enhancements by the end user

Local access

At your telephone:

1 To enable SPRING locally, pick up the receiver and dial the access code in the form of *xx for Digitone (DGT) sets or 11xx for dial pulse (DP) sets.

Response:

End user receives a special dial tone or announcement.

2 Enter the desired number of rings that is to occur before an incoming call is forwarded. (Valid entries are zero through nine.)

Response:

End user receives confirmation tone or an announcement indicating successful local activation. If the attempt fails, the end user receives reorder treatment or an announcement indicating that an invalid ring control value had been entered.

Remote access

To enable SPRING remote access, an end user dials a code to access SPRING, which must have been previously defined by telephone operating company personnel in table IBNXLA (IBN Translation).

The end user dials the SPRING routing DN assigned by the telephone operating company. Then, the end user receives special dial tone (or an announcement which prompts for the entries required to execute this enhancement).

At your telephone:

1 To enable SPRING remote access, pick up the receiver and dial the SPRING routing DN previously assigned by telephone operating company personnel.

Response:

End user receives special dial tone or announcement 2 (as listed in the SPRING recorded announcements table). In addition, an answer message begins tracking billable calls.

2 Dial the DN corresponding to the telephone for which the ring control value is to be changed.

Response:

End user receives special dial tone or announcement 1 (as listed in the SPRING recorded announcements table).

3 Dial a number from 0 to 9 corresponding to the number of rings that is to occur before an incoming call is forwarded.

Response:

End user receives confirmation tone or announcement 5 (as listed in the SPRING recorded announcement table), indicating that the SPRING update has been accepted.

SPRING Enhancements (continued)

The number of specified rings remains in effect until either the end user or telephone operating company personnel change it.

Billing

SPRING Enhancements does not affect billing.

Station Message Detail Recording

SPRING Enhancements does not affect Station Message Detail Recording.

Datafilling office parameters

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

Office parameters used by SPRING Enhancements

Table name	Parameter name	Explanation and action
OFCENG	RINGCTRL_MIN_VALUE	This parameter enables telephone operating company personnel to control (on a switch-wide basis) the minimum number of rings that can be programmed by end users. The values for this parameter range from 0 to 9 rings. The default value is 2 rings.
OFCENG	RINGCTRL_ZERO_CAN_RING	This parameter enables telephone operating company personnel to control whether a reminder ring is delivered to the end user's station when the end user has selected the number of rings to be 0. (A reminder ring occurs for 0.5 second.) The values for this parameter are Y or N. The default value is Y, which indicates that a reminder ring occurs when the selected setting is 0 rings.

SPRING Enhancements (continued)

Datafill sequence

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

Datafill tables required for SPRING Enhancements

Table	Purpose of table
OFCENG	Office Engineering. This table contains data on engineering parameters for the office. Refer to “Datafilling office parameters" for details on how SPRING Enhancements affects office parameters.
IBNFEAT	IBN Line Feature. This table lists the line features that are assigned to the IBN lines listed in table IBNLINES (IBN Line Assignments). ***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.
DNROUTE	Directory Number Route. This table defines the inward wide area telephone service (INWATS) and direct inward system access (DISA) DNs.
ANNS	Announcement. This table contains data for each analog and digital announcement assigned on the switch.

Datafilling table DNROUTE

Feature identifier RCTL allows a virtual DN to be associated with the SPRING feature in table DNROUTE. This virtual DN allows for remote access of the SPRING feature. Remote access allows an end user to change the ring count setting for a DN other than the DN from which the end user is calling. The end user must dial the DN assigned by telephone operating company personnel for SPRING access. The end user is then prompted to make entries to effect the change.

The following table shows the datafill specific to SPRING Enhancements for table DNROUTE. Only the field that applies directly to SPRING

SPRING Enhancements (continued)

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

Datafilling table DNROUTE

Field	Subfield or refinement	Entry	Explanation and action
DNRESULT		see subfields	Directory number results. This field consists of subfields DN_SEL and FEATURE.
	DN_SEL	FEAT	Directory number selector. Enter the DN selector FEAT.
	FEATURE	RCTL	Feature. Enter the feature RCTL (ring control).

Datafill example for table DNROUTE

The following example shows sample datafill for table DNROUTE.

MAP display example for table DNROUTE

```
 AREACODE   OFCODE    STNCODE                  DNRESULT

-------------------------------------------------------
     919      555      1234                    FEAT  RCTL
```

Datafilling table ANNS

Table ANNS contains data for each analog and digital announcement assigned on the switch. SPRING Enhancements adds recorded announcement type RCTL to this table.

The following table shows the datafill specific to SPRING Enhancements for table ANNS. Only the field that applies directly to SPRING Enhancements is shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table ANNS

Field	Subfield or refinement	Entry	Explanation and action
ANTYPE		RCTL	Announcement type. For this feature, enter the announcement type RCTL to specify Subscriber Programmable Ringing (SPRING) for CFDA.

Datafill example for table ANNS

The following example shows sample datafill for table ANNS.

MAP display example for table ANNS

```
CLLI          ANTYPE    TRAFSNO     MAXCONN      CYTIME      MAXCYC

------------------------------------------------------------------
RCTLANN        RCTL       30          1           0           1
```

Error message for table ANNS

The following error message applies to table ANNS.

Error message for table ANNS

Error message	Explanation and action
*** ERROR *** CLLI_FIELD | TYPE OF CLLI	This error message displays if the CLLI has not been datafilled previously in table CLLI (Common Language Location Identifier).

Translation verification tools

SPRING Enhancements does not use translation verification tools.

SERVORD

SPRING Enhancements decreases the values for field TIME to a range of 0 to 60 seconds, which is accessible through option CFDA.

SERVORD limitations and restrictions

Prompt CFDACNTL only displays if office parameter RES_SO_SIMPLIFICATION is set to Y in table OFCVAR. (In the first SERVORD example, CFDACNTL is shown; however, in the second SERVORD example, this prompt does not appear.)

SPRING Enhancements (continued)

SERVORD prompts

The following table shows the SERVORD prompts used to add option CFDA to a line.

SERVORD prompts for SPRING Enhancements

Prompt	Valid input	Explanation
OPTION	CFDA,CFBL	Indicates the option associated with a service to be established, modified, or deleted. Enter CFDA for Call Forwarding Do Not Answer (Residential) or CFBL for Call Forwarding Busy Line.
CFDACNTL: N	N, C, F	Indicates the state of Call Forwarding Do Not Answer control. N=normal (default), F=fixed, and C=programmed assignment
SCRNCL	NSCR	Indicates the screening by class of service
NUMCALLS	1-1024	Indicates the number of calls that can be forwarded simultaneously
TIME	0-60	Indicates the period of time (in seconds) the base station is to ring before the call is forwarded
RINGCTRL	PRGRING or FIXRING	Indicates whether the RES end user or the telephone operating company controls the ringing time-out. PRGRING enables the end user to change the CFDA ringing time-out. FIXRING indicates that the ringing time-out is fixed and only telephone operating company personnel can change it.
FDN	1-30 digits	Indicates the DN to which calls are to be forwarded.

SERVORD example for changing prompt TIME for option CFDA

The following SERVORD example shows how the value of prompt TIME for option CFDA is changed using the CHF (change feature) command.

SERVORD example for changing the value of prompt TIME for option CFDA in prompt mode

```
>CHF
SONUMBER:  NOW 95 3 27 AM
>
DN_OR_LEN:
> 6214000
OPTION:
> CFDA
SCRNCL:
> NSCR
NUMCALLS:
> 2
TIME:
> 20
RINGCTRL:
> PRGRING
FDN:
> 6214001
OPTION:
> $
```

SERVORD example for changing the value of prompt TIME option CFDA in no-prompt mode

```
> CHF $ 6214000 CFDA NSCR 2 20 PRGRING 6214001 $
```

Subscriber Activated Call Blocking (SACB)

Ordering codes

Functional group ordering code: RES00002

Functionality ordering code: RES00015

Release applicability

BCS33 and up

Prerequisites

To operate, Subscriber Activated Call Blocking (SACB) has the following prerequisites:

- BAS Generic, BAS00003
- MDC Standard, MDC00003
- MDC Minimum, MDC00001
- RES Service Enablers, RES00006

Description

The Subscriber Activated Code Blocking feature package provides SACB for Subscriber Services (RES) lines. With Subscriber Activated Call Blocking (SACB), subscribers can activate and deactivate call blocking, thereby restricting or allowing certain types of calls.

Furthermore, if SACB is activated, subscribers can override call blocking on an individual call basis, leaving call blocking intact for subsequent calls.

As an extra level of security, subscribers must enter both an SACB access code and a personal identification number (PIN) to activate and deactivate blocking of restricted calls.

Defining call class codes

Operating company personnel assign SACB call class codes based on nonprefix digits. For example, the nonprefix digits for 1+900 calls are 900; the prefix digit is 1. SACB supports the following call class codes.

Call class codes for the SACB option (Sheet 1 of 2)

Call class	Explanation
IDDD	International direct distance dialing
I800	800 information services

Subscriber Activated Call Blocking (SACB) (continued)

Call class codes for the SACB option (Sheet 2 of 2)

Call class	Explanation
I900	900 information services
I976	976 information services
LDAS	Local directory assistance (411 or equivalent)
TDAS	Toll directory assistance (all 1 + 555)
OPRA	Operator assisted (0+, 01+) calls
SPEC	Special (repair bureau or maintenance)
TOLL	All toll calls, excluding the above.
ZROM	Zero minus (0-) dialing
ALL	All class codes
FPB	Fraud prevention blocking
FPBALLOW	Fraud prevention blocking allow
NONE	Omit all class codes from restrictions

Note: Call classes IDDD, OPRA, TOLL, and ZROM are based on the prefix digits of the dialed number and cannot be assigned in table SACB.

The call class FPB cannot be assigned to table SACB. Operating company personnel must use FPBALLOW to specify digits that can be used by the FPB subscribers without a PIN code.

The call class codes for an office are datafilled in table SACB. Tuples in this table have two fields: the first field contains up to eight digits; the second field specifies the call class code for the digits. Refer to “Datafill procedure for table SACB" in this feature description for details.

During translations, each nonprefix digit dialed is compared with the digits datafilled in table SACB. A call class code is assigned only if the digits match exactly. For example, to restrict TDAS calls dialed as 1+NPA-555-1212, the datafilled digits must be NPA555, rather than 555.

Assignment of call class code restrictions to lines

SACB call class code restrictions are assigned to lines using the Service Order System (SERVORD). When assigning SACB, the subscriber can specify

Subscriber Activated Call Blocking (SACB) (continued)

which call class codes, defined in table SACB, are restricted. When SACB is added to the line, an initial SACB PIN is assigned to the subscriber. The PIN must be entered to activate or deactivate the feature.

Setting up a PIN

The station programmable PIN (SPP) customer group option lets subscribers change the PIN from their stations by dialing an access code and following instructions. For changing an SACB PIN, subscribers enter the SACB activation access code, the old PIN, and the new PIN twice.

Operation

If SACB is active on a line, all calls originated on that line are screened for restricted calls. After a subscriber originates a call, the dialed digits enter the screening stage of translations.

If the translations process determines that the call is restricted, the subscriber is routed to a digital recorded announcement machine (DRAM) announcement. The announcement informs the subscriber of the blocked status and prompts the subscriber for a PIN to override this status.

If the subscriber enters a valid PIN, the call continues through normal processing. Otherwise, the subscriber may be routed to a treatment or given another chance to enter the PIN, depending on how the SPP group option is datafilled. A log is generated for all calls routed to treatments.

Subscribers can activate and deactivate SACB by entering access codes and a PIN. Once activated, SACB remains in effect until the subscriber deactivates the feature. Similarly, once deactivated, SACB remains so until the subscriber activates the feature.

When SACB is assigned to a line, one or more call class codes are specified. These codes identify the types of calls that are restricted. The existence of a call class code in Table SACB does not by itself restrict the calls for lines with the SACB line option.

Activating SACB blocks calls of all call class codes assigned to the line with option SACB. Either all call class codes assigned are blocked, or none are blocked. Subscribers cannot control blocking on a call-code basis from their stations. Fraud prevention blocking (FPB) is an option added for NA011. FPB allows restricted call classes to complete without a PIN if the numbers are entered in the FPBALLOW subfield in table SACB.

Subscriber Activated Call Blocking (SACB) (continued)

Datafill for SACB announcements

SACB must have an announcement defined in order to work properly. To set up an announcement, the tables DRAMS, CLLI, ANNS, ANNMEMS, and DRMUSERS must be datafilled and an announcement recorded.

SACB utilizes customized announcements that are recorded by the operating company personnel. Announcements are recorded using the DRAM recording utility, DRAMREC, at the maintenance and administration position terminal.

This procedure is described in “Recording SACB announcements" in this feature description. Refer to *Digital Recorded Announcement Machine DRAM and EDRAM Guide*, 297-1001-527, for more information on datafilling customized recordings.

The list and summary of recommended announcements for SACB are as follows:

- SACBANNC1: “Please enter your PIN number."
- SACBANNC2 “The Subscriber Call Blocking feature is activated. To override this restriction, please enter your PIN number."
- SACBANNC3 “The Subscriber Call Blocking feature has been activated."
- SACBANNC4 “The Subscriber Call Blocking feature has been deactivated."
- SACBANNC5 “You have entered an incorrect PIN number."
- SACBANNC6 “Please re-enter your PIN number."
- SACBANNC7 “You have exceeded the number of retries. Please hang up and try again."
- SPPANNC9 “Subscriber Activated Call Blocking."

Note: Before datafilling announcements for SACB, read “Datafilling announcements" for Subscriber Services general announcement information.

The sections that follow show recommended datafill for tables DRAMS, CLLI, ANNS, ANNMEMS, and DRMUSERS. Refer to *Digital Recorded Announcement Machine DRAM AND EDRAM Guide*, 297-1001-527, for more information on datafilling announcements.

Table DRAMS

Table DRAMS (Digital Recorded Announcement Machines) lists information about the trunk cards that constitute a DRAM. The following example shows recommended datafill for table DRAMS.

Subscriber Activated Call Blocking (SACB) (continued)

MAP display example for table DRAMS

```
DRAMCARD   TMTYPE   TMNO   TMCKT   CARDCODE    CARDINFO
_____________________________________________________

5  3        MTM   9     6     1X79AA   EEPROM ( 4 ) $
5  4        MTM   9     6     1X79AA   EEPROM ( 5 ) $
```

Table CLLI

Table CLLI (Common Language Location Identifier) codes are used to identify the far end of each announcement, tone, or trunk group. The following example shows recommended datafill for table CLLI.

MAP display example for table CLLI

```
CLLI        ADNUM         TRKGRSIZ        ADMININF
_____________________________________________________

SACBANN     682           10              SACB_anns
SPPANNC     683           10              SPP_anns
```

Table ANNS

Table ANNS (Announcements) contains data for each digital and analog announcement assigned in the switching unit. The following example shows recommended datafill for table ANNS.

MAP display example for table ANNS

```
CLLI     ANTYPE    TRAFSNO     MAXCONN   CYTIME    MAXCYC
_____________________________________________________

SACBANN    SACB       25           1         0         1
SPPANNC    SPP        26           1         0         1
```

Table ANNMEMS

Table ANNMEMS (Announcement Members) lists the members for each announcement defined in table ANNS. The following example shows recommended datafill for table ANNMEMS.

Subscriber Activated Call Blocking (SACB) (continued)

MAP display example for table ANNMEMS

```
ANNMEM     HDWTYPE                CARD       MEMINFO
_____________________________________________________________
SACBANN 1 DRAM                    DRA        ( 0 MTM 9 12 ) $
SACBANN 2 DRAM                    DRA        ( 0 MTM 9 13 ) $
SACBANN 3 DRAM                    DRA        ( 0 MTM 9 14 ) $
SACBANN 4 DRAM                    DRA        ( 0 MTM 9 15 ) $
SACBANN 5 DRAM                    DRA        ( 0 MTM 9 16 ) $
SACBANN 6 DRAM                    DRA        ( 0 MTM 9 17 ) $
SACBANN 7 DRAM                    DRA        ( 0 MTM 9 18 ) $
SACBANN 9 DRAM                    DRA        ( 0 MTM 9 19 ) $
SPPANNC 1 DRAM                    DRA        ( 0 MTM 9 20 ) $
```

Table DRMUSERS

Table DRMUSERS (Digital Recorded Announcement Machine Users) lists the announcements required by users. Specifically, this table identifies phrases to be used with announcements defined in table ANNMEMS. The following example shows recommended datafill for the table DRMUSERS.

MAP display example for table DRMUSERS

```
USERANN                              PHSLIST
_____________________________________________________________
SACBANN 1                          ( SACBANNC1 ) $
SACBANN 2                          ( SACBANNC2 ) $
SACBANN 3                          ( SACBANNC3 ) $
SACBANN 4                          ( SACBANNC4 ) $
SACBANN 5                          ( SACBANNC5 ) $
SACBANN 6                          ( SACBANNC6 ) $
SACBANN 7                          ( SACBANNC7 ) $
SPPANNC 9                          ( SPPANNC9  ) $
```

Recording SACB announcements

Once the datafill is complete, the announcements can be recorded. The procedure for recording SACB announcements follows.

Subscriber Activated Call Blocking (SACB) (continued)

Recording a Subscriber Activated Call Blocking (SACB)

Follow these steps to record SACB announcements:

1. Connect the handset to be used to record the announcement to the HSET jack at the MAP terminal.
2. Enter the DRAMREC command from the CI level of the MAP terminal by typing:

   ```
   > DRAMREC
   ```

   Response:

   Receive the DRAM prompt at the MAP terminal:

   ```
   DRAM:>
   ```
3. Check the amount of recording time available:

   ```
   > DISPLAY 5 3
   ```

   where 5 is the DRAM number and 3 is the card number.

   Response:

   Receive the following message at the MAP terminal:

   ```
   CARD 3 EEPROM SPACE: MAXCONTIG 6  TOTAL 6
   ```

   The amount of recording time left is 6 s.
4. Connect DRAM to trunk HSET, member:

   ```
   > CONNECT 5 HSET 0
   ```

   where 5 is the DRAM number and 0 is the HSET member.

   Response:

   Receive the following message at the MAP terminal:

   ```
   CONNECTION MADE
   ```
5. Pick up the handset connected in Step 1.
6. Enter the following command:

   ```
   > RECORD SACBANNCx 3 NOPAD
   ```

   where x is the announcement number (1 through 7 for this example), 3 indicates that the message is to be 3 s long, and NOPAD specifies no padding for the message.

   Response:

Subscriber Activated Call Blocking (SACB) (continued)

Receive the following message:

```
RECORDING ON DRAM 5  CARD NUMBER: 3  USE TRUNK HSET MEMBER 0
```

In addition, receive 3 short tones.

7. Dictate your message clearly into the handset.

   Response:

   Receive a tone to indicate the end of recording.

   Your message is played back repeatedly.

8. Repeat Steps 6 and 7 for announcements 2 through 7, and for announcement SPPANNC9.

   Response:

   Same responses as in Steps 6 and 7.

9. Enter the following command:

   > DISCONNECT

   Response:

   The message stops playing back. Receive the following message at the MAP terminal:

   ```
   TRUNK DISCONNECT:
   ```

10. Quit the DRAM facility:

    > QUIT

Datafill for subscriber usage billing

To activate subscriber usage billing, set option subscription usage sensitive pricing (SUSP) to ON in table AMAOPTS. See the following figure for an example of option SUSP in table AMAOPTS.

Example of option SUSP in table AMAOPTS

```
OPTION                                              SCHEDULE
-------------------------------------------------------------
SUSP                                                      ON
```

Subscriber Activated Call Blocking (SACB) (continued)

Translations table flow

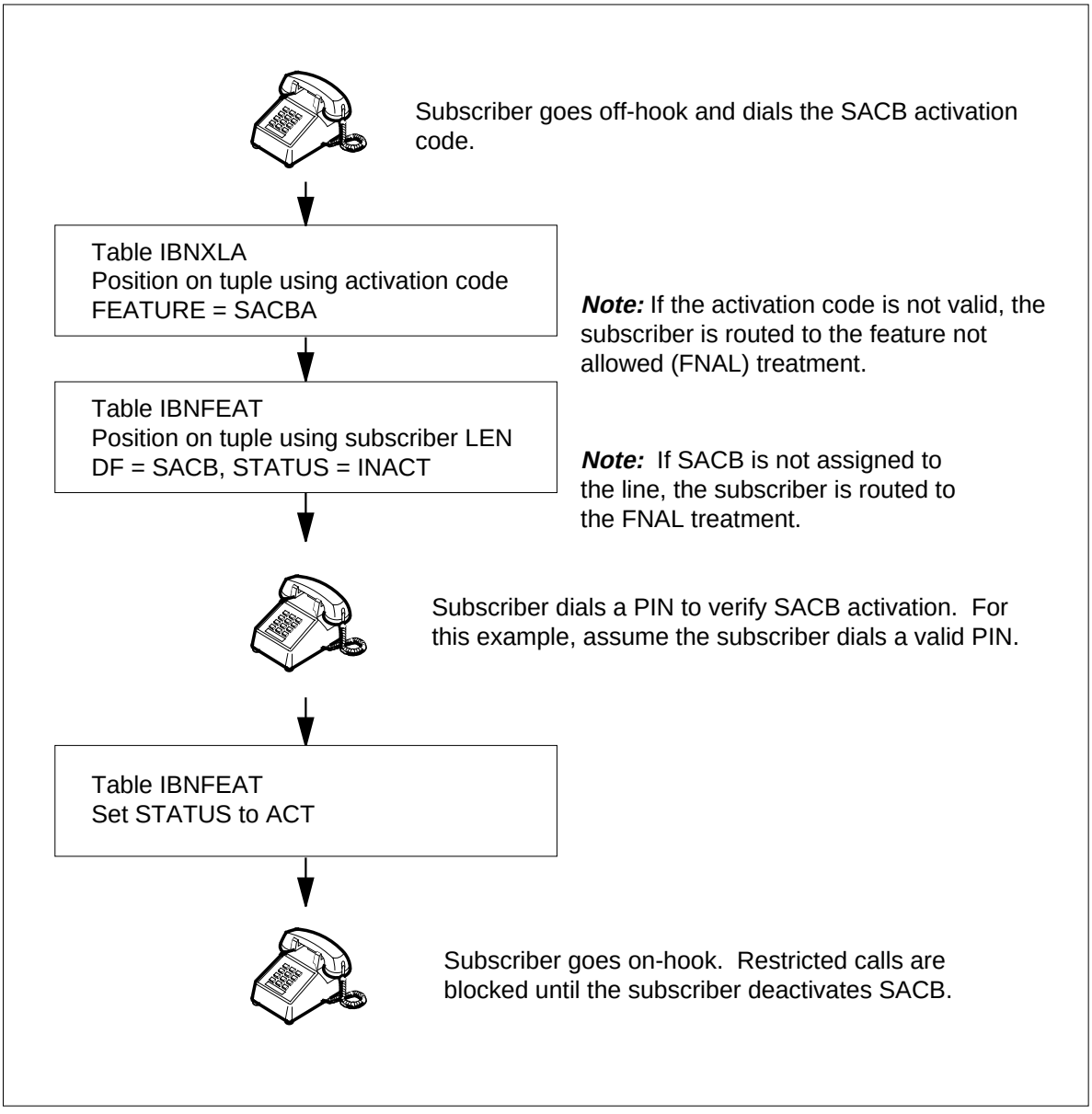
The Subscriber Activated Call Blocking (SACB) translations tables are described in the following list:

- Table IBNXLA associates an activation code with a feature. For the flowchart that follows, the code activates SACB.
- Table IBNFEAT identifies the features assigned to the subscriber line equipment number (LEN).

The Subscriber Activated Call Blocking (SACB) translations process is shown in the flowchart that follows. The figure shows the tables accessed for SACB activation.

Subscriber Activated Call Blocking (SACB) (continued)

Table flow for Subscriber Activated Call Blocking (SACB)



Note: The table flow for PIN verification is shown in feature NC0192, Remote Call Forwarding without Unique PIN.

Subscriber Activated Call Blocking (SACB) (continued)

The following table lists the datafill content used in the flowchart. The SACB activation code is 92, and the LEN of the subscriber is HOST 00 1 10 17.

Datafill example for Subscriber Activated Call Blocking (SACB)

Datafill table	Example data
IBNXLA	RXCFN 92 FEAT N N N SACBA
IBNFEAT	HOST 00 1 10 17 0 SACB SACB ACT OPRA $ $

Table flow for overriding SACB while placing a call

The dialed digits are divided into prefix digits (0+ or 1+) and address digits, and the call type is assigned. Screening assigns one of the following SACB call class codes to the call: IDDD, OPRA, TOLL, or ZROM.

Translations then proceed to table SACB, where the dialed digits are compared to entries in field DIGITS of table SACB. If there is no entry in the table that matches the dialed digits, the preliminary call class code becomes the actual code. The flowchart in the second figure shows this process.

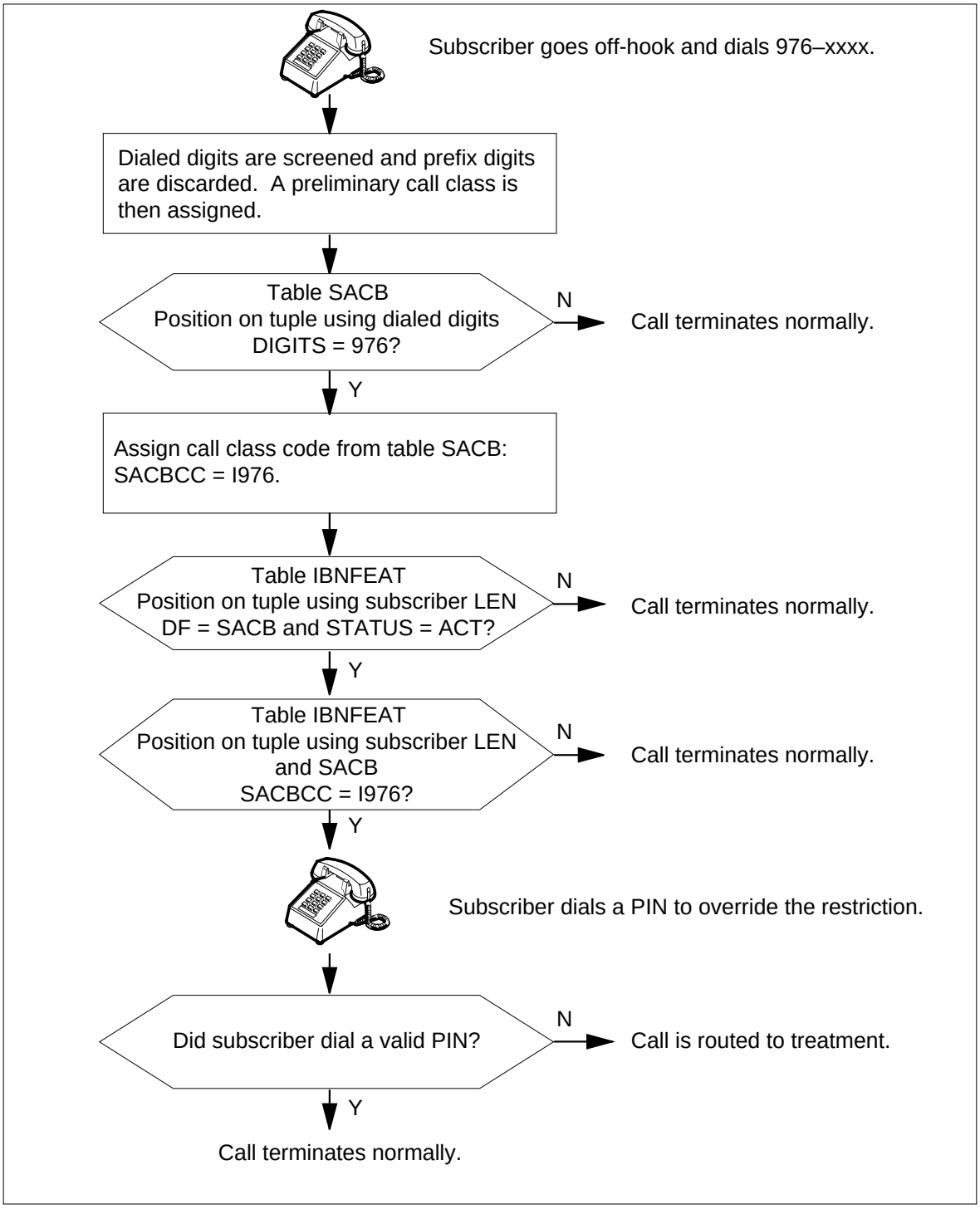
The Subscriber Activated Call Blocking (SACB) translations tables are described in the following list:

- Table SACB associates a call class code with a string of digits. For example, the string “I976" is assigned to 976 information services calls.
- Table IBNFEAT identifies the features assigned to a subscriber LEN. For SACB, the table also shows which call class codes are restricted when SACB is activated.

The Subscriber Activated Call Blocking (SACB) translation overriding process is shown in the flowchart that follows. The figure shows the tables accessed when a subscriber dials a restricted number and overrides SACB, allowing a call to terminate.

Subscriber Activated Call Blocking (SACB) (continued)

Table flow for overriding Subscriber Activated Call Blocking (SACB)



Subscriber Activated Call Blocking (SACB) (continued)

The following table lists the datafill content used in the flowchart. The LEN of the subscriber is HOST 00 0 00 20, the dialed DN is 1+976-1000, the prefix digit is 1, and the call class code is 976.

Datafill example for Subscriber Activated Call Blocking (SACB)

Datafill table	Example data
SACB	976 I976
IBNFEAT	HOST 00 0 00 20 0 SACB SACB ACT I976 $ $

Limitations and restrictions

The following limitations and restrictions apply to Subscriber Activated Call Blocking (SACB):

- SACB cannot be assigned to lines with the following options:
  - — Denied Origination (DOR)
  - — Subscriber Outgoing Restriction (SOR)
  - — International Line Restriction (ILR)
  - — Toll Denial (TDN)
- For a given line, SPP must be assigned to the customer group of the line in table CUSTSTN.
- Emergency calls (911) and calls to reach an operator (0) are always allowed to terminate.
- No screening is done when an operator dials a number for call completion.
- When an SACB subscriber calls a station that is call forwarded, no call class code screening is done on the forward-to DN.
- SACB can be assigned to RES and MDC lines only.

Interactions

The following paragraphs describe the interactions between Subscriber Activated Call Blocking (SACB) and other functionalities.

Overlap Outpulsing and Overlap Carrier Selection

SACB interacts with Overlap Outpulsing (OVLP) and Overlap Carrier Selection (OCS). OVLP and OCS are not performed if SACB restrictions indicate that a call is to be blocked. This allows the subscriber to finish dialing digits before the SACB announcement is played.

Subscriber Activated Call Blocking (SACB) (continued)

Activation/deactivation by the end user

The following procedure shows how to activate SACB.

Activation/deactivation of Subscriber Activated Call Blocking (SACB) by the end user

At your telephone:

1. Go off-hook.

   Response:

   Receive dial tone.

2. Dial the SACB activation code (Note 1). For dial pulse (DP) lines, the code is “11xx"; for dual-tone multifrequency (DTMF) lines, the code is “*xx", where xx is a 2-digit code datafilled in table IBNXLA.

   Response:

   Receive an announcement prompting for a PIN.

3. Enter the PIN (Note 2).

   Response:

   Receive a confirmation announcement; restricted calls are now blocked.

Note 1: If the activation code is invalid, the subscriber is routed to a treatment.

Note 2: If the PIN is invalid, the subscriber is either routed to a treatment or given a chance to enter the PIN again.

Once SACB is activated, all restricted calls are blocked. SACB can be deactivated by following the same procedure, but entering the deactivation code instead of the activation code.

In addition, a subscriber can override SACB for a single call, leaving call class code restrictions intact for subsequent calls. The following procedure shows how subscribers can unblock a restricted call after attempting to place such a call.

Subscriber Activated Call Blocking (SACB) (continued)

Override of Subscriber Activated Call Blocking (SACB) by the end user for a single call

At your telephone:

1. Go off-hook.

   Response:

   Receive dial tone.

2. Dial a restricted number.

   Response:

   Receive an announcement stating that the call is blocked, followed by a prompt for a PIN.

3. Enter the PIN.

   Note: If the PIN is invalid, the subscriber is either routed to a treatment or given a chance to enter the PIN again.

   Response:

   The call terminates normally.

Billing

The Subscriber Activated Call Blocking feature generates two billing records for SACB activation and deactivation. Both records use call code 006C. Both records have module code 611 appended to them. Module code 611 specifies subscriber use billing for feature SACB. Refer to the *Bellcore Format AMA Reference Guide,* 297-1001-830, for more information about call code 006C and module code 611.

The billing record uses structure code 00510 to indicate SACB activation and deactivation. Refer to the *Bellcore Format AMA Reference Guide,* 297-1001-830, for more information about structure code 00510.

The following figure is an example of an AMA record generated for call code 006.

Subscriber Activated Call Blocking (SACB) (continued)

Call code 006

```
*HEX ID:AA  STRUCTURE CODE:40510C  CALL CODE:006C  SENSOR
TYPE:036C  SENSOR ID:0000000C  REC OFFICE TYPE:036C  REC
OFFICE ID:0000000C  DATE:80216C  TIMING IND: 001000C
STUDY IND:0000000C  CLD PTY OFF-HK:0C  SERVICE
OBSERVED:0C  OPER ACTION:0C  SERVICE FEATURE:000C  SIG
DIGITS NEXT FIELD:009C  ORIG OPEN DIGITS  1:00036340103C
ORIG OPEN DIGITS 2:FFFFFFFFFF  ORIGINATING CHARGE
INFO:FFFF  DOMESTIC/INTL INDICATOR:1C  SIG DIGITS NEXT
FIELD:007C  TERM OPEN DIGITS 1:00006321101C  TERM OPEN
DIGITS 2:FFFFFFFFF  CONNECT TIME:2254428C  ELAPSED
TIME:000000014C  MODULE CODE:611C  GENERIC CONTEXT
ID:8002415C  GENERIC DIGITS STRING ONE:A28183820000070C
MODULE CODE:000C
```

Station Message Detail Recording

Subscriber Activated Call Blocking (SACB) does not affect Station Message Detail Recording.

Datafilling office parameters

Subscriber Activated Call Blocking (SACB) does not affect office parameters.

Datafill sequence

The following table lists the tables that require datafill to implement Subscriber Activated Call Blocking (SACB). The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Subscriber Activated Call Blocking (SACB) (Sheet 1 of 2)

Table	Purpose of table
SACB	Subscriber Activated Call Blocking table. Table SACB contains call class definitions. These call class codes are assigned to lines when option SACB is added.

Subscriber Activated Call Blocking (SACB) (continued)

Datafill tables required for Subscriber Activated Call Blocking (SACB) (Sheet 2 of 2)

Table	Purpose of table
IBNFEAT	IBN Line Feature table. Table IBNFEAT defines the features assigned to each Subscriber Services line. ***Note:*** This table is datafilled through SERVORD; therefore, no datafill procedure or example is provided.
IBNXLA	IBN Translations Table. Table IBNXLA contains the data for the digit translations of calls from an MDC station, attendant console, incoming trunk group, or incoming side of a two-way MDC trunk group. Specifically, the feature translator defines feature access codes on a customer-group basis. This table must be datafilled to assign activation and deactivation codes for PRN.

Datafilling table SACB

Table SACB (Subscriber Activated Call Blocking) contains call class definitions. These call class codes are assigned to lines when option SACB is added.

The call classes of IDDD, OPRA, TOLL, and ZROM are based on the standard translation results for the dialed number. Table SACB sets up the call class based on the nonprefix digits where different from the translation results.

The following table shows the datafill specific to Subscriber Activated Call Blocking (SACB) for table SACB. Only those fields that apply directly to

Subscriber Activated Call Blocking (SACB) (continued)

Subscriber Activated Call Blocking (SACB) are shown. For a description of the other fields, refer to the data schema section of this document

Datafilling table SACB

Field	Subfield	Entry	Explanation and action
DIGITS		1 to 8 digits	Digits. This field specifies the destination digits with which a North American call class code is associated. Enter a string of up to 8 digits.
SACBCC		IDDD, I800, I900, I976, LDAS, TDAS, OPRA, SPEC, TOLL, FPBALLOW,or ZROM	SACB call code. This field specifies the North American call class for the digits. Enter one of the following: • IDDD (International Direct Distance Dial) • I800 (“800" information services) • I900 (“900" information services) • I976 (“976" information services) • LDAS (local directory assistance [411 or equivalent]) • TDAS (toll directory assistance [all 1+555 calls]) • OPRA (operator assisted [0+ or 01+ calls]) • SPEC (special [repair bureau or maintenance]) • TOLL (toll calls excluding the above) • FPBALLOW (fraud prevention blocking allow) • ZROM (Zero minus [0-] calls)

Datafill example for table SACB

The following example shows sample datafill for table SACB.

Subscriber Activated Call Blocking (SACB) (continued)

MAP terminal display example for table SACB

```
DIGITS          SACBCC
_____________________________________________________________

411               LDAS
555               TDAS
611               SPEC
900               I900
```

Datafilling table IBNXLA

Table IBNXLA (IBN Translations) contains the data for the digit translations of calls from an MDC station, attendant console, incoming trunk group, or incoming side of a two-way IBN trunk group.

The following table shows the datafill specific to Subscriber Activated Call Blocking (SACB) for table IBNXLA. Only those fields that apply directly to Subscriber Activated Call Blocking (SACB) 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	Entry	Explanation and action
KEY		see subfields	Key. This field consists of the subfields, XLANAME and DGLIDX. These subfields must be entered in succession.
	XLANAME	alphanumeric (1 to 8 characters)	Translator name. This subfield specifies the 1- to 8-character name assigned to the translator. Enter the translator name.
	DGLIDX	alphanumeric	Digilator index. This subfield specifies the digit or digits assigned to the index. Enter the access code assigned to the digilator index.
RESULT		see subfields	Result. This field consists of the subfields TRSEL, ACR, SMDR, and FEATURE.
	TRSEL	FEAT	Translation selector. This subfield specifies the translation selector. Enter FEAT.

Subscriber Activated Call Blocking (SACB) (continued)

Datafilling table IBNXLA (Sheet 2 of 2)

Field	Subfield	Entry	Explanation and action
	ACR	Y or N	Account code entry. This subfield specifies whether or not an account code entry is required for all calls to the special feature access code. Enter Y or N.
	SMDR	Y or N	Station Message Detail Recording. This subfield specifies whether or not SMDR is required for calls originated by a group station or an attendant console. Enter Y or N.
	FEATURE	SACBA or SACBD	Feature. This subfield specifies the feature assigned to the access code. Enter SACBA for the activation access code; enter SACBD for the deactivation access code.

Datafill example for table IBNXLA

The following example shows sample datafill for table IBNXLA.

MAP terminal display example for table IBNXLA

```
KEY                                RESULT
_____________________________________________________________

RXCFN        92                     FEAT N N N SACBA
RXCFN        93                     FEAT N N N SACBD
```

Translation verification tools

The following example shows the output from TRAVER (translations verification) command when it is used to verify Subscriber Activated Call Blocking (SACB).

Subscriber Activated Call Blocking (SACB) (continued)

TRAVER command output example for Subscriber Activated Call Blocking (SACB)

```
TRAVER L 6215004  'B92' B
TABLE IBNLINES
HOST 00 0 09 20 0 DT STN RES 6215004 0 $
TABLE LINEATTR
0 1FR NONE NT FR01 0 613 P621 L613 TSPS 10 NIL NILSFC LATA1 0 NIL NIL 00
Y RESGRP 0 2
LCABILL OFF – BILLING DONE ON BASIS OF CALLTYPE
TABLE DNATTRS
613 621 5004
   ( PUBLIC ( NONUNIQUE ) $ ) $ $
TABLE DNGRPS
TUPLE NOT FOUND
TABLE NCOS
RESGRP 2 0 0 RNCOS2 ( XLAS RXCMN2 NXLA RES ) $
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND
DIGCOL
RESGRP NXLA RESXLA RXCFN 0 RES
TABLE DIGCOL
RES SPECIFIED: RES DIGIT COLLECTION
NCOS FEAT XLA NAME IS NIL.  GO TO NEXT XLA NAME.
TABLE IBNXLA: XLANAME RXCFN
RXCFN 92 FEAT N N N SACBA

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

Note: TRAVER does not follow translations further than table IBNXLA because TRAVER does not support the SACBA access code.

SERVORD

The service order system (SERVORD) can be used to assign SACB to a Subscriber Services line. SACB is assigned with the prompt OPTION.

The following are SERVORD limitations and restrictions

- Subscriber Activated Call Blocking (SACB) does not allow FPBALLOW to be added as SACBCC.
- Only FPB is allowed to be entered as SACBCC in SERVORD.
- STATUS must be specified as ACT for SACBSUS of Y.
- SACB requires a station programmable PIN entry in table CUSTSTN.

Subscriber Activated Call Blocking (SACB) (continued)

SERVORD prompts

The following table shows the SERVORD prompts used to assign Subscriber Activated Call Blocking (SACB) to a line.

SERVORD prompts for Subscriber Activated Call Blocking (SACB)

Prompt	Valid input	Explanation
OPTION	SACB	Specifies the service to be established, modified, or deleted
STATUS	ACT, INACT	Specifies whether SACB is active for a line
SACBCC	IDDD, I800, I900, I976, LDAS, TDAS, OPRA, SPEC, TOLL, FPB, ZROM, ALL, or NONE	Assigns the call class codes that are restricted. Enter one of the codes. The call class codes assigned here must correspond to datafill in table SACB. Enter ALL to assign all class codes. Enter NONE to omit all class codes from restrictions.
SACBPIN	2 to 10 digits	Assigns a PIN for access to SACB (Note).
SACBSUS	Y or N	A boolean function when set to Y blocks calls from an originating line, except those entered in FPBALLOW in table SACB. The default is N.

Note: Option SPP must be datafilled in table CUSTSTN for the customer group assigned to the SACB subscriber. Refer to feature NC0192, Remote Call Forwarding Without Unique PIN, for detailed information on option SPP.

SERVORD example for adding Subscriber Activated Call Blocking (SACB)

The following SERVORD example shows how Subscriber Activated Call Blocking (SACB) is added to a line using the ADO command.

Subscriber Activated Call Blocking (SACB) (continued)

SERVORD example for Subscriber Activated Call Blocking (SACB) in prompt mode

```
>SERVORD
SO:
> ADO
SONUMBER: NOW 91 11 13 AM
>
DN_OR_LEN:
> 6211233
OPTION:
> SACB
STATUS:
> ACT
SACBCC:
> TOLL IDDD  I976
SACBPIN:
> 1234567
OPTION:
> $
```

SERVORD example for Subscriber Activated Call Blocking (SACB) in no-prompt mode

```
> ADO  6211233 SACB  ACT  TOLL  IDDD  I976   1234567  $
```

The following SERVORD example shows how SACBSUS is assigned to a line using the ADO command.

Subscriber Activated Call Blocking (SACB) (end)

SERVORD example for Subscriber Activated Call Blocking (SACB) in prompt mode

```
>SERVORD
SO:
> ADO
SONUMBER: NOW 91 11 13 AM
>
DN_OR_LEN:
> 6215000
OPTION:
> SACB
STATUS:
> ACT
SACBCC:
> I800  FPB
SACBPIN:
> 12345
SACBSUS: N
> Y
OPTION:
> $
```

SERVORD example for Subscriber Activated Call Blocking (SACB) in no-prompt mode

```
> ADO  6215000  (SACB  ACT  I800  FPB  12345  Y)  $
```

Subscriber Programmable Ring Control (SPRING)

Ordering codes

Functional group ordering code: RES00002

Functionality ordering code: RES00037

Release applicability

Subscriber Programmable Ring Control (SPRING) was introduced in NA002.

Prerequisites

To operate, Subscriber Programmable Ring Control (SPRING) has the following prerequisites:

- BAS Generic, BAS00003
- MDC Minimum, MDC00001
- MDC Standard, MDC00003
- RES Service Enablers, RES00006

Description

The SPRING feature allows Call Forward Don't Answer (CFDA) subscribers to program the number of rings at the subscriber's premise before an incoming call is forwarded to another directory number, for example, a Voice Processing System (VPS). The SPRING feature applies to all CFDA line types, (N, F, and C). To activate the feature. the subscriber specifies the number of rings by dialing an access code and entering a time out value. This time-out value corresponds to the number of rings heard, for example a time-out value of three is equivalent to three rings.

When the access code is dialed, (for example,*94 for DTMF sets and 1194 for rotary sets) the subscriber is prompted for the new CFDA time-out value (a digit from 2 to 9). After the time-out value is entered, Table IBNFEAT is accessed and the TIMEVAL field for CFVDT (Call Forward Don't Answer Variable Timer) is updated. Feature CFDVT stores the value in seconds.

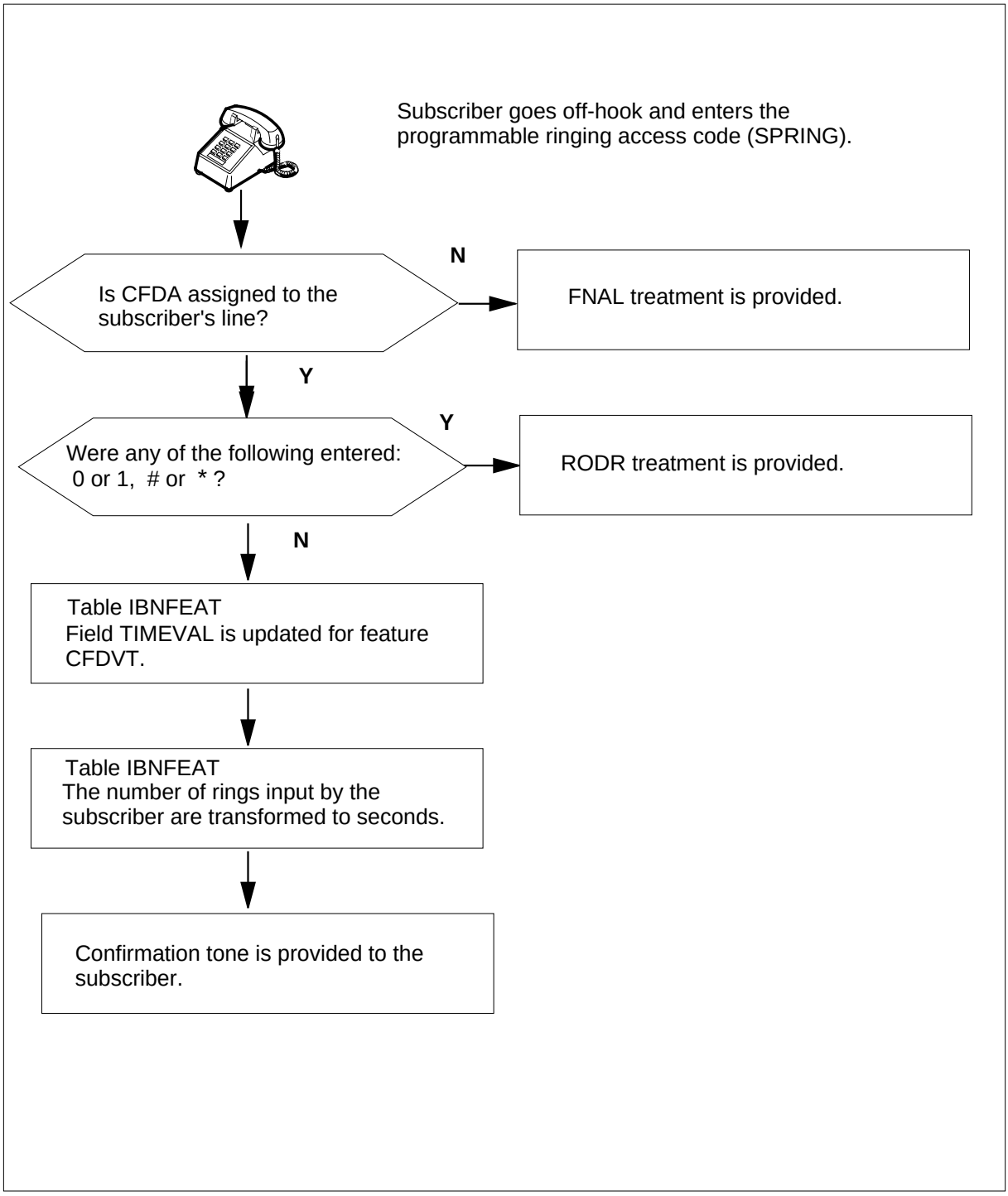
Translations table flow

The Subscriber Programmable Ring Control (SPRING) translations tables are described in the following list:

- Table IBNFEAT contains field RINGCTRL introduced by the SPRING feature. This field has values of FIXRING and PRGRING.
- Table IBNXLA contains feature option CFDPRING. This feature is introduced for the FEAT translation selector of Table IBNXLA.

Subscriber Programmable Ring Control (SPRING) (continued)

Table flow for Subscriber Programmable Ring Control (SPRING)



Subscriber Programmable Ring Control (SPRING) (continued)

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

Datafill example for Subscriber Programmable Ring Control (SPRING)

Datafill table	Example data
IBNFEAT	HOST 0 01 20 0 CFDVT CFDVT 54 PRGRING
IBNXLA	CUSTFEAT 94 FEAT Y Y Y CFDPRING

Limitations and restrictions

The following limitations and restrictions apply to Subscriber Programmable Ring Control (SPRING):

- Only RES lines are supported by the SPRING feature.
- When a RES line assigned with the SPRING feature is converted to a POTS line the feature is deleted.

Interactions

The following paragraphs describe the interactions between Subscriber Programmable Ring Control (SPRING) and other functionalities.

CFDA

While the operation of CFDA is not affected, the SPRING feature allows the subscriber to control the time-out value associated with CFDA. The interactions between CFDA and other features are not modified.

CWT and CFCW

The feature CWT (Call Waiting) normally overrides CFDA. Therefore a call terminating on a busy DN, would not be forwarded even if the CFDA time-out was reached. When the feature Call Forward of Call Waiting calls (CFCW) is assigned to the customer group, CFDA takes precedence over CWT. In this instance, a call terminating on a busy DN is forwarded by CFDA after the CFDA time-out is reached.

If a short CFDA time-out value was entered, the period during which a CWT call can be retrieved is also decreased.

Three-Way Call (3WC), Call Transfer (CXR) and flashable features

This feature cannot be invoked on the second leg of a three-way call or on the second leg of the CXR feature.

A “hook flash" performed after dialing the SPRING access code is interpreted as a hang up if there are no flashable features on the line. If there are flashable

features, the hook flash is ignored. An example of a flashable feature is Three Way Calling or Call Waiting.

Call Forward Do not Answer Variable Timing (CFDVT)

When CFDA for RES is assigned, the subscriber's line automatically acquires the CFDVT feature. This feature is also mandatory for the operation of Subscriber Programmable Ringing for CFDA on RES. If the corresponding CFDVT tuple is deleted from Table IBNFEAT and a subscriber attempts to program the number of CFDA rings, the request is denied and FNAL treatment is provided.

Interactions between CFDVT and other features are not modified.

Activation/deactivation by the end user

Activation/deactivation of Subscriber Programmable Ring Control (SPRING) by the end user

At your telephone:

1 Go off hook

Response: Receive dial tone.

2 Enter the SPRING access code (for example *94)

Response: Receive special dial tone.

3 Specify the number of rings by entering a digit between 2 to 9.

Response: receive confirmation tone.

4 Go on-hook

Billing

Subscriber Programmable Ring Control (SPRING) does not affect billing.

Station Message Detail Recording

Subscriber Programmable Ring Control (SPRING) does not affect Station Message Detail Recording.

Datafilling office parameters

Subscriber Programmable Ring Control (SPRING) does not affect office parameters.

Subscriber Programmable Ring Control (SPRING) (continued)

Datafill sequence

The following table lists the tables that require datafill to implement Subscriber Programmable Ring Control (SPRING). The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Subscriber Programmable Ring Control (SPRING)

Table	Purpose of table
IBNFEAT	This table lists line features that are assigned to the IBN lines listed in Table IBNLINES.
IBNXLA	This table contains the data for the digit translations of calls from an MDC station, attendant console, incoming trunk group or incoming side of a two-way IBN trunk group.

Datafilling Table IBNFEAT

The CFDA timer begins when the called party is idle (subscriber's phone is on-hook or the subscriber is receiving CWT and no other call is on hold or active). The ringing generator is shared by all lines in a peripheral and it is impossible to start in the middle of a ringing cycle, unless immediate ringing is enabled in the End Office. Therefore the subscriber's line rings at most x+1 rings and at least x rings (where x is the value entered by the subscriber). Note that “x rings" is a full ring period of two seconds. In the case of x+1 rings, the first and last rings are not full rings of two seconds but partial rings.

During the Dump/Restore process, the value of the RINGCTRL field for all CFDA RES subscribers is dependent upon the presence of the associated SPRING patch on the Dump side. If the Dump side has the patch applied and activated, all CFDA subscribers are provided with programmable ringing (RINGCTRL is set to PRGING) on the Restore side.

If on the Dump side the patch is applied but not activated or the patch is simply not applied, CFDA subscribers on the Restore side are not provided with programmable ringing for CFDA (RINGCTRL is set to FIXRING).

Table IBNFEAT is datafilled through SERVORD therefore, no datafill procedure or example is provided. Refer to “SERVORD" for an example of datafilling this table.

Datafilling table IBNXLA

Table IBN translations contains the data for the digit translations of calls from an MDC station, attendant console, incoming trunk group or incoming side of a two-way IBN trunk group.

Subscriber Programmable Ring Control (SPRING) (continued)

An explanation of the fields to be datafilled in Table IBNFEAT and an example follow. Only those fields that directly apply to the SPRING feature are shown. For a definition of the other fields in the table, refer to the Data Schema section of this document.

The following table shows the datafill specific to Subscriber Programmable Ring Control (SPRING) for table IBNXLA. Only those fields that apply directly to Subscriber Programmable Ring Control (SPRING) are shown.

Datafilling table IBNXLA

Field	Subfield	Entry	Explanation and action
KEY			KeyThis field consists of subfields, XLANAME and DGLIDX. These subfields are described below and must be entered in succession.
	XLANAME		Translator NameThis subfields specifies the 1-8 character name assigned to the translator. Enter the translator name.
	DGLIDX		Digilator IndexThis subfield specifies the digit or digits assigned to the index. Enter the access code assigned to the index.
RESULT			ResultThis field consists on the subfields TRSEL, ACR, SMDR, and FEATURE. These subfields are described below.
	TRSEL		Translation SelectorThis subfield specifies the translation selector. Enter FEAT.
	ACR		Account Code EntryThis subfield specifies whether or not an account code is entry is required for all calls to the special feature access code. Enter Y or N.
	SMDR		Station Message Detail RecordingThis subfield specifies whether or not SMDR is required for calls originating by a group station or an attendant console.Enter Y or N.
	FEATURE		FeatureThis subfield specifies the feature assigned to the customer group. Enter CFDPRING.

Datafill example for table IBNXLA

The following example shows sample datafill for the SPRING feature in Table IBNXLA.

Subscriber Programmable Ring Control (SPRING) (continued)

MAP display example for table IBNXLA

```
KEY          TRSEL     ACR     SMDR         FEATURE
_____________________________________________________
RXCFNXX  94    FEAT      N       Y         CFDPRING
CUSTFEAT 94    FEAT      N       Y         CFDPRING
```

Translation verification tools

The following example shows the output from TRAVER used to verify Subscriber Programmable Ring Control (SPRING).

Subscriber Programmable Ring Control (SPRING) (continued)

TRAVER output example for Subscriber Programmable Ring Control (SPRING)

```
>TRAVER l 6216076 b44 b
TABLE IBNLINES
HOST 00 1 00 14 0 DT STN RES
6216076 200 $
TABLE LINEATTR
200 1FR NONE NT FR01 0 613 P621
L613 TSPS 10 NIL NILSFC NILLATA 0
NIL NIL 0
LCABILL OFF – BILLING DONE ON BA-
SIS OF CALLTYPE
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
TUPLE NOT FOUND
TABLE IBNFEAT
TUPLE NOT FOUND
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
AIN ORG ATTEMPT TDP: NO SUB-
SCRIBED TRIGGER.
TABLE NCOS
RESG200 0 0 0 RNCOS $
TABLE CUSTHEAD: CUSTGRP, PRE-
LIMXLA, CUSTXLA, FEATXLA,
VACTTTRMT AND DIGCOL
RESG200 NXLA RXCMN200 RXCFNXXX
RXCFNXXX 94 FEAT N N N
CFDPRING
+++ TRAVER: SUCCESSFUL CALL
TRACE +++

FEATURE RCTL NOT SUPPORTED BY
TRAVER
```

The RCTL identifier appearing at the end of the TRAVER is the internal name of the SPRING feature. It would also appear in existing feature related logs.

Subscriber Programmable Ring Control (SPRING) (continued)

SERVORD

SERVORD limitations and restrictions

The following SERVORD limitations and restrictions apply to Subscriber Programmable Ring Control (SPRING):

- PRGRING allows the CFDA subscriber to change the CFDA ringing time-out.
- FIXRING provides a fixed CFDA ringing time-out that only the telephone operating company can change.

SERVORD prompts

The following table shows the SERVORD prompts used to assign, Subscriber Programmable Ring Control (SPRING) to a subscriber's line.

SERVORD prompts for Subscriber Programmable Ring Control (SPRING) (Sheet 1 of 2)

Prompt	Valid input	Explanation
SONUMBER	Service number	The unique number of the service order to be entered.
DN_OR_LEN	Up to 15 digits for DN. Refer to Note for LEN.	Directory number or line equipment number.
OPTION	ADO	Option(s) associated with a service to be established, modified or deleted. A maximum of 20 options can be specified in any single ADD, ADO, EST, or NEW command.
SCRNL	Refer to Table CLSVSCRC	Screening by class of service.
NUMCALLS	0 - 1024	The number of calls that can be forwarded simultaneously. (0 to 1024)
TIME	Current time	Indicates the period of time the base station rings at the subscriber's before the call is forwarded.
Note: Refer to *SERVORD Reference Manual* for more information on service orders.		

Subscriber Programmable Ring Control (SPRING) (continued)

SERVORD prompts for Subscriber Programmable Ring Control (SPRING) (Sheet 2 of 2)

Prompt	Valid input	Explanation
RNGCTRL	Prgring orFixring	The new prompt “Ringctrl" is used to enable the functionality of feature Subscriber Programmable Ringing of CFDA on RES (SPRING).A fixed CFDA ringing time-out is provided when the value of prompt Ringctrl is Fixring. In this case only the telephone company can change the value.The RES CFDA subscriber is able to program the ringing time-out when the value of prompt Ringctrl is Prgring.
FDN	1 to 24 digits	The number to which calls will be forwarded. Enter 1 to 24 digits, the “$" cannot be used.
Note: Refer to *SERVORD Reference Manual* for more information on service orders.		

SERVORD example for adding Subscriber Programmable Ring Control (SPRING)

The following SERVORD example shows how Subscriber Programmable Ring Control (SPRING) is added to a subscriber's line using the ADO command.

Subscriber Programmable Ring Control (SPRING) (continued)

SERVORD example for Subscriber Programmable Ring Control (SPRING) in prompt mode

```
>SERVORD

>ADO
SONUMBER: NOW 99 08 AM
>
DN_OR_LEN
> 6216076
OPTION
> CFDA
SCRNL:
> NSCR
NUMCALLS:
>2
TIME:
>12
RINGCTRL:
>PRGRING
FDN
> 6216077
OPTION:
>
```

SERVORD example for Subscriber Programmable Ring Control (SPRING) in no-prompt mode

```
> ADO $6216076 CFDA NSCR 2 12  PRING 621077 $
```

Example service orders for SPRING

The following service order example shows how the value of the field “RINGCTRL" is changed form FIXRING to PRGRING using the CHF command.

Subscriber Programmable Ring Control (SPRING) (end)

SERVORD example for Subscriber Programmable Ring Control (SPRING) in prompt mode

```
>SERVORD
SO:
>CHF
SONUMBER: NOW 99 08 AM
>
DN_OR_LEN
> 6216076
OPTION
> CFDA
SCRNL:
> NSCR
NUMCALLS:
>2
TIME:
>12
RINGCTRL:
>PRGRING
FDN
> 6216077
OPTION:
>
```

SERVORD example for Subscriber Programmable Ring Control (SPRING) in no-prompt mode

```
> CHF $6216076 CFDA NSCR 2 12   PRING 621077 $
```

Subscriber Programmable Ringing (SPRING) for CFDA

Ordering codes

Functional group ordering code: RES00002

Functionality ordering code: RES00037

Release applicability

Subscriber Programmable Ringing (SPRING) for CFDA was introduced in NA004.

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

Subscriber Programmable Ringing (SPRING) for CFDA enables end users to determine the number of rings that occurs at their stations before an incoming call is forwarded to another directory number (DN).

Operation

SPRING provides end users with Call Forward Don't Answer (CFDA) control over the number of rings sent to their stations before an incoming call is forwarded to another DN, such as a voice processing system (VPS).

Prior to this activity, only telephone operating company personnel could control the time-out value of CFDA. However, with the introduction of SPRING, the end user can specify the number of rings after dialing an access code in the format *xx (for Digitone [DGT] sets) or 11xx (for rotary sets). Refer to the “Activation/deactivation by the end user" section for details.

In order for the end user to access SPRING, the access code first must be datafilled by telephone operating company personnel in table IBNXLA (IBN Translation). In addition, feature option CFDPRING must be added to subfield FEATURE of the FEAT translation selector and the end user must belong to a RES customer group already assigned CFDA. A CFDA end user is assigned the programmable ringing option when prompt RINGCTRL is set to PRGRING in table IBNFEAT (IBN Line Feature).

Note: Line option CFDVT (Call Forward Do Not Answer Variable Timing) is assigned automatically when telephone operating company personnel manually add option CFDA to a RES line.

Subscriber Programmable Ringing (SPRING) for CFDA (continued)

When the number of end user-specified rings is accepted, the value for field TIMEVAL, previously set in table IBNFEAT, is automatically updated for line option CFDVT . This value is also converted to seconds before being stored in table IBNFEAT. (Each ring cycle equals 6 seconds.)

Query commands

Command interpreter (CI) commands QDN (Query Directory Number) and QLEN (Query Line Equipment Number) can be accessed to display the value set in field RINGCTRL (providing that line option CFDA has been assigned to the RES line).

The following is a display example of command QDN for a RES line that was assigned programmable ringing with CFDA.

Query command QDN displaying programmable ringing

```
> QDN 6216076
------------------------------------------------------------
DN:  6216076
TYPE: SINGLE PARTY LINE
SNPA: 613  SIG: DT  LNATTIDX: 200
LINE EQUIPMENT NUMBER:  HOST 00 1 00 14
LINE CLASS CODE:  1FR
IBN TYPE: STATION:
CUSTGRP:  RESG200  SUBGRP: 0  NCOS: 0
CARDCODE: 6X17AC  GND: N  PADGRP: STDLN  BNV: NL
MNO: N
PM NODE NUMBER     :  23
PM TERMINAL NUMBER :  15
CFW INDEX:  N/A
OPTIONS:
DGT CFDA N NSCR 2 A 12 PRGRING 6216077
RES OPTIONS:
____________________________________________________________
```

Dump and restore

If a dump and restore process is performed from batch change supplement (BCS) 36 and below to another BCS with SPRING, the value of field RINGCTRL for all CFDA RES customer groups depends on the presence of SPRING patch FPA46. If the dump side has SPRING patch FPA46 applied and activated, all CFDA end users receive programmable ringing on the restore side (that is, RINGCTRL is set to PRGRING).

Subscriber Programmable Ringing (SPRING) for CFDA (continued)

Otherwise, if the patch is applied but not activated on the dump side or the patch is not applied, CFDA end users on the restore side do not receive programmable ringing (that is, RINGCTRL is set to FIXRING).

Note: Patch FPA46 supplies SPRING functionality on an individual customer basis, while the SPRING stream feature provides this functionality on an individual line basis.

Translations table flow

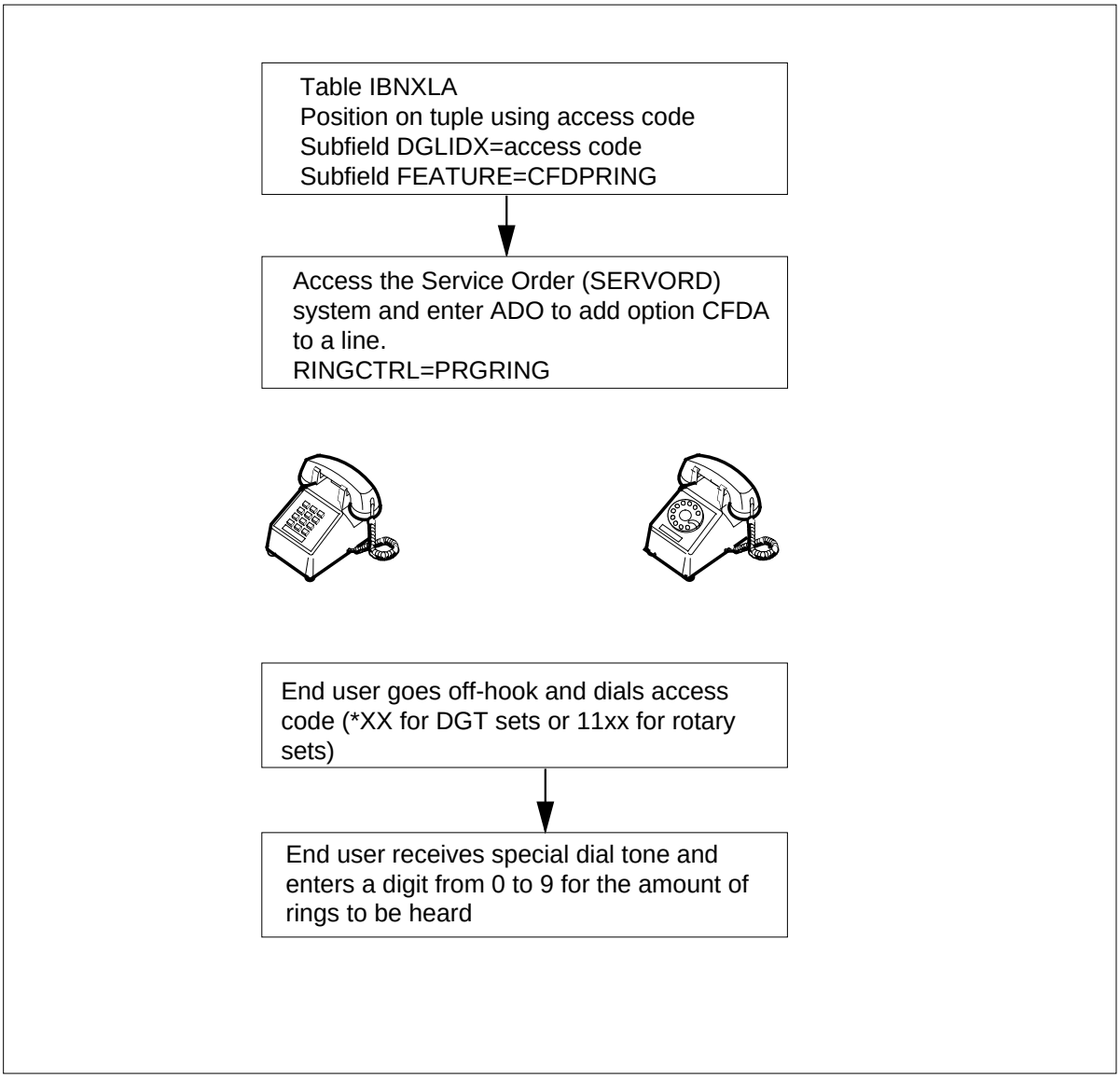
The Subscriber Programmable Ringing (SPRING) for CFDA translations tables are described in the following list:

- Table IBNXLA provides the name of the feature associated with the dialed activation code. Table IBNXLA is accessed by means of the translator name and access code for activation or deactivation.
- Table IBNFEAT lists the features assigned to a line equipment number (LEN). For SPRING, subfield RINGCTRL is added to feature CFDVT.

The Subscriber Programmable Ringing (SPRING) for CFDA translation process is shown in the flowchart that follows.

Subscriber Programmable Ringing (SPRING) for CFDA (continued)

Table flow for Subscriber Programmable Ringing (SPRING) for CFDA



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

Datafill example for Subscriber Programmable Ringing (SPRING) for CFDA

Datafill table	Example data
IBNXLA	CUSTFEAT 44 FEAT Y Y Y CFDRPING
IBNFEAT	HOST 01 0 01 19 0 CFDVT CFDVT 12 PRGRING

Subscriber Programmable Ringing (SPRING) for CFDA (continued)

Limitations and restrictions

Subscriber Programmable Ringing (SPRING) for CFDA is limited to RES lines and does not apply to POTS lines, cellular phones, MDC lines, multi-party lines, private branch exchange (PBX) lines, and trunks.

Interactions

The following paragraphs describe the interactions between Subscriber Programmable Ringing (SPRING) for CFDA and other functionalities.

Call Forward Do Not Answer Variable Timing

Subscriber Programmable Ringing (SPRING) for CFDA is inoperable without CFDA already assigned to a line. When CFDA for RES is manually assigned by telephone operating company personnel, the line automatically acquires CFDVT, which is required for SPRING. Therefore, if the corresponding CFDVT tuple in table IBNFEAT is deleted by telephone operating company personnel, the end user is unable to program the number of CFDA rings. (The end user instead receives feature not allowed [FNAL] treatment.)

Call Waiting

Although Call Waiting (CWT) has precedence over CFDA, if a line is busy, an incoming call is not forwarded even when the CFDA time-out value expires. However, CFDA can override CWT if Call Forward of Call Waiting (CFCW) is assigned to a customer group. Then an incoming call encountering a busy line is forwarded after the CFDA time-out value expires.

If the CFDA time-out value assigned through programmable ringing is low, when an incoming call encounters a busy line and CWT is accessed, the period during which the end user can accept the incoming call is short.

Three-way Calling and Call Transfer

Subscriber Programmable Ringing (SPRING) for CFDA cannot be accessed on the second leg of a three-way call (3WC) or a Call Transfer (CXR) call.

Dialing the SPRING access code and then hook flashing can be:

- interpreted as hanging up if there is no flash feature on the line (that is, any feature that interprets the flash-hook as a non-feature termination, such as 3WC).
- ignored if there is another flash feature on the line.

Activation/deactivation by the end user

To access SPRING, a RES end user in a specified customer group must have been assigned option CFDA with the programmable ringing control option. (A CFDA end user is assigned the programmable ringing option when prompt

Subscriber Programmable Ringing (SPRING) for CFDA (continued)

RINGCTRL is set to “PRGRING" in table IBNFEAT. Refer to the “SERVORD" section for details.)

An end user dials a code to activate SPRING. This access code must have been previously defined by telephone operating company personnel in table IBNXLA.

Activation/deactivation of Subscriber Programmable Ringing (SPRING) for CFDA by the end user

At your telephone:

1 To access SPRING, pick up the receiver and dial the specified access code in the format *xx (for a DGT set) or 11xx (for a rotary set).

where xx = access code set in table IBNXLA

Response:

End user receives a special dial tone that indicates a new CFDA time-out value can be entered.

2 Dial a digit from 0 to 9 corresponding to the number of rings that is to occur before an incoming call is forwarded.

Response:

End user receives a confirmation tone indicating the SPRING update has been accepted.

If the end user mistakenly enters 0 or 1 or the update fails, the feature routes the caller to reorder (RODR) treatment. The end user receives feature not allowed (FNAL) treatment and is unable to access SPRING if he or she is not a member of the specified RES customer group.

The number of specified rings remains in effect until either the end user or telephone operating company personnel change it.

Billing

Subscriber Programmable Ringing (SPRING) for CFDA does not affect billing.

Station Message Detail Recording

Subscriber Programmable Ringing (SPRING) for CFDA does not affect Station Message Detail Recording.

Subscriber Programmable Ringing (SPRING) for CFDA (continued)

Datafilling office parameters

The following table shows the office parameter used by Subscriber Programmable Ringing (SPRING) for CFDA. For more information about office parameters, refer to *Office Parameters Reference Manual.*

Office parameters used by Subscriber Programmable Ringing (SPRING) for CFDA

Table name	Parameter name	Explanation and action
OFCVAR	FIXED_CFBD_DEFAULT_STATE	This parameter enables the end user to change the default value of Call Forward Don't Answer or Call Forward Busy Line (CFDA or CFBL) states, where field CFDACNTL or field CFBLCNTL is set to F, or when field CFDACNTL or field CFBLCNTL is changed from N to F. The values for field CFDACNTL or field CFBLCNTL can be • N-Normal assignment (default state) does not provide any end user control for the CFDA or CFBL state or the forwarded-to DN. • F-Fixed assignment provides end user control for the CFDA or CFBL state only. • C-Programmed assignment provides end user control for the CFDA or CFBL state as well as the forwarded-to DN. ***Note:*** This parameter has two states, active and inactive. The default state is inactive, which enables end user control. The value of this parameter is based on the state of patch FPA48. If this patch is active on the dump side, this office parameter is set to ACT. Otherwise, it is set to INACT. ***Note:*** Field CFDACNTL or field CFBLCNTL is prompted during SERVORD only if parameter RES_SO_ SIMPLIFICATION subfield ENHANCED_ POTS_OPTIONS is set to Y.

Subscriber Programmable Ringing (SPRING) for CFDA (continued)

Datafill sequence

The following table lists the tables that require datafill to implement Subscriber Programmable Ringing (SPRING) for CFDA. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Subscriber Programmable Ringing (SPRING) for CFDA

Table	Purpose of table
OFCVAR	Variable Office Parameter. This table contains data on variable office parameters for the office. Refer to *Office Parameters Reference Manual* for details on how Subscriber Programmable Ringing (SPRING) for CFDA affects office parameters.
IBNXLA	IBN Translation. This table contains data for the digit translation of calls from an IBN station, attendant console, incoming IBN trunk group, or incoming side of a two-way IBN trunk group.
IBNFEAT	IBN Line Feature. This table lists the line features that are assigned to the IBN lines listed in table IBNLINES (IBN Line Assignment). ***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

Feature option CFDPRING is added to the range of values for subfield FEATURE of the FEAT translation selector.

The following table shows the datafill specific to Subscriber Programmable Ringing (SPRING) for CFDA for table IBNXLA. Only the field that applies directly to Subscriber Programmable Ringing (SPRING) for CFDA is shown. 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
RESULT		see subfield	Result. This field consists of subfields TRSEL, ACR, SMDR, VCDR, and FEATURE. ***Note:*** Only subfield FEATURE is affected by this feature.
	FEATURE	CFDPRING	Feature. Enter the name of the feature. Enter CFDPRING.

Subscriber Programmable Ringing (SPRING) for CFDA (continued)

Datafill example for table IBNXLA

The following example shows sample datafill for table IBNXLA.

MAP display example for table IBNXLA

```
        KEY
                                  RESULT

 ------------------------------------------------------
 CUSTFEAT 44       FEAT  Y  Y  Y   CFDPRING
```

Translation verification tools

Subscriber Programmable Ringing (SPRING) for CFDA does not use translation verification tools.

SERVORD

Subscriber Programmable Ringing (SPRING) for CFDA introduces SERVORD prompt RINGCTRL, which enables telephone operating company personnel to control whether or not the RES end user can change the CFDA ringing time-out.

SERVORD limitations and restrictions

Prompt CFDACNTL only displays if office parameter RES_SO_SIMPLIFICATION is set to Y in table OFCVAR. (In the first SERVORD example, CFDACNTL is shown; however, in the second SERVORD example, this prompt does not appear.)

SERVORD prompts

The following table shows the SERVORD prompts used to add Subscriber Programmable Ringing (SPRING) for CFDA to a line.

SERVORD prompts for Subscriber Programmable Ringing (SPRING) for CFDA (Sheet 1 of 2)

Prompt	Valid input	Explanation
OPTION	CFDA,CFBL	Indicates the option associated with a service to be established, modified, or deleted
CFDACNTL: N	N, C, F	Indicates the state of Call Forwarding Do Not Answer control. N=normal (default), F=fixed, and C=programmed assignment

Subscriber Programmable Ringing (SPRING) for CFDA (continued)

SERVORD prompts for Subscriber Programmable Ringing (SPRING) for CFDA (Sheet 2 of 2)

Prompt	Valid input	Explanation
SCRNCL	NSCR	Indicates the screening by class of service
NUMCALLS	1-1024	Indicates the number of calls that can be forwarded simultaneously
TIME	12-60	Indicates the period of time (in seconds) the base station is to ring before the call is forwarded
RINGCTRL	PRGRING or FIXRING	Indicates whether the RES end user or telephone operating company personnel control the ringing time-out. PRGRING enables the end user to change the CFDA ringing time-out. FIXRING indicates that the ringing time-out is fixed and only telephone operating company personnel can change it.
FDN	1-30 digits	Indicates the DN to which calls are to be forwarded.

SERVORD example for adding Subscriber Programmable Ringing (SPRING) for CFDA

The following SERVORD example shows how Subscriber Programmable Ringing (SPRING) for CFDA is added to a line using the ADO (add option) command.

Subscriber Programmable Ringing (SPRING) for CFDA (continued)

SERVORD example for adding Subscriber Programmable Ringing (SPRING) for CFDA in prompt mode

```
>ADO
SONUMBER:  NOW 95 3 27 AM
>
DN_OR_LEN:
> 6214000
OPTION:
> CFDA
CFDACNTL: N
>F
SCRNCL:
> NSCR
NUMCALLS:
> 10
TIME:
> 45
RINGCTRL:
> PRGRING
FDN:
> 6214001
OPTION:
> $
```

SERVORD example for adding Subscriber Programmable Ringing (SPRING) for CFDA in no-prompt mode

```
> ADO $ 6214000 CFDA F NSCR 10 45 PRGRING 6214001 $
```

SERVORD example for changing Subscriber Programmable Ringing (SPRING) for CFDA

The following SERVORD example shows how the value for Subscriber Programmable Ringing (SPRING) for CFDA is changed using the CHF (change feature) command.

Subscriber Programmable Ringing (SPRING) for CFDA (end)

SERVORD example for changing the value of Subscriber Programmable Ringing (SPRING) for CFDA in prompt mode

```
>CHF
SONUMBER:  NOW 95 3 27 AM
>
DN_OR_LEN:
> 6214000
OPTION:
> CFDA
SCRNCL:
> NSCR
NUMCALLS:
> 2
TIME:
> 20
RINGCTRL:
> PRGRING
FDN:
> 6214001
OPTION:
> $
```

SERVORD example for changing the value of Subscriber Programmable Ringing (SPRING) for CFDA in no-prompt mode

```
> CHF $ 6214000 CFDA NSCR 2 20 PRGRING 6214001 $
```

Teen Service (SDN)

Ordering codes

Functional group ordering code: RES00002

Functionality ordering code: not applicable

Release applicability

BCS24 and up (BR0547)

BCS25 and up (AF0815)

BCS26 and up (AF1256)

Prerequisites

To operate, Teen Service (SDN) has the following prerequisites:

- BAS Generic, BAS00003
- MDC Standard, MDC00003
- MDC Minimum, MDC00001
- RES Service Enablers, RES00006

Description

Teen Service (SDN) allows the assignment of multiple directory numbers (DN) to one line equipment number (LEN). Special line signaling is provided for distinctive ringing, enabling subscribers to differentiate between calls terminating to the different DNs assigned to their lines.

Feature 59006893, Provisioning for Enhanced Multi-NPA (ordering code NPE0004) allows a secondary directory number to have a numbering plan area code different from that of the primary directory number.

The SDN line option can be assigned to lines with line class codes 1FR (one-party flat rate), 1MR (one-party message rate), RES, and IBN (Meridian Digital Centrex [MDC] environment). This feature description covers Teen Service in the plain old telephone service (POTS) environment (1FR and 1MR lines). Teen Service in the RES environment is described in “Adding Options on a Secondary Number (ESDN)." Teen Service in the MDC environment is described in the Customer Data Schema Reference Manual.

A 1FR or 1MR Teen Service line has a primary DN (PDN) and up to six secondary DNs (SDN).

With selective Call Forwarding (CFW), an SDN can be forwarded along with its PDN. See “Selective call forwarding" for a description of this capability.

Teen Service can be assigned to lines on the following line equipment:

- line concentrating modules (LCM) with superimposed, coded, or frequency selective ringing
- the following subscriber carrier modules (SCM):
  - — Subscriber Carrier Module-100 Urban (SMU)
  - — Subscriber Carrier Module-100 Rural (SMR)
  - — Subscriber Carrier Module-100S (SMS)
- line modules (LM) with frequency selective ringing

Note 1: The SMS, SMU, and SMR serve as controllers for the SLC-96, DMS-1 Urban, and DMS-1 Rural carrier modules, respectively. These controllers specify which subscribers to ring and with what pattern.

Note 2: Only one SDN can be assigned to a line with frequency selective ringing.

Operation

Ringing patterns

When a call terminates to an idle line with Teen Service, the line is rung with a ringing pattern that is associated with the called DN. The special distinctive ringing patterns defined for Teen Service distinguish between calls for each SDN.

LCMs (superimposed and coded ringing) and SCMs

The table that follows shows the ringing patterns for LCM lines with superimposed or coded ringing and for SCM lines.

Ringing patterns for Teen Service (LCMs with superimposed and coded ringing, and SCMs)

DN	Ringing pattern
PDN	Normal ringing (approximately 2 s on, 4 s off)
SDN 1	2 long rings
SDN 2	2 short rings, 1 long ring
SDN 3	1 short ring, 1 long ring, 1 short ring

Teen Service (SDN) (continued)

The table that follows shows the duration of long and short rings, and of the inter-ring silence for LCMs with superimposed and coded ringing. The ring type associated with the line module equipment (LME) is specified in Tables LMRNG, LCMINV, RCSINV, RCUINV, and RCTINV, depending on the type of module to which the line belongs. See “Datafill sequence" for more information on datafilling these tables.

The coded 20-Hz ring durations shown in the table that follows apply to SCMs. The ringing type is set internally and cannot be changed through datafill.

Ringing duration for LCMs and SCMs

Ringing type	Long ring	Short ring	Inter-ring silence
Superimposed	0.92 s	0.46 s	0.46 s
Coded 20 Hz	1.00 s	0.50 s	0.50 s
Coded 30 Hz	0.90 s	0.45 s	0.45 s

LCMs and LMs (frequency selective ringing)

The table that follows shows the ringing patterns for LCM and LM lines with frequency selective ringing. For each PDN on a line with frequency selective ringing, only one SDN can be assigned.

Ringing patterns for Teen Service (LCMs and LMs with frequency selective ringing)

DN	Ringing pattern
PDN	Normal ringing (approximately 2 s on, 4 s off)
SDN 1	2 short rings (0.60 s on, 0.65 s off, 0.70 s on, 4.04 s off)

Call waiting ringing

A Teen Service subscriber receives distinctive call waiting tones for the PDN and SDNs if feature package NTX807AB, Enhanced Call Waiting POTS, is present in the office. This allows subscribers to distinguish between calls for different SDNs.

The table that follows shows the call waiting tone patterns for each DN on a Teen Service line.

Call waiting tone patterns for Teen Service

DN	Pattern (duration in seconds)
PDN	0.3 s on
SDN 1	0.1 s on, 0.1 s off, 0.1 s on
SDN 2	0.1 s on, 0.1 s off, 0.1 s on, 0.1 s off, 0.1 s on
SDN 3	0.1 s on, 0.1 s off, 0.3 s on, 0.1 s off, 0.1 s on

Call waiting ringing requires an NT3X68AC trunk card dedicated for the following call waiting tones: ENHCWT1, ENHCWT2, and ENHCWT3. See "Datafill procedure for Table STN" for information on using the tones.

Selective call forwarding

With selective CFW, calls to an SDN are either forwarded with the PDN or not forwarded at all. For each SDN associated with a PDN, forwarding is specified through service orders.

If calls to an SDN are to be forwarded, calls to the SDN are forwarded whenever call forwarding is activated for the PDN. If calls to an SDN are not to be forwarded, calls to the SDN terminate as usual.

A call to an SDN that is forwarded along with its PDN uses the ringing cadence that is applicable at the station to which the call is forwarded.

Note: An enhanced SDN (ESDN) can be forwarded independently of the PDN. Refer to "Adding Options on a Secondary Number (ESDN)" for more information.

Teen Service (SDN) (continued)

Teen Service line options

Option SDN is assigned to lines through the service order system (SERVORD). When SDN is specified, the following information must be provided:

- SDN
- SDN ringing pattern
- SDN options:
  - — P specifies call forwarding of the SDN with the PDN
  - — N specifies no call forwarding for the SDN
  - — E specifies an ESDN (RES lines only)

Note: Option E is described in “Adding Options on a Secondary Number (ESDN)."

See “SERVORD" for examples of setting up Teen Service lines.

Translations table flow

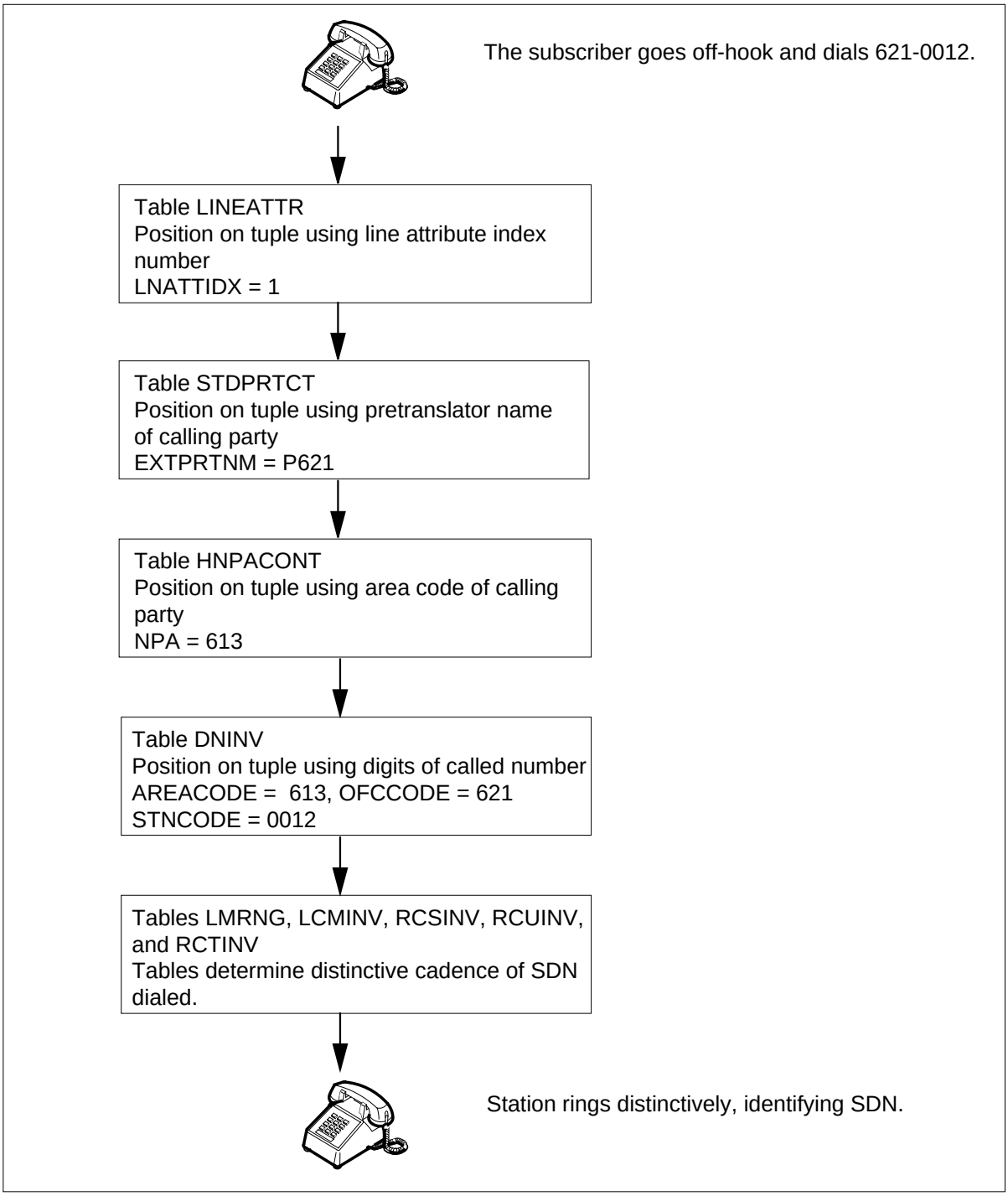
The Teen Service (SDN) translations tables are described in the following list:

- Table LINEATTR gives information relating to the calling party.
- Table STDPRTCT and HNPACONT screen the digits dialed.
- Table DNINV identifies that the number dialed was an SDN and gives further information on the number.
- Table LMRNG, LCMINV, RCSINV, RCUINV, and RCTINV provide distinctive ringing.

The Teen Service (SDN) translation process is shown in the flowchart that follows.

Teen Service (SDN) (continued)

Table flow for Teen Service (SDN)



Teen Service (SDN) (continued)

The following table lists the datafill content used in the flowchart. The LEN of subscriber is HOST 00 0 01 16 and the SDN is 6210012.

Datafill example for Teen Service (SDN)

Datafill table	Example data
LINEATTR	1 1MR NONE NT FR01 0 613 P621 L613 TSPS 10 NIL NILSFCLATA1 0 NIL NIL 00 N $
STDPRTCT	P621 (1) (0)
HNPACONT	613 128 2 (36) (1) (0) (0)
DNINV	613 621 0012 SDN HOST 00 0 00 11 SDN1 N
LMRNG	HOST 02 52V F 16 17 20 25
LCMINV	HOST 00 0 LCE 4 1 P 2 6X04AA NIL_LOAD LGC 0 N 256K LCM Y F BOC 20 30 40 50 HLCM (0) (2) (1) (3) $
RCSINV	REM1 01 2 RCE 29 48 2 A 4 NO_LOAD SMS 9 MODE1 (17) (18) $ MODE2 (12) $ N C WP1 N Y 9 4 8 0 DOOR_OPEN MINOR
RCTINV	REM2 01 2 RTR 29 48 2 A 4 NO_LOAD SMR 9 (17) (18) $ C SLTA Y
RCUINV	REM1 01 2 RTR 29 48 2 A 4 SMU 9 (1 1) (2 2) (3 3) (4 4) (5 5) (6 6) (7 7) (8 8) $ C Y Y Y Y Y Y N N S N

Limitations and restrictions

The following limitations and restrictions apply to Teen Service (SDN):

- Teen Service is incompatible with the following types of lines:
  - — party lines
  - — private branch exchange (PBX) lines
  - — PBX message rate (PBM) lines
  - — COIN lines
- Teen Service is incompatible with the following line options:
  - — BNN (Bridged Night Number)
  - — CIR (Circular)
  - — DNH (Directory Number Hunt)
  - — DLH (Distributed Line Hunt)
  - — DTM (Denied Termination)

— FSR (frequency selective ringing)

— LOD (line overflow to directory number)

— LOR (line overflow to route)

— MLH (Multiline Hunt)

— OFR (overflow register, signal distribution point)

— OFS (overflow register, software)

— PILOT (pilot billing for hunt group)

— PRH (preferential hunt)

— RCHD (Residential Call Hold)

— CFRA (Call Forwarding Remote Access)

— RMB (Random Make Busy)

— TERM (hunt group terminator)

— TRMBOPT (terminator billing option on hunt group)

- In NA012, feature 59006893, Provisioning for Enhanced Multi-NPA, allows an SDN to contain an NPA different from that of the primary DN. Users can enable or disable this feature through the use of software optionality control (SOC). When this feature is enabled, NPAs of SDNs and primary DNs can be different. When it is disabled, NPAs of SDNs and primary DNs must be the same, though the office codes of these DNs can be different. SDNs must have DNs that are not previously unassigned.
- Assigned SDNs can have NPAs different from that of the primary DN. This is due to the Provisioning for Enhanced Multi-NPA feature. The DN given as the SDN must be previously unassigned.
- Immediate ringing is not supported when ringing an SDN. This ensures the identification of the ringing cadence when more than one SDN exists on a Teen Service line. This only affects the ringing of SDNs, not PDNs. (Immediate ringing is disabled only when an SDN ringing cadence is used.)
- When Teen Service is added to a line using frequency selective ringing, only one SDN can be defined for the line, and the ringing pattern must be 0 or 1. If the line is connected to an LCM or LM, that SDN rings with a short-short cadence rather than the usual long-long cadence for the SDN.
- Frequency selective ringing of a PDN or SDN is done only at the primary frequency of the line module equipment (LME) serving that line. Frequencies used by a particular LME are specified in tables LMRNG, LCMINV, RCSINV, RCUINV, and RCTINV. The primary frequency is the first frequency specified in the entry for that LME.

Teen Service (SDN) (continued)

- Subscribers' preferences for SDN call forwarding are specified through service orders. Subscribers cannot control SDN call forwarding themselves.
- Calls to an SDN that have been forwarded with its PDN use the ringing cadence that is appropriate at the forwarded-to line. For example, if a call is forwarded to another SDN, it uses that SDN's ringing cadence. If a call is forwarded to the PDN of a Teen Service line or to a non-Teen Service line, it uses the normal ringing pattern (2 s on, 4 s off).
- SDNs cannot be forwarded separately from their PDN. If the PDN activates call forwarding, SDNs that are to be forwarded automatically forward to the same line as the PDN. Subscribers cannot forward their PDN to one line and forward their SDN to another.

Interactions

The following paragraphs describe the interactions between Teen Service (SDN) and other functionalities.

Call Forwarding

Without selective Call Forwarding, only the PDN is forwarded when CFW is activated. Incoming SDN calls are not forwarded. When a PDN is call forwarded to an associated SDN, calls to the PDN result in the ringing cadence of the SDN.

Calling Line Identification

When Calling Line Identification (CLI) is assigned to a Teen Service line, termination to any DN on the line causes a log to be generated to identify the calling line. The log identifies the line with CLI by displaying the LEN and the PDN of the Teen Service line.

Call Waiting

Distinctive call waiting tones are provided for Teen Service lines with the CWT feature if feature package NTX807AB, Enhanced Call Waiting POTS, is available.

Activation/deactivation by the end user

Teen Service (SDN) requires no activation or deactivation by the end user.

Billing

Teen Service (SDN) does not affect billing.

Station Message Detail Recording

Teen Service (SDN) does not affect Station Message Detail Recording.

Teen Service (SDN) (continued)

Datafilling office parameters

Teen Service (SDN) does not affect office parameters.

Datafill sequence

The following table lists the tables that require datafill to implement Teen Service (SDN). The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Teen Service (SDN)

Table	Purpose of table
LENFEAT	Line Equipment Number Feature Table. Table LENFEAT contains information that defines the features assigned to each line. ***Note 1:*** Table LENFEAT is datafilled for lines with line class codes of 1FR and 1MR. Table IBNFEAT is datafilled for RES lines. Refer to “Adding Options on a Secondary Number (ESDN)" for information on Teen Service datafill for RES lines. ***Note 2:*** This table is datafilled through SERVORD; therefore, no datafill procedure or example is provided.
DNINV	Directory Number Inventory Table. Table DNINV is a read-only table and contains data for all assigned and unassigned DNs, including DNs in table DNROUTE.

The following table lists the tables that must be datafilled for distinctive call waiting tones for SDNs.

Datafill tables required for Teen Service (SDN)

Table	Purpose of table
CLLI	Common Language Location Identifier Table. Table CLLI uniquely identifies the far end of each announcement (tone or trunk group). Teen Service adds three codes to Table CLLI. The codes assigned to the tone trunk circuit are ENHCWT1, ENHCWT2, and ENHCWT3.
STN	Special Tone Table. Table STN contains information for tones that require trunk cards. It lists the physical location and the maximum number of connections that can be made to each of the tones. Datafill in table STN is required for Teen Service CWT with distinctive CWT tones for SDNs.

Teen Service (SDN) (continued)

The following table lists tables that must be datafilled for SDN distinctive ringing. Datafill the table that pertains to the LME to which the SDN line is connected.

Datafill tables required for Teen Service (SDN)

Table	Purpose of table
LMRNG	Line Module Ring Code Table. Table LMRNG specifies the type of ringing assigned to each LM or remote line module (RLM).
LCMINV	Line Concentrating Module Inventory Table. Table LCMINV contains various assignments for each bay associated with a local, remote LCM (RLCM), convertible RLCM, international local remote LCM (IRLCM), ISDN LCM (LCMI), Meridian cabinet line module (MCLM), or enhanced ISDN LCM (LCME).
RCSINV	Remote Concentrator Subscriber Inventory Table. Table RCSINV contains various data assignments for each remote concentrator subscriber (RCS) module.
RCTINV	Remote Concentrator Terminal Inventory Table. Table RCTINV contains various data assignments for each remote concentrator terminal (RCT) unit.
RCUINV	Remote Carrier Urban Inventory Table. Table RCUINV contains an inventory of remote carrier urban (RCU) modules attached to a DMS-100 switch and information on various data assignments for each RCU.

Datafilling table DNINV

Table DNINV (Directory Number Inventory) is a read-only table and contains data for all assigned and unassigned DNs, including DNs in table DNROUTE. For a definition of the fields in the table, refer to the Customer Data Schema Reference Manual.

Datafill example for table DNINV

The following example shows sample datafill for table DNINV.

Note: The first tuple shows the data for the PDN, and the second tuple shows the SDN.

MAP display example for table DNINV

```
 AREACODE      OFCCODE       STNCODE        DNRESULT
_____________________________________________________________
613         621        0011         L  HOST 00 0 00 11
613         621       0012   SDN  HOST 00 0 00 11 SDN1 N
```

Datafilling table CLLI

Table CLLI (Common Language Location Identifier) uniquely identifies the far end of each announcement (tone or trunk group). Teen Service adds three codes to table CLLI. The codes assigned to the tone trunk circuit are ENHCWT1, ENHCWT2, and ENHCWT3.

The following table shows the datafill specific to Teen Service (SDN) for table CLLI. Only those fields that apply directly to Teen Service (SDN) are shown. For a description of the other fields, refer to the Customer Data Schema Reference Manual.

Datafilling table CLLI

Field	Subfield	Entry	Explanation and action
CLLI		alphanumeric (1 to 16 characters)	Common Language Location Identifier. Uniquely identifies the far end of each announcement, tone or trunk group.
ADNUM		0 to one less than the size of Table CLLI shown in Table DATASIZE	Administrative Trunk Group Number. Enter a number from 0 to one less than the size of Table CLLI shown in Table DATASIZE.
TRKGRSIZ		0 to 2047	Trunk Group Size. Enter the maximum quantity of trunk members that are expected to be assigned.
ADMININF		alphanumeric (1 to 32 characters)	Administrative Information. Operating company administrative information. Information in this field is not used by the switching unit.

Datafill example for table CLLI

The following example shows sample datafill for table CLLI.

MAP display example for table CLLI

```
CLLI         ADNUM    TRKGRSIZ                    ADMININF
_____________________________________________________________
ENHCWT1     650        10                         XX
ENHCWT2     651        10                         XX
ENHCWT3     652        10                         XX
```

Teen Service (SDN) (continued)

Datafilling table STN

Table STN (Special Tone) contains information for tones that require trunk cards. It lists the physical location and the maximum number of connections that can be made to each of the tones. Datafill in table STN is required for Teen Service CWT with distinctive CWT tones for SDNs.

The following table shows the datafill specific to Teen Service (SDN) for table STN. Only those fields that apply directly to Teen Service (SDN) are shown. For a description of the other fields, refer to the Customer Data Schema Reference Manual.

Datafilling table STN (Sheet 1 of 2)

Field	Subfield	Entry	Explanation and action
SK		see subfields	Special Tone Key. This field consists of the subfields TONE and MEMBER. These subfields are described below.
	TONE	ENHCWT1, ENHCWT2, or ENHCWT3	Tone. This subfield specifies the code assigned to the tone trunk circuit in table CLLI. Enter ENHCWT1, ENHCWT2, or ENHCWT3.
	MEMBER	0 to 999	Member. This subfield specifies the member number assigned to the tone trunk circuit. Enter a value from 0 to 999.
TMTYPE		MTM or STM	Trunk Module Type. This field specifies the type of trunk module on which the trunk circuit is located. Enter MTM for maintenance trunk module or STM for service trunk module.
TMNO		0 to 2047	Trunk Module Number. This field specifies the number assigned to the maintenance or service trunk module on which the tone trunk circuit is located. Enter a value from 0 to 2047.
TMCKTNO		0 to 29	Trunk Module Circuit Number. This field specifies the trunk module circuit number on the maintenance or service trunk module to which the tone trunk circuit is assigned. Enter a value from 0 to 29.
CARDCODE		alphanumeric	Card Code. This field specifies the product engineering code (PEC) of the tone trunk circuit. Enter the card code.

Datafilling table STN (Sheet 2 of 2)

Field	Subfield	Entry	Explanation and action
MAXCONN		1 to 255	Maximum Connections. This field specifies the maximum number of simultaneous connections that are allowed to be made to the tone trunk circuit. Enter a value from 1 to 255.
TRAFSNO		0, or 1 to 127	Traffic Separation Number. This field specifies the traffic separation number. Where switching unit is local/toll or military private branch exchange (PBX), enter the outgoing traffic separation number (a value from 1 to 127). Where the switching unit is not required, enter 0.

Datafill example for table STN

The following example shows sample datafill for table STN.

MAP display example for table STN

```
SK          TMTYPE  TMNO  TMCKTNO  CARDCODE  MAXCONN  TRAFSNO
_____________________________________________________________
ENHCWT1 0     MTM     22      3      3X68AC        5      10
```

Datafilling table LMRNG

Table LMRNG (Line Module Ring Code) specifies the type of ringing assigned to each LM or remote line module (RLM).

The following table shows the datafill specific to Teen Service (SDN) for table LMRNG. Only those fields that apply directly to Teen Service (SDN) are shown. For a description of the other fields, refer to the Customer Data Schema Reference Manual.

Datafilling table LMRNG

Field	Subfield	Entry	Explanation and action
RNGDATA		see subfield	Ring Data. This field consists of subfields. This subfield is described next.
	RNGTYPE	F, or UNASSIGNED	Ring Type. This subfield specifies the type of ringing assigned to the line module (LM). Enter F to specify frequency selective ringing. UNASSIGNED is used when changing the ring type of a tuple.

Teen Service (SDN) (continued)

Datafill example for table LMRNG

The following example shows sample datafill for table LMRGN.

MAP display example for table LMRNG

```
FRAMENO        CNPRESV                RNGDATA
_______________________________________________________
HOST 02        52V                    F 16  17  20  25
```

Error messages for table LMRNG, LCMINV, RCSINV, RCUINV, and RCTINV

The following error messages apply to table LMRNG, LCMINV, RCSINV, RCUINV, and RCTINV.

Error messages for tables LMRNG, LCMINV, RCSINV, RCUINV, and RCTINV

Error message	Explanation and action
`SDNS 2 AND/OR 3 NOT ALLOWED WITH FREQUENCY SELECTIVE RINGING.`	Only one SDN is allowed on lines with frequency selective ringing.
`SDNS2 AND/OR 3 FOUND ON FOLLOWING LINES:` `npa nxx-xxxx  SDN2  SDN3`	Delete the second and third SDNs from the PDNs listed in the error message. Then repeat the addition or change to the tuple.
`SDNS NOT ALLOWED WITH NEW RINGTYPE.`	RNGTYPE is incompatible with SDNs. The valid input differs for the different line equipment tables. Refer to individual datafill procedures for a list of valid ring types for each table.
`SDNS FOUND ON FOLLOWING LINES:` `npa nxx-xxxx  SDN1 SDN2 SDN3`	Remove the SDNs listed in the error output, or change the value if RNGTYPE.

Datafilling table LCMINV

Table LCMINV (Line Concentrating Module Inventory) contains various assignments for each bay associated with a local, remote LCM (RLCM), convertible RLCM, international local remote LCM (IRLCM), ISDN LCM (LCMI), Meridian cabinet line module (MCLM), or enhanced ISDN LCM (LCME).

The following table shows the datafill specific to Teen Service (SDN) for table LCMINV. Only those fields that apply directly to Teen Service (SDN) are

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

Note: Refer to “Error messages for tables LMRNG, LCMINV, RCSINV, RCUINV, and RCTINV" for information on the error messages related to this table.

Datafilling table LCMINV

Field	Subfield	Entry	Explanation and action
LCMTYPE		see subfields	LCM Type. This field specifies the line equipment module type. Enter LCM, ALCM, ILCM, ELCM, SRU, LCME, or LCMI. This field consists of subfields RGEQUIP and RNGTYPE. These subfields are described next.
	RGEQUIP	Y	Ringing Equipment. This subfield specifies whether a ringing generator is equipped. Enter Y.
	RNGTYPE	C, F, S, or UNASSIGNED	Ringing Type. This subfield specifies the type of ringing assigned to the LCM. The following ringing types are valid for SDNs: C - coded (at 20 Hz) F - frequency S - superimposed C30 - coded (at 30 Hz) UNASSIGNED is used when changing the ring type of a tuple.

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  MEMSIZE
                                                    LCMTYPE

_____________________________________________________________
HOST 00 0   LCE      4      1     P   2  6X04AA NIL_LOAD
LGC  0                                     N       256K
   LCM Y   F REA   20 30 40 50 HLCM  (12) (14) (13) (15)
R
```

Teen Service (SDN) (continued)

Datafilling table RCSINV

Table RCSINV (Remote Concentrator Subscriber Inventory) contains various data assignments for each remote concentrator subscriber (RCS) module.

The following table shows the datafill specific to Teen Service (SDN) for table RCSINV. Only those fields that apply directly to Teen Service (SDN) are shown. For a description of the other fields, refer to the Customer Data Schema Reference Manual.

Note: Refer to “Error messages for tables LMRNG, LCMINV, RCSINV, RCUINV, and RCTINV" for information on the error messages related to this table.

Datafilling table RCSINV

Field	Subfield	Entry	Explanation and action
RNGTYPE		C, C30, F, S, or UNASSIGNED	Ringing Type. This field specifies the type of ringing assigned to the RCS.The following ringing types are valid for SDNs: C - coded (at 20 Hz) C30 - coded (at 30 Hz) F - frequency ringing (Where F is entered, field FREQUENCIES must also be datafilled.) S - superimposed ringing UNASSIGNED is used when changing the ring type of a tuple.

Datafill example for table RCSINV

The following example shows sample datafill for table RCSINV.

MAP display example for table RCSINV

```
 RCSNO    FRTYPE  FRNO  SHPOS  FLOOR  ROW  FRPOS  LOAD
CSPMNO                                            ABINFO
                                                  CDINFO
RNGTYPE  ACU  PROTINFO                          SCSDINFO
MISCTEXT                                      ALMSEVER
_____________________________________________________
REM2 01 2  RCE     29     48     2     A     4    NO_LOAD
SMS 9                                  MODE1 (17) (18) $
                                          MODE2 (12) $ N
C         WP1   N                        Y  9 4  8 0
DOOR OPEN                                    MINOR
```

Datafilling table RCTINV

Table RCTINV (Remote Concentrator Terminal Inventory) contains various data assignments for each remote concentrator terminal (RCT) unit.

The following table shows the datafill specific to Teen Service (SDN) for table RCTINV. Only those fields that apply directly to Teen Service (SDN) are shown. For a description of the other fields, refer to the Customer Data Schema Reference Manual.

Note: Refer to “Error messages for tables LMRNG, LCMINV, RCSINV, RCUINV, and RCTINV" for information on the error messages related to this table.

Datafilling table RCTINV

Field	Subfield	Entry	Explanation and action
RNGDATA		see subfield	Ringing Data. This field consists of the subfield RNGTYPE. This subfield is described next.
	RNGTYPE	C, C30, F, S, or UNASSIGNED	Ringing Type. This subfield specifies the type of ringing assigned to the RCT. The following ringing types are valid for SDNs: C - coded (at 20 Hz) C30 - coded (at 30 Hz) F - frequency selective ringing (Where F is entered, the FREQUENCIES field must also be datafilled.) S - superimposed UNASSIGNED is used when changing the ring type of a tuple.

Datafill example for table RCTINV

The following example shows sample datafill for table RCTINV.

Teen Service (SDN) (continued)

MAP display example for table RCTINV

```
 RCTNO     FRTYPE   FRNO   SHPOS   FLOOR   ROW   FRPOS   LOAD
CSPMNO
          LKINFO
RNGDATA                                  SLTINFO   LINEAUDT
_____________________________________________________________
REM1 01 2  RTR      29      48      2      A      4     NO_LOAD
SMR 9                                                (17) (18) $
C                                                     SLTA     Y
```

Datafilling table RCUINV

Table RCUINV (Remote Carrier Urban Inventory) contains an inventory of remote carrier urban (RCU) modules attached to a DMS-100 switch and information on various data assignments for each RCU.

The following table shows the datafill specific to Teen Service (SDN) for table RCUINV. Only those fields that apply directly to Teen Service (SDN) are shown. For a description of the other fields, refer to the Customer Data Schema Reference Manual.

Note: Refer to "Error messages for tables LMRNG, LCMINV, RCSINV, RCUINV, and RCTINV" for information on the error messages related to this table.

Datafilling table RCUINV

Field	Subfield	Entry	Explanation and action
RNGDATA		see subfield	Ringing Data. This field consists of the subfield RNGTYPE. This subfield is described next.
	RNGTYPE	C, C30, F, S, or UNASSIGNED	Ringing Type. This subfield specifies the type of ringing assigned to the RCT. The following ringing types are valid for SDNs: C - coded (at 20 Hz) C30 - coded (at 30 Hz) F - frequency selective ringing (Where F is entered, the FREQUENCIES field must also be datafilled.) S - superimposed UNASSIGNED is used when changing the ring type of a tuple.

Datafill example for table RCUINV

The following example shows sample datafill for table RCUINV.

MAP display example for table RCUINV

```
  RCUNO     FRTYPE   FRNO   SHPOS   FLOOR   ROW   FRPOS    CSPMNO
                                                  CSLNKTAB
 RNGDATA     LTA    RLTP   RTAC   LINESHF1 CTRLSHF2 LINESHF2
 SSM1 SSM2                                SYSTMOPT    DRTUTEST
 ____________________________________________________________
REM1 01 2  RTR      29      48      2      A      4     SMU 9
       (1 1) (2 2) (3 3) (4 4) (5 5) (6 6) (7 7) (8 8) $
C              Y      Y      Y      Y        Y           Y
  N     N                                  S             N
```

Translation verification tools

The following example shows the output from TRAVER (translations verification) command when it is used to verify Teen Service (SDN).

Teen Service (SDN) (continued)

TRAVER command output example for Teen Service (SDN)

```
>TRAVER L 6215000 6210012 B
TABLE IBNLINES
HOST 00 0 01 16 0 DT STN RES 6215000 0 (COT) (ACB) (AR)$
TABLE LINEATTR
0 1FR NONE NT FR01 0 613 P621 L613 TSPS 10 NIL NILSFC
   LATA1 0  NIL NIL 00 Y RESGRP 0 2 $
LCABILL OFF – BILLING DONE ON BASIS OF CALLTYPE
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
TUPLE NOT FOUND
TABLE NCOS
RESGRP 2 0 0 RNCOS2 ( XLAS RXCMN2 NXLA RES) $
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRMT, AND
DIGCOL
RESGRP NXLA RESXLA RXCFN 0 RES
TABLE DIGCOL
RES SPECIFIED: RES DIGIT COLLECTION
TABLE IBNXLA: XLANAME RXCMN2
TUPLE NOT FOUND
DEFAULT FROM TABLE XLANAME:
RXCMN2
   (NET N N N 0 N NDGT N Y GEN ( LATTR 1) (EA MCI Y 0) $)$ 9
TABLE DIGCOL
NDGT SPECIFIED: DIGITS COLLECTED INDIVIDUALLY
TABLE LINEATTR
1 1MR NONE NT FR01 0 613 P621 L613 TSPS 10 NIL NILSFC
LATA1 0             NIL NIL 00 N $
LCABILL OFF – BILLING DONE ON BASIS OF CALLTYPE
TABLE STDPRTCT
   * SUBTABLE STDPRT
WARNING: CHANGES IN TABLE STDPRT MAY ALTER OFFICE
BILLING.  CALL TYPE DEFAULT IS NP.   PLEASE REFER TO DOCUMENTATION.
P621 ( 1) ( 0)
   * 621 632 N NP 0 NA
   * SUBTABLE AMAPRT
   * KEY NOT FOUND
   * DEFAULT VALUE IS: NONE OVRNONE N
```

TRAVER command output example for Teen Service (SDN) (continued)

```
TABLE HNPACONT
613 128 2 ( 36) ( 1) ( 0) ( 0)
   * SUBTABLE HNPACODE
   * 621 621 DN 613 621
TABLE TOFCNAME
613 621
TABLE DNINV
613 621 0012 SDN HOST 00 0 00 11 SDN1 N
TABLE DNATTRS
613 621 0012
   (PUBLIC (NONUNIQUE ) $)$ $
TABLE DNGRPS
TUPLE NOT FOUND
TABLE LCASCRCN
613 L613 ( 28) OPTL N
   * SUBTABLE LCASCR
   * 621 622
TABLE PFXTREAT
OPTL NP Y NP UNDT
TABLE CLSVSCRC
KEY NOT FOUND
DEFAULT IS TO LEAVE XLA RESULT UNCHANGED

+++ TRAVER: SUCCESSFUL CALL TRACE +++

DIGIT TRANSLATION ROUTES

1 LINE      6136210012     ST

TREATMENT ROUTES.  TREATMENT IS: GNCT
1 T120

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

SERVORD

Table LENFEAT is datafilled by SERVORD.

SERVORD limitations and restrictions

Teen Service (SDN) has no SERVORD limitations and restrictions.

Teen Service (SDN) (continued)

SERVORD prompts

The following table shows the SERVORD prompts used to assign Teen Service (SDN) to a line.

SERVORD prompts for Teen Service (SDN) (Sheet 1 of 2)

Prompt	Valid input	Explanation
DN	Up to 15 digits	Directory number associated with the service that is to be established, modified, or deleted.
LATANAME	Alphanumeric	The calling (LATA) name associated with the originator of the call.
LCC	Refer to table Line class codes in DMS-100 Customer Data Schema Reference Manual for a list of valid LCCs.	The line class code of the service to be established, modified, or deleted.
LEN_OR_LTID	Refer to DMS-100 SERVORD Reference Manual (297-8001-8081).	LEN or logical terminal identifier of the DN that the system changes.
LTG	0 to 255	Line treatment group member calculates the line attribute index when the DN and LCC cannot find a correct index.
OPTION	SDN	Specifies the service to be established, modified, or deleted. Enter SDN to specify Teen Service.
SDN	Up to 15 digits	Specifies the secondary directory number. Enter an unassigned DN.
SDN_DNY	NODNY, DNYCWT	Enter NODNY (No deny to call waiting) to use call waiting and DNYCWT (Deny call waiting) to not allow call waiting. To use these options, primary DN must be equipped with call waiting.

Teen Service (SDN) (continued)

SERVORD prompts for Teen Service (SDN) (Sheet 2 of 2)

Prompt	Valid input	Explanation
SDN_OPT	N, P, E	Specifies call forwarding for the SDN. N specifies no call forwarding. P specifies call forwarding with the PDN. ***Note:*** If feature package NTXE94AA (Secondary Directory Number Options, ordering code RES00017) is present in the office, you can use option E.
SDN_RING	0, 1, 2, or 3	Specifies the ringing pattern applied when the SDN is rung. A value of 0 specifies the same ringing pattern as the PDN. Ringing patterns are described in the Operation section.
SONUMBER	Refer to DMS-100 SERVORD Reference Manual (297-8001-8081).	The number of the service order the user enters.

Because the option can be duplicated, each SDN option must be deleted to delete all of the SDNs.

SERVORD example for adding Teen Service (SDN)

The following SERVORD example shows how Teen Service (SDN) is added to a line using the NEW command.

Teen Service (SDN) (continued)

SERVORD example for Teen Service (SDN) using NEW in prompt mode

```
>SERVORD
SO:
> NEW
SONUMBER:   NOW 99 4 3 AM
>
DN:
> 6210011
LCC:
> 1FR
LATANAME:
> LATA1
LTG:  0
>
LEN_OR_LTID:
> 00 0 00 11
OPTION:
> SDN
SDN:
> 6210012
SDN_RING:
> 1
SDN_OPT:
> N
SDN_DNY:
>DNYCWT
SDN_DNY:
>$
OPTION:
>$
COMMAND AS ENTERED:
ADO NOW 92 4 3 AM 6210011 1FR LATA1 0 HOST 00 0 00 11
 (SDN 6210012 1 N DNYCWT $) $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
> Y
```

SERVORD example for Teen Service (SDN) in no-prompt mode

```
> NEW $ 6210011 1FR LATA1 0 00 0 00 11 SDN 6210012 1  N DNYCWT $
$ Y
```

The following SERVORD example shows how Teen Service (SDN) is added to a line using the ADO command.

Teen Service (SDN) (end)

SERVORD example for Teen Service (SDN) using ADO in prompt mode

```
>SERVORD
SO:
> ADO
SONUMBER:   NOW 99 4 3 AM
>
DN_OR_LEN:
> 6210011
OPTION:
> SDN
SDN:
> 6210012
SDN_RING:
> 1
SDN_OPT:
> N
SDN_DNY:
>DNYCWT
SDN_DNY:
>$
OPTION:
>$
COMMAND AS ENTERED:
ADO NOW 92 4 3 AM 6210011 (SDN 6210012 1 N DNYCWT) $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
> Y
```

SERVORD example for Teen Service (SDN) in no-prompt mode

```
> ADO $ 6210011 SDN 6210012 1 N DNYCWT $ $ Y
```

Universal Access to Call Forwarding (UCFW)

Ordering codes

Functional group ordering code: RES00002

Functionality ordering code: RES00060

Release applicability

SN07 (DMS) and up.

Universal Access to Call Forwarding (UCFW) was introduced in NA006.

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

The UCFW feature supports RES, RES-1FR, and RES-1MR lines. This feature is the Call Forwarding (CFW) feature plus the following changes:

- billing record is generated each time the UCFW feature is activated
- operational measurement registers added to OM group CALLFWD in order to track events relating specifically to UCFW
- per-line denial of UCFW through SERVORD option Call Forwarding Usage Sensitive Denial (CUSD)
- CFW usage sensitive flag added to Call Forwarding provisioning data to differentiate between flat rate CFW and usage sensitive CFW.
- office parameter UCFW_STAYS_ON_LINE added to give the operating companies control over keeping or removing the CFW line option upon user deactivation
- confirmation tone provided to subscriber if UCFW is successfully added or removed from the line and reorder tone provided if UCFW addition or removal fails
- announcement provided when subscriber dials the CFW activation code and is denied access because an image dump is in progress
- logs CFW106 and CFW107 added to record instances where UCFW is added or removed to or from a line while the journal system is inactive

Note: Within this document, Call Forwarding Universal (CFU), Call Forwarding (CFW), and flat-rate CFW refer to the flat-rate subscription Call

Universal Access to Call Forwarding (UCFW) (continued)

Forwarding feature. Universal Access to Call Forwarding (UCFW) and usage sensitive CFW refer to the usage sensitive Call Forwarding feature.

Operation

The UCFW feature operates in the same manner as the CFW feature. The subscriber can have incoming calls automatically forwarded to a predetermined directory number (DN) whenever they are away from the phone or do not want to be disturbed. The CFW validation process verifies that the maximum limits of forwarded calls have not been exceeded. If validation passes, the call is forwarded to the remote station. The station corresponding to the dialed number is referred to as the base station; whereas, the number to which the calls are forwarded to is referred to as the remote station.

The UCFW feature is available to RES lines when the following is true:

- Software Optionality Control (SOC) option for RES00060 is set to ON
- option CUSD is not on the line
- the end user does not subscribe to any of the following CFW features:
  - — Call Forwarding Universal (CFU)
  - — Call Forwarding Intragroup (CFI)
  - — Call Forwarding Fixed (CFF)
- no CFW incompatible options are on the line

When option SOC is set to ON, the UCFW feature is enabled on a switch-wide basis for all RES, RES-1FR, and RES-1MR lines. At any time, the operating company can assign a line option (CUSD) that denies UCFW to an individual subscriber.

After option SOC for RES00060 is set to ON, Call Forwarding is given to RES lines that do not already have it by autoprovisioning. Autoprovisioning means that each time an end user on a line without Call Forwarding dials the CFW activation code, the conditions of the UCFW feature are evaluated to determine if a usage sensitive instance of Call Forwarding should be provided for the line. When activated, the CFW option on the subscriber's line is flagged as a usage sensitive option and AMA billing records are generated.

Universal Access to Call Forwarding (UCFW) (continued)

The following table lists the conditions of the UCFW enabling conditions:

UCFW enabling conditions

Condition	State required to allow UCFW
CUSD	Option not on line
UCFW SOC	SOC state must be ON
Flat rate CFW	Option not on line
Feature interaction	No conflict with existing line options
Dump/Restore Procedure	Not in progress or UCFX present on line in inactive state or CFBL, CFDA or SCF present on line with CFS NUMCALLS parameter greater than 1 or Two or more other flavours of CFX on the line.

If UCFW is denied due to a dump/restore procedure in progress, and all other enabling conditions are satisfied, the subscriber is provided with an announcement. CFW is not provisioned on the subscriber's line.

When the UCFW SOC option is subsequently set to IDLE, the CFW feature is accessible only by subscription.

User interface

The Query Directory Number (QDN), Query Line Equipment number (QLEN) and Query Working Line Equipment Numbers (QLENWRK) commands are used to display the usage sensitive flag for RES lines with the CFW option (UCFW).

The following figure shows the QDN for a RES line with usage sensitive CFW.

Universal Access to Call Forwarding (UCFW) (continued)

QDN for RES line with usage sensitive CFW

```
>qdn 6216804
------------------------------------------------------
DN:     6216804:
TYPE: SINGLE PARTY LINE
SNPA: 613   SIG: DT    LNATTIDX:  271
LINE EQUIPMENT NUMBER:     HOST  00 0 01 15
LINE CLASS CODE:      1FR
IBN TYPE: STATION
CUSTGRP:        RESG271     SUBGRP: 0  NCOS: 0
LINE TREATMENT GROUP:     1
CARDCODE:  6X17AC  GND: N  PADGRP: STDLN  BNV: NL MNO: N
PM NODE NUMBER     :    39
PM TERMINAL NUMBER      48
CFW INDEX:  N/A
OPTIONS:
DGT NAME PUBLIC PUB6804 PRIVATE PVT6804 CFW U NSCR 3 I 6216502
RES OPTIONS:
CFDA NSCR 3 12 PRGRING 6216502
```

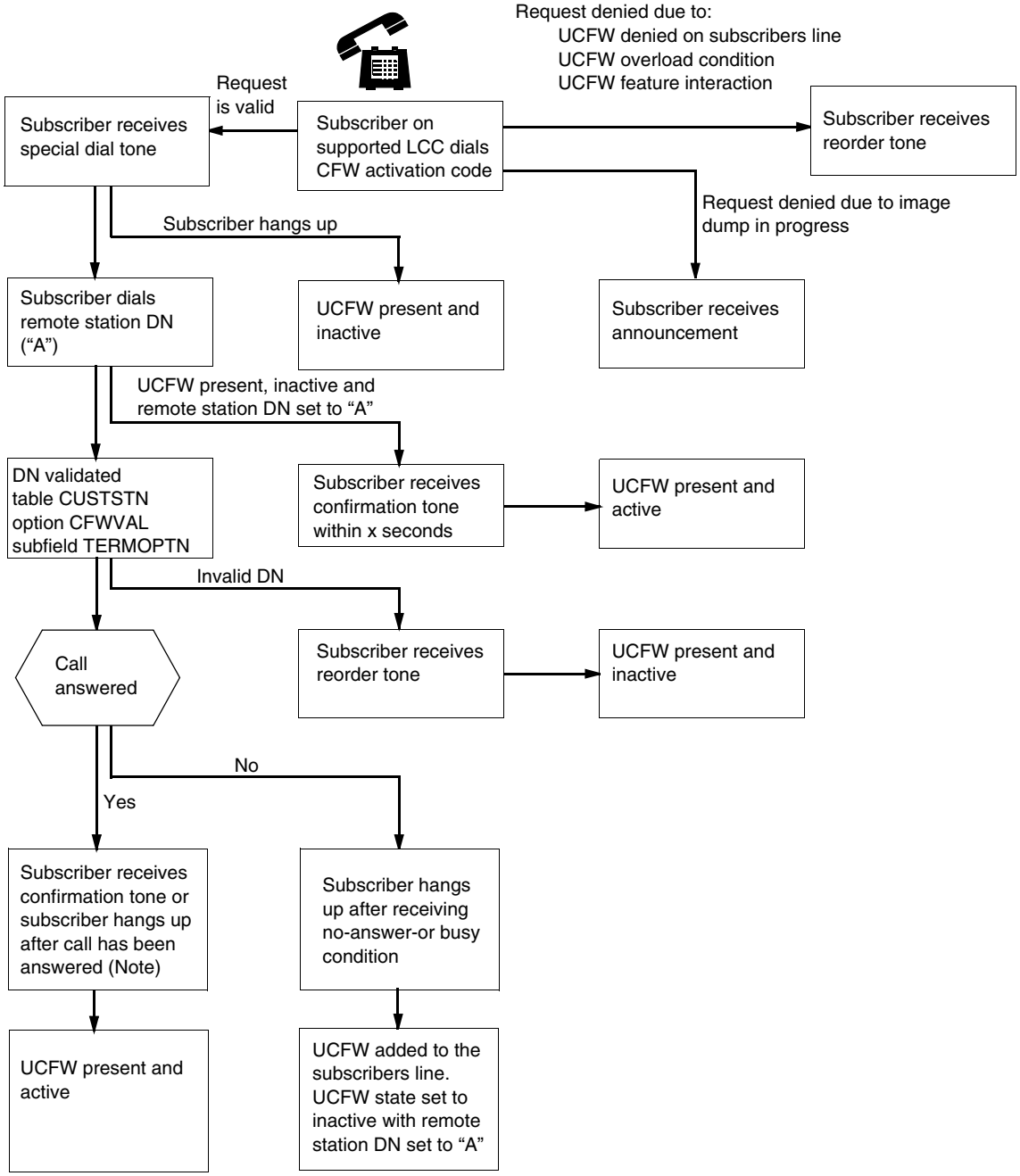
Given that the usage sensitive CFW is only supported for RES lines, this feature ensures that no changes are made in the output of QDN, QLEN and QLENWRK for IBN lines.

Feature processing

The following figure shows the UCFW activation call flow that occurs when a RES subscriber on a supported LCC dials the Call Forwarding activation code:

Universal Access to Call Forwarding (UCFW) (continued)

UCFW activation call flow

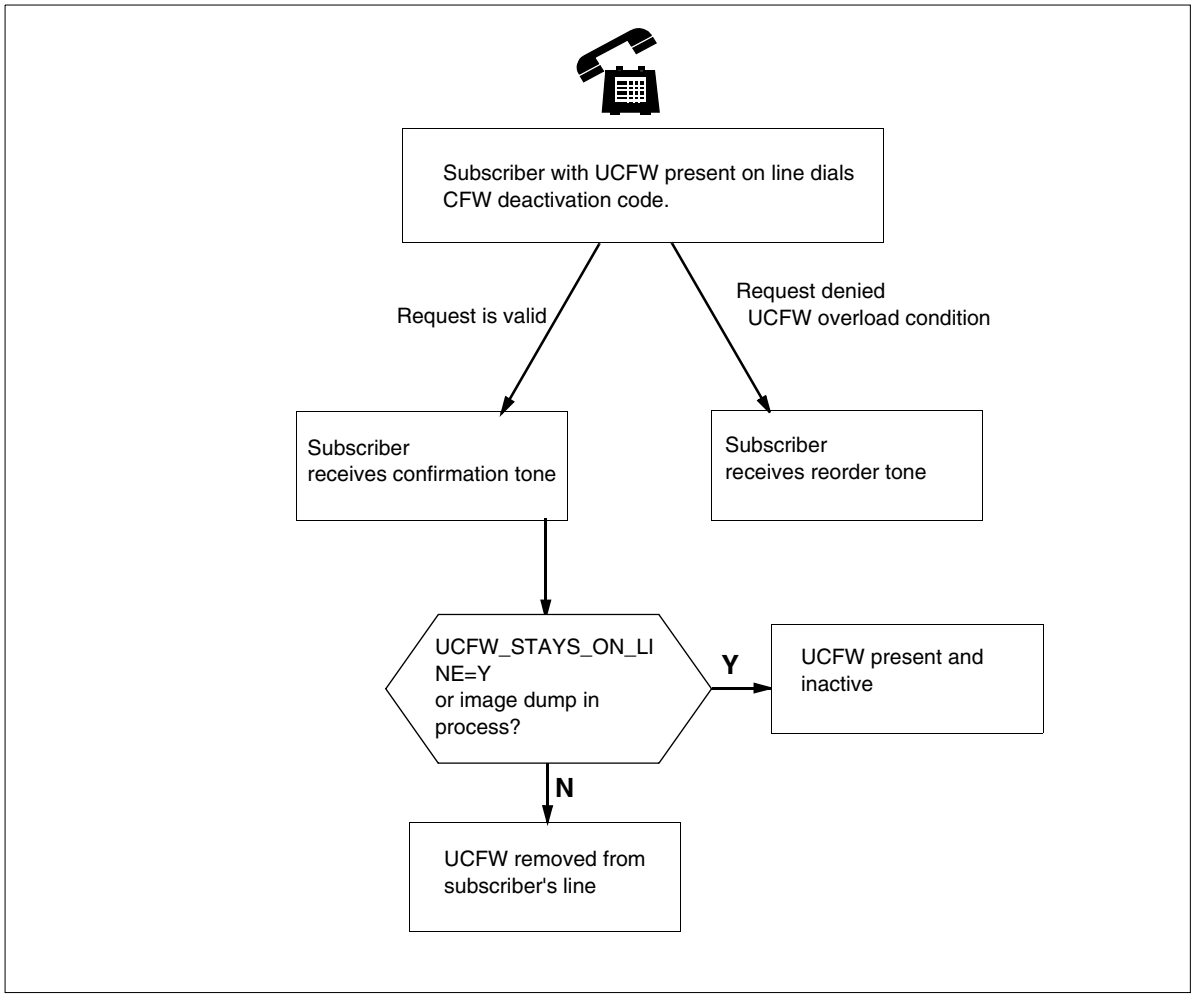


Note: The subscriber receives a confirmation tone when the first Call Forwarding attempt is made and the remote station DN is busy or gives no answer.

Universal Access to Call Forwarding (UCFW) (continued)

The following figure shows the UCFW deactivation call flow that occurs when a RES subscriber on a supported LCC dials the Call Forwarding deactivation code:

UCFW deactivation call flow



Translations table flow

Universal Access to Call Forwarding (UCFW) does not affect the translations table flow for the CFW functionality.

Universal Access to Call Forwarding (UCFW) (continued)

Limitations and restrictions

The following limitations and restrictions apply to the Universal Access to Call Forwarding (UCFW) feature:

- UCFW is valid only on DMS-100 SuperNode, DMS-100/200 SuperNode, and BRISC offices.
- The feature is controlled on a switch wide basis through the use of the SOC system.
- Only RES lines with an LCC (Line Class Code) of RES and POTS/RES lines with CFW-compatible line class codes (1FR, 1MR) have access to the UCFW feature.
- Option CUSD, when applied to a DN or LEN (line equipment number), prevents the usage of the UCFW feature.
- Attempts by a subscriber to activate UCFW during an office dump/restore procedure are denied if UCFW is not present in the inactive state and a variant of CFW does not exist on the line.
- Attempts by a subscriber to deactivate UCFW during an office dump/restore procedure are processed normally. UCFW remains on the line in the inactive state regardless of the entry for parameter UCFW_STAYS_ON_LINE.
- Call Forwarding Remote Access (CFRA) cannot be used to provision UCFW on a subscriber's line.
- The maximum combined activation and deactivation procedures that can be concurrently processed is set to ten. Attempts by a subscriber to activate or deactivate UCFW after the limit has been exceeded are given No Service Circuits (NOSC) treatment.
- Following a POTS to RES or a RES to POTS conversion on a UCFW activated line, UCFW continuation record timing data and UCFW deactivation record timing data corresponds to the time that the conversion occurred rather than the actual activation time.

Interactions

The UCFW feature has the same interactions as the CFW feature. UCFW is incompatible with line options AUL (Automatic Line), BNN (Bridged Night Number), CUSD Call Forwarding Usage Sensitive Denial), FNT (Free Number Terminating, HOT (Hotel/Motel), MAN (Manual line), MPB (Multi-Party Bridging), ONI (Operator Number Identification, and TBO (Terminating Billing Option). These line options are specified in table OPTOPT under the CFW feature.

Universal Access to Call Forwarding (UCFW) (continued)

The following paragraphs describe the interactions between the Universal Access to Call Forwarding (UCFW) feature and other functionalities.

Call Forwarding (CFW)

Flat rate Call Forwarding (CFW) takes precedence over UCFW. Flat rate CFW subscribers who want access to UCFW must first cancel their subscription to CFW through the operating company's business office.

Call Forwarding Remote Access (CFRA)

CFRA cannot be used to provision UCFW on a subscriber's line.

Multiple Appearance Directory Number (MADN)

MADN is incompatible with UCFW.

Secondary Directory Number (SDN)

SDN is incompatible with UCFW.

Activation/deactivation by the end user

Universal Access to Call Forwarding (UCFW) uses the same activation and deactivation access codes as the flat rate CFW feature.

In the following activation/deactivation sequences, the station corresponding to the dialed number is referred to as the base station; whereas, the forwarded-to number is referred to as the remote station.

Activation by the end user

At your telephone

1 Go off hook and listen for dial tone.

Response:

Receive a dial tone

2 Dial the activation code assigned to Call Forwarding.

The activation code is an asterisk plus two digits (*XX).

Response:

Receive a recall dial tone (three short tones followed by a steady tone)

3 Dial the seven- or ten-digit remote station DN.

Universal Access to Call Forwarding (UCFW) (continued)

Response:

If remote station	Do
answers	step 5
does not answer	step 4
returns busy condition	step 4

Hang up.

4 Within two minutes, redial the seven- or ten-digit remote station DN. and receive a confirmation tone (two short tones).

Response:

UCFW is activated.

5 Notify remote station of Call Forwarding activation

Response:

UCFW is activated.

Once UCFW is activated, the phone makes one ring splash each time a call is forwarded. Out-going calls are made as usual.

While UCFW is active, if the base station dials the activation code, reorder tone is heard. This is one method of testing UCFW. To change the remote station DN, UCFW must be deactivated then reinstated using the new remote station DN.

Deactivation by the end user

At your telephone

1 Go off hook and listen for dial tone.

Response:

Receive a dial tone

2 Dial the deactivation code assigned to Call Forwarding.

The deactivation code is an asterisk plus two digits (*XX).

Response:

Receive confirmation tone (two short tones) followed by dial tone. UCFW is deactivated.

Billing

Universal Access to Call Forwarding (UCFW) uses the same AMA billing support as CFW with the following exception: the AMA record generation for usage sensitive CFW is permanently enabled. This eliminates the need for

Universal Access to Call Forwarding (UCFW) (continued)

additional controls such as office parameters to control the generation of usage sensitive CFW AMA records.

The following three billing event records are currently generated for Call Forwarding:

- activation
- deactivation
- continuation

For AMA records generated when Call Forward is Activated or Deactivated, the service feature field is used to differentiate between the flat rate CFW and the UCFW or usage sensitive CFW. The service feature field is set to 0 (zero) for usage sensitive CFW and to 12 (twelve) for flat rate CFW. In AMA records generated for the forwarded leg of a forwarded call, the service feature is set to 12 regardless of whether it is a flat rate CFW or a usage sensitive CFW.

The structure code, call code and service features for UCFW AMA records are as follows:

- UCFW feature activation
  - — Structure code: 00614
  - — Call code: 031
  - — Service feature: 00
- UCFW feature deactivation and continuation
  - — Structure code: 0096
  - — Call code: 031
  - — Service feature: 00

The existing CFW AMA support includes continuation billing records. These continuation billing records are adapted to UCFW by entering the UCFW feature identifier in the service feature field.

Please refer to *Bellcore Format Automatic Message Accounting Reference Guide* for a description of the existing CFW Usage Sensitive Pricing AMA records.

Station Message Detail Recording

Universal Access to Call Forwarding (UCFW) does not affect Station Message Detail Recording.

Universal Access to Call Forwarding (UCFW) (continued)

Datafilling office parameters

The following table shows the office parameter used by Universal Access to Call Forwarding (UCFW). For more information about office parameters, refer to *Office Parameters Reference Manual.*

Office parameter used by Universal Access to Call Forwarding (UCFW)

Table name	Parameter name	Explanation and action
OFCENG	UCFW_STAYS_ON_LINE	This parameter provides the operating company with the following options when the subscriber dials the CFW deactivation code: • keep the UCFW option on the line and set it to inactive • remove the UCFW option from the line

Datafill sequence

The following table lists the tables that require datafill to implement Universal Access to Call Forwarding (UCFW).

Field CFXUSP is added to tables CFX and IBNFEAT as an indicator of usage sensitive CFW.

Datafill tables required for Universal Access to Call Forwarding (UCFW)

Table	Purpose of table
OFCENG	Office Engineering. This table contains data on engineering parameters for the office. Refer to “Datafilling office parameters" for how UCFW is affected by office parameters.
CFX (Note)	Call Forwarding. This table stores directory number (DN) information for various types of IBN Call Forwarding.
IBNFEAT (Note)	IBN Line Feature. This table lists the line features that are assigned to the IBN lines listed in table IBNLINES.
Note: This table is datafilled through SERVORD or through customer activation on the line; therefore, no datafill procedure or example is provided. Refer to “SERVORD" for an example of using SERVORD to datafill this table.	

Translation verification tools

Universal Access to Call Forwarding (UCFW) does not use translation verification tools.

Universal Access to Call Forwarding (UCFW) (continued)

SERVORD

Tables IBNFEAT and CFX are datafilled indirectly through SERVORD when a UCFW subscriber dials a CFW activation access code.

The UCFW feature, however, cannot be added or changed using the SERVORD commands ADO or CHF. The UCFW feature can only be added to a RES line when a subscriber dials the CFW activation access code.

The UCFW feature can be deleted using the SERVORD command DEO.

POTS to RES and RES to POTS conversions

The UCFW feature is the RES equivalent to the POTS Call Forward Usage Sensitive Pricing (CFW-USP) feature. The two features are mapped to each other to allow RES to POTS and POTS to RES conversions.

If a POTS line having the CFW-USP option is converted to a RES line, either as a result of the addition of a RES specific option or a CHG LCC command, the CFW-USP option is converted to RES UCFW.

When the RES UCFW feature is in the SOC idle state, POTS to RES conversions are denied until the POTS CFW-USP option is removed from the line. Similarly, when the POTS CFW-USP feature is not enabled, the RES UCFW feature appears as a RES option and RES to POTS conversions are denied.

SERVORD limitations and restrictions

The following SERVORD limitations and restrictions apply to Universal Access to Call Forwarding (UCFW):

- Call Forwarding Usage Sensitive Denial (CUSD) is an existing line option which when applied to a POTS line or a RES line with LCC of RES, 1FR or 1MR disables the activation UCFW on the line.
- Options CUSD and UCFW are mutually exclusive and cannot be simultaneously assigned to an individual line.
- If the SERVORD commands ADO or NEW are used to add POTS CFW-USP to a POTS line, and that line is later converted to a RES line by adding a RES specific option, POTS CFW-USP is converted to RES UCFW.

SERVORD example for deleting Universal Access to Call Forwarding (UCFW)

The following SERVORD example shows how Universal Access to Call Forwarding (UCFW) is deleted from a subscriber's line using DEO.

Universal Access to Call Forwarding (UCFW) (continued)

SERVORD example for deleting Universal Access to Call Forwarding (UCFW) in prompt mode

```
> SERVORD
SO:
> DEO
SONUMBER:  NOW 96 7 8 AM
>
DN_OR_LEN:
> 6216804
OPTION:
> CFW
OPTION: $
> $
COMMAND AS ENTERED:
DEO NOW 96 7 8 AM 6211501  ( CFW ) $
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT
> Y
```

SERVORD example for Universal Access to Call Forwarding (UCFW) in no-prompt mode

```
> DEO $ 6216804 CFW $ Y
```

SERVORD prompts

The following table shows the SERVORD prompt used to block activation of UCFW on a RES line.

SERVORD prompt to block activation of Universal Access to Call Forwarding (UCFW)

Prompt	Valid input	Explanation
CUSD	Y	Specifies the CFW usage sensitive deny option. This option is assigned on a per-line basis. Options CUSD and UCFW are mutually exclusive and cannot be simultaneously assigned to an individual line.

Universal Access to Call Forwarding (UCFW) (end)

SERVORD example for adding option CUSD to block activation of Universal Access to Call Forwarding (UCFW)

The following SERVORD example shows how option CUSD is added to a single-party line to block activation of Universal Access to Call Forwarding (UCFW).

SERVORD example for adding CUSD to block activation of Universal Access to Call Forwarding (UCFW) in prompt mode

```
> SERVORD
SO:
>ADO
SONUMBER:      NOW  96 8 13
>
DN_OR_LEN:
>6211092
OPTION:
>CUSD
OPTION:
>$
```

SERVORD example for adding CUSD in no-prompt mode

```
>ADO $ 6211092 CUSD $
```

History

SN07 (DMS)

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

Wake-Up Call Reminder (WUCR)

Ordering codes

Functional group ordering code: RES00002

Functionality ordering code: not applicable

Release applicability

BCS33 and up

Prerequisites

To operate, Wake-Up Call Reminder (WUCR) has the following prerequisites:

- BAS Generic, BAS00003
- MDC Standard, MDC00003
- MDC Minimum, MDC00001
- RES Service Enablers, RES00006
- MDC MBS Minimum, MDC00007

Description

The Wake-Up Call Reminder (WUCR) feature can be assigned to Subscriber Services and Meridian Digital Centrex (MDC) lines. WUCR is assigned as a line option and is activated and deactivated by the subscriber through the use of access codes. Upon activation of WUCR, a wake-up call request is programmed by the subscriber to ring the subscriber's line at a particular time within the following 24 hours. The subscriber can deactivate the feature and cancel the wake-up call request at any time after it is programmed.

Operation

Subscribers use a feature activation code to activate WUCR. At the time of activation, the subscriber programs the time at which the service is to ring the subscriber line with the wake-up call. The time must be entered in military time as four consecutive digits, ranging from 0000 to 2359. The time entered must be at least 10 min and no greater than 23 h and 45 min from the present time. The wake-up call is then generated at the next occurrence of that time.

The time at which the wake-up call is received is accurate to within 5 minutes of the specified time. Each wake-up call request is placed into a 5-minute time slot. For example, all wake-up call requests for times 1210, 1211, 1212, 1213, and 1214 are placed in the time slot beginning at 1210 and ending at 1214 and are processed beginning at 1210. A maximum of 100 requests are allowed in a 5-minute time slot. A maximum of 10,000 total active requests are allowed on a switch.

Wake-Up Call Reminder (WUCR) (continued)

Only one wake-up call request can be pending on a line at any given time. To change the specified time of a wake-up call request, the subscriber must first deactivate WUCR, discarding the current wake-up call request, and then reactivate WUCR and program a new wake-up call request. A wake-up call is not automatically repeated after 24 h; if another wake-up call is desired, a subscriber must program a new request. A wake-up call request can be programmed only by the subscriber and applies only to the line from which it is programmed.

When servicing a wake-up call request, the central office switch rings the subscriber's phone within the 5-minute time slot into which the request was placed and provides an administration-defined announcement upon answer. Standard ringing is used to apply physical ringing to the subscriber's phone; there is no special ringing cadence for a wake-up call. If the call is not answered or fails for any reason, a first retry is attempted within approximately 5 min. If the first retry is not answered or fails, a second retry is attempted. If the second retry is not answered or fails, the wake-up call request is discarded, and the event is recorded.

Ringing time-out

The number of times the phone rings (the ringing time-out value) can be defined by the subscriber. The value must be entered immediately after the wake-up call time in a two-digit format, ranging from two through five. For example, a wake up call for 7:35 a.m. with a ringing value of five would be entered as 073505.

The ringing time-out value is an approximation. The value is converted to seconds based on the standard 6-second ringing cycle. If a wake-up call is programmed for five rings, the time value is 30 s.

If the ringing time-out is not specified, the value is taken from office parameter WUCR_RINGING_TIMEOUT in table OFCENG. If the ringing time-out is specified, the programmed ringing time-out must be less than or equal to the value of office parameter WUCR_RINGING_TIMEOUT.

Restarts

Wake-up call requests survive warm, cold, and reload restarts. If a request is not complete before a restart occurs, it cannot survive the restart. Wake-up calls scheduled for generation during the restart may be lost.

SWACTs (switch of activity) in the peripherals affect wake-up calls as they do other calls. A warm SWACT is transparent, and a cold SWACT disconnects the call.

Wake-Up Call Reminder (WUCR) (continued)

Journal files

All additions and deletions of WUCR are recorded in the journal file and are recoverable. Activation and deactivation of wake-up call requests are not recorded in the journal file.

Software load

During a software load application, wake-up call requests are transferred to the inactive software side. The requests can be transferred by moving the internal WUCR table from the active software side to the inactive side through dump and restore procedures.

Time and date changes

Requests are lost if the time or date is advanced or set back. The most common time change occurs when daylight savings time goes into effect. When the switch advances an hour, an hour of wake-up calls is lost. Recovering the lost requests affects the performance of WUCR.

Datafill for WUCR announcements

WUCR must have an announcement defined to work properly. To set up an announcement, the following tables must be datafilled and an announcement recorded.

Note: If the following tables are not datafilled to provide a wake-up call announcement for WUCR, REORDER tone is used as a default.

Table DRAMS

Table DRAMS (Digital Recorded Announcement Machines) contains information for the trunk cards that constitute a DRAM. This table must be datafilled to identify the DRAM that contains the prerecorded announcement that is to be applied to wake-up calls. For more information on this table, see the data schema section of this document.

Table CLLI

Table CLLI (Common Language Location Identifier) contains the CLLI codes that uniquely identify the far-end of each announcement, tone, or trunk group. This table must be datafilled to identify the announcement to be applied to wake-up calls. For more information on this table, see the data schema section of this document.

Table ANNS

Table ANNS (Announcements) contains data for each announcement assigned in a switching unit. This table must be datafilled to associate the data with the announcement that is applied to wake-up calls. For more information on this table, see the data schema section of this document.

Table ANNMEMS

Table ANNMEMS (Announcement Members) contains the memory assignments for each of the members assigned to the announcements listed in table ANNS. For more information on this table, see the data schema section of this document.

Table DRAMTRK

Table DRAMTRK (Digital Recorded Announcement Machine Track) lists the information for the trunk cards that create a DRAM. For more information on this table, see the data schema section of this document.

Refer to the *DRAM and EDRAM Guide*, 297-1001-527, for more information on datafilling announcements.

Table TMTCNTL.TREAT

Subtable TMTCNTL.TREAT (Treatments) is used by the operating company to define the tones, announcements, and states to be returned to the originator of a call when a specified treatment code is encountered during translations. For more information on this table, see the data schema section of this document.

Table OFRT

Table OFRT (Office Route) and subtable RTEREF are used when an originating call is being translated and a preceding stage identifies a route reference index. For more information on this table, see the data schema section of this document.

Translations table flow

The Wake-Up Call Reminder (WUCR) translations tables are described in the following list:

- Table IBNXLA (IBN Translations) stores the data for the digit translations of calls from an MDC station, attendant console, incoming IBN trunk group, or the incoming side of a two-way IBN trunk group. The WUCR feature activation code is datafilled here. Subfield FEATURE is set to WUCRA for the ability to activate WUCR or to WUCRD for the ability to deactivate WUCR.

  If the activation code is not valid, the subscriber is routed to feature not allowed (FNAL) treatment.

- Table IBNFEAT (IBN Line Feature) lists the line features that are assigned to IBN lines listed in table IBNLINES. WUCR is assigned to the line in

Wake-Up Call Reminder (WUCR) (continued)

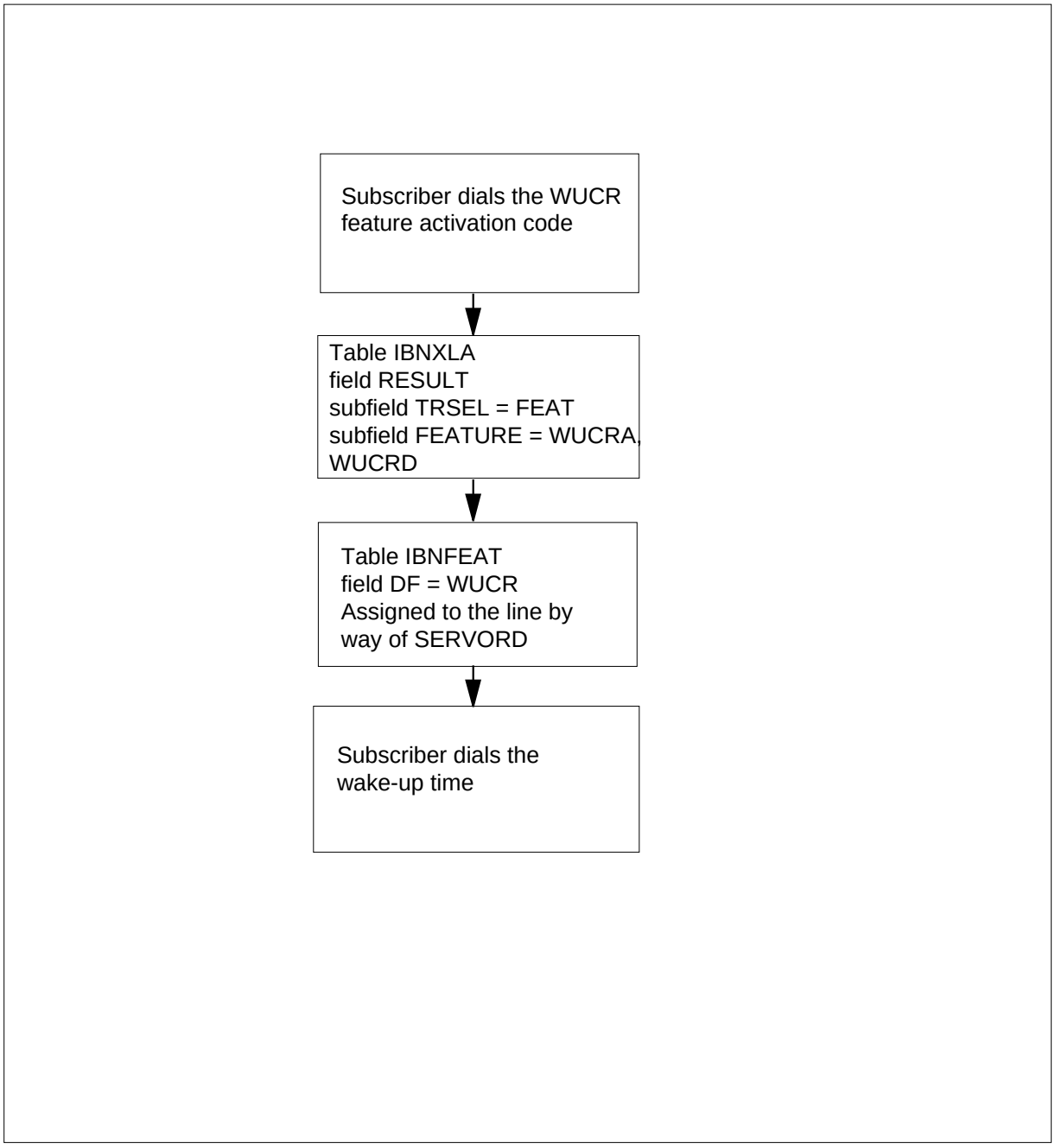
this table, which is datafilled through the Service Order System (SERVORD).

If WUCR is not assigned to the line, the subscriber is routed to FNAL treatment.

The Wake-Up Call Reminder (WUCR) translation process is shown in the flowchart that follows.

Wake-Up Call Reminder (WUCR) (continued)

Table flow for Wake-Up Call Reminder (WUCR)



Wake-Up Call Reminder (WUCR) (continued)

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

Datafill example for Wake-Up Call Reminder (WUCR)

Datafill table	Example data
IBNXLA	RXCFN 67 FEAT N N WUCRA RXCFN 69 FEAT N N WUCRD

Limitations and restrictions

The following limitations and restrictions apply to Wake-Up Call Reminder (WUCR):

- WUCR cannot be assigned to Integrated Services Digital Network (ISDN) lines.
- WUCR cannot be assigned to secondary directory numbers (SDN).
- WUCR applies to the primary directory number (PDN) only when assigned to a Meridian business set (MBS).
- Only one outstanding wake-up call request at a time is permitted on a line.
- Only 100 outstanding wake-up call requests within a single 5-minute time slot are permitted on a switch.
- Only 10,000 total outstanding wake-up call requests at a time are permitted on a switch.
- A wake-up call request cannot be programmed for less than 10 min or more than 23 h and 45 min from the current time.
- Subscribers can activate or deactivate wake-up call requests for their own line only.
- The operating company administrator can only query wake-up call requests; the administrator cannot activate, deactivate, or change wake-call requests.
- Wake-up call requests can be lost during time or date changes, restarts lasting more than 5 min, reboots, and use of the Service Order System (SERVORD) CHG (change) and CLN (change line equipment number) commands.
- Three passes are made through each time slot to attempt to process the wake-up call requests for that time slot. Any requests that cannot be handled during these three passes are discarded as overdue the next time the time slot is processed. Retries (calls being handled on the second and third passes) are given priority and are processed before other requests in that time slot.

- Time zones are ignored by the WUCR feature; the time of day is considered to be the time at the switch.
- Wake-up calls terminating to a peripheral use resources on that peripheral. If heavy traffic exists on a peripheral, wake-up calls terminating to that peripheral can prevent other calls from terminating to the peripheral.
- WUCR is not intended to be used as a wake-up facility of a large hotel or motel. The following limitations make the option ineffective in such an environment:
  - — WUCR is incompatible with the hotel/motel line (HOT) feature.
  - — Third-party activation and deactivation of WUCR are not supported.
  - — The limit of only 100 wake-up call requests for each 5-minute time slot is a switch-wide limitation.
  - — Ring generator restrictions limit the number of lines that a line concentrating device, such as a line concentrating module (LCM), can ring simultaneously.
- Only the original subscriber-programmed request time is displayed by the command interpreter (CI) QDN (query DN) and QLEN (query LEN) commands. The time is not updated to reflect subsequent wake-up call retries.
- WUCR cannot coexist in the same office with feature AE0240, Wake-Up Call for International.

Interactions

The following paragraphs describe the interactions between Wake-Up Call Reminder (WUCR) and other functionalities.

Automatic Answer Back

Automatic Answer Back (AAB) automatically answers wake-up calls.

Automatic Call Back

A line cannot activate Automatic Call Back (ACB) on a wake-up call.

Automatic Call Distribution

A line in the Automatic Call Distribution (ACD) queue cannot activate or deactivate WUCR.

Automatic Dial

The wake-up call programming sequence cannot be abbreviated. Only the wake-up call subscriber service codes can be programmed.

Wake-Up Call Reminder (WUCR) (continued)

Automatic Line

A line with option AUL cannot activate or deactivate WUCR.

Automatic Recall

A line cannot activate Automatic Recall (AR) on a wake-up call.

Automatic Set Relocate

Automatic Set Relocate (ASR) is transparent to WUCR. Wake-up call data is restored by an ASR-IN procedure. When a line with an outstanding wake-up call request does an AST-OUT procedure, the line is treated as out-of-service and the wake-up call request obeys the rules for unanswered first attempts.

Busy Lamp Field

A line engaged in a wake-up call indicates busy to Busy Lamp Field (BLF).

Call Coverage

A line cannot activate Call Coverage (CCV) on a wake-up call.

Call Forwarding

There is no interaction if activation or deactivation of WUCR is attempted on a set that is call forwarded. WUCR cannot forward. If a wake-up call attempts to call a subscriber who has Call Forwarding (CFU, CFBL, CFDA) active, the wake-up call is treated as if it were not answered, and WUCR follows the rules for unanswered first attempts.

Call Park

A wake-up call cannot be parked.

Call Pickup

There is no interaction with any of the call pickup (CPU, DCPU, DCBI) options when activating or deactivating WUCR. A wake-up call cannot be picked up.

Call Waiting

A call into a line engaged in a wake-up call is connected to a treatment. A wake-up call cannot call wait on a busy line. The line is treated as busy, and the wake-up call must be tried later.

Coin lines

WUCR is incompatible with Coin lines.

Wake-Up Call Reminder (WUCR) (continued)

Conference

A line engaged in a wake-up call cannot initiate a conference (CONF6, CONF3, PRESET, MEETME) call. A line engaged in a conference call cannot flash and program a wake-up call.

Customer Originated Trace

A line cannot activate Customer Originated Trace (COT) on a wake-up call.

Denied Origination

A line assigned option DOR cannot activate or deactivate a wake-up call.

Denied Termination

A line assigned option DTM cannot receive a wake-up call.

Display features

Dialed digits are echoed to the display during subscriber activation and deactivation of WUCR.

Do Not Disturb

Wake-up calls are not diverted to Do Not Disturb (DND) treatment by option DND.

Executive Busy Override

A line that is activating, deactivating, or answering a wake-up call cannot be overridden by the Executive Busy Override (EBO).

Flash

A line answering a wake-up call cannot flash (FLS).

Hotel/motel line

WUCR is incompatible with Hotel/motel (HOT) lines.

Hunt groups

WUCR is incompatible with hunt groups (CIR, DLH, DNH, MLH).

Last Number Redial

The wake-up call activation sequence cannot be retrieved by Last Number Redial (LNR).

Make Set Busy

A line with Make Set Busy (MSB) cannot receive a wake-up call.

Wake-Up Call Reminder (WUCR) (continued)

Malicious Call Trace

A line engaged in a wake-up call cannot activate Malicious Call Trace (MCT).

Message Waiting

Message Waiting (MWT) and Executive Message Waiting (EMW) are not supported by WUCR.

Multiple Appearance Directory Number

WUCR is incompatible with Multiple Appearance Directory Number (MADN).

Multiparty lines

WUCR is incompatible with multiparty lines (2FR, 4FR, 8FR, 10FR).

No Double Connect

WUCR is compatible with No Double Connect (NDC).

Plug Up

A line with Plug Up (PLP) cannot program or receive a wake-up call.

POWER

WUCR does not support the POWER feature.

Restricted sent paid lines

WUCR is incompatible with restricted sent paid lines (RSP).

Ring Again

WUCR does not interact with Ring Again (RAG).

Speed Call

The wake-up call programming sequence cannot be abbreviated. Only the wake-up call subscriber service codes can be programmed.

Suspended Service

A line with suspended service (SUS) cannot program or receive a wake-up call.

Three-Way Calling

A line engaged in a wake-up call cannot initiate a three-way call. A line engaged in a three-way call cannot flash and program a wake-up call.

Wake-Up Call Reminder (WUCR) (continued)

Activation/deactivation by the end user

WUCR can be activated and deactivated only by the subscriber from the subscriber's line and for the subscriber's line only.

The time for the wake-up call is entered in military time as four consecutive digits, ranging from 0000 to 2359. After the time is entered, a confirmation tone is received if the request can be accommodated; otherwise, a negative acknowledgment (NACK) tone is received. The NACK tone is returned if any of the following conditions occur:

- An invalid time of day is specified.
- An invalid programming sequence is dialed.
- The wake-up call is requested for a time that is less than 10 min or greater than 23 h and 45 min from the current time.
- The subscriber's line has an outstanding request for a wake-up call.
- The maximum number of outstanding requests for the specified time period (100) has been reached.
- The maximum number of outstanding requests for the entire switch (10,000) has been reached.

A confirmation tone is returned after the deactivation code is entered if the deactivation code is valid; otherwise, a NACK tone is returned. A confirmation tone is returned following a correct dialing sequence regardless of whether the subscriber had an outstanding wake-up request at the time of deactivation.

Activation of Wake-Up Call Reminder (WUCR) by the end user

At your telephone:

1 Lift the handset.

Response:

Listen for dial tone.

2 Enter the 2-digit WUCR end user activation code.

Response:

Listen for a second dial tone.

3 Enter the time of the wake-up call and the number of times the phone should ring in HHMMNN format. NN is the number of rings. The allowed values for NN is from 02 to 09. NN is optional.

Response:

Listen for a confirmation tone or a NACK tone.

Note: The ringing time-out value is an approximation. The value is converted to seconds based on the standard 6-s ringing cycle. If a wakeup

Wake-Up Call Reminder (WUCR) (continued)

call is programmed for seven rings, the time-out value is 42s. If the ringing time-out is not specified, the value is taken from office parameter WUCR_RINGING_TIMEOUT in table OFCENG. If the ringing time-out is specified, the programmed ringing time-out must be less than or equal to the value of the above office parameter.

4 Replace the handset.

Response:

None.

Deactivation of Wake-Up Call Reminder (WUCR) by the end user

At your telephone:

1 Lift the handset.

Response:

Listen for a dial tone.

2 Enter the 2-digit WUCR end user deactivation code.

Response:

Listen for a confirmation tone or a NACK tone.

3 Replace the handset.

Response:

None.

Billing

Wake-Up Call Reminder (WUCR) does not affect billing.

Station Message Detail Recording

Wake-Up Call Reminder (WUCR) does not affect Station Message Detail Recording.

Datafilling office parameters

The following table shows the office parameters used by Wake-Up Call Reminder (WUCR). For more information about office parameters, refer to *Office Parameters Reference Manual*.

Note 1: A line concentrating device can ring only a limited number of lines at a time; therefore, keeping the ringing time of wake-up calls to a minimum reduces the possibility of blocked ringing requests at the peripheral.

Note 2: The value of WUCR_RINGING_TIMEOUT must always be less than the ringing time-out value for the office, which is controlled by office

parameter RNG_TIMEOUT_NO_OF_SECS, except when RNG_TMEOUT_NO_OF_SECS has a value of '0'.

Office parameters used by Wake-Up Call Reminder (WUCR)

Table name	Parameter name	Explanation and action
OFCENG	WUCR_RINGING_TIMEOUT	This parameter specifies the length of time physical ringing is applied to a subscriber phone during a wake-up call. The default value of this parameter is 30 s.

Datafill sequence

The following table lists the tables that require datafill to implement Wake-Up Call Reminder (WUCR). The tables are listed in the order in which they are to be datafilled.

Datafill tables required for Wake-Up Call Reminder (WUCR)

Table	Purpose of table
OFCENG	Office Engineering. This table contains data on engineering parameters for the office. Refer to “Datafilling office parameters" for how WUCR affects office parameters.
IBNFEAT	IBN Line Feature. This table lists the line features that are assigned to the IBN lines listed in table IBNLINES. ***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.
IBNXLA	IBN Translations. This table stores the data for the digit translations of calls from an MDC station, attendant console, incoming IBN trunk group, or the incoming side of a two-way IBN trunk group.

Datafilling table IBNXLA

WUCRA and WUCRD are added to the range of values for subfield FEATURE of field RESULT to allow datafill for the activation and deactivation codes for WUCR.

The following table shows the datafill specific to Wake-Up Call Reminder (WUCR) for table IBNXLA. Only those fields that apply directly to Wake-Up

Wake-Up Call Reminder (WUCR) (continued)

Call Reminder (WUCR) are shown. For a description of the other fields, refer to the data schema section of this document.

Datafilling table IBNXLA

Field	Subfield	Entry	Explanation and action
KEY		see subfields	Key. This field consists of the subfields XLANAME and DGLIDX.
	XLANAME	1- to 8-characters	Translator name. This subfield specifies the 1- to 8-character name assigned to the translator as the access code.
	DGLIDX	access code assigned to the WUCR feature	Digilator index. This subfield specifies the digit or digits assigned to the index as the access code. Enter the access code assigned to the WUCR feature.
RESULT		see subfields	Result. This field consists of the subfields TRSEL, ACR, SMDR, and FEATURE.
	TRSEL	FEAT	Translation selector. This subfield specifies the translation selector. Enter FEAT.
	ACR	Y or N	Account code entry. This subfield specifies whether an account code entry is required for all calls to the special feature access code. Enter Y or N.
	SMDR	Y or N	Station message detail recording. This subfield specifies whether SMDR is required for calls originated by a customer group station or an attendant console. Enter Y or N.
	FEATURE	WUCRA, WUCRD	Feature. This subfield specifies the feature assigned to the function code. Enter WUCRA to allow datafill for the WUCR activation code; enter WUCRD to allow datafill for the WUCR deactivation code.

Datafill example for table IBNXLA

The following example shows sample datafill for table IBNXLA.

MAP display example for table IBNXLA

```
KEY                          RESULT
_____________________________________________________________
RXCFN   67                   FEAT N N WUCRA
RXCFN   69                   FEAT N N WUCRD
```

Translation verification tools

Wake-Up Call Reminder (WUCR) does not use translation verification tools.

SERVORD

SERVORD is used to add or delete option WUCR to or from a line. WUCR is added to a line with an inactive status. When WUCR is deleted from a line, any active wake-up call request against that line is also deleted.

WUCR can also be added to a line at the time the line is established through the use of the NEW command. If a line is taken out-of-service through the use of the OUT command, WUCR is removed from the line, and any active wake-up call request for that line is discarded.

SERVORD is used to datafill table IBNFEAT. Table IBNFEAT defines the features assigned to each residential line. WUCR is added to the range of values for fields DF and FEATURE.

SERVORD limitations and restrictions

The following SERVORD limitations and restrictions apply to Wake-Up Call Reminder (WUCR):

- Because the only data associated with WUCR is the time of an active wake-up call request, and because that data is controlled by the subscriber and not the operating company, the CHF (change feature) command cannot be used on the WUCR feature.
- If the CHG and CLN commands are used on a line that has WUCR active, the active wake-up call request is lost.

Wake-Up Call Reminder (WUCR) (end)

SERVORD prompts

The following table shows the SERVORD prompts used to assign Wake-Up Call Reminder (WUCR) to a line.

SERVORD prompts for Wake-Up Call Reminder (WUCR)

Prompt	Valid input	Explanation
OPTION	WUCR	Indicates the name of the option
DN_OR_LEN	DN (up to 15 digits) or LEN	Specifies the directory number or line equipment number

Note: Table IBNFEAT is updated automatically when option WUCR is assigned through SERVORD.

SERVORD example for adding Wake-Up Call Reminder (WUCR)

The following SERVORD example shows how Wake-Up Call Reminder (WUCR) is added to an existing line using the ADO (add option) command.

SERVORD example for Wake-Up Call Reminder (WUCR) in prompt mode

```
>SERVORD
SO:
> ADO
SONUMBER: NOW 91 11 23 AM
>
DN_OR_LEN:
> HOST 0 0 18 8
OPTION:
> WUCR
OPTION:
> $
```

SERVORD example for Wake-Up Call Reminder (WUCR) in no-prompt mode

```
>ADO $ HOST 0 0 18 8 WUCR $
```

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