297-1421-503

DMS-100 Family

Subscriber Services

Maintenance Guide

BCS36 and up Standard 03.03 April 1997

northern telecom

DMS-100 Family

Subscriber Services

Maintenance Guide

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- Added new command, CNAMDACG and changed command TESTSS
- Added new operational measurements (OM) and new data structures
- Modified logs TCAP 100 and TCAP 101; added AUD 591 log

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Added late design changes to operational measurements (OM) chapter.

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BCS35 Standard 02.01

- Changed document references in “About this document” and in text
- Added new command, MAKERES
- Added new operational measurements (OM) and new data structures

July 1992

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About this document

This maintenance guide provides descriptive information and procedures for maintaining system components that support Subscriber Services. It is to be used by maintenance personnel who already have a basic knowledge of the DMS system and of Subscriber Services, custom local area signaling services (CLASS) Modem Resource (CMR) cards, and associated equipment found in DMS-100 Family offices. It is not to be used by personnel needing specific, step-by-step procedures when performing routine or maintenance tasks.

When to use this document

Northern Telecom (NT) software releases are referred to as batch change supplements (BCS) and are identified by a number, for example, BCS29. This document is written for DMS-100 Family offices that have BCS34 and up.

More than one version of this document may exist. The version and issue are indicated throughout the document, for example, 01.01. The first two digits increase by one each time the document content is changed to support new BCS-related developments. For example, the first release of a document is 01.01, and the next release of the document in a subsequent BCS is 02.01. The second two digits increase by one each time a document is revised and rereleased for the same BCS.

To determine which version of this document applies to the BCS in your office, check the release information in *DMS-100 Family Guide to Northern Telecom Publications*, 297-1001-001.

How to identify the software in your office

The *Office Feature Record (D190)* identifies the current BCS level and the NT feature packages in your switch. You can list a specific feature package or patch on the MAP (maintenance and administration position) terminal by typing

>PATCHER; INFORM LIST identifier

and pressing the Enter key.

where
identifier is the number of the feature package or patch ID

You can identify your current BCS level and print a list of all the feature packages and patches in your switch by performing the following steps. First, direct the terminal response to the desired printer by typing

>SEND printer_id

and pressing the Enter key.

where
printer_id is the number of the printer where you want to print the data

Then, print the desired information by typing

>PATCHER;INFORM LIST;LEAVE

and pressing the Enter key.

Finally, redirect the display back to the terminal by typing

>SEND PREVIOUS

and pressing the Enter key.

How Subscriber Services documentation is organized

This document is part of Subscriber Services documentation that supports the Northern Telecom line of Subscriber Services products. Subscriber Services documentation is a subset of the DMS-100 Family library.

The DMS-100 Family library is structured in numbered layers, and each layer is associated with an NT product. To understand Subscriber Services products, you need documents from the following layers:

- DMS-100 Family basic documents in the 297-1001 layer
- Meridian Digital Centrex documents in the 297-2001 layer
- Subscriber Services documents in the 297-1421 layer

Subscriber Services documents and other documents that contain related information are listed in “Finding Subscriber Services information” in *Subscriber Services Product Guide, 297-1421-010*.

References in this document

The following documents are referred to in this document.

Number	Title
TAM-1001-011	*Data Structures Reference Manual*
297-1001-001	*DMS-100 Family Guide to Northern Telecom Publications*
297-1001-553	*Routine Procedures*
297-1001-584	*Lines, Trunks, and Peripherals Lines Alarm and Performance Monitoring Procedures*
297-1001-589	*Lines, Trunks, and Peripherals Card Replacement Procedures*
297-1001-592	*Peripheral Modules Maintenance Guide*
297-1001-814	*Operational Measurements Reference Guide*
297-1001-820	*Non–Menu Commands Reference Manual*
297-1001-821	*Menu Commands Reference Manual*
297-1001-840	*Log Report Manual*
297-1421-010	*Subscriber Services Product Guide*
297-1421-110	*Subscriber Services Planning and Engineering Guide*
297-1421-300	*Subscriber Services Administration Guide*
297-1421-350	*Subscriber Services Translations Guide*
297-1421-501	*Subscriber Services Alarm and Performance Monitoring Procedures*
297-1421-502	*Subscriber Services Trouble Locating and Clearing Procedures*
297-2711-520	*Remote Switching Center (RSC) Maintenance Guide*
297-2721-520	*Subscriber Carrier Module–100S (SMS) Maintenance Guide*

—continued—

Number	Title (continued)
297-2731-520	*Subscriber Carrier Module–100 Urban (SMU) Maintenance Guide*
297-5101-544	*DMS SuperNode Signaling Transfer Point Trouble Locating and Clearing Procedures*
	End

How commands, parameters, and responses are represented

Commands, parameters, and responses in this document conform to the following conventions.

Input prompt (>)

An input prompt (>) indicates that the information that follows it is a command:

>BSY

Commands and fixed parameters

Commands and fixed parameters that are entered at a MAP terminal are shown in uppercase letters:

>BSY LINK

Variables

Variables are shown in lowercase letters:

>BSY LINK ps_link

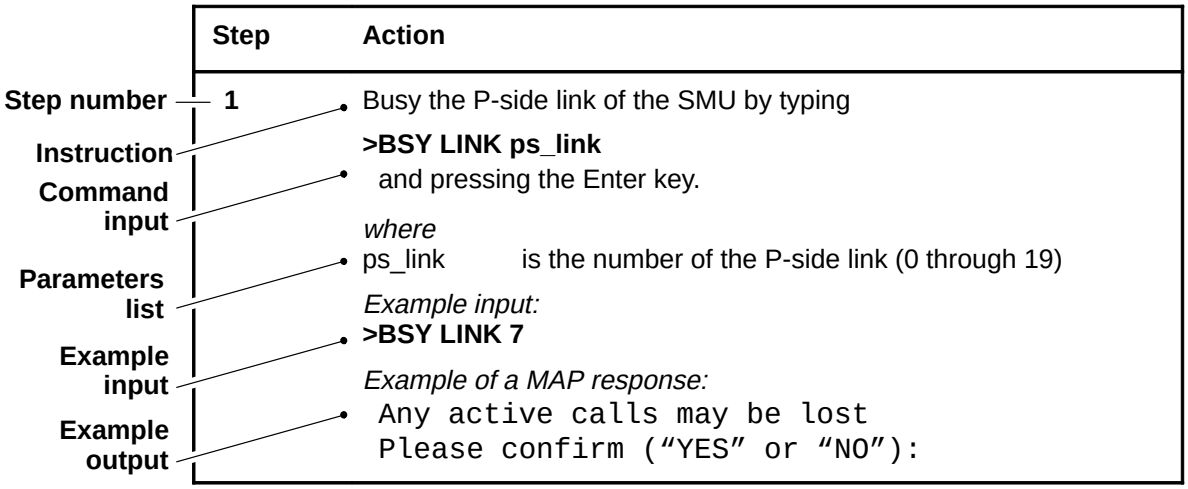
The letters or numbers that the variable represents must be entered. Each variable is explained in a list that follows the command string.

Responses

Responses correspond to the MAP display and are shown in a different type:

```
Any active calls may be lost
Please confirm (“YES” or “NO”):
```

The following example illustrates the command syntax used in this document.



Maintenance overview

This section provides the basic maintenance strategy of Subscriber Services. The information in this section is background in nature. It provides the maintenance supervisor or manager with the information necessary to make logical deductions while troubleshooting.

Detailed maintenance procedures are included in *Subscriber Services Card Replacement Procedures*, 297-1421-500, *Subscriber Services Alarm and Performance Monitoring Procedures*, 297-1421-501, and *Subscriber Services Trouble Locating and Clearing Procedures*, 297-1421-502.

Functional description

Subscriber Services provides the platform for the implementation of new, sophisticated phone services to residential subscribers and small businesses previously serviced on plain old telephone service (POTS) lines (one-party flat rate [1FR], one-party message rate [1MR], or wide area telephone service [WATS]) or Integrated Business Network (IBN) lines.

Subscriber Services provides access to most of the features available to POTS, plus additional features available in Meridian Digital Centrex (MDC). The Subscriber Services class of services bridges the POTS and MDC environments to provide subscribers with a more sophisticated feature set. The Residential Enhanced Services (RES) line class code (LCC) supports the standard dial pulse and Digitone sets. For feature information, refer to *Subscriber Services Product Guide*, 297-1421-010.

Subscriber Services types

There are two types of Subscriber Services:

- Subscriber Services RES
- 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.

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 is a set of features offered to residential and business subscribers in both nodal and network configurations. CLASS is offered for the following types of calls:

- calls where the call originator and call destination are served by the same central office
- calls where the call originator and call destination are served from different central offices located in the same local access and transport area (LATA) whose office-to-office trunk connection uses common channel signaling 7 (CCS7) protocol

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

- CLASS
- CLASS on MDC
- CLASS on MVP
- CLASS on MBS
- Analog Display Services Interface (ADSI)
- network messaging

Subscriber Services CLASS on MDC Subscriber Services CLASS on MDC is a set of software that makes Subscriber Services CLASS features available in the MDC environment, giving business subscribers the use of network CLASS services. The Subscriber Services CLASS on MDC feature 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 and MBSs.

> ***Note:*** Subscriber Services CLASS on MDC is not available on integrated voice/data terminals (IVDT) 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)

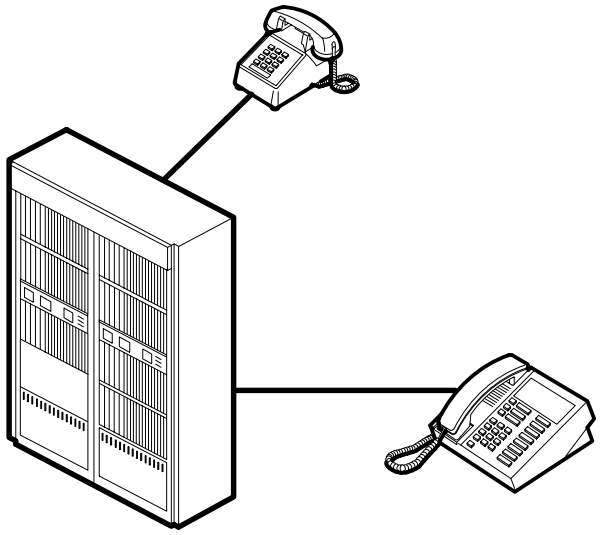
Nodal Subscriber Services

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.

Figure 1–1 shows the configuration of nodal Subscriber Services.

Figure 1–1
Configuration of nodal Subscriber Services



DMS-100 end office (EO)

Available features

RES features, as well as all features available in the network configuration shown in figure 1–2, are available in this configuration.

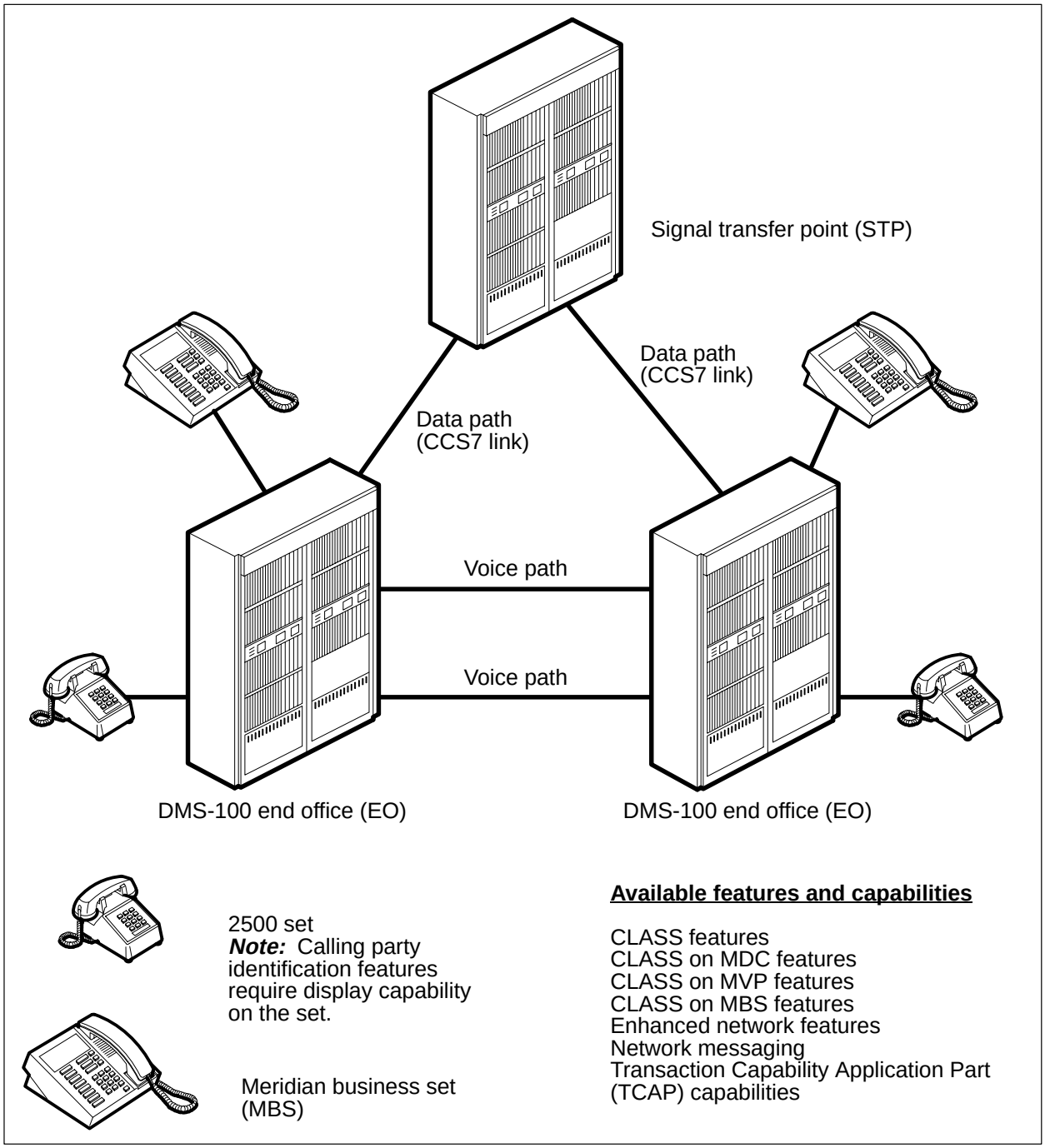
Network Subscriber Services

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.

Figure 1–2 shows the configuration of network Subscriber Services.

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

Figure 1–2
Configuration of network Subscriber Services



Hardware

Subscriber Services relies on two types of hardware components specifically designed to support RES and CLASS features. They are prerecorded digital recorded announcement (DRA) cards and the CLASS Modem Resource (CMR) card. In addition, CCS7 links are required if CLASS features are to be provided between switches. For engineering requirements, refer to *Subscriber Services Planning and Engineering Guide*, 297-1421-110.

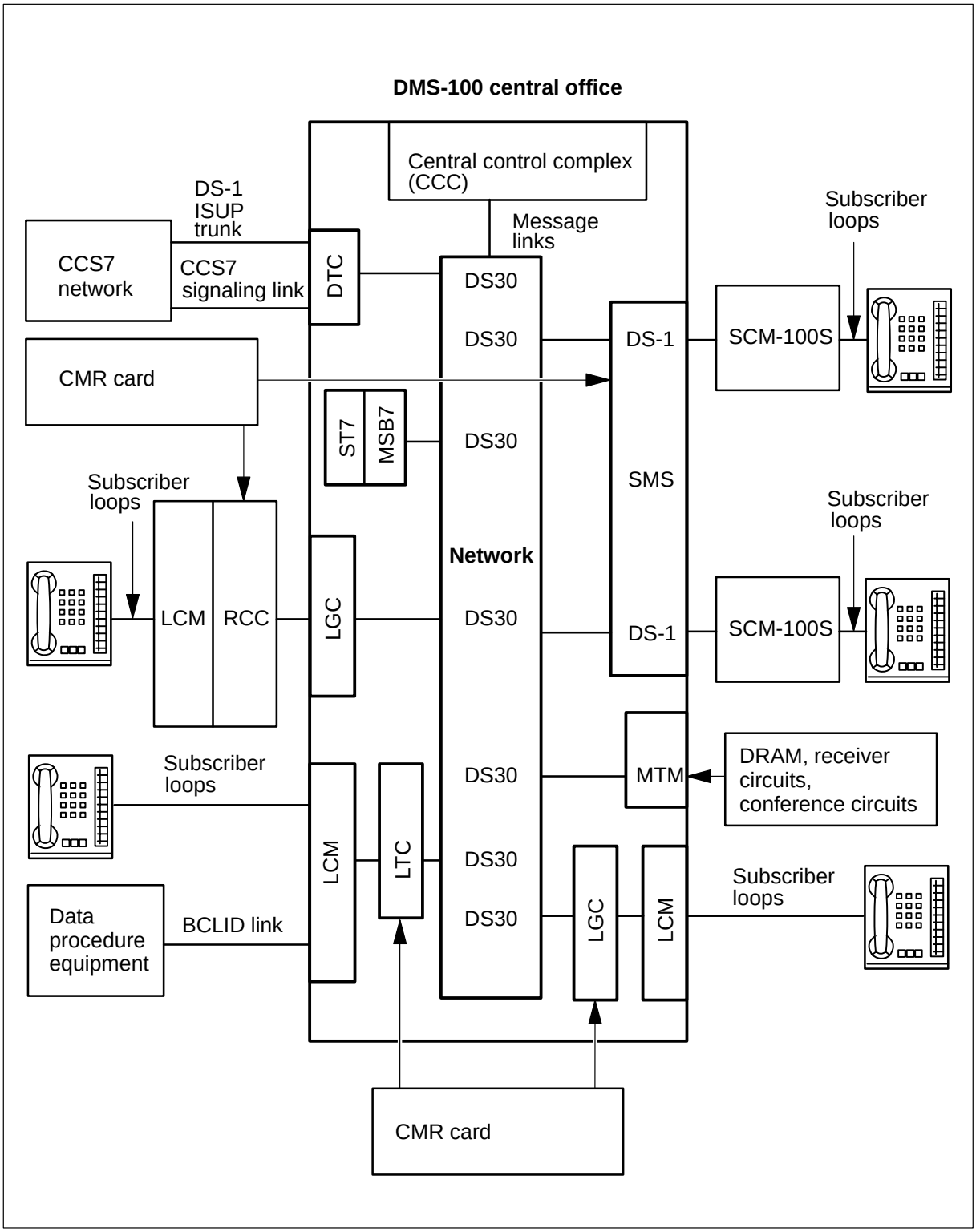
How Subscriber Services is configured

Figure 1–3 shows a DMS central office configured to provide the full range of Subscriber Services. In this example, Bulk Calling Line Identification (BCLID) services are provided by the CMR card, located in a remote cluster controller (RCC). CCS7 links for interoffice CLASS signaling are provided by the signaling terminals 7s (ST7), the message switch and buffer 7 (MSB7), and a digital trunk controller (DTC). Prerecorded DRA cards are installed on the shelves of a maintenance trunk module (MTM) configured to be a digital recorded announcement machine (DRAM). For more information about the RCC, refer to *Remote Switching Center (RSC) Maintenance Guide*, 297-2711-520.

Subscriber Services is also supported on the following peripheral types:

- line trunk controller (LTC) (For more information, refer to *Line Trunk Controller Maintenance Guide*, 297-1001-566.)
- line group controller (LGC) (For more information, refer to *Line Group Controller Maintenance Guide*, 297-1001-565.)
- Subscriber Carrier Module–100S (SMS) (For more information, refer to *Subscriber Carrier Module–100S (SMS) Maintenance Guide*, 297-2721-520.)
- Subscriber Carrier Module–100 Urban (SMU) (For more information, refer to *Subscriber Carrier Module–100 Urban (SMU) Maintenance Guide*, 297-2731-520.)

Figure 1–3
Subscriber Services hardware components



CLASS Modem Resource card

The CLASS display features require the addition of two CLASS Modem Resource cards (NT6X78AB) in each unit of the peripheral module (PM). The CMR cards act as a controller for the CLASS display lines.

The CMR card supports the CLASS features, such as Calling Number Delivery (CND), Dialable Number Delivery (DDN), Calling Name Delivery (CNAMD), BCLID, CLASS Message Waiting Indicator (CMWI), Downloadable Softkeys, Visual Screen List Editing (VSLE), and Spontaneous Call Waiting Identification (SCWID).

The following PMs can serve as the host for the CMR cards:

- LGC
- LTC
- RSC
- RCC
- SMU
- SMS

Digital recorded announcement machine

The DRAM is an MTM with a special equipment shelf (NT2X58) containing DRA cards. The number of DRAMs required for each office is based on the number and type of announcements required by the telephone operating company, the total amount of time required for the announcements, and the traffic capacity of the central office.

CCS7 network interface

Interoffice CLASS services require hardware that supports CCS7 signaling. In one hardware configuration, an MSB7, DTC, and ST7 provide signaling links between the central office and other nodes providing CLASS service. CCS7 trunk signaling requires that the peripheral equipment supporting CCS7 trunks consist of DTCs equipped with enhanced messaging and expanded memory. The DTCs must be equipped with an additional Master Processor Memory Plus circuit pack (NT6X47AB) to provide expanded memory.

The DTC common peripheral processor (CPP) Message Protocol and Tone circuit pack (NT6X69AB) supports the interperipheral message link (IPML) between the DTC and the MSB7 peripheral. The Continuity Tone Detector circuit pack (NT6X70AA) performs ISDN user part (ISUP) continuity checking of the trunks.

Refer to *Common Channel Signaling 7 Maintenance Reference*, 297-1001-531, for information about maintaining the interface to the CCS7 network.

A second hardware configuration, the link peripheral processor (LPP)-based DMS-service switching point/signaling point (SSP/SP), consists of DMS SuperNode and other DMS-100 Family equipment. The LPP equipment frame contains two types of PMs: a link interface module (LIM) and a series of CCS7 link interface unit 7s (LIU7). The LIM, which consists of two local message switches (LMS) and two frame transport buses, controls messaging between the LIU7s in the LPP and between the LPP and the DMS-Bus. The LIU7s process the messages that enter and leave an LPP through an individual signaling data link. Both DS-0A and V.35 interface protocols are supported. The channel bank is used to multiplex several DS-0A signaling data links to the network.

BCLID data links

The CLASS BCLID feature package, NTXF55AA, provides information about incoming calls in record format. The data associated with the incoming calls are transmitted from the switch to subscriber data processing equipment through one or more dedicated Bell 202A data channels. The data processing equipment collects the ASCII records for immediate use or for archiving. BCLID records are created for all calls incoming to a BCLID group.

The data links used to transmit BCLID messages can be configured on peripheral devices equipped with CMR cards. These include the LGC, LTC, RCC, SMS and SMU. Only the Standard Line Circuit Card (NT6X17AC), NT3X06, and SCD203 line cards can be used for BCLID data links.

BCLID messages are transmitted at a rate of up to 1200 bit/s. All message traffic is one way, with any signals from the subscriber equipment being ignored. A continuous, 1200-Hz carrier tone is maintained on the data link except when messages are transmitted.

Software

In addition to hardware components, Subscriber Services requires three tiers of feature packages in order to offer full call-processing capabilities.

Certain of these feature packages have specific hardware and software requirements to function properly. For complete information, refer to *Subscriber Services Planning and Engineering Guide*, 297-1421-110.

RES base

The RES base (feature package NTXA64AA) is the foundation for all Subscriber Services applications. The functionality that the RES base provides can be broken down into the following three areas:

- the capability provided by base Subscriber Services
- the capability provided as an enhancement to Subscriber Services, that is, features developed specifically for the application that did not exist previously in the POTS environment

- the capability provided by Subscriber Services when combined with CLASS, which includes all CLASS-based features

Software requirements for Subscriber Services RES base software

Table 1–1 lists the software feature packages that are required to provide base capabilities in Subscriber Services RES.

Table 1–1
RES base software

NT PEC	Software feature package title
NTX000AA	Bilge
NTX001AA	Common Basic
NTX901AA	Local Features I
NTX100AA	IBN Basic
NTX898AA	Variable Speed Call Access Code
NTX824AB	IBN Enhanced Call Waiting
NTX413AB	IBN Enhanced Call Forwarding ***Note:*** NTX413AB is only used in the United States market. NTX413AA is used in all other markets.
NTXA64AA	RES Base

Refer to "Subscriber Services software" in *Subscriber Services Product Guide*, 297-1421-010, for a description of each software feature package.

Software requirements for nodal Subscriber Services

Table 1–2 lists the software feature packages that are required to provide nodal Subscriber Services.

Table 1–2
Nodal software

NT PEC	Software feature package title
NTXP73AA	CNDB Officewide Activation
NTXQ90AA	Enhanced Residential Services
NTXP57AA	Call Wake-Up Service
NTXE94AA	Secondary Directory Numbers with Options
NTXF85AA	Residential Message Reminder

—continued—

Table 1–2
Nodal software (continued)

NT PEC	Software feature package title
NTXA18AA	Subscriber Activated Code Blocking
NTXF82AA	Single Line Variety Package
NTXJ69AA	Residential Call Hold
NTXA81AA	Extension Bridged Services
NTXA94AA	RES Features
NTXA43AA	Call Forward Remote Activation
NTX219AB	Teen Service
NTXN75AA	Remote Call Forward Without Unique PIN
NTXJ70AA	Call Forwarding of Call Waiting Calls
NTXJ58AA	Cancel Call Waiting Per Line
End	

Refer to “Subscriber Services Software” in *Subscriber Services Product Guide*, 297-1421-010, for a description of each software feature package.

CLASS

CLASS features combine the results of processing carried out at the central office (CO) serving the call originator and processing carried out at the central office serving the call destination. CLASS services are offered for the following types of calls:

- calls where the call originator and the call destination are both served by the same central office
- calls where the call originator and the call destination are served from different central offices in the same LATA, and the office-to-office trunk connection uses CCS7 trunks and signaling links

Software requirements for Subscriber Services CLASS base

Table 1–3 lists the software feature packages that are required to provide base capabilities in Subscriber Services CLASS.

Table 1–3
CLASS base software

NT PEC	Software feature package title
NTX000AA	Bilge
NTX001AA	Common Basic
NTX901AA	Local Features I
NTX100AA	IBN Basic
NTX898AA	Variable Speed Call Access Code
NTX824AB	IBN Enhanced Call Waiting
NTX413AB	IBN Enhanced Call Forwarding
NTXA64AA	RES Base
NTXA82AA	CLASS Line Office Data
NTX270AA	New Peripheral Maintenance Package

Refer to “Subscriber Services software” in *Subscriber Services Product Guide*, 297-1421-010, for a description of each software feature package.

Software requirements for network/nodal Subscriber Services CLASS

Table 1–4 lists the software feature packages that are required to provide network or nodal Subscriber Services CLASS features.

Table 1–4
Network/nodal Subscriber Services CLASS software

NT PEC	Software feature package title
NTXE56AA	Screening List Editing
NTXA96AA	Selective Call Rejection
NTXA45AA	Selective Call Acceptance
NTXA95AA	Selective Call Forwarding
NTXA42AA	Distinctive Ringing/Call Waiting
NTXA00AB	Call Setup
NTXA01AA	Calling Number Display

—continued—

Table 1–4
Network/nodal Subscriber Services CLASS software (continued)

NT PEC	Software feature package title
NTXA41AA	Calling Number Delivery Blocking Administration
NTXA87AA	Long Distance Indicator
NTXE27AA	Dialable Number Delivery
NTXP80AA	Two Level Automatic Recall Enhancements
NTXN97AA	Call Waiting Display
NTXE52AA	Name Display
NTXF55AA	Bulk Calling Line Identification
NTXR35AA	800 Dialed Number Display and BCLID
NTXN11AA	Ten-Digit GTT for CLASS Features
NTXP12AA	Anonymous Caller Rejection
NTXQ29AA	Calling Name Delivery Blocking for Lines
NTXE46AB	Calling Name/Number Delivery Blocking
NTXJ39AA	Visual Message Waiting Indicator
NTXA02AA	Customer-Originated Trace
NTXN35AA	COT Enhancements
NTXJ70AA	Call Forwarding of Call Waiting Calls
NTXJ58AA	Cancel Call Waiting Per Line
NTXN75AA	Remote Call Forward Without Unique PIN
End	

Refer to “Subscriber Services software” in *Subscriber Services Product Guide*, 297-1421-010, for a description of each software feature package.

Software requirements for Subscriber Services CLASS on MDC

Table 1–5 lists the software feature packages that are required to support Subscriber Services CLASS on MDC features.

Table 1–5
CLASS on MDC software

NT PEC	Software feature package title
NTXF72AB	CLASS on MBS Phase I and II
NTXF56AA	CLASS on MDC Base
NTXJ78AA	CLASS on MDC Phase II
NTXE58AA	CLASS on MVP Base
NTXF60AA	CLASS on MVP Phase II
NTXQ81AA	Name Display on MADN

Refer to "Subscriber Services software" in *Subscriber Services Product Guide*, 297-1421-010, for a description of each software feature package.

Software requirements for Subscriber Services ADSI

Table 1–6 lists the software feature packages that are required to support Subscriber Services ADSI features.

Table 1–6
ADSI software

NT PEC	Software feature package title
NTXP91AA	ADSI Services Protocol
NTXP96AA	Call Logging
NTXP95AA	Visual Screen List Editing

Refer to "Subscriber Services software" in *Subscriber Services Product Guide*, 297-1421-010, for a description of each software feature package.

Software requirements for network Subscriber Services CCS7

Table 1–7 lists the software feature packages that are required to support Subscriber Services CCS7 features.

Table 1–7
Network CCS7 software

NT PEC	Software feature package title
NTX167AB	CCS7 Trunk Signaling
NTX041AB	MTP/SCCP Associated and Nonassociated Signaling
NTX550AA	CCS7 Transaction Service Support

Refer to "Subscriber Services software" in *Subscriber Services Product Guide*, 297-1421-010, for a description of each software feature package.

Additional software

Table 1–8 lists the software feature packages that are required to support additional Subscriber Services features.

Table 1–8
Additional software

NT PEC	Software feature package title
NTX101AA	IBN Enhanced Business Services
NTX106AA	IBN Proprietary Business Set
NTX006AA	Business Lines
NTX732AA	Simplified Message Desk Interface
NTX119AA	IBN Message Service
NTXA68AA	Network Message Service
NTX103AA	IBN—SMDR Enhanced

Refer to "Subscriber Services software" in *Subscriber Services Product Guide*, 297-1421-010, for a description of each software feature package.

Fault conditions

This section describes the situations in which service may be affected.

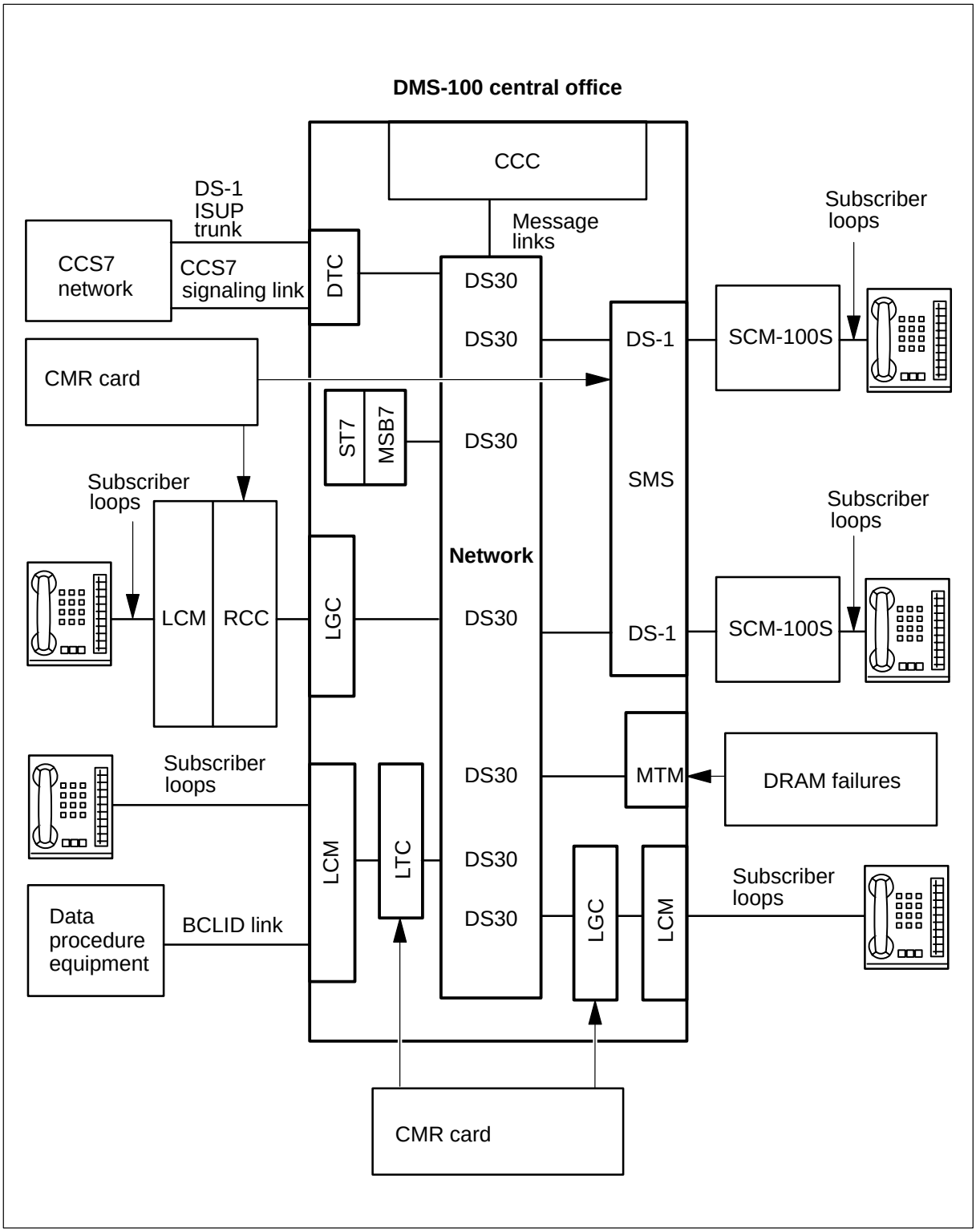
Subscriber Services component failures and system faults

The DMS-100 switch components having the most serious impact on Subscriber Services call processing if they fail are the PMs linking subscribers to the network, CCS7 network peripherals for internodal CLASS call processing, CMR cards, and DRA cards in the MTM. Figure 1–4 shows the location of these components in a typical central office configuration.

Detection and investigation of these and other system faults are primarily the responsibility of the operating company maintenance organization.

Procedures for these maintenance activities are described in documents listed in “About this document,” at the front of this guide. The usual role of the administrator is to monitor various log reports and operational measurements (OM) outputs that may provide early evidence of fault conditions.

Figure 1–4
Subscriber Services system faults



Automatic maintenance

Audits and system actions attempt to catch faults in order to allow the DMS switch to repair itself. The DMS switch produces a log report indicating that additional manual action may be required. For example, log report PM128 is generated if the load in the peripheral inventory table is changed so that it does not agree with the load in the CMR card.

An audit runs in-service diagnostics on the CMR card approximately every minute. If an in-service fault is detected, the PM is set to in-service trouble (ISTb), and a PM181 log is generated indicating that CND is not working for remote carrier urban (RCU) lines connected to the PM. The craftsperson can then perform maintenance on the faulty CMR card as required.

Monitoring Subscriber Services system faults

Table 1–9 identifies system faults that can affect delivery of Subscriber Services features to subscribers. Performance indicators used to detect these maintenance problems are also included in the table.

Table 1–9
Subscriber Services system faults and performance indicators

System fault	Operational measurements	Related log reports
PM and link failures	DS1CARR:	
	DS1BER	None
	DS1LOF	PM110
	PM:	
	PMERR	PM108, PM125, PM180, PM181
	PMFLT	PM180
	PMPSERR	PM110, PM181
	PMPSFLT	PM181
	CNDXPM:	
	SCWDFAIL	None
CMR card failures	PM:	
	PMERR	PM181
	CND:	
	CNDUNAVL	None
DRAM failures	ANN:	
	ANNSBU	TRK106
BCLID link failures	BCLID:	
	BCLDCLDN	BCLID101, BCLID102
	BCLDOOA	
	BCLDPRIV	
	BCLIDO:	
	BCLDOVLD	

Peripheral module and link failures

Any OM pegs should be reported to the switch maintenance organization.

CMR card failures

The CMR card (NT6X78AB) in each unit of a PM acts as a controller for CLASS display lines. The card supports CND, CNAMD, DDN, CMWI, and BCLID links. The CND_CNDUNAVL register provides an indication of possible card failure.

Data evaluation procedure

The CMR card is duplicated in an extended PM. It is unlikely that service would be interrupted due to a card failure. If a CMR card unavailability condition persists as indicated by the register CND_CNDUNAVL, use maintenance procedures defined in *Subscriber Services Alarm and Performance Monitoring Procedures,* 297-1421-501, to determine if both cards have failed simultaneously. If they have not, the probable cause of the problem is an overload condition. Check the assignment spread of CLASS subscribers at the extended peripherals.

DRAM failures

Any system busy pegs should be reported to the switch maintenance organization.

Escalation to manual maintenance

The automatic system actions may indicate that a significant number of similar trouble reports or logs (as defined by local operating company procedures) are being generated. In this case, manual intervention may be required. For specific information, refer to *Subscriber Services Trouble Locating and Clearing Procedures,* 297-1421-502.

BCLID data link

If a BCLID link fails, a subscriber complaint indicates that BCLID messages are not being received at the subscriber location.

Fault clearing for BCLID data links requires that personnel be located at a MAP (maintenance and administration position) terminal as well as at the site of the customer premises equipment (CPE) during any manual maintenance. During the maintenance of the link, a test pattern is generated at the office and is transmitted over the BCLID link to the CPE. The link may fail because the CMR card fails to respond to a diagnostic request (DR) or because the BCLID link is in the call processing busy (CPB) state.

If BCLID links are supported by a CMR card that is out of service, a cold switch activity (SWACT) must be performed to return to service (RTS) the BCLID links when the PM is returned to service after troubleshooting. Refer to table BCLIDGRP for a listing of the hardware addresses of all central office lines in BCLID groups.

Manual maintenance on the BCLID link

Manual maintenance is performed on the BCLID link under the following conditions:

- when the BCLID group links are overloaded
- when the BCLID data link is not datafilled in table BCLIDGRP
- when BCLID diagnostic tests or RTS actions fail
- when a BCLID link is found in any state other than CPB

Other aids to identify BCLID link faults

The query BCLID (QBCLID) command is also an aid to identify and solve problems regarding BCLID. The QBCLID command, which displays every line in the office that belongs to a BCLID group, is entered from the command interpreter (CI) level of the MAP terminal. Three lists are displayed:

- The first list identifies BCLID lines datafilled in tables LENFEAT, IBNFEAT, and KSETFEAT.
- The second list identifies all line groups with the BCLID option found in tables HUNTGRP and UCDGRP.
- The third list identifies the PX, P2, IBNT0, and IBNT2 trunks assigned the BCLID option in table TRKGRP.

When maintaining BCLID links, standard diagnostic testing of the CMR card is the first step using the QUERYPM and TST commands from the MAP terminal. The second step is performing standard line diagnostics and test pattern transmission.

CMR card

Manual maintenance on the CMR card

Manual maintenance is performed on the CMR card under the following conditions:

- when the CMR card is busied, tested and returned to service
- when the CMR-equipped peripheral is returned to service
- when initiated by a maintenance technician (using the TST command)
- when included as part of routine in-service activity (discussed in Chapter 2, “Preventive maintenance strategies”)
- when the CMR card goes out of service in an active PM. (If the PM is configured with CLASS features, the display features will not function until the CMR card is busied and returned to service, or until a manual SWACT is performed, as the other PM also contains a CMR card.)

Other aids to identify CMR card faults

The QUERYPM command is also an aid to identify and solve problems regarding the CMR card. The QUERYPM command is entered from the PM level of the MAP terminal. The command has two options, which are particularly useful when investigating CMR card problems:

- Query PM fault (QUERYPM FLT)
- Query PM counters (QUERYPM CNTRS)

The QUERYPM FLT command is used to display the fault causing the ISTb peripheral. The text message response identifies whether the CMR card is the cause of the ISTb status.

The QUERYPM CNTRS command is used to display a full set of information about the peripheral including the CMR card load in the CMR card in each unit of the peripheral and the number of softkey definers downloaded to each unit of the CMR.

The software that controls the operation of the CMR card is downloaded as part of the peripheral reload process. The CMR can be loaded separately from the PM by loading the CMR with the CMR card load file that is found in the inventory table of the posted PM.

More information about user interface commands is contained in Chapter 6, “Subscriber Services related user interface commands.”

Preventive maintenance strategies

This chapter explains the preventive maintenance procedures for Subscriber Services that help the operating company maintain the DMS switch most efficiently. By following these procedures, the operating company can locate possible faults and correct them before they become service affecting.

Routine maintenance schedules comprise tasks performed according to a predefined schedule. Refer to *Routine Procedures*, 297-1001-553, for the procedures used to complete these and other maintenance tasks.

Description of routine maintenance procedures

Routine maintenance procedures are defined as those procedures that help ensure that both the hardware and software of the DMS switch have no faults.

Preventive routine maintenance for the DMS switch includes routine exercise (REX) testing at regular intervals on DMS front-end equipment by internal software. This diagnostic test indicates if there are any problems with Subscriber Services, specifically, with the Bulk Calling Line Identification (BCLID) data links and the CLASS Modem Resource (CMR) card.

When there is heavy usage of the BCLID links, the office may have to schedule a “maintenance window” to test a link in order to ensure that it has not degraded. A BCLID link cannot be diagnosed when it is call processing busy.

Other routine maintenance procedures include automatic line testing, which can be performed routinely in order to perform line diagnostics, and gathering and interpreting log reports and operational measurements (OM) in order to monitor the components of the DMS switch.

Routine maintenance of CLASS display features

Routine maintenance of the CLASS display features Calling Number Delivery (CND), Calling Name Delivery (CNAMD), and Dialable Number Delivery (DDN) can identify any problems occurring with these features through existing logs generated by CND, CNAMD, and DDN activity, and through the station ringer test, which tests the subscriber set.

Station ringer test

The station ringer test has been enhanced to include a test of the display on the subscriber set. The final portion of the test causes the on-hook phone to ring. For lines that have the following features assigned, the test also sends a modem transmission to the set after the first ring:

- CND
- CND with the subscription usage sensitive pricing (SUSP) option (CND SUSP)
- CNAMD
- CNAMD with the SUSP option (CNAMD SUSP)
- DDN
- DDN with the SUSP option (SUSP)

The access code for the station ringer test is determined by the operating company. Therefore, there is no special directory number (DN) to dial to test the CNAMD, CND, or DDN subscriber set.

The format of the modem transmission for the station ringer test is similar to that of the modem transmission for delivering calling information to a subscriber set, with the following exceptions:

- The station ringer test uses the test message as defined in TR-TSY-0000030.
- To test the display of all possible digits, the directory number field of the modem transmission for the station ringer test contains the digits *0123456789*.

No CND SUSP, CNAMD SUSP, or DDN SUSP Automatic Message Accounting (AMA) records are generated as a result of the modem transmission from the station ringer test.

Routine maintenance schedules

Subscriber Services test calls should be conducted on a weekly basis, and the translation verification utility, TRAVER, can be used to check the routing of the test calls through the switch. Refer to *Subscriber Services Translations Guide*, 297-1421-350, for examples of TRAVER for Subscriber Services calls. Recommended schedules for preventive routine maintenance are at least on a monthly basis. Routine maintenance for Subscriber Services will be on the same schedule as that for the DMS switch.

Subscriber Services related logs

This chapter provides a table listing the log reports associated with Subscriber Services. Gathering and interpreting log reports is one of the ways that the operating company can monitor the components of the DMS switch. Certain log reports are useful in isolating a problem to a single component, while others help in spotting link problems.

Table 3–1 contains each log report name, the cause for the log report, and the recommended maintenance response. For more information, refer to *Log Report Manual*, 297-1001-840.

Table 3–1
Subscriber Services related logs

Log name	Causes	Response
AMAB117	This log report is generated for specific custom local area signaling services (CLASS) features Calling Number Delivery (CND) with the subscription usage sensitive pricing (SUSP) option, Calling Name Delivery (CNAMD) with the SUSP option, Dialable Number Delivery (DDN) with the SUSP option, Calling Name Delivery Blocking (CNDB) with the SUSP option, Calling Number Blocking (CNB), and Calling Name and Number Blocking (CNNB), identified by the structure and call codes assigned to each feature. The code values are as follows: Feature / Structure code / Call code CND SUSP / 00110 / 264 CNAMD SUSP DDN SUSP CNDB SUSP / 01030 / 330 CNB CNNB	Refer to *Log Report Manual*, 297-1001-840. Decide whether provisioning or maintenance is required and notify the appropriate organization.
ASR102	This log report is generated in the following instances: when a temporary Automatic Set Relocate (ASR) entry cannot be deleted from table KSETINV, when a temporary entry is not datafilled in table LNINV, when an ASR customer group is not associated with a real customer group, when data is not moved with the relocated set, or when the new line equipment number (LEN) is already defined in table KSETINV.	Refer to *Log Report Manual*, 297-1001-840. Decide whether provisioning or maintenance is required and notify the appropriate organization.
AUD591	This log report is generated when a call traps or dies while holding a CNAMD TCAP extension block.	Save this log report as additional information for investigating call traps or deaths.

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Table 3–1
Subscriber Services related logs (continued)

Log name	Causes	Response
BCLID101	This log report is generated when Bulk Calling Line Identification (BCLID) diagnostic tests or return to service (RTS) actions fail for one of the following reasons: illegal port or channel index, link deallocation in progress, wrong link state, modem data inconsistent, buffer full, CLASS modem resource (CMR) card faulty, or line not allocated. The log report includes the LEN and BCLID group number of the affected BCLID link.	Refer to the BCLID link troubleshooting procedure in *Subscriber Services Trouble Locating and Clearing Procedures*, 297-1421-502, and the CMR card troubleshooting procedure in *Lines, Trunks and Peripherals Line Card Replacement Procedures*, 297-1001-589.
BCLID102	The BCLID software conducts BCLID link audits every 5 minutes during normal operation. This log report is generated if the audits detect a BCLID link in the IDL (idle) state, which is not valid for DMS data links. The log report is also generated when an IDL link status changes to MB (manual busy) or CPB (call processing busy). The audits identify which condition is responsible for the log report.	Refer to the BCLID link troubleshooting procedure in *Subscriber Services Trouble Locating and Clearing Procedures*, 297-1421-502.
CFW101	This log report is generated when the subscriber activates the Call Forwarding feature with the journal file inactive.	Refer to *Log Report Manual*, 297-1001-840. Decide whether provisioning or maintenance is required and notify the appropriate organization.
IBN106	This log report is generated when the LOG flag is set to Y in table IBNTREAT for the treatment indicated.	Refer to *Log Report Manual*, 297-1001-840. Decide whether provisioning or maintenance is required and notify the appropriate organization.
IBN107	This log report is generated when failures in digit manipulation datafill occur.	Refer to *Log Report Manual*, 297-1001-840. Decide whether provisioning or maintenance is required and notify the appropriate organization.
IBN108	This log report is generated when there is tone detection trouble occurs.	Refer to *Log Report Manual*, 297-1001-840. Decide whether provisioning or maintenance is required and notify the appropriate organization.

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Table 3–1
Subscriber Services related logs (continued)

Log name	Causes	Response
IBN115	This log report is generated to give coder-decoder (CODEC) ringing differential offset readings.	Refer to *Log Report Manual*, 297-1001-840. Decide whether provisioning or maintenance is required and notify the appropriate organization.
IBN120	This log report is generated when an Integrated Business Network (IBN) flexible intercept treatment is not found in table IBNTREAT under the applicable customer group, but has been encountered in datafill in other tables. The call is routed to reorder treatment.	Refer to *Log Report Manual*, 297-1001-840. Decide whether provisioning or maintenance is required and notify the appropriate organization.
IBN122	This log report is generated when the IBN station set programs a speed call and the journal file is not attached.	Refer to *Log Report Manual*, 297-1001-840. Decide whether provisioning or maintenance is required and notify the appropriate organization.
IBN123	This log report is generated when a call is trying to use a central office (CO) type trunk that does not have a billing directory number (DN) associated with it in table TRKGRP.	Refer to *Log Report Manual*, 297-1001-840. Decide whether provisioning or maintenance is required and notify the appropriate organization.
LINE120	This log report is generated when the DMS switch fails to set up a three-way call when requested, because hardware or software resources were not available.	Refer to *Log Report Manual*, 297-1001-840. Decide whether provisioning or maintenance is required and notify the appropriate organization.
LINE138	This log report is generated when a call is routed to a treatment after being call processing busy. LINE138 usually follows the LINE120 log report.	Refer to *Log Report Manual*, 297-1001-840. Decide whether provisioning or maintenance is required and notify the appropriate organization.
LINE150	This log report is generated when a customer originated trace (COT) has been performed successfully. (See Note.)	None is required.

—continued—

Table 3–1
Subscriber Services related logs (continued)

Log name	Causes	Response
LINE151	This log report is generated when the COT feature is activated by a subscriber under circumstances where the COT cannot be performed successfully. (See Note.)	None is required since this log report contains information about potentially malicious calls.
LINE180	This log report is generated when a subscriber with the Subscriber Activated Call Blocking (SACB) feature has attempted to complete a call to a restricted call class and has exceeded the number of attempts to enter the SACB personal identification number (PIN) to override the restriction.	None is required.
OM2200	This log report is generated when a threshold condition defined in table OMTHRESH is exceeded by a register. This log report is associated with the operational measurements (OM) Thresholding and Alarms feature package (NTX385AA).	Refer to *Log Report Manual*, 297-1001-840. Decide whether provisioning or maintenance is required and notify the appropriate organization.
OMPR2nn	This log report is generated to capture raw measurement data from OMs as defined in table OMPRT. Up to 33 different reports, consisting of accumulating classes, holding classes, OM groups, or groups in an OM class, are supported by the table OMRT.	Refer to *Log Report Manual*, 297-1001-840. Decide whether provisioning or maintenance is required and notify the appropriate organization.
PM106	This log report is generated when a peripheral module (PM) is returned to service.	Refer to *Log Report Manual*, 297-1001-840. Decide whether provisioning or maintenance is required and notify the appropriate organization.
PM108	This log report is generated when a firmware or hardware error is detected in the peripheral processor (PP).	Refer to *Log Report Manual*, 297-1001-840. Decide whether provisioning or maintenance is required and notify the appropriate organization.

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Table 3–1
Subscriber Services related logs (continued)

Log name	Causes	Response
PM110	This log report is generated when a change occurs in the service count level and a threshold has been reached.	Refer to *Log Report Manual*, 297-1001-840. Decide whether provisioning or maintenance is required and notify the appropriate organization.
PM125	This log report is generated when a firmware or hardware error is detected in the PP.	Refer to *Log Report Manual*, 297-1001-840. Decide whether provisioning or maintenance is required and notify the appropriate organization.
PM128	This log report is generated when the PM encounters trouble (TRBL) during routine operation.	Refer to the in-service trouble (ISTb) alarm troubleshooting procedure in *Subscriber Services Alarm and Performance Monitoring Procedures*, 297-1421-501.
PM180	This log report is generated when a trouble has been detected on a CMR card and the system is attempting to reset the card.	Make a record of this log report in case faults should develop in the PM.
PM181	This log report is generated when a specific step has occurred in a PM call-processing function. The report is often associated with a PM exception condition.	Refer to the ISTb alarm troubleshooting procedure in *Subscriber Services Alarm and Performance Monitoring Procedures*, 297-1421-501.
SLE101	This log report is generated when table RESFEAT is changed while the journal file is inactive. This occurs while a subscriber activates or deactivates the screening list editing (SLE) service.	None is required.
SLE102	This log report is generated when table SLELIST is changed while the journal file is inactive.	None is required.
SLE103	This log report is generated when the SLE compaction process begins. Compaction is a method of recovering data that has been used by SLE lists and then released. The action is triggered by one of two office parameters, based on the time of day or the number of SLE transactions that have occurred.	None is required.

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Table 3–1
Subscriber Services related logs (continued)

Log name	Causes	Response
SLE104	This log report is generated when the SLE compaction process is completed.	If the MAX_COUNT field is larger than the number of segments allocated, it indicates that a cold or reload restart has not occurred since the SLE_MAX_SEGMENT_COUNT office parameter was set last. If there is insufficient data store for the current volume of SLE data, a cold or reload restart is required. If the number of segments used is equal to the number of segments allocated and SWERR logs indicate failure to obtain memory for SLE data, activate SLE_MAX_SEGMENT_COUNT.
SLE105	This log report is generated when table RESFEAT finds an inconsistency in the data.	If the log report message is NO RESFEAT MAILBOX, restart the process. If the message is BAD RESFEAT MSGTYPE, no action is required.
SLE106	This log report is generated when the central SLE compaction process finds a data mismatch during the verification process.	If the log report message is DATA STORE NOT ALLOCATED, reset the office parameter SLE_MAX_SEGMENT_COUNT. If the parameter is already reset, a cold or reload restart is required. For any other log report message, a cold or reload restart is required.
SLE107	This log report is generated when the SLE audit, which is part of the compaction process, finds an inconsistency in the data.	None is required.
SLE108	This log report is generated when the SLE session count audit, which is part of the compaction process, finds an inconsistency in the internally stored session counts. A comparison is made between the actual number of SLE sessions currently active and the internally calculated counts. If the counts differ, they are corrected and this report is generated.	None is required.

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Table 3–1
Subscriber Services related logs (continued)

Log name	Causes	Response
TCAP100	This log report is generated when any of the four following transaction capability application part (TCAP) messages are received by the following Automatic Call Back (ACB) or Automatic Recall (AR) features: • CNAMD RETURN ERROR RECEIVED • CNAMD REJECT RECEIVED • CNAMD VERIFICATION QUERY SENT • CNAMD VERIFICATION RESPONSE RCVD ***Note:*** The text reason for this log report does not apply to return error components (CNAMD RETURN ERROR RECEIVED) or to reject components (CNAMD REJECT RECEIVED) received in response to TCAP QWP packages sent using the TESTSS CNAMD database verification command.	This log report is generated for information purposes. If CNAMD RETURN ERROR RECEIVED or CNAMD REJECT RECEIVED messages are received, analyze the component set of the log report data to determine the error code. If the CNAMD VERIFICATION QUERY SENT message is received, analyze the contents of the CNAMD TCAP QWP package sent using the TESTSS CNAMD command to ensure that the SSP conforms to TCAP standards. If the CNAMD VERIFICATION RESPONSE RCVD message is received, analyze the contents of the CNAMD TCAP response package to ensure that the centralized residence name database conforms to TCAP standards.
TCAP101	This log report is generated when an ACB or AR TCAP message is returned by the signaling connection control part (SCCP) to the ACB or AR application by way of the SCCP unit data services message. ***Note:*** This log report can be generated for CNAMD TCAP QWP packages sent for an actual call (CNAMD UDTS RECEIVED) and for CNAMD TCAP QWP packages sent using the TESTSS CNAMD database verification command (CNAMD VERIFICATION UDTS RECEIVED).	This log report is generated for information purposes. Analyze the diagnostic field of the log report data to determine the problem.

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Table 3–1
Subscriber Services related logs (continued)

Log name	Causes	Response
TRK106	This log report is generated when a diagnostic test on trunk equipment fails.	Refer to *Log Report Manual*, 297-1001-840. Decide whether provisioning or maintenance is required and notify the appropriate organization.
TRK128	This log report is generated when a trunk maintenance (T100) test fails. This test measures the far-to-near-end noise and loss.	Refer to *Log Report Manual*, 297-1001-840. Decide whether provisioning or maintenance is required and notify the appropriate organization.
TRK138	This log is report generated when a trunk call is routed to a treatment after being call processing busy. TRK138 usually follows TRK110 and TRK128 log reports.	Refer to *Log Report Manual*, 297-1001-840. Decide whether provisioning or maintenance is required and notify the appropriate organization.
WUCR101	This log report is generated when a wake-up call reminder (WUCR) cannot be completed due to ringing limitations of the peripheral.	None is required.
WUCR102	This log report is generated when a WUCR is discarded because a change of time or date occurred, or because there was no answer after 3 WUCR requests.	None is required.

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Table 3–1
Subscriber Services related logs (continued)

Log name	Causes	Response
	Note: The LINE150 and LINE151 log reports provided by the COT feature have been enhanced by the CLASS on multiline variety package (MVP) feature package to reflect the Group Intercom (GIC) CALL indicator in incoming call memory. The GIC CALL flag in the Input/Output Message System (IMS) undergoes COT data validation procedures. For example, if the IMS contents were correct except that INTRAOFFICE was FALSE and GIC CALL was TRUE, the LINE151 log report would be generated with a reason of *AMBIGUOUS DATA*. This result occurs because GIC feature is nodal and does not apply to an internode call.	
	End	

Subscriber Services related operational measurements

Defining operational measurements

The following table describes the basic functions of the operational measurements (OM) identified in the previous chapter. It also identifies all other OMs designed to track the impact of individual Subscriber Services features on system performance. For more detailed explanations of individual OMs, refer to *Operational Measurements Reference Manual*, 297-1001-814.

Subscriber Services operational measurements

Group	Register	Information
ACB		**Description:** ACB contains registers that provide information on the use of the Automatic Call Back (ACB) feature. **BCS history:** This group was created in BCS27.
	ACBATT	**Description:** This register is pegged when the ACB feature activation code is dialed. The ACB feature activation code must be datafilled in table IBNXLA for the Subscriber Services feature translator. **BCS history:** This register was created in BCS27. **Associated registers:** ACBATT is pegged when ACBRACT is pegged. **Register validation:** none

—continued—

Subscriber Services operational measurements (continued)

Group	Register	Information
ACB (continued)	ACBOVFL	**Description:** This register is pegged when the subscriber receives short-term denial tone due to a lack of software resources. Treatments no software resources (NOSR), no service circuits (NOSC), or network blockage heavy traffic (NBLH) are given when this OM is pegged. **BCS history:** This register was created in BCS27. **Associated registers:** ACBATT is pegged when ACBOVFL is pegged. **Register validation:** none
	ACBLTDA	**Description:** This register is pegged when the subscriber receives long-term denial announcement. **BCS history:** This register was created in BCS27. **Associated registers:** ACBATT is pegged when ACBLTDA is pegged. **Register validation:** none
	ACBSTDA	**Description:** This register is pegged when the subscriber receives short-term denial announcement. **BCS history:** This register was created in BCS27. **Associated registers:** ACBATT is pegged when ACBSTDA is pegged. **Register validation:** none
	ACBSTDT	**Description:** This register is pegged when the subscriber receives short-term denial tone. Treatments negative acknowledgment (NACK), no service circuits (NOSC), network blockage heavy traffic (NBLH), feature not allowed (FNAL), and system failure (SYFL) are given when this OM is pegged. **BCS history:** This register was created in BCS27. **Associated registers:** ACBATT is pegged when ACBSTDT is pegged. **Register validation:** none
	ACBIMED	**Description:** This register is pegged when the ACB feature activation code is dialed resulting in immediate processing. **BCS history:** This register was created in BCS27. **Associated registers:** ACBATT is pegged when ACBIMED is pegged. Also, ACBIMED is pegged when ACBSCR is pegged. **Register validation:** none

—continued—

Subscriber Services operational measurements (continued)

Group	Register	Information
ACB (continued)	ACBNIMED	**Description:** This register is pegged when an internodal ACB request is immediately processed. **BCS history:** This register was created in BCS27. **Associated registers:** TCAPUSAG_TCRTERR counts return error components sent or received. Refer to *Operational Measurements Reference Manual*, 297-1001-814, for a description of this register. **Register validation:** none
	ACBDLAY	**Description:** This register is pegged when ACB feature requests result in delayed processing. **BCS history:** This register was created in BCS27. **Associated registers:** ACBATT is pegged when ACBDLAY is pegged. **Register validation:** none
	ACBTIME	**Description:** This register is pegged when an ACB request times out during delayed processing. This happens when the T10 or T6 timer expires or the maximum number of ringback applications has been allowed. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	ACBRSCN	**Description:** This register is pegged when scanning resumes for ACB after the originating office receives an indication that the called line is busy. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	ACBSCR	**Description:** This register is pegged when the ACB feature is activated on a line with the Selective Call Rejection (SCR) line option. **BCS history:** This register was created in BCS27. **Associated registers:** ACBIMED is pegged when ACBSCR is pegged. **Register validation:** none

—continued—

Subscriber Services operational measurements (continued)

Group	Register	Information
ACB (continued)	ACBDATT	**Description:** This register is pegged when the ACB feature deactivation code is dialed. The ACBD access code must be datafilled in table IBNXLA for the Subscriber Services feature translator. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	ACBABT	**Description:** This register is pegged when an ACB request is abnormally terminated or when SYFL treatment is received. **BCS history:** This register was created in BCS27. **Associated registers:** ACBATT is pegged when ACBABT is pegged. **Register validation:** none
	ACBRACT	**Description:** This register is pegged when an ACB activation attempt is made for a call that already has an outstanding ACB or Automatic Recall (AR) request. Note that if an AR request is outstanding and the ACB activation code is dialed to the same directory number (DN), this register is pegged. **BCS history:** This register was created in BCS27. **Associated registers:** ACBATT is pegged when ACBRACT is pegged. **Register validation:** none
	ACBSTR	**Description:** This register is pegged when a subscriber deactivates an ACB request. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	ACBTSCN	**Description:** This register is pegged when an ACB request receives confirmation of terminating scanning. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	ACBOSCN	**Description:** This register is pegged when an ACB request results in originating scanning where ACBTSCN has not already been pegged. This register is pegged only once for each request. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none

—continued—

Subscriber Services operational measurements (continued)

Group	Register	Information
ACB (continued)	ACBFDEN	**Description:** This register is pegged when a subscriber (subscription or universal access) cannot activate ACB because the feature is not available on the line, or because other features in use prevent the use of ACB. For example, ACB cannot be invoked on the second leg of a three-way call. Treatments FNAL or NACK are given when this OM is pegged. **BCS history:** This register was created in BCS27. **Associated registers:** ACBATT is pegged when ACBFDEN is pegged. **Register validation:** none
	ACBACBN	**Description:** This register counts call attempts made on a line with the ACB feature that terminates on a network. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	ACBUNIV	**Description:** This register counts the number of universal access attempts for ACB. **BCS history:** This register was created in BCS35. **Associated registers:** ACBATT or ACBDATT is pegged when ACBUNIV is pegged. **Register validation:** none
	ACBDENY	**Description:** This register counts the number of ACB universal attempts denied by the DENYACB option. **BCS history:** This register was created in BCS35. **Associated registers:** ACBFDEN is pegged when ACBDENY is pegged. **Register validation:** none
ACRJ		**Description:** ACRJ contains registers that collect office-wide counts of Anonymous Caller Rejection (ACRJ) events. **BCS history:** This group was created in BCS32.
	ACRJACT	**Description:** This register is pegged when a subscriber (subscription or universal access) activates the ACRJ feature. **BCS history:** This register was created in BCS32. **Associated registers:** none **Register validation:** none

—continued—

Subscriber Services operational measurements (continued)

Group	Register	Information
ACRJ (continued)	ACRJDACT	**Description:** This register is pegged when a subscriber deactivates the ACRJ feature. **BCS history:** This register was created in BCS32. **Associated registers:** none **Register validation:** none
	ACRJANN	**Description:** This register is pegged when a rejected call is routed to an announcement provided by the operating company. **BCS history:** This register was created in BCS32. **Associated registers:** none **Register validation:** none
	ACRJAUNV	**Description:** This register counts the number of successful ACRJ universal activations. **BCS history:** This register was created in BCS35. **Associated registers:** none **Register validation:** none
	ACRJDUNV	**Description:** This register counts the number of successful ACRJ universal deactivations. **BCS history:** This register was created in BCS35. **Associated registers:** none **Register validation:** none
	ACRJDENY	**Description:** This register counts the number of ACRJ universal attempts denied through the DENYACRJ option. **BCS history:** This register was created in BCS35. **Associated registers:** none **Register validation:** none
ANN		**Description:** ANN contains registers that provide information on the use of recorded announcements in an office. When the custom local area signaling services (CLASS) announcement common language location identifier (CLLI) is defined, a new tuple is added to OM group ANN. The new tuple has the same name as the key to the tuple. The pegs for CLASS announcements under this group can be used to determine whether the CLASS announcements have been properly engineered. **BCS history:** This group was created prior to BCS20.

—continued—

Subscriber Services operational measurements (continued)

Group	Register	Information
ANN (continued)	ANNATT	**Description:** This register counts all calls that are routed to a particular announcement. **BCS history:** This register was created prior to BCS20. **Associated registers:** none **Register validation:** none
	ANNOVFL	**Description:** This register counts calls that are routed to a recorded announcement but fail to connect to the announcement because either the maximum number of calls are connected or the announcement is maintenance busy. **BCS history:** This register was created prior to BCS20. **Associated registers:** none **Register validation:** none
	ANNMBU	**Description:** This register records whether an announcement is manual busy. It is a usage register. **BCS history:** This register was created prior to BCS20. **Associated registers:** none **Register validation:** none
	ANNSBU	**Description:** This register records whether an announcement is system busy. It is a usage register. **BCS history:** This register was created prior to BCS20. **Associated registers:** none **Register validation:** none
	ANNTRU	**Description:** This register records whether an announcement is traffic busy. It is a usage register. **BCS history:** This register was created prior to BCS20. **Associated registers:** none **Register validation:** none
AR		**Description:** AR contains registers that provide information on the use of the AR feature in an office. **BCS history:** This group was created in BCS27.
	ARATT	**Description:** This register is pegged when a subscriber (subscription or universal access) dials the AR feature activation code. The AR feature activation code must be datafilled in table IBNXLA for the Subscriber Services feature translator. **BCS history:** This register was created in BCS27. **Associated registers:** ARATT is pegged when ARLTDA is pegged. **Register validation:** none

—continued—

Subscriber Services operational measurements (continued)

Group	Register	Information
AR (continued)	ARFDEN	**Description:** This register is pegged when a subscriber (subscription or universal access) cannot activate AR because the feature is not available on the line, or because other features in use prevent the use of AR. For example, AR cannot be invoked on the second leg of a three-way call. Treatments FNAL or NACK are given when this OM is pegged. **BCS history:** This register was created in BCS27. **Associated registers:** ARATT is pegged when ARFDEN is pegged. **Register validation:** none
	AROVFL	**Description:** This register is pegged when the subscriber receives short-term denial tone due to a lack of software resources. Treatments NOSR or NBLH are given when this OM is pegged. **BCS history:** This register was created in BCS27. **Associated registers:** ARATT is pegged when AROVFL is pegged. **Register validation:** none
	ARLTDA	**Description:** This register is pegged when the subscriber receives long-term denial announcement. **BCS history:** This register was created in BCS27. **Associated registers:** ARATT is pegged when ARLTDA is pegged. **Register validation:** none
	ARSTDA	**Description:** This register is pegged when the subscriber receives short-term denial announcement. **BCS history:** This register was created in BCS27. **Associated registers:** ARATT is pegged when ARSTDA is pegged. **Register validation:** none
	ARSTDT	**Description:** This register is pegged when the subscriber receives short-term denial tone. Treatments NACK, NOSC, NBLH, FNAL, and SYFL are given when this OM is pegged. **BCS history:** This register was created in BCS27. **Associated registers:** ARATT is pegged when ARSTDT is pegged. **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
AR (continued)	ARIMED	**Description:** This register is pegged when an internodal AR request is immediately processed. **BCS history:** This register was created in BCS27. **Associated registers:** ARATT is pegged when ARIMED is pegged. Also, ARIMED is pegged when ARSCR is pegged. **Register validation:** none
	ARNIMED	**Description:** This register is pegged when the AR feature activation code is dialed resulting in immediate processing. **BCS history:** This register was created in BCS29. **Associated registers:** none **Register validation:** none
	ARDLAY	**Description:** This register is pegged when AR feature requests result in delayed processing. **BCS history:** This register was created in BCS27. **Associated registers:** ARATT is pegged when ARDLAY is pegged. **Register validation:** none
	ARTIME	**Description:** This register is pegged when an AR request times out during delayed processing. This happens when the T10 or T6 timer expires or the maximum number of ringback applications has been allowed. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	ARRSCN	**Description:** This register is pegged when scanning resumes for AR after the originating office receives an indication that the called line is busy. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	ARSCR	**Description:** This register is pegged when the AR feature is activated on a line with the SCRJ feature. **BCS history:** This register was created in BCS27. **Associated registers:** ARIMED is pegged when ARSCR is pegged. **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
AR (continued)	ARDATT	**Description:** This register is pegged when the AR feature deactivation code is dialed. The ARD access code must be datafilled in table IBNXLA for the Subscriber Services feature translator. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	ARPRCD	**Description:** This register is pegged when the subscriber enters the correct input for AR two-level activation and the feature is activated. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	AROPTO	**Description:** This register is pegged during AR two-level activation when the subscriber hangs up before activating the feature. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	ARBDIN	**Description:** This register is pegged when the AR feature activation code is dialed and the subscriber dials invalid digits or times out during two-level activation. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	ARABT	**Description:** This register is pegged when an AR request is abnormally terminated. Treatment SYFL is given if a system error occurs. **BCS history:** This register was created in BCS27. **Associated registers:** ARATT is pegged when ARABT is pegged. **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
AR (continued)	ARRACT	**Description:** This register is pegged when an AR activation attempt is made for a call that already has an outstanding ACB or AR request. Note that if an AR request is outstanding and the ACB activation code is dialed to the same DN, this register is pegged. **BCS history:** This register was created in BCS27. **Associated registers:** ARATT is pegged when ARRACT is pegged. **Register validation:** none
	ARSTR	**Description:** This register is pegged when a subscriber deactivates AR. Every outstanding AR request that is terminated due to a single subscriber deactivation attempt causes this register to be pegged. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	ARTSCN	**Description:** This register is pegged when an AR request receives confirmation of terminating scanning. This register is pegged once for each AR request. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	AROSCN	**Description:** This register is pegged when an AR request results in originating scanning. This register is pegged only once for each request. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	ARARN	**Description:** This register counts call attempts made on a line with an AR line feature that terminates on a network. **BCS history:** This register was created in BCS29. **Associated registers:** none **Register validation:** none
	ARUNIV	**Description:** This register counts the number of AR universal access attempts. **BCS history:** This register was created in BCS35. **Associated registers:** ARATT or ARDATT is pegged when ARUNIV is pegged. **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
AR (continued)	ARDENY	**Description:** This register counts the number of AR universal attempts denied by the DENYAR option. **BCS history:** This register was created in BCS35. **Associated registers:** ARFDEN is pegged when ARDENY is pegged. **Register validation:** none
BCLID		**Description:** BCLID contains registers that maintain officewide peg counts for the number of times a calling DN is delivered, and the number of times substitute information is delivered, to the subscriber data processing devices. For this OM group, the following OMs pertain to Subscriber Services: BCLDCLDN, BCLDOOA, and BCLDPRIV. Refer to *Operational Measurements Reference Manual*, 297-1001-814, for a complete list of OMs in this group. **BCS history:** This group was created in BCS31.
	BCLDCLDN	**Description:** This register and its extension, BCLDCLD2, record the number of times a full Bulk Calling Line Identification (BCLID) calling DN message is delivered. **BCS history:** This register was created in BCS31. **Associated registers:** none **Register validation:** none
	BCLDOOA	**Description:** This register and its extension, BCLDOOA2, count the number of out-of-area indications that are delivered by BCLID messages. **BCS history:** This register was created in BCS31. **Associated registers:** none **Register validation:** none
	BCLDPRIV	**Description:** This register and its extension, BCLDPRI2, record the number of private DN indications that are contained in BCLID messages. **BCS history:** This register was created in BCS31. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
BCLIDNL		**Description:** BCLIDNL contains a register that tracks the number of BCLID messages not sent to the customer premises equipment (CPE) due to lack of in-service BCLID data links. **BCS history:** This group was created in BCS33.
	BCLDNOLK	**Description:** This register counts the number of times a BCLID message cannot be sent to the CPE because there are no in-service BCLID data links. The register associated with the particular BCLID group is also incremented. **BCS history:** This register was created in BCS33. **Associated registers:** none **Register validation:** none
BCLIDO		**Description:** BCLIDO contains a register that tracks BCLID link overload conditions. **BCS history:** This group was created in BCS31.
	BCLDOVLD	**Description:** This register counts the number of times a BCLID message cannot be sent to a BCLID group's data processing device because the group's links are overloaded. One register is provisioned for each BCLID group. **BCS history:** This register was created in BCS31. **Associated registers:** none **Register validation:** none
CALLOG		**Description:** CALLOG contains a register that provides an indication of the officewide usage of the Call Logging (CALLOG) feature and any resulting resource shortages or denials. **BCS history:** This group was created in BCS34.
	CALLACT	**Description:** This register records the number of times a subscriber successfully activates the CALLOG feature. **BCS history:** This register was created in BCS34. **Associated registers:** none **Register validation:** none
CALLFWD		**Description:** CALLFWD contains registers that provide information about incoming calls that are redirected using call forwarding features. For this OM group, the following OMs pertain to Subscriber Services: CFBATT, CFDATT, and CFUATT. Refer to *Operational Measurements Reference Manual*, 297-1001-814, for a complete list of OMs in this group. **BCS history:** This group was created prior to BCS20.

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Subscriber Services operational measurements (continued)

Group	Register	Information
CALLFWD (continued)	CFBATT	**Description:** This register records the number of times an attempt is made to forward a call from a busy line to any other line. **BCS history:** This register was created prior to BCS20. **Associated registers:** none **Register validation:** none
	CFDATT	**Description:** This register records the number of times an attempt is made to forward a call from an unanswered line to any other line. **BCS history:** This register was created prior to BCS20. **Associated registers:** none **Register validation:** none
	CFUATT	**Description:** This register records the number of times an attempt is made to forward a call from a line with Call Forwarding Universal (CFU), Call Forwarding Intragroup (CFI), or Call Forwarding Fixed (CFF) features. **BCS history:** This register was created prior to BCS20. **Associated registers:** none **Register validation:** none
CALLWAIT		**Description:** CALLWAIT contains registers that provide information about the use of the Call Waiting (CWT), Dial Call Waiting (CWD), and Call Waiting Originating (CWO) features. For this OM group, the following OMs pertain to Subscriber Services: CWDATT, CWOATT, and CWTTATT. Refer to *Operational Measurements Reference Guide*, 297-1001-814, for a complete list of OMs in this group. **BCS history:** This group was created prior to BCS20.
	CWDATT	**Description:** This register records the number of times a subscriber attempts to activate CWD. **BCS history:** This register was created prior to BCS20. **Associated registers:** none **Register validation:** none
	CWOATT	**Description:** This register records the number of times a subscriber attempts to activate CWO. **BCS history:** This register was created prior to BCS20. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
CALLWAIT (continued)	CWTTATT	**Description:** This register records the number of times a subscriber attempts to activate CWT. **BCS history:** This register was created prior to BCS20. **Associated registers:** none **Register validation:** none
CFRA		**Description:** CFRA contains registers that provide information on the use of the Call Forwarding Remote Access (CFRA) feature. **BCS history:** This group was created in BCS27.
	CFRAATT	**Description:** This register is pegged when a subscriber attempts to use the CFRA feature. If CFRA is the only Direct Inward System Access (DISA) feature, CFRAATT is pegged when the DISA DN is dialed. If there are two or more DISA features, CFRAATT is pegged when the CFRA feature access code is dialed. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	CFRASWOV	**Description:** This register is pegged when a subscriber cannot successfully activate the CFRA feature because of insufficient software resources. Treatment NOSR is given when this OM is pegged. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	CFRAHWOV	**Description:** This register is pegged when a subscriber cannot successfully activate the CFRA feature because of insufficient hardware resources. Treatment NOSR is given when this OM is pegged. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	CFRALIMT	**Description:** This register is pegged when a subscriber cannot successfully activate the CFRA feature because the number of concurrent users exceeds the limit set by office parameter MAX_PROGRAMMERS in table OFCENG. Treatment NOSR is given when this OM is pegged. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
CFRA (continued)	CFRADENY	**Description:** This register is pegged when the CFRA subscriber enters an incorrect personal identification number (PIN), an invalid feature access code, or an invalid forward-to number (such as 911, 0, or a non-translatable number). **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	CFRAFAIL	**Description:** This register is pegged when the CFRA feature is not successfully activated because the CFRA subscriber exceeded the number of retries that are allowed for entering any of the forward-to number, the PIN, or the feature access code. Treatment NACK is given when this OM is pegged. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
CNAB		**Description:** CNAB contains registers that provide information on the behavior of the Calling Name Delivery Blocking (CNAB) feature and the Calling Number and Name Delivery (CNND) feature. This is a single-tuple group. **BCS history:** This group was created in BCS33.
	CNABATT	**Description:** This register counts the number of times the CNAB or CNND access code is dialed, regardless of whether the feature is successfully activated. **BCS history:** This register was created in BCS33. **Associated registers:** none **Register validation:** none
	CNABFDEN	**Description:** This register is pegged when CNAB or CNND feature activation is denied because the CNAB line option or group option has not been assigned to the subscriber line. This register is also pegged if the line option is assigned but the CNAB or CNND feature has not been enabled for the office. **BCS history:** This register was created in BCS33. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
CNAB (continued)	CNABSACT	**Description:** This register is pegged when the CNAB feature is successfully activated, in which case, a subscriber with a default name status of unsuppressed is successful in suppressing the name through CNAB activation, or a subscriber with a default name status of suppressed successfully activates CNAB, resulting in an unsuppressed name status for the call. This register is also pegged when CNND is successfully activated, resulting in an unsuppressed name status for the call. **BCS history:** This register was created in BCS33. **Associated registers:** none **Register validation:** none
	CNNDSDEL	**Description:** This register counts the number of times the name and number are successfully delivered after CNND is activated. **BCS history:** This register was created in BCS33. **Associated registers:** none **Register validation:** none
	CNABUNIV	**Description:** This register counts the number of CNAB universal access attempts. **BCS history:** This register was created in BCS35. **Associated registers:** CNABATT is pegged when CNABUNIV is pegged. **Register validation:** none
	CNABDENY	**Description:** This register counts the number of CNAB universal attempts denied by the DENYCNAB option. **BCS history:** This register was created in BCS35. **Associated registers:** CNABFDEN is pegged when CNABDENY is pegged. **Register validation:** none
	CNNDDENY	**Description:** This register counts the number of CNND universal attempts denied by the DENYCNND option. **BCS history:** This register was created in BCS35. **Associated registers:** CNABFDEN is pegged when CNABDENY is pegged. **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
CNAMD		**Description:** This group measures the display activity for the Calling Name Delivery feature for both intra- and inter-switch calls. **BCS history:** This group was created in BCS36. In BCS36, because no room was left in the CND OM group, the CNAMD-specific OM registers (CNMDEL, CNMDEL2, CNMNDEL, CNMNDEL2, CNMUNAVL, CNMUNAV2, NNDUNAVL, CNMDODEL, and CNMDPDEL) were broken out from the CND OM group, and relocated to the CNAMD OM group under similar but different names. See also the CND OM group.
	CNAMDEL	**Description:** This register is pegged when the calling name is delivered to CNAMD subscriber. **BCS history:** This register was created in BCS36. **Associated registers:** none **Register validation:** none
	CNAMDEL2	**Description:** This register is the extension register for CNAMDEL. **BCS history:** This register was created in BCS36. **Associated registers:** none **Register validation:** none
	CNAMPDEL	**Description:** This register is pegged when the calling name is private, and the private name indication (P) is sent to the subscriber's CPE. **BCS history:** This register was created in BCS36. **Associated registers:** none **Register validation:** none
	CNAMODEL	**Description:** This register is pegged when the calling name is unavailable and the out-of-area name indication (O) is sent to the subscriber's CPE. **BCS history:** This register was created in BCS36. **Associated registers:** none **Register validation:** none
	NANUMDEL	**Description:** This register is pegged when the calling name is available, and it is sent with a calling number or calling number indicator to the subscriber's CPE. **BCS history:** This register was created in BCS36. **Associated registers:** CNAMDEL is incremented when NANUMDEL is incremented. One of the calling number delivery OMs (CNDDNDEL, CNDPDEL, CNDODEL, or DDNDEL) will also be pegged. **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
CNAMD (continued)	NANUMDE2	**Description:** This register is the extension register for NANUMDEL. **BCS history:** This register was created in BCS36. **Associated registers:** none **Register validation:** none
	NAMTCPQ	**Description:** This register is pegged when a calling name transaction capability application part (TCAP) query is initiated. **BCS history:** This register was created in BCS36. **Associated registers:** none **Register validation:** none
	NAMTCPQ2	**Description:** This register is the extension register for NAMTCPQ. **BCS history:** This register was created in BCS36. **Associated registers:** none **Register validation:** none
	NAMTCPTO	**Description:** This register is pegged when a calling name TCAP query is initiated and the timer expires before the TCAP response package is received—a TCAP timeout condition. **BCS history:** This register was created in BCS36. **Associated registers:** none **Register validation:** none
	TRIDUAVL	**Description:** This register is pegged when a calling name TCAP query cannot be initiated, because a transaction id in unavailable. **BCS history:** This register was created in BCS36. **Associated registers:** none **Register validation:** none
	NAMACGBK	**Description:** This register is pegged when a calling name TCAP query is blocked due to an active ACG 6-digit code control. **BCS history:** This register was created in BCS36. **Associated registers:** none **Register validation:** none
	NAMACGOV	**Description:** This register is pegged when the SCP requests an ACG 6-digit code control, which cannot be applied due to the code control table being full. **BCS history:** This register was created in BCS36. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)		
Group	**Register**	**Information**
CNAMD (continued)	NAMISPTO	**Description:** This register is pegged when a calling name ISUP query is initiated, and the timer expires before the ISUP Pass Along Message (PAM) is received—an ISUP timeout condition. **BCS history:** This register was created in BCS36. **Associated registers:** none **Register validation:** none
CND		**Description:** CND contains registers that indicate the officewide use of the Calling Number Delivery (CND), Dialable Number Delivery (DDN), Calling Name Delivery (CNAMD), and Long Distance Indicator (LDI) features, including any resulting resource shortages or denials. These OMs are pegged by the central control (CC). Each time calling information is delivered, a register in the OM group CND is pegged. **BCS history:** This group was created in BCS27. In BCS36, because no room was left in the CND OM group, the CNAMD-specific OM registers (CNMDEL, CNMDEL2, CNMNDEL, CNMNDEL2, CNMUNAVL, CNMUNAV2, NNDUNAVL, CNMDODEL, and CNMDPDEL) were broken out from the CND OM group, and relocated to the CNAMD OM group under similar but different names. These registers will not be removed from the CND OM group until BCS38; however, these registers will no longer be pegged and will always have a zero count. For more information, refer to the CNAMD OM group.
	CNDACT	**Description:** This register is pegged when the Custom Local Area Signaling Services (CLASS) display feature activation code is dialed in an attempt to enable subscription usage sensitive pricing (SUSP) for CND, DDN, or CNAMD. Dialing the activation code does not imply successful activation. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	CNDDACT	**Description:** This register is pegged when the CLASS display feature deactivation code is dialed in an attempt to disable SUSP for CND, DDN, or CNAMD. Dialing the deactivation code does not imply successful deactivation. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
CND (continued)	CNDFDNA	**Description:** This register is pegged each time a subscriber dials the activation code for CND SUSP but is denied access. Access is denied if the CLASS display feature is not available on the line, or if the CLASS display feature is not activated for the office in table RESOFC. The call is routed to FNAL treatment. If CND SUSP cannot be accessed because of denied termination, or if multiple appearance directory number (MADN) options are on the line, the call is routed to NACK treatment. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	CNDFDND	**Description:** This register is pegged each time a subscriber dials the deactivation code for CND SUSP but is denied access. Access is denied if the CLASS display feature is not available on the line, or if the CLASS display feature is not activated for the office in table RESOFC. The call is routed to FNAL treatment. If CND SUSP cannot be accessed because of denied termination, or if MADN options are on the line, the call is routed to NACK treatment. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	CNDOVFL	**Description:** This register is pegged when a subscriber is not allowed to activate or deactivate SUSP for CND, DDN, or CNAMD features due to a lack of software resources. The call is routed to the NOSR treatment. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	CNDDNDEL	**Description:** This register is pegged once for each calling number delivered as an actual ten-digit DN in either the single-data CND message or the multiple-data message containing the calling line identification (CLID) parameter. This register is pegged for both CND and CND SUSP. **BCS history:** This register was created in BCS27. **Associated registers:** CND delivered as P (private) is counted in CNDPDEL. CND delivered as O (not available) is counted in CNDODEL. CNDDNDEL is pegged when DDNUNAVL, DDNNUNIQ, or DDNTRUNC is pegged. **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
CND (continued)	CNDDDEL2	**Description:** CNDDDEL2 is an extension register for CNDDNDEL. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	CSCWDACT	**Description:** This register is pegged each time a Spontaneous Call Waiting Identification (SCWID) subscriber activates the cancel SCWID (CSCWID) option for a call. **BCS history:** This register was created in BCS32. **Associated registers:** CSCWDACT is pegged when SCWDNYDS is pegged. **Register validation:** none
	CNDPDEL	**Description:** This register is pegged each time P (private) is delivered to a set instead of the DN. The letter P indicates the calling DN is suppressed (private). This register is pegged for CND, CND SUSP, DDN, DDN SUSP, CNAMD, and CNAMD SUSP. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	CNDPDEL2	**Description:** CNDPDEL2 is an extension register for CNDPDEL. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	CNDODEL	**Description:** This register is pegged each time O (not available) is delivered to a set instead of calling name or number information. This register is pegged for CND, CND SUSP, DDN, DDN SUSP, CNAMD, and CNAMD SUSP. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	CNDODEL2	**Description:** This register is an extension register for CNDODEL. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
CND (continued)	CNDUNAVL	**Description:** This register is pegged when calling information is not delivered because the CLASS modem resource (CMR) card is unavailable. This register is pegged for CND, CND SUSP, DDN, DDN SUSP, CNAMD, and CNAMD SUSP. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	DDNDEL	**Description:** This register is pegged when a calling number is delivered as a dialable DN. **BCS history:** This register was created in BCS28. **Associated registers:** If DDNDEL is pegged, CNDDNDEL is not pegged. **Register validation:** none
	DDNDEL2	**Description:** This register is an extension register for DDNDEL. **BCS history:** This register was created in BCS28. **Associated registers:** none **Register validation:** none
	DDNUNAVL	**Description:** This register is pegged when the reverse translations facilities cannot be accessed as a result of the unavailability of the required information and thus the calling line identification is delivered to the set rather than the dialable DN. **BCS history:** This register was created in BCS28. **Associated registers:** CNDDNDEL is pegged when DDNUNAVL is pegged. **Register validation:** none
	DDNNUNIQ	**Description:** This register is pegged when the calling number to a DDN subscriber is not unique. **BCS history:** This register was created in BCS28. **Associated registers:** CNDDNDEL is pegged when DDNNUNIQ is pegged. **Register validation:** none
	DDNTRUNC	**Description:** This register is pegged when the reverse translations facilities return a dialable DN greater than 24 digits or less than 1 digit in length and thus the calling line identification is delivered to the set rather than the dialable DN. **BCS history:** This register was created in BCS28. **Associated registers:** CNDDNDEL is pegged when DDNTRUNC is pegged. **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
CND (continued)	LDIDEL	**Description:** This register is pegged when the calling information is delivered to a set with a call qualifier of L (long distance). **BCS history:** This register was created in BCS29. **Associated registers:** none **Register validation:** none
	LDIDEL2	**Description:** This register is an extension register for LDIDEL. **BCS history:** This register was created in BCS29. **Associated registers:** none **Register validation:** none
	LDIOVFL	**Description:** This register is pegged when the call qualifier L (long distance) is evaluated but not sent to the set due to lack of space in the message. **BCS history:** This register was created in BCS29. **Associated registers:** none **Register validation:** none
	CNMDEL	**Description:** This register is being zeroed in BCS36. **BCS history:** This register was created in BCS30. As of BCS36, OM group CNAMD, register CNAMDEL will be pegged in place of register CNMDEL. For more information refer to OM group CNAMD, register CNAMDEL. **Associated registers:** none **Register validation:** none
	CNMDEL2	**Description:** This register is being zeroed in BCS36. **BCS history:** This register was created in BCS30. As of BCS36, OM group CNAMD, register CNAMDEL2 will be pegged in place of register CNMDEL2. For more information refer to OM group CNAMD, register CNAMDEL2. **Associated registers:** none **Register validation:** none
	CNMNDEL	**Description:** This register is being zeroed in BCS36. **BCS history:** This register was created in BCS30. As of BCS36, OM group CNAMD, register NANUMDEL will be pegged in place of register CNMDEL. For more information refer to OM group CNAMD, register NANUMDEL. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
CND (continued)	CNMNDEL2	**Description:** This register is being zeroed in BCS36. **BCS history:** This register was created in BCS30. As of BCS36, OM group CNAMD, register NANUMDE2 will be pegged in place of register CNMDEL. For more information refer to OM group CNAMD, register NANUMDE2. **Associated registers:** none **Register validation:** none
	CNMUNAVL	**Description:** This register is being zeroed in BCS36. **BCS history:** This register was created in BCS30. As of BCS36, OM group CNAMD, registers CNAMODEL and CNAMPDEL will be pegged in place of register CNMUNAVL. For more information refer to OM group CNAMD, registers CNAMODEL and CNAMPDEL. **Associated registers:** none **Register validation:** none
	CNMUNAV2	**Description:** This register is being zeroed in BCS36. **BCS history:** This register was created in BCS30. As of BCS36, this register will be zeroed, but it will not have a corresponding register in the OM group CNAMD. **Associated registers:** none **Register validation:** none
	NNDUNAVL	**Description:** This register is being zeroed in BCS36. **BCS history:** This register was created in BCS30. As of BCS36, OM group CNAMD, register NAMISPTO will be pegged in place of register NNDUNAVL. For more information refer to OM group CNAMD, register NAMISPTO. **Associated registers:** none **Register validation:** none
	SCWDNYDS	**Description:** This register is pegged when calling party information is not sent to a SCWID line because the subscriber activated the cancel SCWID (CSCWID) option for the call. **BCS history:** This register was created in BCS32. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
CND (continued)	SCWIDDEL	**Description:** This register is pegged when SCWID data is delivered to the XPM from the CM for a waiting call to a SCWID line. Data is delivered once for each waiting call through the CMR card. NOTE: SCWIDDEL, when pegged, only indicates that SCWID data was delivered to the XPM from the CM. Associated omgroup CNDXPM must be referenced to determine if the XPM actually delivered the SCWID data to the subscriber's telephone. **BCS history:** This register was created in BCS32. **Associated registers:** none **Register validation:** none
	CNMDODEL	**Description:** This register is being zeroed in BCS36. **BCS history:** This register was created in BCS33. As of BCS36, OM group CNAMD, register CNAMODEL will be pegged in place of register CNMDODEL. For more information refer to OM group CNAMD, register CNAMODEL. **Associated registers:** none **Register validation:** none
	CNMDPDEL	**Description:** This register is being zeroed in BCS36. **BCS history:** This register was created in BCS33. As of BCS36, OM group CNAMD, register CNAMPDEL will be pegged in place of register CNAMPDEL. For more information refer to OM group CNAMD, register CNAMPDEL. **Associated registers:** none **Register validation:** none
CNDB		**Description:** CNDB contains registers that indicate the officewide usage of the Calling Number Delivery Blocking (CNDB), Calling Number Blocking (CNB), and Calling Name/Number Delivery Blocking (CNNB) features, including any resulting resource shortages or denials. Existing DMS OM control tables are used in administering OM group CNDB. Extension registers are not provided for OM group CNDB. For every CNDB, CNB, or CNNB activation, CNDBATT is pegged, along with another CNDB register. The only exception to this occurs when the subscriber successfully activates CNDB, CNB, or CNNB but subsequently fails to make a call. For example, when the subscriber hangs up after dialing the CNDB, CNB, or CNNB access code and receiving successful confirmation, only CNDBATT is updated. **BCS history:** This group was created in BCS27.

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Subscriber Services operational measurements (continued)

Group	Register	Information
CNDB (continued)	CNDBUSUP	**Description:** This register is pegged when CNDB is successfully activated, resulting in an unsuppressed status for the call. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	CNDBATT	**Description:** This register is pegged when the CNDB, CNB, or CNNB feature access code is dialed. CNDBATT is pegged whenever a CNDB, CNB, or CNNB access code is dialed regardless of whether the feature is successfully activated. **BCS history:** This register was created in BCS27. **Associated registers:** CNDBATT is equal to the sum of registers CNDBSUP, CNDBUSUP, CNDBFDEN, CNDBOVFL, and CNNBSUP, plus the number of calls in which CNDB is activated, but the call is not completed. Each time CNDBATT is pegged, another CNDB register is pegged, unless no call is made. **Register validation:** none
	CNDBSUP	**Description:** This register is pegged when a calling party's DN is suppressed successfully by means of the CNDB or CNB feature. **BCS history:** This register was created in BCS27. **Associated registers:** OTS_ORGFSET or OTS_SYSFSET is pegged when CNDBSUP is pegged. **Register validation:** none
	CNDBFDEN	**Description:** This register is pegged when CNDB, CNB, or CNNB feature activation is denied because either the CNDB feature has not been applied to the subscriber line or the CNDB feature has not been enabled for the office or another feature prevents the use of CNDB, CNB, or CNNB. The call is routed to the FNAL treatment. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	CNDBOVFL	**Description:** This register is pegged when unsuccessful activation of the CNDB, CNB, or CNNB feature occurs due to the unavailability of CNDB facilities. The call is routed to the NOSR treatment. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
	CNNBSUP	**Description:** This register is pegged when the calling party's name and DN are successfully suppressed by means of the CNNB feature. **BCS history:** This register was created in BCS29. **Associated registers:** none **Register validation:** none
CNDB (continued)	CNDBUNIV	**Description:** This register counts the number of CNDB, CNB, or CNNB universal access attempts. **BCS history:** This register was created in BCS35. **Associated registers:** CNDBATT is pegged when CNDBUNIV is pegged. **Register validation:** none
	CNDBDENY	**Description:** This register counts the number of CNDB universal attempts denied by the DENYCNDB option. **BCS history:** This register was created in BCS35. **Associated registers:** CNDBFDEN is pegged when CNBDENY is pegged. **Register validation:** none
	CNBDENY	**Description:** This register counts the number of CNB universal attempts denied by the DENYCNDB option. **BCS history:** This register was created in BCS35. **Associated registers:** CNDBFDEN is pegged when CNBDENY is pegged. **Register validation:** none
	CNNBDENY	**Description:** This register counts the number of CNNB universal attempts denied by the DENYCNNB option. **BCS history:** This register was created in BCS35. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
CNDXPM		**Description:** CNDXPM contains registers that are pegged when calling information is not delivered to the XMS-based peripheral modules (XPM). The line trunk controller (LTC), line group controller (LGC), remote cluster controller (RCC), Subscriber Carrier Module–100S (SMS), or Subscriber Carrier Module–100 Urban (SMU) pegs a set of internal OMs. If office parameter OMHISTORYON in table OFCOPT is set to Y, there is a 5-min OM transfer period. The OM counts are transmitted back to the central control (CC), where they are pegged and placed in OM group CNDXPM. Tuples are provided for each extended peripheral. If office parameter OMHISTORYON is set to N, the transfer period is every 15 min. **BCS history:** This group was created in BCS27.
CNDXPM (continued)	CNDNOMON	**Description:** This register is pegged when calling information for a CLASS feature is not delivered because a ringing monitor on the CMR card is unavailable. Spontaneous Call Waiting Identification (SCWID) attempts are included in the count. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	CNDNOMDM	**Description:** This register is pegged when calling information for a CLASS feature is not delivered because a modem resource on the CMR card is unavailable. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	CNDEANS	**Description:** This register is pegged when calling information for a CLASS feature is not delivered successfully because the Calling Number Delivery (CND), Dialable Number Delivery (DDN), or Calling Name Delivery (CNAMD) subscriber answers the call before the calling information is delivered to the set. SCWID attempts are included in the count. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
CNDXPM (continued)	CNDOABND	**Description:** This register is pegged when calling information is not delivered successfully to a CND, DDN, or CNAMD subscriber because the originator abandons the call. This register is not pegged by the Class Message Waiting Indicator (CMWI) feature. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	CNDMSG	**Description:** This register is pegged when the CNDXPM OMs are received in the CC from the XPMs. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none
	SCWDATTS	**Description:** This register is pegged when the XPM attempts to transmit calling party information for a waiting call to a SCWID line. **BCS history:** This register was created in BCS32. **Associated registers:** SCWDATTS is greater than or equal to the sum of SCWDCOMP and SCWDFAIL. **Register validation:** none
	SCWDCOMP	**Description:** This register is pegged when the XPM transmits calling party information for a waiting call to a SCWID line. **BCS history:** This register was created in BCS32. **Associated registers:** SCWDATTS is greater than or equal to the sum of SCWDCOMP and SCWDFAIL. **Register validation:** none
	SCWDFAIL	**Description:** This register is pegged when calling party information for a waiting call does not reach the CMR card in the XPM. **BCS history:** This register was created in BCS32. **Associated registers:** SCWDATTS is greater than or equal to the sum of SCWDCOMP and SCWDFAIL. **Register validation:** none
	SCWDNUTR	**Description:** This register counts the number of times the XPM cannot monitor for the acknowledgment tone during a SCWID call waiting attempt because universal tone receivers (UTR) are not available. **BCS history:** This register was created in BCS32. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
	SCWDNAKA	**Description:** This register is pegged when the XPM expects but does not receive an acknowledgment tone from a SCWID line after the first call waiting alert. **BCS history:** This register was created in BCS32. **Associated registers:** none **Register validation:** none
	SCWDNAKR	**Description:** This register is pegged when the XPM expects but does not receive an acknowledgment tone from a SCWID line after the second call waiting alert (10 s after the first alert). **BCS history:** This register was created in BCS32. **Associated registers:** none **Register validation:** none
CNDXPM (continued)	SCWDOVLP	**Description:** This register is pegged when SCWID data transmission is not completed before a timer expires. The initial timer value is 630 ms. The timer is reset to 100 ms up to 3 times after it expires the first time. The register can be pegged up to 4 times for each call, if the data transmission takes longer than 930 ms. **BCS history:** This register was created in BCS32. **Associated registers:** none **Register validation:** none
COT		**Description:** COT contains registers that provide information on the use of the Customer Originated Trace (COT) feature in the office. **BCS history:** This group was created in BCS27.
	COTATT	**Description:** This register is pegged when the COT feature access code is dialed. Dialing the access code does not imply successful feature activation. **BCS history:** This register was created in BCS27. **Associated registers:** COTATT is equal to the sum of COTFDEN, COTOVFL, COTPFLR, COTOPTO, COTBDIN, COTCMPL, and COTINCM. **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
COT (continued)	COTFDEN	**Description:** This register is pegged when the COT feature activation fails because the subscriber does not have access to the feature. This occurs if the subscriber line does not have the COT line option or if the COT tuple in table RESOFC has field ENABLED set to N. This register can also be pegged if access is prevented by feature interaction. Treatments NACK or feature not allowed (FNAL) are given when this OM is pegged. **BCS history:** This register was created in BCS27. **Associated registers:** COTATT is equal to the sum of COTFDEN, COTOVFL, COTPFLR, COTOPTO, COTBDIN, COTCMPL, and COTINCM. **Register validation:** none
	COTOVFL	**Description:** This register is pegged when the subscriber is not allowed to proceed with the COT feature due to a lack of feature data blocks (FDB) or if the incoming call memory block (ICMB) for the line cannot be located. Treatment NOSR is given when this OM is pegged. **BCS history:** This register was created in BCS27. **Associated registers:** COTATT is equal to the sum of COTFDEN, COTOVFL, COTPFLR, COTOPTO, COTBDIN, COTCMPL, and COTINCM. **Register validation:** none
	COTCMPL	**Description:** This register is pegged when a complete COT trace is generated. **BCS history:** This register was created in BCS27. **Associated registers:** COTATT is equal to the sum of COTFDEN, COTOVFL, COTPFLR, COTOPTO, COTBDIN, COTCMPL, and COTINCM. **Register validation:** none
	COTPRCD	**Description:** This register is pegged when the subscriber dials 1 to proceed with two-level activation of the COT feature. This register only applies to the two-level activation of COT. **BCS history:** This register was created in BCS27. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
	COTOPTO	**Description:** This register is pegged when the subscriber hangs up to avoid activating the COT feature. As with COTPRCD, this register only applies to two-level activation. **BCS history:** This register was created in BCS27. **Associated registers:** COTATT is equal to the sum of COTFDEN, COTOVFL, COTPFLR, COTOPTO, COTBDIN, COTCMPL, and COTINCM. **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
COT (continued)	COTBDIN	**Description:** This register is pegged when a call is routed to NACK treatment during two-level COT activation because the subscriber has exceeded one of the allowable parameters for digit collection; that is, the subscriber has entered the wrong digit too many times or has allowed the digit collection to time out too many times. Treatment NACK is given when this OM is pegged. **BCS history:** This register was created in BCS27. **Associated registers:** COTATT is equal to the sum of COTFDEN, COTOVFL, COTPFLR, COTOPTO, COTBDIN, COTCMPL, and COTINCM. **Register validation:** none
	COTPFLR	**Description:** This register is pegged when two-level feature activation halts because the utilities responsible for digit collection during interruptible announcements fail. This failure can happen for any of the following reasons: ▪ NOSC if UTRs, RCVRs, or ports are unavailable ▪ NOSR if no software resources are available ▪ network blockage heavy traffic (NBLH) if no connections are available **BCS history:** This register was created in BCS27. **Associated registers:** COTATT is equal to the sum of COTFDEN, COTOVFL, COTPFLR, COTOPTO, COTBDIN, COTCMPL, and COTINCM. **Register validation:** none
	COTINCM	**Description:** This register is pegged when a partial COT trace is generated. **BCS history:** This register was created in BCS27. **Associated registers:** COTATT is equal to the sum of COTFDEN, COTOVFL, COTPFLR, COTOPTO, COTBDIN, COTCMPL, and COTINCM. **Register validation:** none
	COTUNIV	**Description:** This register counts the number of COT universal access attempts. **BCS history:** This register was created in BCS35. **Associated registers:** COTATT is pegged when COTUNIV is pegged. **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
COT (continued)	COTDENY	**Description:** This register counts the number of COT universal attempts denied by the COTDENY option. **BCS history:** This register was created in BCS35. **Associated registers:** COTFDEN is pegged when COTDENY is pegged. **Register validation:** none
DS1CARR		**Description:** DS1CARR contains registers that provide information about maintenance limits and out-of-service limits for digital trunks on digital peripherals. For this OM group, the following OMs pertain to Subscriber Services: DS1BER and DS1LOF. Refer to *Operational Measurements Reference Manual*, 297-1001-814, for a complete list of OMs in this group. **BCS history:** This group was created prior to BCS20.
	DS1BER	**Description:** This register counts messages received from the peripheral module indicating the bit error rate exceeds maintenance or out-of-service limits. **BCS history:** This register was created in BCS24. **Associated registers:** Information that was contained in DS1BPV prior to BCS24 is now contained in register DS1BER. **Register validation:** none
	DS1LOF	**Description:** This register counts occurrences of loss of frame on the incoming side of the associated digital carrier. **BCS history:** This register was created prior to BCS20. **Associated registers:** none **Register validation:** none
DRCW		**Description:** DRCW contains registers that provide information indicating the behavior of the Distinctive Ringing/Call Waiting (DRCW) feature. This is a single-tuple group. **BCS history:** This group was created in BCS30.
	DRCWEATT	**Description:** This register is pegged when an attempt is made to enter the screening list editing (SLE) function for DRCW. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
DRCW (continued)	DRCWEDEN	**Description:** This register is pegged when an attempt to access SLE for DRCW is denied because the feature is not assigned or enabled or prevented by interaction with another feature. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	DRCWEOVF	**Description:** This register is pegged when an attempt to access SLE for DRCW is denied due to lack of system resources. The call is routed to treatments NOSC or NOSR, depending on whether DRCW access is denied due to lack of hardware or software resources. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	DRCWACT	**Description:** This register is pegged when DRCW is activated. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	DRCWDACT	**Description:** This register is pegged when DRCW is deactivated. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	DRCWEUSG	**Description:** This register is a 10-s usage scan of the number of users of DRCW SLE. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	DRCWSAT	**Description:** This register records the number of call terminations that attempt to perform DRCW. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	DRCWSAT2	**Description:** This register is an extension register for DRCWSAT. Multiply by 65,536 and add the result to DRCWSAT to obtain the true number of screening attempts. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
DRCW (continued)	DRCWSDEN	**Description:** This register is pegged when a DRCW screening attempt is denied. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	DRCWSBLK	**Description:** This register is pegged when a DRCW screening attempt is blocked because the list data cannot be accessed. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	DRCWTATT	**Description:** This register is pegged when an attempt is made to provide the distinctive call waiting tone. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	DRCWRING	**Description:** This register is pegged when the distinctive power ring is applied. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	DRCWTOVF	**Description:** This register is pegged when a tone attempt fails due to unavailable system resources. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	DRCWUNIV	**Description:** This register counts the number of DRCW universal access attempts. **BCS history:** This register was created in BCS35. **Associated registers:** DRCWEATT is pegged when DRCWUNIV is pegged. **Register validation:** none
	DRCWDENY	**Description:** This register counts the number of DRCW universal attempts denied by the DENYDRCW option. **BCS history:** This register was created in BCS35. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)		
Group	**Register**	**Information**
DRCW (continued)	DRCWAUNV	**Description:** This register counts the number of successful DRCW universal activations. **BCS history:** This register was created in BCS35. **Associated registers:** none **Register validation:** none
	DRCWDUNV	**Description:** This register counts the number DRCW universal deactivations. **BCS history:** This register was created in BCS35. **Associated registers:** none **Register validation:** none
DSCWID		**Description:** DSCWID contains registers that measure the use of the SCWID with Disposition feature. The registers peg each instance a given disposition option is selected, each time a call setup message is sent, and each time a terminal interface message is sent. The existing SCWID peg counts for the CSCWID feature are used by DSCWID. **BCS history:** This group was created in BCS35
	DSCWDANS	**Description:** This register is pegged every time a DSCWID subscriber selects the Answer option. **BCS history:** This register was created in BCS34. **Associated registers:** none **Register validation:** none
	DSCWDRTN	**Description:** This register is pegged every time a DSCWID subscriber selects the Return option. **BCS history:** This register was created in BCS34. **Associated registers:** none **Register validation:** none
	DSCWDDRP	**Description:** This register is pegged every time a DSCWID subscriber selects the Drop option. **BCS history:** This register was created in BCS34. **Associated registers:** none **Register validation:** none
	DSCWDDSC	**Description:** This register is pegged every time a DSCWID subscriber selects the Disconnect option. **BCS history:** This register was created in BCS34. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
DSCWID (continued)	DSCWDWAT	**Description:** This register is pegged every time a DSCWID subscriber selects the Wait option. **BCS history:** This register was created in BCS34. **Associated registers:** none **Register validation:** none
	DSCWDSND	**Description:** This register is pegged every time a DSCWID subscriber selects the Send option. **BCS history:** This register was created in BCS34. **Associated registers:** none **Register validation:** none
	DSCWDCSM	**Description:** This register is pegged every time a call setup message is sent. **BCS history:** This register was created in BCS34. **Associated registers:** none **Register validation:** none
	DSCWDTIM	**Description:** This register is pegged every time a terminal interface message is sent. **BCS history:** This register was created in BCS34. **Associated registers:** none **Register validation:** none
	DSCWDFHK	**Description:** This register is pegged every time a DSCWID subscriber flashes to cancel DSCWID. **BCS history:** This register was created in BCS34. **Associated registers:** none **Register validation:** none
	DSCWDRER	**Description:** This register is pegged every time a DSCWID subscriber goes on-hook before answering the call waiting or held party and is rerung. **BCS history:** This register was created in BCS34. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
FTRQ		**Description:** FTRQ contains registers that count successful and unsuccessful requests for feature queue blocks of a specific type. FTRQ also reflects the maximum number of blocks in use at any time during a specific period by means of a high water mark register. FTRQ provides one tuple for each key field. The Network Message Waiting Indicator feature adds feature queue blocks FTRQ32WAREAS and FTRQ32WPERMS. The types of feature queue blocks are as follows: ▪ FTRQAGENTS (created prior to BCS20) ▪ FTRQ0WAREAS (created prior to BCS20) ▪ FTRQ2WAREAS (created prior to BCS20) ▪ FTRQ4WAREAS (created prior to BCS20) ▪ FTRQ8WAREAS (created prior to BCS20) ▪ FTRQ16WAREAS (created prior to BCS20) ▪ FTRQ32WAREAS (created in BCS30) ▪ FTRQ0PERMS (created in BCS29) ▪ FTRQ2PERMS (created in BCS29) ▪ FTRQ4PERMS (created in BCS29) ▪ FTRQ16PERMS (created in BCS29) ▪ FTRQ32PERMS (created in BCS30) **BCS history:** This group was created prior to BCS20.
	FTRQSEIZ	**Description:** This register is pegged when a request for a feature queue block of a given size is successful. **BCS history:** This register was created prior to BCS20. **Associated registers:** none **Register validation:** none
	FTRQOVFL	**Description:** This register is pegged when a request for a feature queue block of a given size fails because no blocks are available. **BCS history:** This register was created prior to BCS20. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
FTRQ (continued)	FTRQHI	**Description:** This register indicates the maximum number of feature queue blocks of one type that are in simultaneous use during the current transfer period. This data may be used to verify and adjust the provisioning of feature queue blocks. **BCS history:** This register was created in BCS23. **Associated registers:** none **Register validation:** none
IBNGRP		**Description:** IBNGRP contains registers that provide information about the use of Meridian Digital Centrex (MDC) call processing by a customer group. For this OM group, the following OM pertains to Subscriber Services: GICORIG. Refer to *Operational Measurements Reference Manual*, 297-1001-814, for a complete list of OMs in this group. **BCS history:** This group was created prior to BCS20.
	GICORIG	**Description:** This register is pegged when a Group Intercom (GIC) origination occurs. **BCS history:** This register was created prior to BCS20. **Associated registers:** none **Register validation:** none
MDCWAKUP		**Description:** MDCWAKUP contains registers that provide information on the activation and deactivation of the Wake-Up Call Reminder (WUCR) feature. **BCS history:** This group was created in BCS33.
	WUCSACT	**Description:** This register is pegged when the WUCR feature is successfully activated. **BCS history:** This register was created in BCS33. **Associated registers:** none **Register validation:** none
	WUCDNY	**Description:** This register is pegged when WUCR feature activation is denied because the requested time slot is full or the total number of requests allowed has been exceeded. **BCS history:** This register was created in BCS33. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
MDCWAKUP (continued)	WUCDCT	**Description:** This register is pegged when the WUCR feature is successfully deactivated. **BCS history:** This register was created in BCS33. **Associated registers:** none **Register validation:** none
	WUCCOMP	**Description:** This register is pegged when a wake-up call is successfully terminated and answered (completed). **BCS history:** This register was created in BCS33. **Associated registers:** none **Register validation:** none
	WUCRTRY1	**Description:** This register is pegged when a wake-up call requires the first retry because the initial attempt is busy or was not answered. **BCS history:** This register was created in BCS33. **Associated registers:** none **Register validation:** none
	WUCRTRY2	**Description:** This register is pegged when a wake-up call requires the first and second retries because the initial attempt is busy or is not answered. **BCS history:** This register was created in BCS33. **Associated registers:** none **Register validation:** none
	WUCBLCK	**Description:** This register is pegged when a wake-up call is blocked because of ringing limitations. **BCS history:** This register was created in BCS33. **Associated registers:** none **Register validation:** none
	WUCOVRDU	**Description:** This register is pegged when a wake-up call is discarded because the request is overdue as a result of a time or date change. **BCS history:** This register was created in BCS33. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)		
Group	**Register**	**Information**
MDCWAKUP (continued)	WUCDSCRD	**Description:** This register is pegged when a wake-up call is discarded because successful completion does not occur after three wake-up calls are made but not successfully completed. **BCS history:** This register was created in BCS33. **Associated registers:** none **Register validation:** none
MWTCAR		**Description:** MWTCAR contains registers that provide information on feature use, traffic measurements, and failures that occur because of insufficient hardware and software resource provisioning for the Message Waiting feature. For this OM group, the following OMs pertain to Subscriber Services: MWTOVFL, CMWIACT, CMWIDACT, CMWINACK, CMWITRMS, CMWIUNAV, CMWISW, CMWRACT, CMWRDACT, CMWRDNAC, and CMWRDNDA. Refer to *Operational Measurements Reference Manual*, 297-1001-814, for a complete list of OMs in this group. **BCS history:** This group was created prior to BCS20.
	MWTOVFL	**Description:** This register is pegged when the message center attendant is unable to activate the message waiting lamp because of insufficient provisioning of feature data blocks. These data blocks are specified in office parameters NO_OF_FTR_DATA_BLKS and FTRQ2WAREAS in table OFCENG. **BCS history:** This register was created prior to BCS20. **Associated registers:** TRMT3_NOSR, indicating a lack of software resources, is also pegged when MWTOVFL is pegged. Refer to *Operational Measurements Reference Manual*, 297-1001-814, for a description of this OM. **Register validation:** none
	CMWIACT	**Description:** This register is pegged when a request for CLASS Message Waiting Indicator (CMWI) activation is received. **BCS history:** This register was created in BCS31. **Associated registers:** none **Register validation:** none
	CMWIDACT	**Description:** This register is pegged when a request for CMWI deactivation is received. **BCS history:** This register was created in BCS31. **Associated registers:** none **Register validation:** none

—continued—

Subscriber Services operational measurements (continued)

Group	Register	Information
MWTCAR (continued)	CMWINACK	**Description:** This register is pegged when a CMWI message cannot be transmitted successfully. **BCS history:** This register was created in BCS31. **Associated registers:** none **Register validation:** none
	CMWITRMS	**Description:** This register is pegged when a CMWI request is discarded because the allowable number of retransmissions has been reached. The maximum number of retransmissions is defined in table RESOFC. **BCS history:** This register was created in BCS31. **Associated registers:** none **Register validation:** none
	CMWIUNAV	**Description:** This register is pegged when delivery of CMWI information is prevented because the CLASS modem resource (CMR) card is not datafilled or is not in service. **BCS history:** This register was created in BCS31. **Associated registers:** none **Register validation:** none
	CMWISW	**Description:** This register is pegged when a CMWI request is discarded because of a lack of software resources in the central control. **BCS history:** This register was created in BCS31. **Associated registers:** none **Register validation:** none
	CMWRACT	**Description:** This register is pegged when a subscriber activates the ringing option of CMWI. **BCS history:** This register was created in BCS31. **Associated registers:** none **Register validation:** none
	CMWRDACT	**Description:** This register is pegged when a subscriber deactivates the ringing option of CMWI. **BCS history:** This register was created in BCS31. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
MWTCAR (continued)	CMWRDNAC	**Description:** This register is pegged when a CMWI ring activation request is denied. Denial results if the subscriber does not have the ring option or CMWI is not enabled for the office. **BCS history:** This register was created in BCS31. **Associated registers:** none **Register validation:** none
	CMWRDNDA	**Description:** This register is pegged when a CMWI ring deactivation request is denied. Denial results if the subscriber does not have the ring option or CMWI is not enabled for the office. **BCS history:** This register was created in BCS31. **Associated registers:** none **Register validation:** none
MWTCAR2		**Description:** MWTCAR2 is a continuation group for the MWTCAR group. It contains registers that provide information on the use of the periodic ring notification (PRN) and CMWI periodic ring notification (CRN) options. **BCS history:** This group was created in BCS33.
	PRNACT	**Description:** This register is pegged when a message is queued against a line that has PRN activated. **BCS history:** This register was created in BCS33. **Associated registers:** none **Register validation:** none
	PRNRACT	**Description:** This register is pegged when a subscriber attempts to activate PRN by dialing the activation code. This register is pegged even if the ringing is already active or if the subscriber does not have the PRN option. **BCS history:** This register was created in BCS33. **Associated registers:** none **Register validation:** none
	PRNRDACT	**Description:** This register is pegged when a subscriber attempts to deactivate PRN by dialing the deactivation code. This register is pegged even if the ringing is already inactive or if the subscriber does not have the PRN option. **BCS history:** This register was created in BCS33. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
NETMSG		**Description:** NETMSG contains registers that provide a monitor of various conditions of the network message services (NMS) subsystem. **BCS history:** This group was created in BCS30.
	NMSTIME	**Description:** This register is pegged at the host node when an NMS transaction capability application part (TCAP) request times out. The request can time out if the TCAP instruction is lost before reaching the server node, or if the TCAP acknowledgment is lost before reaching the host node. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	NMSDENL	**Description:** This register is pegged at the host node when an NMS TCAP request receives a negative acknowledgment. A negative acknowledgment can be caused by underprovisioning of the number of 32-word feature queue blocks available on the server node. (This number is set through office parameter FTRQ32WAREAS in table OFCENG.) If a message service is unable to alter a subscriber's message waiting indicator (MWI), a negative acknowledgment can result. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	NMSINVAD	**Description:** This register is pegged at the host node when an invalid address is received from a message service. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	NMSVACT	**Description:** This register is pegged at the server node when an NMS request is received for a vacant subscriber DN. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
OFZ		**Description:** OFZ contains registers that provide information for traffic analysis. Registers summarize the composition of traffic that arrives at an office, initial routing, and routing of outgoing traffic. For this OM group, the following OM pertains to Subscriber Services: ORIGTONE. Refer to *Operational Measurements Reference Manual*, 297-1001-814, for a complete list of OMs in this group. **BCS history:** This group was created prior to BCS20.
	ORIGTONE	**Description:** This register is pegged when a subscriber activates a feature and receives a tone. **BCS history:** This register was created prior to BCS20. **Associated registers:** TONES_TONEATT counts attempts to attach to tones. OFZ_INTONE counts incoming calls that are routed to a tone. Refer to *Operational Measurements Reference Manual*, 297-1001-814, for descriptions of these OMs. **Register validation:** none
OTS		**Description:** OTS contains registers that count calls by source and destination to indicate the traffic load on the switch. For this OM group, the following OMs pertain to Subscriber Services: ORGTRMT, ORGFSET, SYSFSET, NORG, and ORGTRM. Refer to *Operational Measurements Reference Manual*, 297-1001-814, for a complete list of OMs in this group. **BCS history:** This group was created prior to BCS20.
	ORGTRMT	**Description:** This register is pegged when a feature is activated by an access code and an error condition is encountered. **BCS history:** This register was created prior to BCS20. **Associated registers:** ANN_ANNATT counts calls that are routed to announcements. TONES_TONEATT counts calls that are routed to tones. OTS_INCTRMT counts incoming calls that are routed to a tone or an announcement because of an error condition. OTS_SYSTRMT counts system-generated (test) calls that are routed to a tone or an announcement because of an error condition. Refer to *Operational Measurements Reference Manual*, 297-1001-814, for descriptions of these OMs. **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
OTS (continued)	ORGFSET	**Description:** This register is pegged when the Call Pickup (CPU) feature is successfully activated. This register is used to note the number of calls from originating traffic that activate or deactivate a custom calling feature. Successful activation or deactivation of CLASS Message Waiting Indicator (CMWI) option CMWIRING also pegs this register. **BCS history:** This register was created prior to BCS20. **Associated registers:** none **Register validation:** none
	SYSFSET	**Description:** This register is pegged when the Calling Number Delivery Blocking (CNDB) feature is activated after the subscriber flashes the switchhook during a call. The register records actual call dispositions for the office traffic summary. **BCS history:** This register was created prior to BCS20. **Associated registers:** none **Register validation:** none
	NORG	**Description:** This register is pegged twice for each call origination during successful operation of the CPU feature. **BCS history:** This register was created prior to BCS20. **Associated registers:** ORGTRM counts calls that are routed to a line. ORGTRMT counts calls that are routed to a tone or announcement. Refer to *Operational Measurements Reference Manual*, 297-1001-814, for descriptions of these OMs. **Register validation:** none
	ORGTRM	**Description:** This register counts call terminations that result from successful operation of the CPU feature. **BCS history:** This register was created prior to BCS20. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
PM		**Description:** PM contains registers that count errors, faults, and maintenance state transitions for DMS peripheral modules (PM) with node numbers. For this OM group, the following OMs pertain to Subscriber Services: PMERR, PMFLT, PMPSERR, and PMPSFLT. Refer to *Operational Measurements Reference Manual*, 297-1001-814, for a complete list of OMs in this group. **BCS history:** This group was created prior to BCS20.
	PMERR	**Description:** This register counts errors in in-service PMs. For series 1 PMs, such as trunk modules (TM), errors reported include random access memory (RAM) parity failures, firmware errors, and message response failures. For series 2 PMs, reported errors include errors that only result in the output of a log, integrity failures, and PM fault (PMFLT) conditions. **BCS history:** This register was created prior to BCS20. **Associated registers:** none **Register validation:** none
	PMFLT	**Description:** This register counts faults that cause an entire PM or a unit to be made system busy. **BCS history:** This register was created prior to BCS20. **Associated registers:** none **Register validation:** none
	PMPSERR	**Description:** This register counts errors on the P-side interface of a series 2 PM. The register is pegged when errors occur in trunk interface cards or on trunks. **BCS history:** This register was created prior to BCS20. **Associated registers:** none **Register validation:** none
	PMPSFLT	**Description:** This register counts faults on the P-side interface of series 2 PMs. These faults affect service and require maintenance action. **BCS history:** This register was created prior to BCS20. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
RCHDOPT		**Description:** RCHDOPT contains registers that track use of the Residential Call Hold (RCHD) feature. **BCS history:** This group was created in BCS31.
	RCHDABD	**Description:** This register is pegged when an RCHD call is abandoned before the RCHD timer expires or the holding party goes off-hook. The RCHD timer is set through office parameter SLVP_RCHD_TIMER in table OFCVAR. **BCS history:** This register was created in BCS31. **Associated registers:** none **Register validation:** none
	RCHDATT	**Description:** This register is pegged when a subscriber attempts to use the RCHD feature. **BCS history:** This register was created in BCS31. **Associated registers:** none **Register validation:** none
	RCHDTEX	**Description:** This register is pegged when an RCHD call is terminated by expiration of the RCHD timer. The RCHD timer is set through office parameter SLVP_RCHD_TIMER in table OFCVAR. **BCS history:** This register was created in BCS31. **Associated registers:** none **Register validation:** none
	RCHDOVFL	**Description:** This register is pegged when an attempt to place an RCHD call on hold fails. **BCS history:** This register was created in BCS31. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
RCVR		**Description:** RCVR contains registers that count successful and failed attempts to obtain receiver circuits in the DMS switch. For this OM group, the following OMs pertain to Subscriber Services: RCVOVFL, RCVSZRS, and RCVQOVFL. Refer to *Operational Measurements Reference Manual*, 297-1001-814, for a complete list of OMs in this group. **BCS history:** This group was created prior to BCS20.
	RCVOVFL	**Description:** This register is pegged when a request for a receiver cannot be satisfied because all receivers are busy. When all receivers are busy, the request attempts to enter the wait queue for the receiver type. **BCS history:** This register was created prior to BCS20. **Associated registers:** The number of calls entering the wait queue is equal to the difference of RCVOVFL and RCVQOVFL. **Register validation:** none
	RCVSZRS	**Description:** This register is pegged when a receiver is assigned to a call. The pegging takes place before the network path is set from the receiver to the line, trunk, or position. If the path is unavailable, the receiver is released. **BCS history:** This register was created prior to BCS20. **Associated registers:** none **Register validation:** none
	RCVQOVFL	**Description:** This register is pegged when a request for a register that attempts to enter the wait queue fails because the queue is full. The size of the wait queue for Digitone receivers is half the number datafilled in table RECEIVER or 100, whichever is less. Incoming calls overflowing from the receiver queue are routed to NOSC treatment. **BCS history:** This register was created prior to BCS20. **Associated registers:** The number of calls entering the wait queue is equal to the difference of RCVOVFL and RCVQOVFL. TRK_INFAIL counts the number of incoming overflow calls from the receiver queue that are routed to NOSC treatment. Refer to *Operational Measurements Reference Manual*, 297-1001-814, for a description of this OM. **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
RTLTSUM		**Description:** RTLTSUM contains registers that count originating call, terminating call, and feature activation attempts for each line and trunk type. For this OM group, the following OMs pertain to Subscriber Services: RTTATT and RTOATT. Refer to *Operational Measurements Reference Manual*, 297-1001-814, for a complete list of OMs in this group. **BCS history:** This group was created in BCS29.
	RTTATT	**Description:** This register counts terminating call and feature activation attempts from lines or trunks of a specified type. **BCS history:** This register was created in BCS29. **Associated registers:** none **Register validation:** none
	RTOATT	**Description:** This register counts originating call and feature activation attempts from lines or trunks of a specified type. **BCS history:** This register was created in BCS29. **Associated registers:** none **Register validation:** none
SACB		**Description:** SACB contains registers that provide measurements for the activation and deactivation of the Subscriber Activated Call Blocking (SACB) feature. **BCS history:** This group was created in BCS33.
	SACBACT	**Description:** This register is pegged when a subscriber activates the SACB feature by entering the SACB activation code. **BCS history:** This register was created in BCS33. **Associated registers:** none **Register validation:** none
	SACBDACT	**Description:** This register is pegged when a subscriber deactivates the SACB feature by entering the SACB deactivation code. **BCS history:** This register was created in BCS33. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
SACB (continued)	SACBIPIN	**Description:** This register is pegged when a subscriber enters an incorrect SACB personal identification number (PIN) when trying to activate or deactivate the SACB feature or when trying to override the call restriction. **BCS history:** This register was created in BCS33. **Associated registers:** none **Register validation:** none
	SACBEPIN	**Description:** This register is pegged when a subscriber exceeds the number of allowed PIN attempts when trying to activate or deactivate the SACB feature or when trying to override the call restriction. **BCS history:** This register was created in BCS33. **Associated registers:** none **Register validation:** none
	SACBTNOR	**Description:** This register is pegged when there are no resources available when the subscriber attempts to activate or deactivate the SACB feature. **BCS history:** This register was created in BCS33. **Associated registers:** none **Register validation:** none
SCA		**Description:** SCA contains registers that indicate the behavior of the Selective Call Acceptance (SCA) feature. This is a single-tuple group. **BCS history:** This group was created in BCS30.
	SCAEATT	**Description:** This register records all attempts made to enter the screening list editing (SLE) function for SCA. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	SCAEDEN	**Description:** This register is pegged when an attempt to access SLE for SCA is denied because the feature has not been assigned or enabled or by interactions with other features. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
SCA (continued)	SCAEOVF	**Description:** This register is pegged when an attempt to access SLE for SCA is denied due to lack of system resources. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	SCAACT	**Description:** This register is pegged when a subscriber activates SCA. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	SCADACT	**Description:** This register is pegged when a subscriber deactivates SCA. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	SCAEUSG	**Description:** This register is a 10-s usage scan of the number of users of SCA SLE. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	SCASAT	**Description:** This register records the number of call terminations that attempt to perform SCA. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	SCASAT2	**Description:** This register is an extension register for SCASAT. Multiply by 65,536 and add the result to SCASAT to obtain the true number of screening attempts. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	SCASDEN	**Description:** This register is pegged when an SCA screening attempt is denied. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
SCA (continued)	SCASBLK	**Description:** This register is pegged when an SCA screening attempt is blocked because the list data cannot be accessed. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	SCASRJT	**Description:** This register is pegged when a call is rejected as a result of SCA. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	SCASRJT2	**Description:** This register is an extension register for SCASRJT. Multiply by 65,536 and add the result to SCASRJT to obtain the true number of screening attempts that have been rejected due to SCA. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	SCASTRM	**Description:** This register records the number of calls accepted as a result of SCA. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	SCAUNIV	**Description:** This register counts the number of SCA universal access attempts. **BCS history:** This register was created in BCS35. **Associated registers:** SCAEATT is pegged when SCAUNIV is pegged. **Register validation:** none
	SCADENY	**Description:** This register counts the number of SCA universal attempts denied by the DENYSCA option. **BCS history:** This register was created in BCS35. **Associated registers:** SCAEDEN is pegged when SCADENY is pegged. **Register validation:** none
	SCAAUNV	**Description:** This register counts the number of successful SCA universal activations. **BCS history:** This register was created in BCS35. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
SCA (continued)	SCADUNV	**Description:** This register counts the number of successful SCA universal deactivations. **BCS history:** This register was created in BCS35. **Associated registers:** none **Register validation:** none
SCF		**Description:** SCF contains registers that indicate the behavior of the Selective Call Forwarding (SCF) feature. This is a single-tuple group. **BCS history:** This group was created in BCS30.
	SCFEATT	**Description:** This register is pegged when a subscriber attempts to enter the screening list editing (SLE) function for SCF. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	SCFEDEN	**Description:** This register is pegged when an attempt to access SLE for SCF is denied because the feature has not been assigned or enabled or through feature interaction. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	SCFEOVF	**Description:** This register is pegged when an attempt to access SLE for SCF is denied due to lack of system resources. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	SCFACT	**Description:** This register is pegged when a subscriber activates SCF. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	SCFDACT	**Description:** This register is pegged when a subscriber deactivates SCF. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
SCF (continued)	SCFEUSG	**Description:** This register is a 10-s usage scan of the number of users of SCF SLE. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	SCFSAT	**Description:** This register records the number of call terminations that attempt to perform SCF. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	SCFSAT2	**Description:** This register is an extension register for SCFSAT. Multiply by 65,536 and add the result to SCFSAT to obtain the true number of screening attempts. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	SCFSDEN	**Description:** This register is pegged when an SCF screening attempt is denied. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	SCFSBLK	**Description:** This register is pegged when an SCF screening attempt is blocked because the list data cannot be accessed. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	SCFFWD	**Description:** This register is pegged when a call is call forwarded through a base station by SCF. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	SCFFWD2	**Description:** This register is an extension register for SCFFWD. Multiply by 65,536 and add the result to SCFFWD to obtain the true number of calls that are forwarded by SCF. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
SCF (continued)	SCFFAIL	**Description:** This register records the number of call forwarding attempts that fail because of feature interactions. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	SCFOVFL	**Description:** This register records the number of call forwarding attempts that fail due to unavailable system resources or system failure. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	SCFSOVFL	**Description:** This register records the number of call forwarding attempts that fail because the maximum number of simultaneous SCF calls permitted has been reached. **BCS history:** This register was created in BCS30. **Associated registers:** none **Register validation:** none
	SCFUNIV	**Description:** This register counts the number of SCF universal access attempts. **BCS history:** This register was created in BCS35. **Associated registers:** SCFEATT is pegged when SCFUNIV is pegged. **Register validation:** none
	SCFDENY	**Description:** This register counts the number of SCF universal access attempts denied by the DENYSCF option. **BCS history:** This register was created in BCS35. **Associated registers:** none **Register validation:** none
	SCFAUNV	**Description:** This register counts the number of successful SCF universal activations. **BCS history:** This register was created in BCS35. **Associated registers:** none **Register validation:** none
	SCFDUNV	**Description:** This register counts the number of successful SCF universal deactivations. **BCS history:** This register was created in BCS35. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
SCRJ		**Description:** SCRJ contains registers that indicate the behavior of the Selective Call Rejection (SCRJ) feature. This is a single-tuple group. **BCS history:** This group was created in BCS29.
	SCRJEATT	**Description:** This register is pegged when a subscriber attempts to enter the screening list editing (SLE) function for SCRJ. **BCS history:** This register was created in BCS29. **Associated registers:** none **Register validation:** none
	SCRJEDEN	**Description:** This register is pegged when an attempt to access SLE for SCRJ is denied because the feature has not been assigned or enabled through feature interaction. **BCS history:** This register was created in BCS29. **Associated registers:** none **Register validation:** none
	SCRJEOVF	**Description:** This register is pegged when an attempt to access SLE for SCRJ is denied due to lack of system resources. **BCS history:** This register was created in BCS29. **Associated registers:** none **Register validation:** none
	SCRJACT	**Description:** This register is pegged when a subscriber activates SCRJ. **BCS history:** This register was created in BCS29. **Associated registers:** none **Register validation:** none
	SCRJDACT	**Description:** This register is pegged when a subscriber deactivates SCRJ. **BCS history:** This register was created in BCS29. **Associated registers:** none **Register validation:** none
	SCRJEUSG	**Description:** This register is a 10-s usage scan of the number of users of SCRJ SLE. **BCS history:** This register was created in BCS29. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
SCRJ (continued)	SCRJSAT	**Description:** This register records the number of call terminations that attempt to perform SCRJ. **BCS history:** This register was created in BCS29. **Associated registers:** none **Register validation:** none
	SCRJSAT2	**Description:** This register is an extension register for SCRJSAT. Multiply by 65,536 and add the result to SCRJSAT to obtain the true number of screening attempts. **BCS history:** This register was created in BCS29. **Associated registers:** none **Register validation:** none
	SCRJSDEN	**Description:** This register is pegged when an SCRJ screening attempt is denied. **BCS history:** This register was created in BCS29. **Associated registers:** none **Register validation:** none
	SCRJSBLK	**Description:** This register is pegged when an SCRJ screening attempt is blocked because the list data cannot be accessed. **BCS history:** This register was created in BCS29. **Associated registers:** none **Register validation:** none
	SCRJSRJT	**Description:** This register is pegged when a call is rejected as a result of SCRJ. **BCS history:** This register was created in BCS29. **Associated registers:** TRMTFR_TTFRSCRJ counts calls that receive the SCRJ treatment because the call has been rejected by SCRJ. Refer to *Operational Measurements Reference Manual,* 297-1001-814, for a description of this OM. **Register validation:** none
	SCRJUNIV	**Description:** This register counts the number of SCRJ universal access attempts. **BCS history:** This register was created in BCS35. **Associated registers:** SCRJEDEN is pegged when SCRJDENY is pegged. **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
SCRJ (continued)	SCRJDENY	**Description:** This register counts the number of SCRJ universal access attempts denied by the DENYSCRJ option. **BCS history:** This register was created in BCS35. **Associated registers:** SCRJEDEN is incremented when SCRJDENY is incremented. **Register validation:** none
	SCRJAUNV	**Description:** This register counts the number of successful SCRJ universal activations. **BCS history:** This register was created in BCS35. **Associated registers:** none **Register validation:** none
	SCRJDUNV	**Description:** This register counts the number of successful SCRJ universal deactivations. **BCS history:** This register was created in BCS35. **Associated registers:** none **Register validation:** none
SLVPOPT		**Description:** SLVPOPT contains registers that track the number of times each of the Single Line Variety Package (SLVP) features is used. The SLVP features are SLVP Intercom, SLVP Transfer, and SLVP Hold. **BCS history:** This group was created in BCS31.
	SLVPINT	**Description:** This register is pegged when an access code is entered for SLVP Intercom. **BCS history:** This register was created in BCS31. **Associated registers:** none **Register validation:** none
	SLVPTRAN	**Description:** This register is pegged when an access code is entered for SLVP Transfer. **BCS history:** This register was created in BCS31. **Associated registers:** none **Register validation:** none
	SLVPHOLD	**Description:** This register is pegged when an access code is entered for SLVP Hold. **BCS history:** This register was created in BCS31. **Associated registers:** none **Register validation:** none

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Subscriber Services operational measurements (continued)

Group	Register	Information
SPPIN		**Description:** SPPIN contains registers that monitor the use of the Station Programmable PIN (SPP) feature. **BCS history:** This group was created in BCS32.
	SPPSUCC	**Description:** This register counts the number of subscribers who successfully change their personal identification number (PIN) using the SPP feature. **BCS history:** This register was created in BCS32. **Associated registers:** none **Register validation:** none
	SPPNOMAT	**Description:** This register counts the number of times a current PIN and a DN do not match. **BCS history:** This register was created in BCS32. **Associated registers:** none **Register validation:** none
	SPPNOVER	**Description:** This register counts the number of times a new PIN entry fails validation; that is, the PIN is not within the 2- to 10-digit limit. **BCS history:** This register was created in BCS32. **Associated registers:** none **Register validation:** none
	SPPRETRY	**Description:** This register counts the number of times an SPP subscriber retries an SPP process. The SPP process can be a current PIN and DN entry, a new PIN entry, or a reentered PIN. **BCS history:** This register was created in BCS32. **Associated registers:** none **Register validation:** none
	SPPLIMEX	**Description:** This register counts the number of times the caller exceeds the retry count limit during the SPP process. The retry count designates only the number of repeats. The initial entry of any SPP part, current PIN entry, new PIN entry, or reentered new PIN, is not included in this count. **BCS history:** This register was created in BCS32. **Associated registers:** none **Register validation:** none

—continued—

Subscriber Services operational measurements (continued)		
Group	**Register**	**Information**
SPPIN (continued)	SPPPROG	**Description:** This register is pegged when the number of simultaneous SPP subscribers exceeds the limit set in office parameter SPP_MAX_PROGRAMMERS in table OFCENG. **BCS history:** This register was created in BCS32. **Associated registers:** none **Register validation:** none
TRMTFR2		**Description:** TRMTFR2 is a continuation group for the TRMTFR group. Registers in the TRMTFR2 group count calls made to specific treatments. The xxxx characters in a TFRxxxx register name identify which treatment is being monitored. For this OM group, the following OMs pertain to Subscriber Services: TFRACRJ and TFRWUCR. Refer to *Operational Measurements Reference Manual*, 297-1001-814, for a complete list of OMs in this group. **BCS history:** This group was created in BCS30.
	TFRACRJ	**Description:** This register is pegged when a rejected anonymous call is provided a treatment. **BCS history:** This register was created in BCS32. **Associated registers:** none **Register validation:** none
	TFRWUCR	**Description:** This register is pegged when a call is routed to the wake-up call treatment. **BCS history:** This register was created in BCS33. **Associated registers:** none **Register validation:** none
	TFRDSCN	**Description:** This register is pegged when a DSCWID subscriber sends the calling party to DSCN treatment. **BCS history:** This register was created in BCS34. **Associated registers:** none **Register validation:** none
TRMTRS		**Description:** TRMTRS contains registers that track the number of calls that are routed to a treatment due to a shortage of hardware or software resources. For this OM group, the following OM pertains to Subscriber Services: TRSNOSC. Refer to *Operational Measurements Reference Manual*, 297-1001-814, for a complete list of OMs in this group. **BCS history:** This group was created prior to BCS20.

—continued—

Subscriber Services operational measurements (continued)

Group	Register	Information
TRMTRS (continued)	TRSNOSC	**Description:** This register is pegged when a call is routed to the no service circuits (NOSC) treatment. **BCS history:** This register was created prior to BCS20. **Associated registers:** none **Register validation:** none
TWCIBN		**Description:** TWCIBN contains registers that provide information on the use of the Three-Way Calling (3WC) and Call Transfer (CXR) features within a customer group. For this OM group, the following OMs pertain to Subscriber Services: CXFRATT and TWCATT. Refer to *Operational Measurements Reference Manual*, 297-1001-814, for a complete list of OMs in this group. **BCS history:** This group was created in BCS22.
	CXFRATT	**Description:** This register counts the number of CXR attempts. **BCS history:** This register was created in BCS22. **Associated registers:** none **Register validation:** none
	TWCATT	**Description:** This register counts the number of 3WC attempts. **BCS history:** This register was created in BCS22. **Associated registers:** none **Register validation:** none
TWCPOTS		**Description:** TWCPOTS contains registers that count attempts and failures to initiate three-way calls in the plain old telephone service (POTS) environment. For this OM group, the following OMs pertain to Subscriber Services: TWCPATT and TWCPOVFL. Refer to *Operational Measurements Reference Manual*, 297-1001-814, for a complete list of OMs in this group. **BCS history:** This group was created in BCS20.
	TWCPATT	**Description:** This register is pegged when a subscriber attempts to initiate a three-way call by flashing to activate Three-Way Calling (3WC). **BCS history:** This register was created in BCS20. **Associated registers:** none **Register validation:** none

—continued—

Subscriber Services operational measurements (continued)		
Group	**Register**	**Information**
TWCPOTS (continued)	TWCPOVFL	**Description:** This register is pegged when a three-way call attempt fails due to a lack of hardware or software resources. **BCS history:** This register was created in BCS20. **Associated registers:** none **Register validation:** none
UTR		**Description:** UTR contains registers that count and record call processing requests from lines and trunks for universal tone receivers (UTR) and the activities in request wait queues. For this OM group, the following OMs pertain to Subscriber Services: UTROVFL, UTRSZRS, and UTRQOVFL. Refer to *Operational Measurements Reference Manual*, 297-1001-814, for a complete list of OMs in this group. **BCS history:** This group was created prior to BCS20.
	UTROVFL	**Description:** This register is pegged when no receivers are available when a request for a receiver is made. **BCS history:** This register was created prior to BCS20. **Associated registers:** none **Register validation:** none
	UTRSZRS	**Description:** This register is pegged when a UTR is allocated to a call in response to a request. **BCS history:** This register was created prior to BCS20. **Associated registers:** none **Register validation:** none
	UTRQOVFL	**Description:** This register is pegged when a UTR request is denied a position in the wait queue because the queue is full. **BCS history:** This register was created prior to BCS20. **Associated registers:** TRK_INFAIL is pegged when UTRQOVFL is pegged. Refer to *Operational Measurements Reference Manual*, 297-1001-814, for a description of this OM. **Register validation:** none
End		

Subscriber Services related data structures

Table 5–1 lists Subscriber Services related data structures. Detailed information is contained in *Data Structures Reference Manual*, TAM-1001-011, a Northern Telecom proprietary document.

Table 5–1
Subscriber Services related data structures

Data structure	Application
DPROFILE_SS_INDEX	Used to index table DPROFILE
EMW_SDB_DATA	Indicates which network class of service (NCOS) is subscribed by the agent
IBN_OPTIONS_AREA	Indicates the options that are assigned to a line
LINES_INDEX	Used to index lines tables
LINES_TEMP_TUPLE	Identifies options associated with an active line
LINEMTC_REQUEST_BODY	Contains the body of the line maintenance request
MLE_USER_DATA	Holds user-specific control of EMW
MWT_FTRQ_DATA	Holds the application data for each message waiting (MWT) request
NPASPLIT	Table containing parallel dialing arrangements during permissive dialing period
OPTIONS_LIST	Used for prompting
OPTIONS_LIST_COMPAT	Used to check option compatibilities

—continued—

Table 5–1
Subscriber Services related data structures (continued)

Data structure	Application
PER_LCD_TYPE_DATA	Indicates major differences between line concentrating devices (LCD) with regard to maintenance
POOR_IBN_BOOLS	Used by Integrated Business Network (IBN) options
SO_COMMON_DATA	The base Service Order data structure that points to all the common Service Order (SO) data
SOFTKEY_DT	Defines the data tuple for table SOFTKEY
SOFTKEY_INDEX	Used to index the data tuple of table SOFTKEY
SOFTKEY_KEY	Used to index the logical tuple of table SOFTKEY
SOFTKEY_LT	Defines the logical tuple for table SOFTKEY
SOFTKEY_PT	Used to hold the physical data of table SOFTKEY
End	

Subscriber Services related user interface commands

This chapter describes the user interface commands associated with Subscriber Services. The user interface consists of the MAP (maintenance and administration position) terminal and the software required to convert human information to machine information and to communicate machine information to maintenance personnel.

The following commands, described in this chapter, are useful in investigating and troubleshooting Subscriber Services problems. For detailed information about each command, refer to *Non-Menu Commands Reference Manual*, 297-1001-820 and *Menu Commands Reference Manual*, 297-1001-821.

- Alarm status (ALMSTAT)
- BCS monitor (BCSMON)
- Menu commands
  - — Busy (BSY)
  - — Load peripheral module (LOADPM)
  - — Return to service (RTS)
  - — Test (TST)
  - — TESTSS
- Non-menu command
  - — Test Analog Display Services Interface (ADSI) set (TESTAME)
  - — Make Residential Enhanced Services (RES) line class code (MAKERES)
  - — Calling Name Delivery Automatic Call Gapping (CNAMDACG)
- Query commands
  - — Call logging query (CLOG)
  - — Query Bulk Calling Line Identification (QBCLID)
  - — Query call memory (QCM)

  - — Query directory number (QDN)
  - — Query line equipment number (QLEN)
  - — Query peripheral module (QPM)
  - — Query SLE lists (QSL)
- Service order system (SERVORD) commands
  - — Change feature (CHF)
  - — Change list (CHL)
- Translation verification commands
  - — Translation verification (TRAVER)
  - — Reverse translation verification (REVXLVER)

Alarm status (ALMSTAT)

The ALMSTAT command at the line test position (LTP) level of the MAP terminal reports the total number of Bulk Calling Line Identification (BCLID) data links in the office.

BCS monitor (BCSMON)

The nonmenu command utility BCSMON reports the number of datafilled custom local area signaling services (CLASS) lines and the extent of CLASS feature penetration, if the EQPCOUNTS subcommand is executed.

Menu commands

Busy (BSY)

The BSY command at the peripheral module (PM) level allows busying a specific unit of a posted PM, busying both units simultaneously, busying the CLASS modem resource (CMR) card on a specified unit, or busying the CMR card on both PM units.

Load peripheral module (LOADPM)

The LOADPM command at the PM level allows loading a specific unit of a posted PM, loading both PM units simultaneously, loading the CMR card on a specified unit, or loading the CMR card on both PM units.

Return to service (RTS)

The RTS command at the PM level allows returning a specific unit of a posted PM to service, returning both PM units to service simultaneously, returning the CMR card on a specified unit to service, or returning the CMR card on both PM units to service.

Test (TST)

The TST command at the PM level allows testing a specific unit of a posted PM, testing both PM units simultaneously, testing the CMR card on a specified unit, or testing the CMR card on both PM units.

TESTSS

The TESTSS command provides the capability to send a test calling name delivery (CNAMD) transaction capabilities application part (TCAP) query with permission (QWP) package to the centralized residence name database. By executing the TESTSS command for the CNAMD subsystem, the craftsperson can test the signalling system 7 (SS7) network between the service switching point (SSP) and the service control point (SCP) and test the centralized residence name database located at the SCP.

The CNAMD subsystem name is now valid for the TESTSS command. The CNAMD subsystem must be in service at the SCCPLOC level of the MAP system for the TESTSS CNAMD command to work. The TESTSS CNAMD command outputs a TCAP100 log for each test CNAMD TCAP QWP package and for each associated TCAP Response package. The TESTSS CNAMD command also outputs a TCAP 101 log if the CNAMD TCAP QWP package is returned in an SCCP unit data services (UDTS) message.

Note: Only one TESTSS CNAMD request can be executed at a time.

Non-menu command

Test ADSI set (TESTAME)

The TESTAME command at the command interpreter (CI) level of the MAP terminal provides data and drives the procedure that downloads information to the subscriber ADSI set. The command is used in the absence of actual service features for ADSI transmission and customer premises equipment (CPE) display testing.

Make RES line class code (MAKERES)

The MAKERES command converts plain old telephone service (POTS) lines to RES lines over a given range of line equipment numbers (LENs). The LENs to be converted are found in the LENLINES table, and upon successful conversion, are moved to the IBNLINES table.

MAKERES contains four subcommands: CONVERT, DELOPT, COPY, and CHECKCM. CONVERT lists a starting and ending range of LENs that are converted from POTS to RES. DELOPT deletes a specified option from the RES lines that fall within the specified start and stop range. COPY is run after CONVERT or DELOPT. It is used to save the identity of the LENs that did not convert (CONVERT) or did not delete (DELOPT). CHECKCM gives the status of incoming and outgoing call memory for all RES lines in

the specified start and stop range. For further information, refer to *Non-Menu Commands Reference Manual*, 297-1001-820.

Calling Name Delivery Automatic Call Gapping (CNAMDACG)

The CNAMDACG CI command displays the internally stored list of active CNAMDACG six-digit code controls, including their associated gap interval, duration interval, and time remaining for the code control.

Query commands

Call logging Query (CLOG)

The CLOG command displays the contents of a call logging subscriber's incoming callers list (ICL) for a given directory number (DN). It also allows the subscriber to delete one entry or all entries in the ICL, or to add entries to the ICL.

There are four subcommands to provide this functionality: STATUS, RESET, DEQ, and QUEUE. The STATUS subcommand provides the subscriber with all the entries in the ICL and pertinent data associated with each entry. The RESET subcommand allows the subscriber to delete all ICL entries. The DEQ subcommand deletes the specified ICL entry, and the QUEUE subcommand adds the specified entry to the ICL.

Query Bulk Calling Line Identification (QBCLID)

The CI level QBCLID command displays every line in the office that belongs to a BCLID group. Three lists are displayed. The first list identifies all lines assigned the BCLID option in tables LENFEAT, IBNFEAT, and KSETFEAT. The second list identifies all line groups assigned the BCLID option in Tables HUNTGRP and UCDGRP. The third list identifies the PX, P2, IBNTO, and IBNT2 trunks assigned the BCLID option in table TRKGRP.

If a BCLID group number is specified when QBCLID is invoked, the information specific to that group is displayed along with the three lists specified above. When a group has been assigned the DISP800DN option, the dialed 800 number is included as part of the BCLID message transmitted for the call.

Query call memory (QCM)

The QCM command displays the status of lines with CLASS features assigned that require incoming or outgoing call memory.

CLASS incoming call memory

Each line assigned the CLASS Automatic Recall (AR) or Customer Originated Trace (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, whether the call is answered or not.

CLASS outgoing call memory

Each line assigned the CLASS Automatic Call Back (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, whether the called party answered or not.

Query directory number (QDN)

The QDN command displays information about a subscriber line. The subscriber line is identified in the command by its DN.

When a line equipped with Subscriber Services based features (line class code of RES) is queried, the QDN command displays one-party flat rate (1FR)-like feature codes.

When the optional RES_AS_POTS capability provided by the RES Base feature package is activated, the QDN command displays RES lines as 1FR lines with field RES OPTIONS containing RES-specific options.

Additionally, RES_AS_POTS can be either Y or N. If Y, the line class code (LCC) displayed is a POTS LCC (ZMD/ZMZPA). IF N, the line class code displayed is RES (LCC) where LCC is ZMD or ZMZPA.

The command will also display RMT as a RES option when it is added to non-IBN type lines.

Query line equipment number (QLEN)

The QLEN command displays information about a subscriber line by its LEN.

When a line equipped with Subscriber Services-based features (LCC of RES) is queried, the QLEN command displays 1FR-like feature codes.

When the optional RES_AS_POTS capability provided by the RES Base feature package is activated, the QLEN command displays RES lines as 1FR lines with field RES OPTIONS containing RES-specific options.

Additionally, RES_AS_POTS can be either Y or N. If Y, the LCC displayed is a POTS LCC (ZMD/ZMZPA). IF N, the LCC displayed is RES (LCC) where LCC is ZMD or ZMZPA.

The command will also display RMT as a RES option when it is added to non-IBN type lines.

Query peripheral module (QPM)

The QPM command displays information about the PM load and hardware. The counters (CNTRS) option displays unsolicited message limit and current count for each unit, the random access memory (RAM), read-only memory (ROM) and CMR loads, and the master processor (MP) and signaling processor (SP) version of the master or signaling processor card (NT6X45). The number of downloaded softkey definers is also displayed.

Query SLE lists (QSL)

The CI level command QSL provides detailed lists for each Screening List Editing (SLE) feature on a specified line. The line can be specified by either DN or LEN. One or all features can be specified. When parameter ALL is selected, information is given in FULL format; when one feature is specified, the subscriber can select FULL or HEX format.

SERVORD commands

Change feature (CHF)

The CHF command allows the subscriber to change the billing option and status of an SLE feature.

Change list (CHL)

The CHL command allows the subscriber to change the billing option and status of an SLE feature, and to change the screening list associated with an SLE feature. The command provides the capability of adding up to 20 DNs at a time to an SLE screening list, deleting up to 20 DNs at a time, and replacing up to 10 DNs at a time.

Translation verification commands

Translation verification (TRAVER)

The TRAVER command simulates a call and displays the translation and routing tables accessed by the call. When calls should go to treatment (route, tone, or announcement), or do not follow their intended route, TRAVER allows the user to determine how the calls can be routed by displaying the following information:

- the tables used to translate and route a call
- each element of the route list with digits outpulsed
- each alternate conditional route

Note 1: TRAVER can be used to confirm that the correct tuple in table IBNXLA has been accessed. TRAVER does not show the results of the CLASS processing initiated by the datafill in that tuple.

Note 2: TRAVER cannot be used to check the translation of calls initiated using the AR and ACB features.

Reverse translation verification (REVXLVER)

REVXLVER is a datafill verification utility similar to TRAVER that simulates reverse translation from a specified origination to a specified destination. REVXLVER examines and displays translation data for reverse translation call processing. It also can display the reverse translation number result.

Subscriber Services related card requirements

Description of circuit card removal and replacement procedures

There are no special considerations for circuit card removal and replacement for Subscriber Services. The custom local area signaling services (CLASS) Modem Resource (CMR) card replacement procedure is provided in *Lines, Trunks, and Peripherals Card Replacement Procedures*, 297-1001-589.

Description of other equipment removal and replacement procedures

There are no special considerations for the removal and replacement of equipment other than circuit cards.

Trouble isolation and correction

This chapter provides descriptions of the procedures used to troubleshoot fault conditions on Subscriber Services lines. Subscriber Services relies on the Bulk Calling Line Identification (BCLID) data link and the custom local area signaling services (CLASS) Modem Resource (CMR) card specifically to support the Subscriber Services RES and Subscriber Services CLASS categories of Subscriber Services. Refer to *Subscriber Services Trouble Locating and Clearing Procedures*, 297-1421-502, for explanatory and context-setting information, a summary flowchart, and step-action procedures explaining how to locate and clear incorrect or non-displayed calling party directory number (DN) information and how to clear BCLID link failure.

Description of troubleshooting procedures

This section provides descriptions of the troubleshooting procedures to provide background for the maintenance technician.

Locating and clearing faults

The Subscriber Services components having the most serious impact on call processing if they fail are the BCLID data link and the CMR card.

BCLID data link fault

The BCLID data links are used to transmit calling party information for Subscriber Service lines belonging to BCLID groups. A subscriber complaint indicates that BCLID messages are not being received at the subscriber location.

Possible causes for BCLID data link faults are

- CMR card failure
- other peripheral module failure
- subscriber link failure
- customer premises equipment failure

CMR card fault

When the DMS switch detects a failure in the active peripheral module (PM) unit, such as the CMR card out of service, a warm switch of activity

(SWACT) occurs automatically. CLASS features that require a CMR card do not function properly until the CMR card is returned to service.

A warm SWACT under these conditions is called an *uncontrolled* warm SWACT. A *controlled* warm SWACT occurs when operating company personnel issue the SWACT command from the PM level of the MAP (maintenance and administrative position) terminal or when a scheduled diagnostic such as the routine exercise (REX) test occurs. When a warm SWACT occurs, calls in the talking state are maintained, but calls in transient states such as digit collection or ringing are dropped. Subscribers receive dial tone immediately after the call is dropped.

Possible causes for CMR card faults are

- failure to download new information to the CMR card
- failure to load PM that contains CMR card
- failure to provision card in correct slot
- hardware fault in card

Changing data in table SOFTKEY causes an in-service trouble (ISTb) fault in all PMs with CMR cards; therefore, all CMR cards in the office must be busied and returned to service to update the softkey definer information in the CMR memory.

Fault isolation tests

When the PM is in a manual busy (ManB), in service (InSv) or in-service trouble (ISTb) state, diagnostics can be run by entering the Test (TST) command from the PM level of the MAP terminal. If the CMR card is datafilled for the peripheral, the appropriate diagnostic for the CMR card can also be run.

The TST command also identifies datafill problems (including when there is no CMR card in the slot indicated).

Note 1: In-service diagnostics can be run when the PM is ISTb or InSv. Out-of-service diagnostics can be run when the unit is ManB.

Note 2: When the central control (CC) is performing the peripheral diagnostics (in response to the TST command or as part of the standard return to service [RTS] sequence), the most recently run test is indicated in the PM level of the MAP terminal to the right of the posted peripheral. When the text message “TESTED CMR” is generated, however, the screen may not be updated due to the positioning of the CMR card in the running order of the diagnostics.

Testing when the peripheral is returned to service

During the normal RTS of the PM, out-of-service diagnostics that include CMR diagnostics can be run. If a CMR card fault is detected during the RTS sequence, the peripheral will fail to RTS.

The RTS test also identifies datafill problems (including when there is no CMR card in the slot indicated).

For detailed information on PM maintenance see *Peripheral Modules Maintenance Guide*, 297-1001-592.

Diagnostic tests

Tests on the BCLID links are run

- as part of standard diagnostic testing of the CMR card
- as part of standard line diagnostics and test pattern transmission

Tests on the CMR card are run

- when the CMR-equipped peripheral is returned to service
- when initiated by a maintenance technician using the TST command
- as part of routine in-service activity

Product specific test tools

Calling Number Delivery (CND), Calling Name Delivery (CNAMD), Dialable Number Delivery (DDN)

Problems occurring with the CND, CNAMD, and DDN features can be identified using

- existing logs generated by CND, CNAMD, and DDN activity
- the station ringer test to test the subscriber set

If problems still exist after doing these tests, check the CMR card

- in slot 13 if the peripheral hosting the line is a line trunk controller (LTC) or a line group controller (LGC)
- in slot 18 if the peripheral hosting the line is a remote cluster controller (RCC)
- in slot 16 if the peripheral hosting the line is a Subscriber Carrier Module–100S (SMS) or Subscriber Carrier Module–100 Urban (SMU)

For detailed installation information, refer to IM 925, Section 1002.

Note 1: To carry out and report the full range of CMR tests, the CMR-equipped peripheral must also be equipped with Master or Signaling Processor (NT6X45BA) processor cards.

Note 2: The CMR card maintenance facilities are provided by feature package NTXA01AA, Calling Number Display.

Note 3: To free slot 18 of an RCC for the CMR card, insert a common peripheral processor (CPP) Message Tone and Protocol (NT6X69AB) circuit pack in slot 17.

Downloadable softkeys

Problems occurring with Downloadable softkeys can be identified using the Test Analog Display Services Interface (ADSI) set (TESTAME) test tool, designed to test the Downloadable Softkeys feature, including data transmission and the subscriber ADSI set.

TESTAME command

The command interpreter (CI) level command TESTAME enables the office to simulate application software by initiating data transmission from the CC to an ADSI set. The command must be directed toward an ADSI set in an off-hook state.

The TESTAME command controls what is displayed at the ADSI set and instructs the CLASS Modem Resource (CMR) card to release all resources associated with an ADSI session. The command syntax is as follows:

```
TESTAME <APPLICATION> <FUNCTION> <FILENAME> <DN>
```

Where:

- APPLICATION is the feature being simulated (that is, Visual Screen List Editing [VSLE], Call Logging [CALLOG])
  - — VSLE provides ADSI subscribers with a visual interface for screening list editing. Subscribers use downloadable softkeys to create and modify their screening lists.
  - — CALLOG provides a switch-based incoming callers list (ICL) to subscribers with an ADSI set. The information in the ICL includes the directory number or name of the calling party, the time and date of the call, the number of times the party called, and a status of unanswered, forwarded, or busy. This application makes use of downloadable softkeys.
- FUNCTION is the instruction specifying the type of action to be taken on the PM (that is, Tone, Softkey, Data, Release, Cancel, All).
  - — TONE sends a dual-tone multifrequency (DTMF) tone A to the ADSI set, meant to query the set to determine if it is an ADSI set. No data is necessary.
  - — SOFTKEY transmits a list of up to seven definer numbers from the CC to the PM. The corresponding application and a data file with the correct parameters and hex format is necessary for this subcommand.

— DATA transmits display data from the CC to the PM. A data file with the correct parameters and hex format is necessary for this command.

— RELEASE indicates to the CMR card that current transmission is finished and that the card should release all resources needed for an ADSI session. No data is necessary.

— CANCEL immediately stops any action associated with an ADSI session and then releases all resources. No data is necessary.

— ALL encompasses the functions performed by the TONE, SOFTKEY, DATA, and RELEASE subcommands. The downloaded softkeys are a set of default softkeys from table SOFTKEY with service ID CPETEST. Default data is downloaded to the set; therefore, no input datafill is necessary.

- FILENAME is the name of the file where the downloaded data is to be stored.
- DN is the DN of the ADSI set.

Example TESTAME commands, system responses, explanations, system actions, and user actions are shown below.

```
TESTAME VSLE DATA <FILENAME> <DN>
```

Response: FILE NOT FOUND

Explanation: This response is provided when the data file does not exist.

System Action: None.

User Action: Check the file and reenter the command.

```
TESTAME VSLE DATA <FILENAME> <DN>
```

Response: `DATA FILE PROBLEM`

Explanation: This response is provided when the data file cannot be opened.

System Action: None.

User Action: Check the file and reenter the command.

```
TESTAME CALLOG SOFTKEY <FILENAME> <DN>
```

Response: `Invalid DN`

Explanation: This response is provided when the DN is not a valid DN for the office.

System action: None.

User Action: Check the DN and reenter the command.

```
TESTAME VSLE SOFTKEY <FILENAME> <DN>
```

Response: `Downloading. . .`

```
Unable to Download.
<return code from procedure>.
```

Explanation: This response indicates that there is a problem with the CMR card or with the data that is downloaded.

System Action: None.

User Action: Verify that the data that reaches the ADSI set matches the data in Table SOFTKEY.

```
TESTAME CALLOG CANCEL <DN>
```

Response: `Downloading. . .`

```
Downloading complete.
```

Explanation: This response indicates that the download is complete.

System action: None.

User action: None.

```
TESTAME CALLOG TONE <DN>
```

Response: `Downloading. . .`

```
Downloading complete.

Validate messages. . .
```

Explanation: This response indicates that the download was completed.

System action: None.

User action: None.

```
TESTAME VSLE DATA <FILENAME> <DN>
```

Response: `Downloading. . .`

```
Downloading complete.

Validate messages. . .

NUMBER OF MESSAGES SENT = ##
```

Explanation: This response indicates that the download was completed.

System action: None.

User action: None.

`TESTAME CALLOG TONE <DN>`

Response: `Downloading. . .`

```
Downloading complete.

Validate messages. . .

DTMF A SENT TO SET
```

Explanation: This response indicates that the set acknowledged with either a negative acknowledgement (NAK) or an acknowledgement (ACK), depending on the type of dual-tone multifrequency (DTMF) tone that was sent.

System action: None.

User action:

None.

`TESTAME CALLOG SOFTKEY <FILENAME> <DN>`

Response: `Downloading. . .`

```
Downloading complete.

Validate messages. . .

NUMBER OF MESSAGES SENT = #
```

Explanation: This response indicates that all transmissions are complete.

System action: None.

User action: None.

```
TESTAME CPETEST ALL <DN>
```
Response: `Downloading. . .`

```
Downloading complete.
```

Explanation: This response indicates that all transmissions are complete.

System action: None.

User action: None.

Translation verification

The translation verification (TRAVER) command simulates a call and displays the translation and routing tables accessed by the call.

TRAVER is documented in *Nonmenu Commands Reference Manual,* 297-1001-820.

Example of TRAVER

Following is an example of TRAVER run on the Calling Number Delivery Blocking (CNDB) access code asterisk (*)67 to determine if the CNDB access code is correctly datafilled.

TRAVER output example (NCOS of 0 call)

```
>TRAVER L 6216051 6221234 'B47' B
 TABLE IBNLINES
 HOST 00 0 19 16 DNNO DT STN RES 6216051 200 $
 TABLE LINEATTR
 200 RES NONE NT FR01 0 613 P621 L613 TSPS 10 NIL NILSFC
       NILLATA 0 NIL NIL 00 Y RESGRP 0 0 $
 TABLE DNATTRS
 TUPLE NOT FOUND
 TABLE DNGRPS

 TUPLE NOT FOUND
 TABLE NCOS
 RESGRP 0 RNCOS 0 0  (XLAS RXCMN200 NXLA RES)$
 TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA,
     VACTRMT, AND DIGCOL
 RESGRP NXLA NILXLA RXCFN 0 RES
 TABLE DIGCOL
 RES SPECIFIED: RES DIGIT COLLECTION
 TABLE IBNXLA: XLANAME RXCMN200
 TUPLE NOT FOUND
 DEFAULT FROM TABLE XLANAME:
 RXCMN200
     (NET N N 0 N NDGT N Y GEN ( LATTR 200) $)$

 TABLE DIGCOL
 NDGT SPECIFIED: DIGITS COLLECTED INDIVIDUALY.
 TABLE LINEATTR
 200 RES NONE NT FR01 0 613 P621 L613 TSPS N 10 NIL
 NILSFC
       NILLATA 0 NIL NIL 00 Y RESGRP 0 0 $
 TABLE STDPRTCT
 P621 ( 1) ( 0)
  . SUBTABLE STDPRT
  . 622 624 N NP 0 NA
  . SUBTABLE AMAPRT
  . KEY NOT FOUND
  . DEFAULT VALUE IS:   NONE   N
```

—continued—

TRAVER output example (NCOS of 0 call) (continued)

```
TABLE HNPACONT
613 199 1 ( 47) ( 1) ( 84)
 . SUBTABLE HNPACODE
 . 622 622 LRTE 2
 . SUBTABLE RTEREF
 .  2 S D OTDP1
 . EXIT TABLE RTEREF
EXIT TABLE HNPACONT
TABLE LCASCRCN
613 L613 ( 12) MNDT N
 . SUBTABLE LCASCR
 . 622 622

TABLE PFXTREAT
MNDT NP Y NP UNDT
TABLE CLSVSCRC
KEY NOT FOUND
DEFAULT IS TO LEAVE XLA RESULT UNCHANGED

+++ TRAVER: SUCCESSFUL CALL TRACE +++

DIGIT TRANSLATION ROUTES
1 OTDP1                 6221234            ST
TREATMENT ROUTES. TREATMENT IS: GNCT
1 *OFLO
2 LKOUT

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

End

Reverse translation verification

Reverse translation verification (REVXLVER) is a datafill verification utility, similar to TRAVER, that simulates reverse translation from a specified origination to a specified destination.

Reverse translation tables

Two data tables perform reverse DN translation. The first table, table DNREGION, is used to identify groups of DNs belonging to the same region (or community of interest). The second table, table DNREVXLA, is used to provide reverse translation algorithms based on the various regions defined in table DNREGION. Together, these two tables specify the way in which destination digits are to be manipulated, based on whether or not the originator and the destination share a particular region.

For each Subscriber Services and Meridian Digital Centrex (MDC) customer group containing lines using the Automatic Recall (AR) and DDN features, a tuple must exist in table CUSTNTWK. This table CUSTNTWK tuple identifies the reverse translator to be used by the AR and DDN features. In the case of the Automatic Call Back (ACB) feature, the reverse translator name is always ACB.

REVXLVER subcommands

The REVXLVER tool has four associated subcommands:

- AR allows the user to analyze AR reverse translations datafill.
- ACB allows the user to analyze ACB reverse translations datafill.
- DDN allows the user to analyze DDN reverse translations datafill.
- R allows the user to trace table DNREGION.

For detailed information about each subcommand, refer to "Additional features" in *Subscriber Services Translations Guide*, 297-1421-350.

REVXLVER AR subcommand

The AR subcommand allows the user to analyze the AR reverse translations datafill. The command syntax is as follows:

```
REVXLVER AR <DN> <DIGITS> <OPTION> <NETNAME>
```

Where:

- DN is the seven- or ten-digit DN of the line originating the call.
- DIGITS consists of the ten-digit sequence identifying the destination.
- OPTION is the type of tracing option, as follows:
  - — T (trace) uses parallel software to simulate the reverse translations part of a call and displays sequentially all table entries that are referenced by the call.
  - — NT (no trace) displays the reverse translations output digits for the associated DN and digits specified in the command line.
  - — B invokes both the T and NT options.
- NETNAME is an optional parameter identifying a valid network name. Network names are listed in table NETNAMES. The default value is "PUBLIC."

REVXLVER ACB subcommand

The ACB subcommand allows the user to analyze the ACB reverse translations datafill. The command syntax is as follows:

```
REVXLVER ACB <DN> <DIGITS> <OPTION>
```

Where**:**

- DN is the seven- or ten-digit DN of the line originating the call.
- DIGITS consists of the ten-digit sequence identifying the destination.
- OPTION is the type of tracing option, as follows:
  - — T (trace) uses parallel software to simulate the reverse translations part of a call and displays sequentially all table entries that are referenced by the call.
  - — NT (no trace) displays the reverse translations output digits for the associated DN and digits specified in the command line.
  - — B invokes both the T and NT options.

REVXLVER DDN subcommand

The DDN subcommand allows the user to analyze the DDN reverse translations datafill. The command syntax is as follows:

```
REVXLVER DDN <DN> <DIGITS> <OPTION> <NETNAME>
```

Where:

- DN is the seven- or ten-digit DN of the line originating the call.
- DIGITS consists of the ten-digit sequence identifying the destination.
- OPTION is the type of tracing option, as follows:
  - — T (trace) uses parallel software to simulate the reverse translations part of a call and displays sequentially all table entries that are referenced by the call.
  - — NT (no trace) displays the reverse translations output digits for the associated DN and digits specified in the command line.
  - — B invokes both the T and NT options.
- NETNAME is an optional parameter identifying a valid network name. Network names are listed in table NETNAMES. The default value is “PUBLIC.”

REVXLVER R subcommand

The R subcommand allows the user to trace table DNREGION. The syntax is as follows:

```
REVXLVER R <DN> <RXLANAME>
```

Where:

- DN is the seven- or ten-digit DN of the line originating the call.

- RXLANAME is the name of a valid reverse translator name. The RXLANAME parameter is valid only in the R subcommand syntax.

Troubleshooting chart

This chapter contains an alarm clearing table and a trouble locating table designed to provide easy access to Subscriber Services troubleshooting procedures. The tables provide a list of trouble symptoms, possible causes, and the actions that should be taken as a result of the trouble.

These tables are intended as a point of reference, leading the maintenance personnel to the documentation containing detailed actions. Table 9–1 describes the conditions, possible causes and actions for alarm clearing and references procedures contained in *Subscriber Services Alarm and Performance Monitoring Procedures*, 297-1421-501. Table 9–2 describes the conditions, possible causes, and actions for trouble clearing and references procedures contained in both *Subscriber Services Trouble Locating and Clearing Procedures*, 297-1421-502, and “Advanced troubleshooting procedures” in this document.

Table 9–1
Subscriber Services alarm clearing

Alarm condition	Possible cause	Action
PM ISTb minor	custom local area signaling services (CLASS) Modem Resource (CMR) card failure	1 Refer to *Subscriber Services Alarm and Performance Monitoring Procedures*, 297-1421-501. 2 Busy and test the whole unit. If there is another failure, check the card list that is generated. There could be another card that is causing the CMR card failure.
	Other peripheral module (PM) failure	1 Refer to *Subscriber Services Alarm and Performance Monitoring Procedures*, 297-1421-501. 2 Do in-depth analysis of operational measurements (OM) and log reports to determine which of the PMs is having the problem. Check out PM maintenance. Refer to *Peripheral Modules Maintenance Guide*, 297-1001-592.
	CMR card load failure	1 Refer to *Subscriber Services Alarm and Performance Monitoring Procedures*, 297-1421-501. 2 The software load may have been corrupted. Load the card.

Table 9–2
Subscriber Services trouble locating

Trouble condition	Possible cause	Action
Bulk Calling Line Identification (BCLID) link failure	CMR card failure	1 Refer to *Subscriber Services Trouble Locating and Clearing Procedures*, 297-1421-502. 2 Busy and test the CMR card. If there is another failure, check the card list that is generated. There could be another card that is causing the CMR card failure.
	Other PM failure	1 Refer to *Subscriber Services Trouble Locating and Clearing Procedures*, 297-1421-502. 2 Do in-depth analysis of OMs and log reports to determine which of the PMs is having the problem. Check out PM maintenance. Refer to *Peripheral Modules Maintenance Guide*, 297-1001-592.
	Subscriber link failure	1 Refer to *Subscriber Services Trouble Locating and Clearing Procedures*, 297-1421-502. 2 Perform diagnostics on the line. Check if there is poor transmission on the line. Check if other subscribers are experiencing line failure. Refer to *Lines, Trunks, and Peripherals Lines Alarm and Performance Monitoring Procedures*, 297-1001-584. 3 Collect BCLIDO group OMs for the time the subscriber was experiencing the problem. Refer to *Subscriber Services Administration Guide*, 297-1421-300. 4 Check to see if the BCLID links are overloaded by message traffic. Check to see if the BCLID links are overloaded continuously. Refer to “Advanced troubleshooting procedures” in this document.

—continued—

Table 9–2
Subscriber Services trouble locating (continued)

Trouble condition	Possible cause	Action
	Customer premises equipment failure	1 Refer to *Subscriber Services Trouble Locating and Clearing Procedures*, 297-1421-502. 2 Ensure that the customer premises equipment for the BCLID link you are testing consists of one Bell 202A modem in receive mode, one DB25 connector cable, and one of the following pieces of data terminal equipment: a computer equipped with an RS232 interface and the associated communications software, a dummy terminal with an RS232 interface, and a protocol analyzer.
	Datafill error	1 Refer to *Subscriber Services Trouble Locating and Clearing Procedures*, 297-1421-502. 2 Recheck datafill.
CMR data mismatch with central control (CC)	Datafill error	1 Refer to *Subscriber Services Trouble Locating and Clearing Procedures*, 297-1421-502. 2 Recheck datafill.
Incorrect directory number (DN) in incoming callers list	Datafill error	1 Refer to *Subscriber Services Trouble Locating and Clearing Procedures*, 297-1421-502. 2 Recheck datafill.
Incorrect or no displayed calling party name or DN	Defective Subscriber Services-compatible terminal	1 Refer to *Subscriber Services Trouble Locating and Clearing Procedures*, 297-1421-502. 2 Check the type of equipment the subscriber is using. Devices with a filter may affect the Subscriber Services-compatible terminal. 3 Refer to “Advanced troubleshooting procedures” in this document.

—continued—

Table 9–2
Subscriber Services trouble locating (continued)

Trouble condition	Possible cause	Action
	Subscriber line failure	1 Refer to *Subscriber Services Trouble Locating and Clearing Procedures*, 297-1421-502. 2 Perform diagnostics on the line. Check if there is poor transmission on the line. Check if other subscribers are experiencing line failure. Refer to *Lines, Trunks, and Peripherals Lines Alarm and Performance Monitoring Procedures*, 297-1001-584.
	Line-ended PM failure	1 Refer to *Subscriber Services Trouble Locating and Clearing Procedures*, 297-1421-502. 2 Do in-depth analysis of OMs and log reports to determine which of the PMs is having the problem. Check out PM maintenance. Refer to *Peripheral Modules Maintenance Guide*, 297-1001-592.
	CMR card failure	1 Refer to *Subscriber Services Trouble Locating and Clearing Procedures*, 297-1421-502. 2 Busy and test the CMR card. If there is another failure, check the card list that is generated. There could be another card that is causing the CMR card failure.
	Datafill error	1 Refer to *Subscriber Services Trouble Locating and Clearing Procedures*, 297-1421-502. 2 Recheck datafill.
SCWID subscriber gets no notification of a waiting call	Defective Analog Display Services Interface (ADSI) set	1 Refer to *Subscriber Services Trouble Locating and Clearing Procedures*, 297-1421-502. 2 Refer to “Advanced troubleshooting procedures” in this document.

—continued—

Table 9–2
Subscriber Services trouble locating (continued)

Trouble condition	Possible cause	Action
	CMR card failure	1 Refer to *Subscriber Services Trouble Locating and Clearing Procedures*, 297-1421-502. 2 Busy and test the CMR card. If there is another failure, check the card list that is generated. There could be another card that is causing the CMR card failure.
	Line-ended PM failure	1 Refer to *Subscriber Services Trouble Locating and Clearing Procedures*, 297-1421-502. 2 Do in-depth analysis of OMs and log reports to determine which of the PMs is having the problem. Check out PM maintenance. Refer to *Peripheral Modules Maintenance Guide*, 297-1001-592.
	Datafill error	1 Refer to *Subscriber Services Trouble Locating and Clearing Procedures*, 297-1421-502. 2 Recheck datafill.
	Lack of tone	1 Refer to “Advanced troubleshooting procedures” in this document.
Softkey information does not download to the ADSI set	CMR card failure	1 Refer to *Subscriber Services Trouble Locating and Clearing Procedures*, 297-1421-502. 2 Busy and test the CMR card. If there is another failure, check the card list that is generated. There could be another card that is causing the CMR card failure.
	Line-ended peripheral module failure	1 Refer to *Subscriber Services Trouble Locating and Clearing Procedures*, 297-1421-502. 2 Do in-depth analysis of OMs and log reports to determine which of the PMs is having the problem. Check out PM maintenance. Refer to *Peripheral Modules Maintenance Guide*, 297-1001-592.

—continued—

Table 9–2
Subscriber Services trouble locating (continued)

Trouble condition	Possible cause	Action
	Datafill error	1 Refer to “Advanced troubleshooting procedures” in this document.
	Software failure, data transmission failure, or defective ADSI set	1 Refer to *Subscriber Services Trouble Locating and Clearing Procedures*, 297-1421-502. 2 Refer to “Advanced troubleshooting procedures” in this document.
	Alarm conditions	1 Refer to “Advanced troubleshooting procedures” in this document.
visual screen list editing (VSLE) session defaults to audio screening list editing (SLE)	Defective ADSI set	1 Refer to *Subscriber Services Trouble Locating and Clearing Procedures*, 297-1421-502. 2 Refer to “Advanced troubleshooting procedures” for the correct procedure. 3 Replace the ADSI set.
	CMR card failure	1 Refer to *Subscriber Services Trouble Locating and Clearing Procedures*, 297-1421-502. 2 Busy and test the CMR card. If there is another failure, check the card list that is generated. There could be another card that is causing the CMR card failure.
	Line-ended PM failure	1 Refer to *Subscriber Services Trouble Locating and Clearing Procedures*, 297-1421-502. 2 Do in-depth analysis of OMs and log reports to determine which of the PMs is having the problem. Check out PM maintenance. Refer to *Peripheral Modules Maintenance Guide*, 297-1001-592.

—continued—

Table 9–2
Subscriber Services trouble locating (continued)

Trouble condition	Possible cause	Action
	Datafill error	1 Refer to *Subscriber Services Trouble Locating and Clearing Procedures*, 297-1421-502. 2 Recheck datafill.
	Lack of tone	1 Refer to “Advanced troubleshooting procedures” in this document.
End		

Advanced troubleshooting procedures

This section contains the advanced troubleshooting procedures for transaction capabilities application part (TCAP) calling name delivery (CNAMD) feature. These procedures are limited to those that have a high probability of affecting the service in a negative manner.

Task list

The tasks exclusively assigned to the supervisory and management level of maintenance personnel for TCAP CNAMD include the following:

- Determine if datafill error prevents TCAP CNAMD call completion; interpret log messages.
- Use command interpreter (CI) command CNAMDVER or TESTSS CNAMD command to monitor TCAP CNAMD messages and to see if the service control point (SCP) and the service switching point (SSP) are sending messages; check TCAP 100 logs.
- Use the C7TU test utility to monitor messages going over links to database and back, checking to monitor and interpret messages from the SSP and SCP.
- Error Detection

Advanced trouble locating procedures

The advanced troubleshooting procedures include the following:

Determining if datafill error prevents TCAP CNAMD call completion

The following datafill-related logs are associated with TCAP CNAMD:

- TCAP 100 log generated with problem text CNAMD SCCP FORMAT FAILURE for missing datafill in table C7GTTYPE or C7NETWRK

The other log associated with TCAP CNAMD is the CCS300 log, used extensively with commands TESTSS CNAMD or CNAMDVER to print every message sent to or received from the SCP database or business services database (BSDB). These are not error logs but can ensure standards of conformance for both the SSP and the SCP database.

The TCAP 100 log is also output when commands TESTSS CNAMD or CNAMDVER are used. This log is generated for information purposes.

The centralized resident database could not successfully return requested information.

The reason fields added for the TCAP CNAMD application of the TCAP 100 log are as follows:

- CNAMD RETURN ERROR RECEIVED
- CNAMD REJECT RECEIVED
- CNAMD VERIFICATION QUERY SENT
- CNAMD VERIFICATION RESPONSE RCVD

For more information on logs, including the recommended action for each log number, refer to “Subscriber Service related logs,” beginning on page 3-1.

CNAMDACG, CNAMDVER, and TESTSS CNAMD commands

Commands CNAMDVER and TESTSS CNAMD enable the user to test CNAMD TCAP QWP package to the centralized residence name database by sending and receiving messages to and from the SCP database (BSDB) without placing a telephone call.

New command CNAMDACG is provided by this feature to display the internally stored list of CNAMD ACG 6-digit code controls. There are no parameters for this command. By typing CNAMDACG from a maintenance and administration position (MAP) terminal, a list of active CNAMD ACG 6-digit code controls are displayed.

These commands are also a valuable tool in troubleshooting, as they can help to identify problems in the routing of messages to and from the database.

Responses to these commands and user action recommendations are included in *Non-Menu Commands Reference Manual,* 297–1001–820, and in *Menu Commands Reference Manual,* 297–1001–821.

C7TU test utility

The C7TU test utility can be used to monitor messages going over links to the database and back. C7TU provides testing of CCS7 features but is also password protected. This can be used for troubleshooting, in monitoring, and interpretation of messages from the SSP and SCP. Refer to *Non-Menu Commands Reference Manual,* 297-1001-820, and to *C7TU User Guide Technical Assistance Manual,* TAM-1001-015, for additional information.

CAUTION
Real-time impact
The C7TU tool should be used with CAUTION. There is a real-time impact on any node using C7TU.

Interpretation of the logs generated will also be helpful in pinpointing problems and troubleshooting.

Error Detection

Each message sent by the SCP database is error checked and validated by the SSP. Checking is done to detect protocol and application errors.

Protocol errors are caused by incorrect TCAP messages and are detected by either TCAP or the application process. Unrecognized package type or component type, and unrecognized operation or correlation ID are protocol errors.

Application errors are caused by violations of application process procedures or unavailability of network resources. Unexpected sequence of components, unexpected data value, unavailable network resource, or reply overdue are application errors.

DMS-100 implementation has some rules and basic assumptions regarding the type of error message returned to the database.

Protocol error and application error handling

If an error message is detected when decoding or processing the TCAP response package containing the return result component, an out-of-area unavailable indication will be sent to the called party's customer premises equipment (CPE). Possible error conditions include protocol violations, unexpected parameters, and unexpected data values.

A TCAP 100 log is output with text *DATA ERROR IN CNAMD RESPONSE PACKAGE* for each occurrence of a detected error.

Error logs

A TCAP 100 log is generated to print the content of the BSDB message under the following circumstance:

- For any *RESPONSE* package with a *RETURN ERROR* or *REJECT* component.

Refer to *Log Report Reference Manual*, 297-1001-840, for additional information on the TCAP 100 log.

Powering up Subscriber Services

This procedure does not apply to Subscriber Services software.

Powering down Subscriber Services

This procedure does not apply to Subscriber Services software.

Common procedures

There are no common procedures referenced in this section.

List of terms

1FR

one-party flat rate

1MR

one-party message rate

3WC

three-way calling

ACB

automatic call back

ACRJ

anonymous caller rejection

alarm

A visual signal, audible signal, or both, used to alert operating company personnel to a condition of the DMS-100 Family switch requiring attention.

alarm status (ALMSTAT)

The ALMSTAT command at the line test position (LTP) level of the MAP terminal reports the total number of Bulk Calling Line Identification (BCLID) data links in the office.

ALMSTAT

alarm status

American Standard Code for Information Interchange (ASCII)

Coded character set used for the interchange of information among information processing systems, communications systems, and associated equipment. ASCII defines one format in which data is exchanged between an input or output device and the device controllers of the DMS-100 Family of switches.

anonymous caller rejection (ACRJ)

A custom local area signaling services (CLASS) feature that allows a subscriber to reject calls from calling parties who suppress the display of their name or directory number.

AR

Automatic Recall

ASCII

American standard code for information interchange

automatic call back (ACB)

A custom local area signaling services (CLASS) feature that enables subscribers to dial a feature code that will automatically set up a call to the last directory number that was dialed. If the destination line is busy, ACB monitors it until it becomes idle and can accept the call.

Automatic Recall (AR)

A custom local area signaling services (CLASS) feature that enables subscribers to dial a feature code that will automatically set up a call to the directory number of the last incoming call. If the destination line is busy, AR monitors it until it becomes idle and can accept the call.

batch change supplement (BCS)

A DMS-100 Family software release.

BCLID

Bulk Calling Line Identification

BCS

batch change supplement

BCSMON

BCS monitor

BCS monitor (BCSMON)

The nonmenu command utility BCSMON reports the number of datafilled custom local area signaling services (CLASS) lines and the extent of CLASS feature penetration, if the EQPCOUNTS subcommand is executed.

BSY

busy

Bulk Calling Line Identification (BCLID)

This feature allows data to be collected in one central location for all calls received by lines that are members of a bulk calling line identification group.

busy (BSY)

The BSY command at the peripheral module level allows busying a specific unit of a posted peripheral module, busying both units simultaneously, busying the CLASS modem resource (CMR) card on a specified unit, or busying the CMR card on both peripheral module (PM) units.

call forwarding (CF)

This feature allows a subscriber to have incoming calls to a station's directory number forwarded to a predetermined directory number. There are five types of call forwarding:

- call forwarding fixed (CFF) permits stations to forward calls to locations determined by the operating company.
- call forwarding intragroup (CFI) permits stations to forward calls only to customer-defined locations within the customer group.
- call forwarding universal (CFU) permits stations to forward calls to locations inside or outside the customer group.
- call forwarding don't answer (CFDA) permits an incoming call that is not answered within a specified length of time to be forwarded to another designated station.
- call forwarding busy (CFB) permits all calls to a busy station to be forwarded to a designated station within the customer group.

call forwarding remote access (CFRA)

The CFRA feature is provided by the feature package Call Forwarding Remote Activation. CFRA allows a call forwarding subscriber to place a call from a station other than his or her own and to call forward his or her particular line.

call logging query (CLOG)

The CLOG command displays the contents of a call logging subscriber's incoming callers list (ICL) for a given directory number. It also allows the subscriber to delete one entry or all entries in the ICL, and add entries to the ICL.

Calling Name Delivery (CNAMD)

The custom local area signaling services (CLASS) feature that delivers the name of the calling party to the subscriber set.

Calling Name Delivery Blocking (CNAB)

The custom local area signaling services (CLASS) feature that allows a subscriber to control the delivery of his or her name to the set of the called party.

Calling Number and Name Delivery (CNND)

CNND enables a subscriber to deliver both number and name information to the called party set regardless of the permanent number and name suppression status of the subscriber line. CNND is available to subscribers who have the CNAB line or customer group option.

Calling Number Delivery (CND)

The custom local area signaling services (CLASS) feature that delivers the ten-digit (NPA-NXX-XXXX) directory number of a calling party and the date and time of the call to a subscriber's set.

Calling Number Delivery Blocking (CNDB)

The custom local area signaling services (CLASS) feature that allows a subscriber to control the delivery of his or her directory number to the set of the called party.

Call Pickup (CPU)

CPU is a service-related telephony feature that permits a station to answer incoming calls to another station in the same pickup group.

Call Transfer (CXR)

CXR is a service-related telephony feature that permits the called subscriber to instruct the switching equipment or operator to transfer an incoming call to another station.

Call Waiting (CWT)

A service-related telephony feature that allows a subscriber already in the talking state to be alerted—by means of an audible tone—that another call to his or her station is being attempted.

CC

central control

CCS7

common channel signaling 7

CCS7 link interface unit 7 (LIU7)

The LIU7 is a peripheral module that processes messages entering and leaving a link peripheral processor through an individual signaling data link. Each LIU7 consists of a set of cards and a paddleboard that is provisioned in one of the link interface shelves of the link peripheral processor.

central control (CC)

Comprises the data processing functions of the DMS-100 Family, with associated data store and program store.

central office (CO)

A switching office arranged for terminating subscriber lines and provided with switching equipment and trunks for establishing connections to and from other switching offices.

central side (C-side)

The side of a node facing the central control.

CFRA

call forwarding remote access

change feature (CHF)

This command allows the subscriber to change the billing option and status of a screening list editing (SLE) feature.

Change list (CHL)

This command allows the subscriber to change the billing option and status of a screening list editing (SLE) feature, and to change the screening list associated with an SLE feature. The command provides the capability of adding up to 20 DNs at a time to a SLE screening list, deleting up to 20 DNs at a time, and replacing up to 10 DNs at a time.

CHF

change feature

CHL

change list

CI

command interpreter

CLASS

custom local area signaling services

CLASS Message Waiting Indicator (CMWI)

This feature builds on the Message Waiting (MWT) feature. The MWT feature allows a subscriber to have several messages stored against his or her station in the DMS switch or at a message center. When a message is queued against the subscriber's station, the message waiting indicator is activated.

CLASS Modem Resource (CMR) card

The hardware component required to provide calling party identification display and Bulk Calling Line Identification (BCLID) transmissions.

CLOG

call logging query

CMR

CLASS modem resource card

CMWI

CLASS message waiting indicator

CNAB

calling name delivery blocking

CNAMD

calling name delivery

CND

calling number delivery

CNDB

calling number delivery blocking

CNNB

calling name and number blocking

CNND

calling name and number delivery

command interpreter (CI)

A support operating system component that functions as the main interface between machine and user. Its principal roles are

- to read lines entered by a terminal user
- to break each line into recognizable units
- to analyze the units
- to recognize command item-numbers on the input lines
- to implement these commands

common channel signaling 7 (CCS7)

A digital, message-based, network signaling CCITT standard. It separates call signaling information from voice channels so that interoffice signaling is exchanged over a separate signaling link.

CO

central office

CODEC

coder-decoder

coder-decoder (CODEC)

An assembly consisting of an encoder and a decoder in the same equipment. It converts analog input to digital and digital input to analog.

COT

customer originated trace

CPE

customer premises equipment

CPU

call pickup

C-side

central side

Custom Local Area Signaling Services (CLASS)

Services combining the results of processing carried out at the central office serving the call originator and processing carried out at the central office service the call destination. Features include call screening and calling party identification.

customer originated trace (COT)

The custom local area signaling services (CLASS) service that enables a subscriber to dial a feature code to generate a trace report for the last incoming call. The report, which is printed in the central office, is intended to support a customer complaint about a malicious call.

customer premises equipment (CPE)

Equipment located on the customer or subscriber premises, such as a display telephone, or Analog Display Services Interface (ADSI) set.

CWT

call waiting

CXR

call transfer

Data link

A full-duplex data set used to connect the message desk terminal devices to the DMS-100 switch. It is used to transmit messages between the message desk and the DMS-100 switch.

Data terminal equipment (DTE)

The functional unit of a data station that serves as a data source or a data sink and provides for the data communication control function to be performed in accordance with link protocol.

DDN

dialable directory number

DGT

digitone

dialable directory number (DDN)

The screening list editing (CLASS) feature that delivers the directory number of the calling party in a dialable format (the digits the subscriber needs to dial the calling party, instead of the ten-digit format) and the date and time of the incoming call to a calling number delivery (CND) subscriber set.

Digital Multiplex System (DMS)

A central office switching system in which all external signals are converted to digital data and stored in assigned time slots. Switching is performed by reassigning the original time slots.

digital recorded announcement (DRA)

A DRA is a set of one or more phrases routed to a subscriber as a recorded announcement. The DRA is stored on a card located in the digital recorded announcement machine (DRAM) and is initiated by the system software.

digital recorded announcement machine (DRAM)

A peripheral module (PM) developed for DMS switch, in which voice messages are stored in digital form, providing access to up to 30 different service voice announcements.

digital signal 0 (DS-0)

A protocol for data transmission that is used to represent one channel in a 24-channel DS-1 trunk. This term may also appear as DS0.

digital signal 1 (DS-1)

The 8-bit, 24-channel, 1.544 Mb/s digital signaling format as used in the DMS-100 Family. The DS-1 is the North American standard for digital trunks. It is a closely specified bipolar pulse stream with a bit rate of 1.544

Mb/s. It is the standard signal used to interconnect Northern Telecom digital systems. The DS-1 signal carries 24 information channels of 64 Kbit/s each.

digital trunk controller (DTC)

A peripheral module (PM) that connects DS30 links from the network with digital trunk circuits.

digitone (DGT)

The DGT feature allows the telephone set to generate an address in the form of dual-tone multifrequency signals.

directory number (DN)

The full complement of digits required to designate a subscriber station within one numbering plan area (NPA)—usually a three-digit central office code followed by a four-digit station number.

Distinctive Ringing/Call Waiting (DRCW)

This feature allows certain terminating calls to be identified by a distinctive pattern of alerting: a distinctive ring (long, short, long) or, if busy, a distinctive call waiting tone (short, long, short). The caller receives standard audible ringback tone.

DMS

Digital Multiplex System

DN

directory number

DRA

digital recorded announcement

DRAM

digital recorded announcement machine

DRCW

distinctive ringing/call waiting

DS-0

digital signal 0

DS-1

digital signal 1

DS30

- A 10-bit, 32-channel, 2.048 Mb/s speech-signaling and message-signaling link as used in the DMS-100 Family.
- The protocol by which DS30 links communicate.

DTC

digital trunk controller

DTE

data terminal equipment

feature group (FTRGRP)

The operating company, through datafill, can define a number of line options and group them together in a feature group, and the line assigned the FTRGRP option would have all of the options defined in the feature group. This saves the operating company from having to define each option individually for each line. With the FTRGRP option, the operating company can add all these options to a line through one service order entry.

FTRGRP

feature group

GIC

group intercom

Group Intercom (GIC)

The Group Intercom feature allows members of a given GIC group to call other group members by dialing their intercom member number. This number is shorter than a normal directory number. Intercom groups can be configured in four different sizes, and the length of the number dialed to reach another group will depend on the size of the group.

Host office

In DMS switching, a central office equipped to control peripheral modules at remote sites.

IBN

Integrated Business Network

IDL

idle

Idle (IDL)

A line state in which call processing can take place.

In service (InSv)

Refers to the state of switching equipment when it is performing normal call processing functions (that is, providing subscriber service).

InSv

in service

inward wide area telephone service (INWATS)

A telephone service that allows a subscriber to receive long-distance telephone calls originating within specified service areas without a charge to the originating party. A 1-800 number is assigned to a certain private branch exchange to allow for free calls. *See also* outward wide area telephone service and wide area telephone service.

INWATS

inward wide area telephone service

Integrated Business Network (IBN)

Now known as Meridian Digital Centrex (MDC). A special DMS business services package that utilizes the data-handling capabilities of a DMS-100 Family office to provide a centralized telephone exchange service. Many other features are also available.

LATA

local access and transport area

LCC

line class code

LCM

line concentrating module

LEN

line equipment number

LGC

line group controller

LIM

link interface module

line class code (LCC)

An alphanumeric code that identifies the class of service assigned to a line.

line concentrating module (LCM)

A peripheral module that interfaces the line trunk controller or line group controller and up to 640 subscriber lines, using two to six DS30A links.

line equipment number (LEN)

A seven-digit function reference used to identify line circuits.

line group controller (LGC)

A peripheral module that interfaces DS30 links from the network to line concentrating modules.

line test position (LTP)

A maintenance and administration position that has been specially equipped for performing line tests.

line trunk controller (LTC)

A peripheral module that is a combination of the line group controller and the digital trunk controller, and provides all of the services offered by both.

link

- In DMS switching, a connection between any two nodes.
- A four-wire group of conductors providing transmit and receive paths for the serial speech or message data between components of DMS-100 Family systems. Speech links connect peripheral modules to the network modules. Message links connect network message controllers or input/output controllers to the central message controller.

link interface module (LIM)

The LIM is a peripheral module that controls messaging between link interface units (LIU) in a link peripheral processor (LPP). The LIM also controls messages between the LPP and the DMS-Bus. An LIM consists of two local message switches and two frame transport buses. This ensures LIM reliability in the event of a local message switch failure because each local message switch has adequate capacity to carry the full message load of an LPP. Each local message switch uses a dedicated frame transport bus to communicate with the LIUs in the LPP.

link peripheral processor (LPP)

The LPP is an equipment frame that contains two types of peripheral modules: a link interface module (LIM) and a series of CCS7 link interface units (LIU7). The LIM, which consists of two local message switches (LMS) and two frame transport buses, 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 the LPP through individual an signaling data link.

LIU7

common channel signaling 7 (CCS7) link interface unit 7

LOADPM

load peripheral module

load peripheral module (LOADPM)

This command at the PM level allows loading a specific unit of a posted peripheral module, loading both peripheral module units simultaneously, loading the CMR card on a specified unit, or loading the CMR card on both peripheral module units.

local access and transport area (LATA)

A geographical area, called an exchange or exchange area in the Modified Final Judgement (MFJ), where an operating company offers telecommunication services. LATA is used in the United States only.

log system

Used by the DMS software to record (log) the occurrence of all significant events (for example, equipment failure), and then report the events to the operating company.

LPP

link peripheral processor

LTC

line trunk controller

LTP

line test position

maintenance and administration position (MAP)

A group of components that provide a interface between operating company personnel and the DMS-100 Family systems. A MAP terminal consists of a visual display unit and keyboard, a voice communications module, test facilities, and MAP furniture. MAP is a trademark of Northern Telecom.

maintenance trunk module (MTM)

A peripheral module, located in a trunk module equipment frame, that is equipped with test and service circuit cards. The MTM contains special buses to accommodate test cards for maintenance purposes. It provides an interface between the DMS-100 Family digital network and digital or analog test and service circuits.

make RES line class code (MAKERES)

A command used by the operating company to convert POTS lines to RES lines, allocate the necessary memory, and assign incoming and outgoing call memory to each RES line. MAKERES is available only when the Universal Access to CLASS Feature package is present in the office.

MAKERES command

make RES line class code

ManB

manual busy

manual busy (ManB, MB)

The intentional removal of a circuit from service either by operation of a panel control or by a command entered through the keyboard of a visual display unit.

MAP

maintenance and administration position

master processor (MP)

In a DMS switching, the processor containing the instruction set that implements the tasks assigned by the central control software. The MP carries out all high-level tasks.

master processor memory (card)

A circuit pack that contains memory for the master processor card.

MDC

Meridian Digital Centrex

Meridian Digital Centrex (MDC)

A special DMS business services package that utilizes the data-handling capabilities of DMS-100 Family offices. It provides a centralized telephone exchange service, formerly known as Integrated Business Network (IBN).

Message switch and buffer 7 (MSB7)

The MSB7 is a peripheral module used by the DMS-100 Family, along with a signaling terminal, to operate within a common channel signaling environment. The MSB7 is configured for the common channel signaling 7 (CCS7) protocol.

message waiting (MWT)

The MWT feature allows the subscriber to receive notification of waiting messages. When MWT is activated, the subscriber's directory number (DN)

is forwarded to a message desk. When a message is queued against the line, the message waiting notification occurs.

MP

master processor

MSB7

message switch and buffer 7

MTM

maintenance trunk module

multiline variety package (MVP)

An MVP group consists of a set of business lines configured to use a public network dial plan (seven- or ten-digit plain old telephone service [POTS] dialing) and a subset of Meridian Digital Centrex (MDC) features.

MVP

multiline variety package

MWT

message waiting

OM

operational measurements

one-party flat rate (1FR)

A line whose line class code (LCC) is 1FR when RES_AS_POTS is FALSE or a line not having RES-specific options when RES_AS_POTS is TRUE. For a fixed monthly charge, a subscriber may complete an unlimited number of calls from this line within the flat rate area.

one-party message rate (1MR)

A line whose line class code (LCC) is 1MR when RES_AS_POTS is FALSE or a line not having RES-specific options when RES_AS_POTS is TRUE. For a fixed monthly rate, a subscriber is allocated a fixed number of message units to complete calls from this line to a specified group of destinations.

operating company

The owner and operator of a DMS switch.

operational measurements (OM)

The hardware and software resources of the DMS-100 Family systems that control the collection and display of measurements taken on an operating system. OMs organize the measurement data and manage its transfer to displays and records on which maintenance, traffic, accounting, and provisioning decisions are based.

OOS

out of service

out of service (OOS)

An equipment state in which equipment is removed from service either automatically by the system or manually by the craftsperson.

outward wide area telephone service (OUTWATS)

A telephony service, provided over one or more dedicated access lines to the serving central office, that permits subscribers to make calls to specified service areas on a direct-dialing basis for a flat monthly charge or for a charge based on accumulated usage. OUTWATS lines have special directory numbers. *See also* inward wide area telephone service and wide area telephone service.

OUTWATS

outward wide area telephone service

overflow

Traffic in excess of the capacity of the circuits on a particular route that is offered to an alternative route.

peg count

The number of times an event occurs. For example, the number of telephone calls originated during a specified period of time.

peripheral module (PM)

A generic term referring to all hardware modules of the DMS-100 Family systems that provide interfaces with external line, trunk, or service facilities. PM contain peripheral processors which perform local routines, thus relieving the load on the central processing unit.

peripheral side (P-side)

The side of a node facing away from the central control and towards the peripheral modules.

personal identification number (PIN)

The PIN is used along with an access code to activate a feature, such as Subscriber Activated Call Blocking (SACB). The PIN provides security for the subscriber from unauthorized use of a feature.

PIN

personal identification number

plain old telephone service (POTS)

POTS is an acronym used in the telephone industry to denote basic, conventional telephone services.

PM

peripheral module

port

The point at which a speech or message link is connected to a hardware module, peripheral module, network module, input/output controller, or central message controller. Each port on the foregoing components connects a two-way (four-wire) link, carrying 32-channel serial data. The exception is the DS-1 line on the P-side of the peripheral module, which has 24 channels.

POTS

plain old telephone service

P-side

peripheral side

QBCLID

Query Bulk Calling Line Identification

QCM

query call memory

QDN

query directory number

QLEN

query line equipment number

QPM

query peripheral module

QSL

query screening list editing (SLE) lists

Query Bulk Calling Line Identification (QBCLID)

The QBCLID command displays every line in the office that belongs to a Bulk Calling Line Identification (BCLID) group.

query call memory (QCM)

The QCM command displays the status of lines with custom local area signaling services (CLASS) features assigned that require incoming or outgoing call memory.

query directory number (QDN)

A command that allows the craftsperson to associate a directory number with a line equipment number and obtain additional information about a subscriber line.

query line equipment number (QLEN)

A command that allows the craftsperson to associate a line equipment number with a directory number and obtain additional information about a subscriber line.

query peripheral module (QPM)

A command that displays information about the peripheral module load and hardware. The Counters option displays unsolicited message limit and current count per unit, the random access memory, read-only memory and CLASS modem resource card (CMR) loads, and the master processor and signaling processor version of the Master or Signaling Processor card (NT6X45). The number of downloaded softkey definers is also displayed.

query SLE lists (QSL)

A command that provides detailed lists for each screening list editing (SLE) feature on a specified line. The line can be specified by either directory number or line equipment number. One or all features can be specified. When parameter ALL is selected, information is given in FULL format; when one feature is specified, the subscriber can select FULL or HEX format.

RAM

random access memory

random access memory (RAM)

A memory system in which information is stored in discrete, individually addressable locations such that access time is independent of location.

RCC

remote cluster controller

RCHD

Residential Call Hold

RCU

Remote carrier urban

remote carrier urban (RCU)

A peripheral module that provides remote subscriber loop concentration for a DMS-1 urban carrier system. The RCU uses high-level message protocol to communicate over one or two message channels and, in configuration with a digital switch, supports up to 560 subscriber lines over a maximum of eight DS-1 links.

remote cluster controller (RCC)

The RCC is a dual-shelf peripheral module that provides a master controller for all units at the remote switching center and is, in turn, controlled by the host line trunk controller.

remote maintenance module (RMM)

A peripheral module, with a configuration similar to that of the maintenance trunk module, that accommodates up to 12 service and test cards.

requested suspension (RSUS)

This feature is assigned to a line when a customer has requested suspension of service. Any attempts to originate or terminate calls to that line are routed to treatment.

RES

Residential Enhanced Services

Residential Call Hold (RCHD)

The RCHD feature allows a subscriber to place a call on hold for up to three minutes. The call can be one that the subscriber originated or one that the subscriber received.

Residential Enhanced Services (RES)

Software that provides sophisticated phone services to residential subscribers and small businesses previously serviced on a plain old telephone service (POTS) (1FR or 1MR) line.

return to service (RTS)

A maintenance and administration position (MAP) command that restores

- communications among or between the components of the remote switching center or remote switching center with integrated services digital network (ISDN)
- communications between the remote switching center or remote switching center with ISDN and the the host
- subscriber service

reverse translation verification (REVXLVER)

REVXLVER is a datafill verification utility that simulates reverse translation from a specified origination to a specified destination. REVXLVER examines and displays translation data for reverse translation call processing. It can also display the reverse translation number result.

REVXLVER

reverse translation verification

REX

routine exercise (tests)

Routine exercise (REX) tests

Automatic tests performed at regular intervals on DMS equipment by internal software.

RMM

remote maintenance module

RSUS

requested suspension

RTS

return to service

SACB

subscriber activated call blocking

SC1

Speed Calling Short List

SC2

Speed Calling Long List (L30)

SC3

Speed Calling Long List (L50)

SCA

selective call acceptance

SCCP

signaling connection control part

SCF

selective call forwarding

screening list editing (SLE)

The SLE feature is provided by the feature package screening list editing. SLE provides call screening lists. The subscriber selects actions to be performed by entering one- or two-digit command sequences. Screening lists are comprised of validated directory numbers.

SCRJ

selective call rejection

selective call acceptance (SCA)

Allows a subscriber to selectively accept calls arriving from a limited set of previously identified directory numbers.

selective call forwarding (SCF)

An incoming call management feature that allows subscribers to define a special list of telephone numbers and remote destination numbers. Calls that terminate on a line with this feature are forwarded only if the originating station directory number matches one of the defined numbers.

selective call rejection (SCRJ)

This feature allows a subscriber to reject selected calls arriving from a limited set of previously identified directory numbers.

service position (SP)

A type of trunk circuit that can interface with a traffic service position.

signaling connection control part (SCCP)

A level of common channel signaling 7 (CCS7) layered protocol. It supports advanced services such as E800 and service switching point (SSP) and the Automatic Calling Card Service feature. The main functions of the SCCP include the transfer of signaling units with or without the use of a logical signaling connection and the provisioning of flexible global title translations for different applications.

signaling terminal 7 (ST7)

A dual processor device with an 8085-based master processor (MP) and an 8031-based data link processor resident in a single card in the message switch and buffer 7 (MBS7) frame. In common channel signaling 7 (CCS7), ST7 is the same as a signaling terminal controller.

Signaling transfer point (STP)

A node in a common channel signaling 7 (CCS7) network that routes messages between nodes. STPs transfer messages between incoming and outgoing signaling links but, with the exception of network management information, do not originate or terminate messages. STPs are deployed in

pairs. If one STP fails, the mate takes over, ensuring that service continues without interruption.

simplified message desk interface (SMDI)

An interface feature that enables a DMS-100 switch to communicate with a message desk. It provides the directory number of the called station, the calling station number (if available), and the reason for the call being forwarded to a message desk. In addition, it provides the message desk with the ability to activate or deactivate the message waiting indication for any station able to forward calls to the desk.

SLE

screening list editing

SMS

Subscriber Carrier Module-100S

SMU

Subscriber Carrier Module-100 Urban

SP

service position

Speed Calling Long List (L30) (SC2)

The SC2 feature allows subscribers to program up to 30 frequently called numbers. The abbreviated dialing codes available for SC2 range from 20 to 49.

Speed Calling Long List (L50) (SC3)

The SC3 feature allows subscribers to program up to 50 frequently called numbers. The abbreviated dialing codes available for SC3 range from 20 to 69.

Speed Calling Short List (SC1)

The SC1 feature allows subscribers to program up to eight frequently called numbers. The abbreviated dialing codes available for SC1 range from 2 to 9.

ST7

signaling terminal 7

STP

signaling transfer point

subscriber activated call blocking (SACB)

Subscriber Activated Call Blocking enables the subscriber to block certain call classes, such as toll calls, 900+ calls, 976+ calls, and 611 maintenance calls, from originating on the subscriber line.

Subscriber Carrier Module-100S (SMS)

A subscriber carrier module that provides an interface between the remote concentrator SLC-96 of an SLC-96 system and the central office of a DMS-100 Family switch.

Subscriber Carrier Module-100 Urban (SMU)

A subscriber carrier module provides an interfaces between the remote concentrator urban of a DMS-1 and the central office of a DMS-100 Family switch.

subscription usage sensitive pricing (SUSP)

By request from the subscriber, SUSP is a method of charging for local calls based on the duration of the call. One example of usage sensitive pricing is local measured service.

SUS

suspended service

SUSP

subscription usage sensitive pricing

suspended service (SUS)

The SUS feature allows no calls to originate or terminate from a line.

SWACT

switch of activity

switch of activity (SWACT)

Fault tolerant systems in a DMS switch consist of two identical devices devoted to the same function. One is active while the other remains inactive. A SWACT switches the roles of the two devices.

TCAP

transaction capability application part

test (TST)

A command used to initiate diagnostics on an Subscriber Carrier Module-100 Urban (SMU), remote carrier urban (RCU), or DS-1 link.

test ADSI set (TESTAME)

The TESTAME command at the command interpreter (CI) level of the MAP terminal provides data and drives the procedure that downloads information to the subscriber Analog Display Services Interface (ADSI) set. The command is used in the absence of actual service features for ADSI transmission and customer premises equipment display testing.

TESTAME

test ADSI set

three-way calling (3WC)

A service-related telephony feature that permits a subscriber in the talking state to add a third party to the call without operator assistance.

TM

trunk module

transaction capability application part (TCAP)

TCAP is a proprietary Northern Telecom layer of the protocol developed for custom channel signaling 7 (CCS7). TCAP provides the ability for the service switching point to communicate with a service control point. TCAP is used by the integrated services digital network (ISDN) network layer facility message to transport service information for transaction signaling, not associated with an active call over primary rate interface card links.

translation verification (TRAVER)

The TRAVER command simulates a call and displays the translation and routing tables accessed by the call.

TRAVER

translation verification

TRBL

trouble

trouble

An equipment state that indicates a fault is present and needs to be cleared for the equipment to work properly.

trunk module (TM)

A peripheral module, in a trunk module equipment frame, that provides speech and signaling interfaces between a DS30 network port and analog trunks.

TST

test

universal tone receiver (UTR)

The UTR is a 32-channel tone receiver located in the peripheral module. Thirty channels detect a variety of tones including dual-tone multifrequency for lines and multifrequency for trunks.

UTR

universal tone receiver

user interface

The series of commands and responses that are used by operating company personnel to communicate with the DMS-100 Family machines. The MAP terminal is the medium for communicating with the DMS.

Wake-Up Call Reminder (WUCR)

The WUCR feature allows the subscriber to program his or her telephone to ring at a specified time. The feature is activated and deactivated by dialing access codes.

WATS

wide area telephone service

wide area telephone service (WATS)

A special direct distance dialing service that, for a flat monthly charge or a charge based on accumulated usage, permits either inward or outward dialing between a subscriber and specified areas. *See also* inward wide area telephone service (INWATS) and outward wide area telephone service (OUTWATS).

WUCR

Wake-Up Call Reminder

DMS-100 Family

Subscriber Services

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