297-5151-020

DMS-100 Family

Common Channel Signaling 7

Services Guide

BCS35 and up Standard 01.01 March 1993

northern telecom

DMS-100 Family

Common Channel Signaling 7

Services Guide

Publication number: 297-5151-020
Product release: BCS35 and up
Document release: Standard 01.01
Date: March 1993

Publication history

March 1993

BCS35 Standard 01.01 first release of this document

Contents

List of figures

About this document

This document contains all the service-specific information needed to set up, administrate, and maintain 800 Service. It is intended to be used by personnel responsible for maintaining and administrating 800 Service, and by personnel responsible for planning, engineering, and datafilling 800 Service.

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 applies to DMS SuperNode offices that have BCS35. Unless the document is revised, it also applies to offices that have software releases greater than BCS35.

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.

Specific packages

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

All packages

You can identify your current BCS level and print a list of all 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;LEAVE
and pressing the Enter key.

Finally, redirect the display back to the terminal by typing:

>SEND PREVIOUS
and pressing the Enter key.

How CCS7 services documentation is organised

This document is part of a suite of documentation that supports CCS7 services on the Northern Telecom line of DMS-100 SuperNode switches. This documentation suite is part 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 CCS7 services, you need documents from the following layers:

- *DMS-100 Family* basic documents in the 297-1001 layer
- *CCS7* documents in the 297-5151, 297-5101, 297-5121, and 297-5131 layers

References in this document

The following DMS SuperNode documents are referred to in this document:

Number	Title
297-0201-019	*Service Priority Classification Description*
297-1001-001	*Guide to Northern Telecom Publications*
297-1001-129	*Input/Output System Reference Manual*
297-1001-300	*Basic Administration Procedures*
297-1001-451	*Common Customer Data Schema*
297-1001-455	*Office Parameters Reference Manual*
297-1001-509	*Command Reference Manual*
297-1001-814	*Operational Measurements Reference Manual*
297-1001-840	*Log Report Reference Manual*
297-5101-101	*DMS SuperNode Signaling Transfer Point Planning and Engineering Guide*
297-5121-101	*DMS SuperNode Signaling Point/Service Switching Point Planning and Engineering Guide*
297-5131-101	*DMS SuperNode Service Control Point II Planning and Engineering Guide*
297-5151-010	*DMS SuperNode Common Channel Signaling 7 Product Guide*
297-5151-350	*DMS SuperNode Common Channel Signaling 7 Translations Guide*

Understanding CCS7 services

Common channel signaling system 7 (CCS7) services use the CCS7 connectivity in your switching network to provide value-added telecomunications capabilities to your subscribers. The revenue generating portion of CCS7 services is called 800 Service. 800 Service is discussed in subsequent sections of this chapter as follows:

800 Service on page 1-2 describes the functions and features of 800 Service.

Service profile on page 1-8 describes the parameters that make up a subscriber's service profile.

Software requirements on page 1-10 outlines the software packages used to provide 800 Service.

Software dependencies on page 1-12 outlines the software packages required to support 800 Service.

800 Service

800 Service uses service switching points (SSP) and a service control point (SCP) in your CCS7 network to provide toll-reversed calling, in which the called party pays long distance charges. Businesses and other organisations subscribing to 800 Service can provide customers and callers with convenient, cost-free access to telephone services.

Operation

CCS7 lets the telephone switches in your network exchange the information required to set up calls, take down calls, and perform administrative functions. This information is exchanged on dedicated signaling links between switches.

When a caller dials an 800 number, the SSP originating the call sends a CCS7 message to the SCP requesting routing information. The SCP retrieves routing information for the 800 number from its database and sends a message back to the originating SSP. The returned message contains the 800 number terminating directory number (DN). The SSP routes the call to that terminating DN through normal call processing.

The 800 Service subscriber specifies a service area for an 800 number by selecting one of six available zones. Each progressively higher-numbered zone covers a greater geographical area. For example, zone 1 includes only the numbering plan area (NPA) in which the 800 line is located; zone 6 includes all of Canada.

Features

The following are features provided by 800 Service:

- Basic 800
- 800 Entry
- SuperCom 800
- SingleNumber
- Area Code Route
- Call Allocator
- FlexRoute
- ZonePlus
- Exchange Route
- International 800
- 800 Service - U.S.
- Enhanced Southbound
- MultiCarrier 800
- MultiCarrier Default Routing

- Emergency Route
- Call Prompter
- Courtesy Response
- Enhanced Courtesy Response
- Dialed Number Identifier
- 800 Caller Identifier
- Call Forward
- Overflow Route

Basic 800

A Basic 800 service subscriber has a single terminating line that can receive toll-reversed calls from an area defined by zone.

800 Entry

An 800 Entry subscriber has a regular business or residential telephone at which a low volume of 800 Service calls terminate. That telephone is still available for regular incoming and outgoing calls.

SuperCom 800

A SuperCom 800 subscriber receives discounts on large volumes of incoming 800 Service calls. Discounts result from the use of dedicated facilities, such as T1 lines, between the SSP and the customer premises.

SingleNumber

A SingleNumber subscriber has more than one terminating line for an 800 number.

Area Code Route

An Area Code Route subscriber has SingleNumber terminating lines that receive calls based on originating NPAs. The routing of a dialed 800 number to a terminating number is determined by the location (NPA) of the caller. No two terminating lines can share the same NPA.

Call Allocator

A Call Allocator subscriber specifies how calls are divided up between terminating DNs for a particular 800 number. The subscriber can specify the percentage of total call volume to be routed to each DN. The list can have as few as 2 or as many as 100 terminating DNs.

FlexRoute

A FlexRoute subscriber has 800 Service terminating lines that change depending on the time of day, day of the week, and holidays. The subscriber can group time criteria together to create a flexible call routing plan.

Calls in progress are not affected by routing changes.

ZonePlus

A ZonePlus subscriber can accept calls from outside the subscribed area. Calls from outside the subscribed area can be routed to a specific terminating line, or to an 800 Service feature treatment such as FlexRoute alternate treatment. You can provide special billing for these out-of-zone calls.

Exchange Route

An Exchange Route subscriber can use coverage areas that are more precisely defined than the coverage areas available with Basic 800 service. Each coverage area is routed to its own terminating number.

The NPA-NXX of the caller's telephone number must be present in the 800 query. If only the NPA is available, then Exchange Route routing does not take place. The subscriber defines the treatment that occurs when only the NPA is available. For example, the call may be routed to a certain terminating number, service may be denied, or the caller may hear an announcement.

Exchange Route coverage areas cannot span NPAs. This means that all of the NPA-NXXs that define a coverage area must be within the same NPA.

International 800

The International 800 feature allows 800 calls dialed in North America to terminate on Freephone-type access lines in countries outside North America. This feature lets you specify the carrier to be used for these calls.

800 Service - U.S.

The 800 Service - U.S. feature lets 800 calls originating from the continental U.S. (including Hawaii and Alaska) terminate on a subscriber's 800 access line in Canada.

The Canadian gateway SSP acts like the originating SSP and queries the SCP. The SCP responds to the SSP the same way it would if the call were a domestic 800 call.

Enhanced Southbound

An Enhanced Southbound subscriber can specify an 800 number as a terminating number. The advantages of this are as follows:

- Subscribers can use FlexPlus to route calls to a domestic plain ordinary telephone service (POTS) line during certain hours, and to a U.S. destination during other hours.
- Subscribers can choose to route some 800 calls to U.S. number destinations.

MultiCarrier 800

MultiCarrier 800 Service allows an 800 call to be routed to a different carrier. The call can be routed with the same dialed 800 number, or with a different 800 number.

MultiCarrier Default Routing

If a dialed 800 number is not found in the 800 number database, 800 Service verifies whether the number belongs to a different carrier. The NXX of the dialed 800 number is matched against a list of 800 number NXXs belonging to other carriers. If another carrier owns the dialed 800 number, the call is routed to that carrier.

The originating SSP receives from the SCP an 800 number with the "800" replaced by the following:

- a Special Routing code (SRC), when the SSP is a gateway SSP, with access to the specified carrier
- an 00Y code, when the originating SSP is in the same NPA as the nearest gateway SSP with access to the specified carrier

The SSP also receives the carrier ID of the carrier to which the call is routed.

Emergency Route

An Emergency Route subscriber can specify alternate terminating numbers that can be activated at any time in case a normal terminating number becomes unavailable.

Call Prompter

The Call Prompter feature lets 800 number callers select specific answering locations using interactive prompts. Callers respond to prompts using the touchtone buttons on their telephone.

Courtesy Response

A Courtesy Response subscriber can play a voice announcement to 800 number callers.

Enhanced Courtesy Response

An Enhanced Courtesy Response subscriber can play a voice announcement to 800 number callers and can also receive voice messages from callers.

Dialed Number Identifier

A Dialed Number Identifier (DNID) subscriber can display the 800 number the caller dialed on the receiving telephone set.

800 Caller Identifier

An 800 Caller Identifier (CND) subscriber can display the caller's telephone number on the receiving telephone set.

Call Forward

The Call Forward feature allows call forwarding to an 800 number. The originator pays toll charges resulting from the leg of the call from the originating point to the call-forwarding point. The 800 Service subscriber pays only those toll charges resulting from the leg of the call from the call-forwarding point to the 800 number destination.

Overflow Route

An Overflow Route (OCR) subscriber can specify alternate terminating DNs for an 800 number. Calls can be diverted to alternate DNs when the 800 number's primary terminating DN is busy.

This feature increases the completion rate for 800 service calls, providing the subscriber with more effective service.

Each terminating line for an OCR-equipped 800 number can use 800 Entry service.

Operation of overflow route

When an 800 number is dialed, the originating SSP sends a query to the SCP to obtain a terminating DN for the called number. With OCR, more than one terminating DN may be returned from the SCP. The SSP tries each DN in the list until it finds one that is idle.

Translation and routing of these numbers is not affected by OCR.

OCR impacts the following:

- call failure
- INWATS calls
- TOPS calls

Call failure

If the SCP returns a standard or special announcement component (that is, if a call fails), the call will be routed to a treatment based on the returned treatment code. If the response from the SCP has invalid data or if the message is indecipherable, the call will receive CCS7 Application Failure treatment.

Inward wide-area telephone service

If the routing number is returned from the SCP in the form of an 800 number, or labelled with the Special Routing Indicator transition number, the call is retranslated using the inward wide-area telephone service (INWATS) tables and OCR no longer applies. For this reason, an INWATS number should be included only as the last item in the OCR routing list.

> ***Note:*** If during OCR call processing the call is routed to an INWATS number, 800 billing records are not produced for the call.

Traffic Operator Position System

OCR can apply to traffic operator position system (TOPS) calls, but OCR timers are not applied to TOPS calls. TOPS call processing selectively determines the integrated services digital network (ISDN) user part (ISUP) trunk availability in the identified routing lists.

Overflow Route limitations

OCR has the following limitations:

- ISUP connectivity
- CCS7 connectivity
- termination to treatment during routing
- attendant consoles
- preset conference feature
- private branch exchange (PBX) trunks
- hunt groups and automatic call distribution (ACD) groups
- International 800 terminating lines
- billing
- post-dial delay time

ISUP connectivity

OCR requires ISUP connectivity between the originating SSP and the terminating SSP or end office (EO).

CCS7 connectivity

If full end-to-end CCS7 connectivity is unavailable between the originating SSP and the terminating central office (CO), or if the terminating CO does not support the return of an ISUP Release with Cause message, the originating SSP cannot determine the success or failure of the call. In this case, the OCR feature times out. OCR call processing ceases to apply. The call will complete, but may complete to a treatment generated at the terminating CO.

Termination to treatment during routing

If an error in translation occurs during the processing of a route in an OCR routing list, then call processing continues using the next route in the list.

OCR call processing cannot detect a termination to treatment during the routing stage (for example, GNCT). If this occurs, the call receives treatment even though there may be additional routes in the OCR list.

Attendant consoles

OCR call processing terminates when a call is routed to an attendant console.

Preset conference feature

OCR is not performed on calls that invoke the preset conference feature.

PBX trunks

OCR call processing terminates if routing includes a PBX trunk.

Hunt groups and ACD groups

OCR call processing terminates when a call is routed to a hunt group or an ACD group local to the SSP at which OCR is occurring.

International 800 terminating lines

International terminating lines cannot be included on OCR lists.

Billing

If OCR call processing finds no idle terminating lines, the call is routed based on the last DN in the OCR route list. Since billing details are not recorded for unanswered calls, the fact that OCR is performed on unanswered calls is lost.

Options UNANS_TOLL or UNANS_LOCAL in table AMAOPTS on the SSP must be used if billing records are required for unanswered calls.

Post-dial delay time

The post-dial delay time may be increased by OCR on calls to 800 numbers with alternative terminating DNs. This delay could be significant.

Service profile

The service profile gives the 800 Service subscriber the ability to customize 800 Service functions to meet specific needs.

The service profile is created, modified, and deleted through the Service Management System (SMS). For more information on your SMS interface, refer to SMS documentation.

A service profile contains information that defines the service parameters described in table 1-1.

Table 1-1xxx
800 Service parameters

Feature	Parameters required
Basic 800	Terminating DN at which 800 calls are received Zone number defining the area from which calls can be received
800 Entry	Terminating DN at which 800 calls are received
SuperCom 800	Terminating DN at which 800 calls are received
Single Number	Terminating DN at which 800 calls are received
Area Code Route	Terminating DN at which 800 calls are received
Call Allocator	Percentages of call volume to be delivered to each terminating DN
FlexRoute	Routing changes, depending on the following: - weekday and time of day - statutory holidays - customer defined holidays - time zone and daylight savings time
ZonePlus	NPAs outside subscribed area from which calls are to be accepted
Exchange Route	Coverage areas for each terminating DN, specified as a list of originating NPA-NXXs
International 800	Terminating DN outside North America
800 Service - U.S.	Activate or deactivate
Enhanced Southbound	Alternate terminating 800 number
MultiCarrier 800	A carrier for routing 800 calls
Emergency Route	Alternate terminating DN to be used in case primary terminating DN becomes unavailable
Call Prompter	Activate or deactivate
Overflow Route	Alternate terminating DNs (up to four). (See the OCR limitations described earlier in this document)

Software requirements

The software feature packages that provide 800 Service are described here. These packages must be equipped on the SSPs and the SCP that are to carry and support 800 Service transactions.

On the SCP

800 Service query processing software resides on the SCP. The software packages required to support 800 Service are listed in table 1-2.

Table 1-2xxx
Software packages required by 800 Service

Package number	Package name
NTXQ36AB	800 Plus SCP Base Service Enhancement
NTXN24AA	DMS-SCP Basic 800 Services
NTX550AA	CCS7 Transaction Service Support

NTXQ36AB

The 800 Plus SCP Base Service Enhancement software package provides support on the SCP for Call Allocator, International 800, Enhanced Southbound, SuperCom 800, 800 Entry, Overflow Route, Exchange Route, and Emergency Route.

NTXN24AA

The DMS-SCP Basic 800 Services software package provides basic 800 Service functionality on the SCP, as well as support for FlexRoute, ZonePlus, and SingleNumber features.

NTX550AA

The CCS7 Transaction Service Support software package provides a set of procedures required to support 800 Service query transactions.

On the SSP

800 Service call routing software resides on the SSP. The software packages required to support 800 Service are listed in table 1-3.

Table 1-3xxx
Software packages required by 800 Service

Package name	Description
NTX550AA	CCS7 Transaction Service Support
NTX555AB	800 Plus
NTX169BA	800 Plus Southbound
NTXR35AA	800 Dialed Number Display and BCLID
NTXQ38AA	SSP 800 Calling and Dialed Number Delivery
NTXQ39AA	SSP 800 Billing Enhancements
NTXQ40AA	SSP 800 Overflow Call Routing
NTXQ41AA	NB / SB Enhancement
AR0535	800Plus End-Office Display for CMS Subscribers
AR0536	800Plus End-Office Display for ACD & Centrex Subscribers
AR0487	800+: Call Forwarding on ISUP

NTX550AA

The CCS7 Transaction Service Support software package provides a set of procedures required to support 800 Service query transactions.

NTX555AB

The 800 Plus software package provides support for 800 Service on the SSP. The SSP communicates with an operating company database using CCS7 by sending a CCS7 query to the SCP in which the database resides. An SSP may be either an access tandem (AT) or equal access end office (EAEO) in an equal access network.

NTX169BA

The 800 Plus Southbound software package provides support for MultiCarrier 800 service and MultiCarrier Default Routing.

NTXR35AA

The 800 Dialed Number Display and BCLID software package provides support for the Dialed Number Identifier feature by allowing the dialed number to be transported to the destination SSP using bulk calling line ID (BCLID).

NTXQ38AA

The SSP 800 Calling and Dialed Number Delivery software package delivers the originator's DN and the dialed 800 number to the terminating office for subscribers of 800 Service that have subscribed to either the 800 Caller Identifier or Dialed Number Identifier feature.

NTXQ39AA

The SSP 800 Billing Enhancements software package provides support for new billing records for 800 Service features, including Overflow Route, Emergency Route, Call Prompter, Courtesy Response, and 800 Entry.

NTXQ40AA

The SSP 800 Overflow Route software package provides an Overflow Route subscriber with a list of alternate terminating numbers to which calls can be diverted if the primary DN is busy.

NTXQ41AA

The NB / SB Enhancement software package provides ISUP interworking on 800 Service calls between Canada and the U.S., allowing correct processing of the calling party number.

AR0535

The 800Plus End-Office Display for CMS Subscribers software patch provides support for delivery of 800 Caller Identifier and Dialed Number Identifier information to call management services (CMS) terminating telephone sets.

AR0536

The 800Plus End-Office Display for ACD and Centrex Subscribers software patch provides support for delivery of 800 Caller Identifier and Dialed Number Identifier information to ACD and Centrex terminating telephone sets.

AR0487

The 800+: Call Forwarding on ISUP software patch supports the Call Forward feature by providing correct billing for calls forwarded to 800 numbers across ISUP trunks.

Software dependencies

The software packages required to support basic CCS7 functionality are described in the *DMS SuperNode Common Channel Signaling 7 Product Guide,* 297-5151-010.

On the SCP

800 Service query processing software resides on the SCP. The software packages required to support 800 Service are listed in table 1-4.

Table 1-4xxx
800 Service software dependencies

Package name	Software feature package title
NTX000AA	Bilge
NTX001AA	Common basic
NTXN21AA	DMS-SCPII base
NTX041AB or NTXR72AA	CCS7-MTP/SCCP CCS7 MTP/SCCP for LPP-based Platforms
NTX270AA	New Peripheral Maintenance Package

On the SSP

800 Service query generation and call processing occurs on the SSP. The software packages required to support 800 Service are listed in table 1-5.

Table 1-5xxx
800 Service software dependencies

Package name	Software feature package title
NTX000AA	Bilge
NTX001AA	Common basic
NTX041AB or NTXR72AA	CCS7-MTP/SCCP CCS7 MTP/SCCP for LPP-based Platforms
NTX100AA	Integrated Business Network - Basic (IBN)
NTX270AA	New Peripheral Maintenance Package
NTXA64AA	RES (Residential Enhanced Services) Base
NTXA82AA	Class Line Office Data
NTX940AA	CM bilge
NTX801AA or NTX901AA	Toll Features I Local Features I
NTX950AA	MS bilge
NTXF55AA	Class Bulk Calling Line Identification

Planning and engineering

This chapter provides information on 800 Service planning and engineering. Planning and engineering are discussed in subsequent sections of this chapter as follows:

Product functions on page 2-2 describes how 800 Service functions.

800 Service components on page 2-2 describes the various components that make up 800 Service and how they function.

Determining service requirements on page 2-10 provides information on the configuration and service requirements of 800 Service.

Billing considerations on page 2-11 provides information on 800 Service billing.

Product functions

800 Service is a service to which the called party subscribes. It provides called-party billing on toll calls. Businesses and other organisations using 800 Service can provide customers and callers with convenient, cost-free access to their telephone services.

When a caller dials an 800 number, the service switching point (SSP) used to originate the call sends a query to the service control point (SCP) requesting routing information for the call. The SCP looks up the 800 number in its database and sends routing information back to the originating SSP. The returned message contains the terminating directory number (DN) defined for the 800 number. The call is routed to that DN through normal call processing.

800 Service components

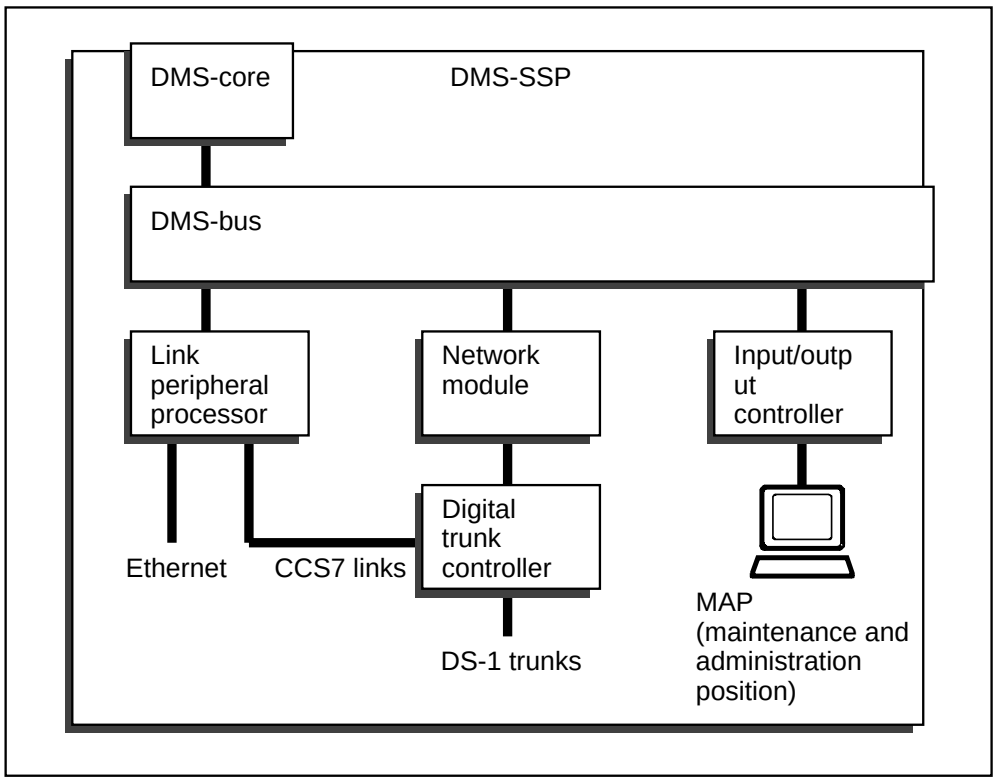
800 Service operates using software packages on SSPs involved in originating and receiving 800-type calls, and on the SCP that carries the service database.

Service switching point

The SSP, which uses the DMS SuperNode platform, provides tandem switching and routing functions using integrated services digital network (ISDN) user part (ISUP) digital trunks and Common Channel Signaling 7 (CCS7). Figure 2-1 shows the architecture of the SSP.

Figure 2-1 2-1xxx SSP architecture

FW-30670



Key components of the SSP architecture include the following:

- DMS-core
- DMS-bus
- network module
- link peripheral processor (LPP)
- digital trunk controller (DTC)

DMS-core

The DMS-core performs the call management and system control functions. Within the DMS-core, fully duplicated 32-bit Motorola MC68000-series microprocessors and cache memory assure high performance. The DMS-core can provide up to 240 megabytes of call and program store.

DMS-bus

The DMS-bus includes a microprocessor and supporting memory. A 32-bit Motorola MC68000-series microprocessor, supported by six megabytes of memory, manages the overall performance of the DMS-bus. The DMS-bus consists of one message switch (MS) configured in a modular, compact architecture that allows economical expansion from a minimum of two ports to a maximum of 1400 ports.

The DMS-bus is fully duplicated for high reliability.

Network module

The network module determines which messages coming from the DMS-core are switching network control messages and which are messages destined for the connected peripheral modules (PM). The network module acts on the switching network messages and forwards any PM control messages to the PMs.

Link peripheral processor

The LPP provides message link interfaces to CCS7 links and Ethernet local area networks (LAN). A single cabinet can contain up to 36 interface units. These are CCS7 link interface units (LIU7) that are used for termination of CCS7 signaling links, and Ethernet interface units (EIU) that are used for LAN connections.

Digital trunk controller

The DS-1 digital trunk controller (DTC) provides the functions needed to support digital carrier facilities using common channel signaling systems.

The DTC is a dual-shelf peripheral. The shelves operate in an active/standby mode. One shelf is active and provides the necessary processing and control functions. The mate shelf is in standby mode, able to take over call processing if a fault occurs on the active shelf.

The DTC communicates with the DMS-100 network using up to 20 DS-1 ports spread across up to 16 network modules. Communication with the network module is accomplished through four message channels (two for each controller shelf in the DTC) using the DMS-100 network's DS30 protocol.

SSP functions

The main functions provided by the SSP include the following:

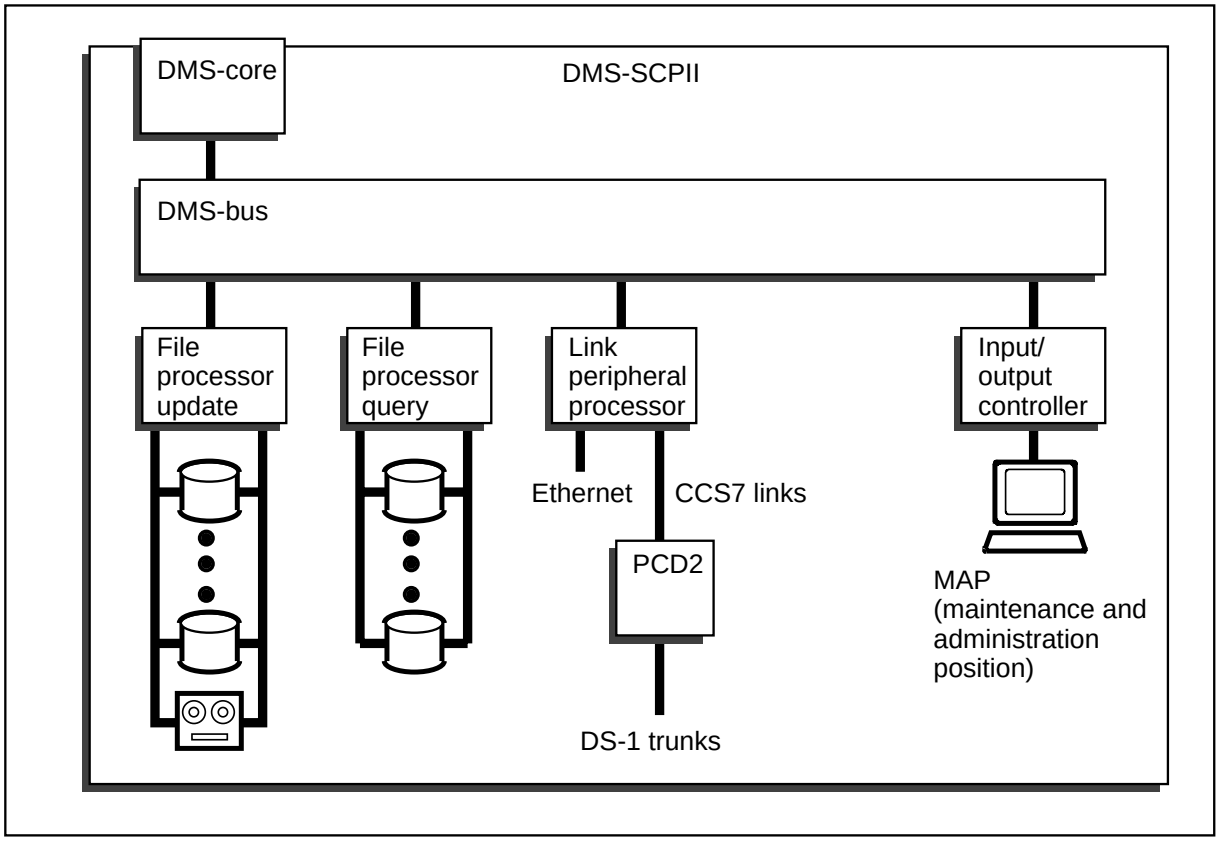
- call processing and routing
- query transaction initiation
- local call treatment

Service control point

The SCP uses the DMS SuperNode platform to provide, through a multi-processor architecture, the high message-processing capacity needed to support 800 Service during peak periods. Figure 2-2 shows the architecture of the SCP.

Figure 2-2xxx
SCP architecture

FW-30671



Key components of the SCP architecture include the following:

- DMS-core
- DMS-bus
- file processor (FP)
- network module
- LPP

File processor

FPs enhance the multicomputing and input/output (I/O) capabilities of the DMS-core. Each FP has a fully duplicated, provisionable, fault tolerant architecture. FPs are connected directly to the DMS-bus and provide a messaging pathway between the LIU7s and the DMS-core.

For descriptions of other SCP components, see SSP architecture.

SCP functions

The main functions provided by the SCP include the following:

- CCS7 query processing
- local update validation and application
- SCP system and service management for one or more network services

800 Service software

The following sections describe the software packages that are available for 800 Service.

Required software on the SCP

The software packages required to support 800 Service on the SCP are listed in table 2-1.

Table 2-1
Software packages required by 800 Service

Package number	Package name
NTXQ36AB	800 Plus SCP Base Service Enhancement
NTXN24AA	DMS-SCP Basic 800 Services
NTX550AA	CCS7 Transaction Service Support

NTXQ36AB

The 800 Plus SCP Base Service Enhancement software package provides support on the SCP for these features: Call Allocator, International 800, Enhanced Southbound, SuperCom 800, 800 Entry, Overflow Route, Exchange Route, and Emergency Route.

NTXN24AA

The DMS-SCP Basic 800 Services software package provides basic 800 Service functionality on the SCP, as well as support for the FlexRoute, ZonePlus, and SingleNumber features.

NTX550AA

The CCS7 Transaction Service Support software package provides a set of procedures required to support 800 Service query transactions.

Required software on the SSP

The 800 Service software packages must be installed on every SSP that serves as a source or destination for 800 Service calls. This software is listed in table 2-2.

Table 2-2x
Software packages required by 800 Service

Package name	Description
NTX550AA	CCS7 Transaction Service Support
NTX555AB	800 Plus
NTX169BA	800 Plus Southbound
NTXR35AA	800 Dialed Number Display and BCLID
NTXQ38AA	SSP 800 Calling and Dialed Number Delivery
NTXQ39AA	SSP 800 Billing Enhancements
NTXQ40AA	SSP 800 Overflow Call Routing
NTXQ41AA	NB / SB Enhancement
AR0535	800Plus End-Office Display for CMS Subscribers
AR0536	800Plus End-Office Display for ACD & Centrex Subscribers
AR0487	800+: Call Forwarding on ISUP

NTX550AA

The CCS7 Transaction Service Support software package provides a set of procedures required to support 800 Service query transactions.

NTX555AB

The 800 Plus software package provides support for 800 Service on the SSP. The SSP communicates with an operating company database using CCS7 by sending a CCS7 query to the SCP in which the database resides. An SSP may be either an access tandem (AT) or equal access end office (EAEO) in an equal access network.

NTX169BA

The 800 Plus Southbound software package provides support for MultiCarrier 800 service and MultiCarrier Default Routing.

NTXR35AA

The 800 Dialed Number Display and BCLID software package provides support for the Dialed Number Identifier feature by allowing the dialed number to be transported to the destination SSP using bulk calling line ID (BCLID).

NTXQ38AA

The SSP 800 Calling and Dialed Number Delivery software package delivers the originator's DN and the dialed 800 number to the terminating office for subscribers of 800 Service that have subscribed to either the 800 Caller Identifier or Dialed Number Identifier feature.

NTXQ39AA

The SSP 800 Billing Enhancements software package provides support for new billing records for 800 Service features, including Overflow Route, Emergency Route, Call Prompter, Courtesy Response, and 800 Entry.

NTXQ40AA

The SSP 800 Overflow Route software package provides an Overflow Route subscriber with a list of alternate terminating numbers to which calls can be diverted if the primary DN is busy.

NTXQ41AA

The NB / SB Enhancement software package provides ISUP interworking on 800 Service calls between Canada and the U.S., allowing correct processing of the calling party number.

AR0535

The 800Plus End-Office Display for CMS Subscribers software patch provides support for delivery of 800 Caller Identifier and Dialed Number Identifier information to call management services (CMS) terminating telephone sets.

AR0536

The 800Plus End-Office Display for ACD and Centrex Subscribers software patch provides support for delivery of 800 Caller Identifier and Dialed Number Identifier information to automatic call distribution (ACD) and Centrex terminating telephone sets.

AR0487

The 800+: Call Forwarding on ISUP software patch supports the Call Forward feature by providing correct billing for calls forwarded to 800 numbers across ISUP trunks.

For more information on these packages and patches, see the *Understanding CCS7 services* section of this guide.

Supporting software on the SCP

The software packages required to support 800 Service on the SCP are listed in table 2-3.

Table 2-3
800 Service software dependencies

Package name	Software feature package title
NTX000AA	Bilge
NTX001AA	Common basic
NTXN21AA	DMS-SCPII base
NTX041AB or NTXR72AA	CCS7-MTP/SCCP CCS7 MTP/SCCP for LPP-based Platforms
NTX270AA	New Peripheral Maintenance Package

For more information on these software packages and requirements, refer to *DMS SuperNode Service Control Point II Planning and Engineering Guide*, 297-5131-101.

Supporting software on the SSP

The software packages required to support 800 Service on the SSP are listed in table 2-4.

Table 2-4
800 Service software dependencies

Package name	Software feature package title
NTX000AA	Bilge
NTX001AA	Common basic
NTX041AB or NTXR72AA	CCS7-MTP/SCCP CCS7 MTP/SCCP for LPP-based Platforms
NTX100AA	Integrated Business Network - Basic (IBN)
NTX270AA	New Peripheral Maintenance Package
NTXA64AA	RES (Residential Enhanced Service) Base
NTXA82AA	Class Line Office Data
NTX940AA	CM bilge
NTX801AA or NTX901AA	Toll Features I Local Features I
NTX950AA	MS bilge
NTXF55AA	Class Bulk Calling Line Identification

For more information on these software packages and requirements, refer to *DMS SuperNode Signaling Point/Service Switching Point Planning and Engineering Guide,* 297-5121-101.

Determining service requirements

Consider the following when determining service requirements.

Memory

The program store requirement depends on the features used in an office. The program store available on the switch is shared by all the office feature software, including 800 Service software. Program store is used as a repository for the program instructions required by the CPU to support call processing, maintenance, and administrative functions.

The data store requirement depends on individual office parameters, the level of traffic at the office, and the amount of customer data. The data store is used to hold transient information, customer data, and office parameters.

The maximum combined program store and data store is 240 Mbytes.

Processing resources

800 Service does not introduce any new impact on existing processing resources.

Messaging and throughput

Engineering calculations for elements in a CCS7 network are discussed in the following books:

- *DMS SuperNode Signaling Transfer Point Planning and Engineering Guide*, 297-5101-101
- *DMS SuperNode Service Control Point II Planning and Engineering Guide*, 297-5131-101
- *DMS SuperNode Signaling Point/Service Switching Point Planning and Engineering Guide*, 297-5121-101

800 Service places a message load across the network, over links between SSPs, signaling transfer points (STP), and SCPs. This message load must be considered when planning 800 Service implementation and expansion.

Overflow Route

Some planning is required to implement the Overflow Route (OCR) feature across your network. OCR has certain limitations:

- CCS7 connectivity is required between the SSP and the far-end office so that an ISUP Release with Cause message can be returned to the SSP to report a non-idle 800 terminating line. (A timeout facility overrides OCR in cases where full CCS7 connectivity is not available.)
- Each originating SSP must be equipped with the OCR software package.
- Originating trunks must be Super CAMA Centralized Automatic Message Accounting (SCAMA) trunks, Intertoll (IT) trunks, ISUP trunks (ANSI TR317, IBN and POTS), or TOPS trunks.

The post-dial delay time may increase if an OCR list is returned from the SCP. Depending on the types of routes defined in the OCR list, the maximum delay time is calculated as:

(Number of routes in OCR list) x (OCRTIME value in table NSCDEFS)

Note: Post-dial delay time could be significant.

Billing considerations

800 Service introduces new planning considerations related to billing. These include

- recording of OCR on unanswered calls
- OCR routing to INWATS

Recording of OCR on unanswered calls

If OCR call processing finds no idle terminating lines, the call is routed according to busy treatment for the last DN in the OCR route list. However, since billing details are not recorded for unanswered calls, the fact that OCR was performed on an unanswered call is lost.

If billing records are required for unanswered calls, activate options UNANS_TOLL or UNANS_LOCAL in table AMAOPTS on the SSP. The corresponding code types in table BCCODES must be datafilled for the types of billing records that are needed. Refer to *DMS-100 Family Customer Data Schema*, 297-1001-451 for complete datafill requirements in table AMAOPTS and table BCCODES.

OCR routing to INWATS

If during OCR call processing the call routes to an INWATS number, 800 Service billing records are not produced for the call. The additional flags returned in an 800 Service billing record (for example, the flag indicating OCR) are not generated for calls routed by INWATS.

800 Service translations

This chapter describes the datafill needed to support 800 Service. Read this entire section carefully before proceeding with datafill. For further information on translations, refer to *CCS7 Translations Guide,* 297-5151-350.

Understanding translations on page 3-2 provides a brief description of the translations process.

Preparing to datafill 800 Service on page 3-3 gives a description on how to prepare for the datafilling of the appropriate tables.

Datafilling 800 Service on the SCP on page 3-5 provides information on how to datafill tables for the proper translations of 800 Service.

Datafilling 800 Service on the SSP on page 3-5 provides information on how to datafill tables for the proper translations of 800 Service.

Understanding translations

Translation is the process in which information stored in data tables is accessed by the DMS system and processed to support 800 Service. You must datafill certain tables in a specific sequence to ensure full and efficient operation of the service.

Components of the translation system

The translation system consists of data, and the facilities for accessing and manipulating that data. The translation system includes the following elements:

- the translation database
- the hardware on which the database resides
- the table editor (that is, the software that controls data entry, storage, and retrieval)

Entries, deletions, and modifications to the translation database are made to these tables through the table editor facility or a dump-and-restore process.

Translations database

In order to perform translations, the switch must access data stored in the central control complex memory called the translation database.

The translation database contains data tables. Each table has a specific purpose and contains a certain type of data. Every table has a name. (Table names are written using capital letters.) A table consists of horizontal rows and vertical columns of data. Each row contains one record of data and is called a tuple. Each column is called a field.

For further information, refer to *DMS SuperNode Common Channel Signaling 7 Translations Guide,* 297-5151-350.

How translation reads tables

Each table used by translation has a specific function. Translation typically accesses a combination of tables to obtain all the information needed to translate and route a call.

Certain key fields in each table index the next table or set of tables. Any fields in the table can be used to key other tables.

800 Service translation involves reading specific tuples in designated data tables to determine the path that a call takes to its destination. The number and sequence of tables accessed by a given call varies according to several factors, for example, the origin and destination of the call, the number of digits dialed, and the signaling system used on the incoming trunk group.

Translation starts after call processing (which uses the trunk group tables) analyzes the information provided by the incoming trunk. Information in the trunk group tables indexes one of the translation tables. Each translation table in turn indexes another until the call is fully translated and can be routed.

How translation tables are datafilled

The process for datafilling translation tables differs depending on whether the switch is being datafilled for the first time, a BCS update is being applied, or routine modifications are being made to certain tables. For further information on general translation procedures, refer to the *DMS SuperNode Common Channel Signaling 7 Translations Guide*, 297-5151-350.

Preparing to datafill 800 Service

Datafill for 800 Service must take place at any SSP that serves as source or destination for 800 Service calls. Datafill must also take place at the network SCP.

How to use this section

This section is organized by CCS7 node type and feature package.

On the SCP

The following feature package requires datafill on each SCP supporting 800 Service.

Table 1-1xxx
Software package requiring datafill for 800 Service

Package number	Package name
NTXN21AA	DMS-SCP Base

On SSPs

The following feature packages require datafill on each SSP supporting 800 Service.

Table 1-2xxx
Software packages requiring datafill for 800 Service

Package name	Description
NTX550AA	CCS7 Transaction Service Support
NTX555AB	800 Plus
NTXR35AA	800 Dialed Number Display and BCLID
NTXQ40AA	SSP 800 Overflow Call Routing
AR0535	800Plus End-Office Display for CMS Subscribers
AR0536	800Plus End-Office Display for ACD & Centrex Subscribers

Read through this section. Familiarize yourself with the parameters that affect service operation. Follow the datafill sequence, referring to the information presented here for each table you use.

For more information about datafilling tables refer to *Customer Data Schema*, 297-1001-451.

Determining the system datafill sequence

Proceed with datafill of the tables using the sequence shown later in this section.

Determining 800 Service capabilities

The operation of a number of 800 Service components require proper datafill on SSPs involved in 800-type calls. Specific functions and capabilities of 800 Service are discussed below.

Overflow Route timeout

On a call routed to a non-CCS7 connected central office, or to a central office that cannot return a non-idle indication, the SSP does not receive a completion or non-idle indication. In this case, Overflow Route (OCR) routing times out. An option in table NSCDEFS on the SSP controls this timeout facility. When OCR times out it allows the call to complete, but OCR call processing no longer applies.

Services codes for Overflow Route

Option NSCNUM in table NSCDEFS on the SSP defines the three-digit Number Services Codes (NSC) used in the SCP database query and SSP

automated message accounting (AMA) record. NSCODE must be datafilled in table NSCDEFS on the SSP, if SSP NSC services are required.

Billing records for unanswered calls

If you require billing records for unanswered calls, activate options UNANS_TOLL or UNANS_LOCAL in table AMAOPTS on the SSP. Datafill the corresponding code types in table BCCODES on the SSP for the types of billing records you need. For more information on table AMAOPTS and table BCCODES, refer to *Customer Data Schema*, 297-1001-451.

Datafilling 800 Service on the SCP

Datafill tables for package NTXN21AA. This package is required to support 800 Service.

Refer to *Customer Data Schema*, 297-1001-451 for a description of any fields not shown in this document. This document discusses 800 Service specific tables and fields only.

Datafilling 800 Service on the SSP

Datafill tables for the following packages and features in the order shown here:

- NTX550AA
- NTX555AB
- NTXQ40AA
- NTXR35AA
- AR0535
- AR0536

Refer to *Customer Data Schema*, 297-1001-451 for a description of any fields not shown here. (This guide discusses only those tables and fields that have direct impact on 800 Service.)

NTXN21AA
DMS-SCP Base

Package name

DMS-SCP Base

Package number

NTXN21AA

Feature numbers

The NTXN21AA software package consists of the following features:

NTXN21AA Feature numbers and names

Feature number	Feature name
AL1647	SCPII Query Handling
AL1648	SCPII Local Master Database Request Handler
AL1652	SCPII Distributed Database Maintenance
AL1701	SCPII Query Traffic Maintenance
AL1702	SCPII Maintenance MMI
AL2020	SCPII Database Copy Maintenance
AL2079	SCPII Initial Database Load
AL2080	SCPII External Database Dump
AL2082	SCPII DB/TRMS Enhancements
AL2089	SCPII UBH MMI
AL2090	SCPII Update Batch Handling Maintenance
AL2093	SCPII Update Batch Handling
AL2330	SCPII Server Layer
AR0158	SCPII Service OM & LOG Interface Enhancements
AR0159	SCPII Service Transaction Processing Base

BCS applicability

This package was first released in BCS33. The information in this section applies to BCS34 and up.

Description

DMS-SCPII Base translations allows you to display, enter, and modify engineerable system data related to 800 Service.

NTXN21AA (continued)
DMS-SCP Base (continued)

Theory of operation

DMS-SCPII Base performs the database lookup function to translate the 800 number into the actual telephone number of the destination and determines the appropriate routing.

Coordinated state change

Coordinated state change routes queries to a second SCP when the number of query processor instances (QPI) in service drops below a minimum and the primary SCP is congested. The mimimum number of QPI is datafilled in table SCPLOCSS. When the number of available QPI drops below the datafilled threshold, a message is sent from the first SCP to the second SCP requesting coordinated state change. If the second SCP is not congested and the number of QPIs in service is above the minimum, it sends a response to the first SCP giving it permission to go into coordinated state change. The first SCP then takes down the 800 Service subsystem, and informs the signaling transfer point (STP) to route all queries to the second SCP.

When the number of QPIs in service in the first SCP exceeds the minimum, the 800 Service subsystem is brought back into service and the SCPs begin to load share again.

Translations table flow

The translation process is shown in the flowchart that follows.

Table SCPLOCSS defines the minimum number of subsystem instances (SSI) required to process queries in order for a particular application to go into service. It also defines the maximum number of SSIs that can process queries for a particular application at any one time.

Table C7LOCSSN provides information for the local subsystem.

Table SCPCOMP defines the logical component instances.

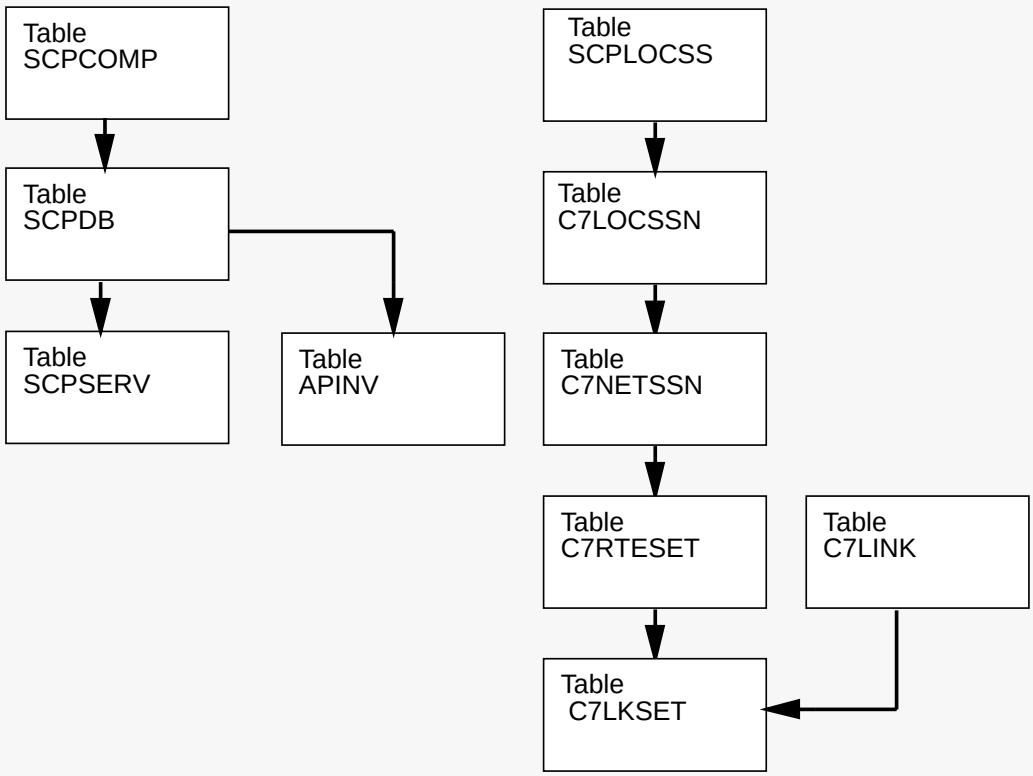
Table SCPDB specifies the resource processors in which database instances reside and designates each instance as master or slave.

Table SCPSERV defines the services and the configuration parameters that apply globally to signaling control point (SCP) services.

Table C7LOCSSN is detailed in the *CCS7 Translations Guide*, 297-5151-350.

NTXN21AA (continued)
DMS-SCP Base (continued)

Table flow for DMS-SCP Base



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

Datafill example for	
Item	**Example data**
Processor	File Processor (FP)
Database instance	800PLUS
Datafill table	**Example data**
APINV	FP 0 0 1 POWER NTDX15AA NIL NIL
SCPSERV	800PLUS 500 3000 40 5 23 30 23 30 N
SCPDB	800PLUS MASTER 0 FP 6 800PLUS MASTER 0
SCPCOMP	800PLUS UPI 0 FP 6 (800PLUS MASTER 0) $
SCPLOCSS	SCPE800 6 1 N N $

Package limitations and restrictions

The following limitations apply to NTXN21AA:

- The update batch handler (UBH) must be datafilled after the update processor instance (UPI).
- The UBH and UPI must reside on the same file processor (FP).
- Only one UBH can be datafilled per service.

Feature interactions

Feature AL2089 (SCPII UBH MMI) interacts with the following features:

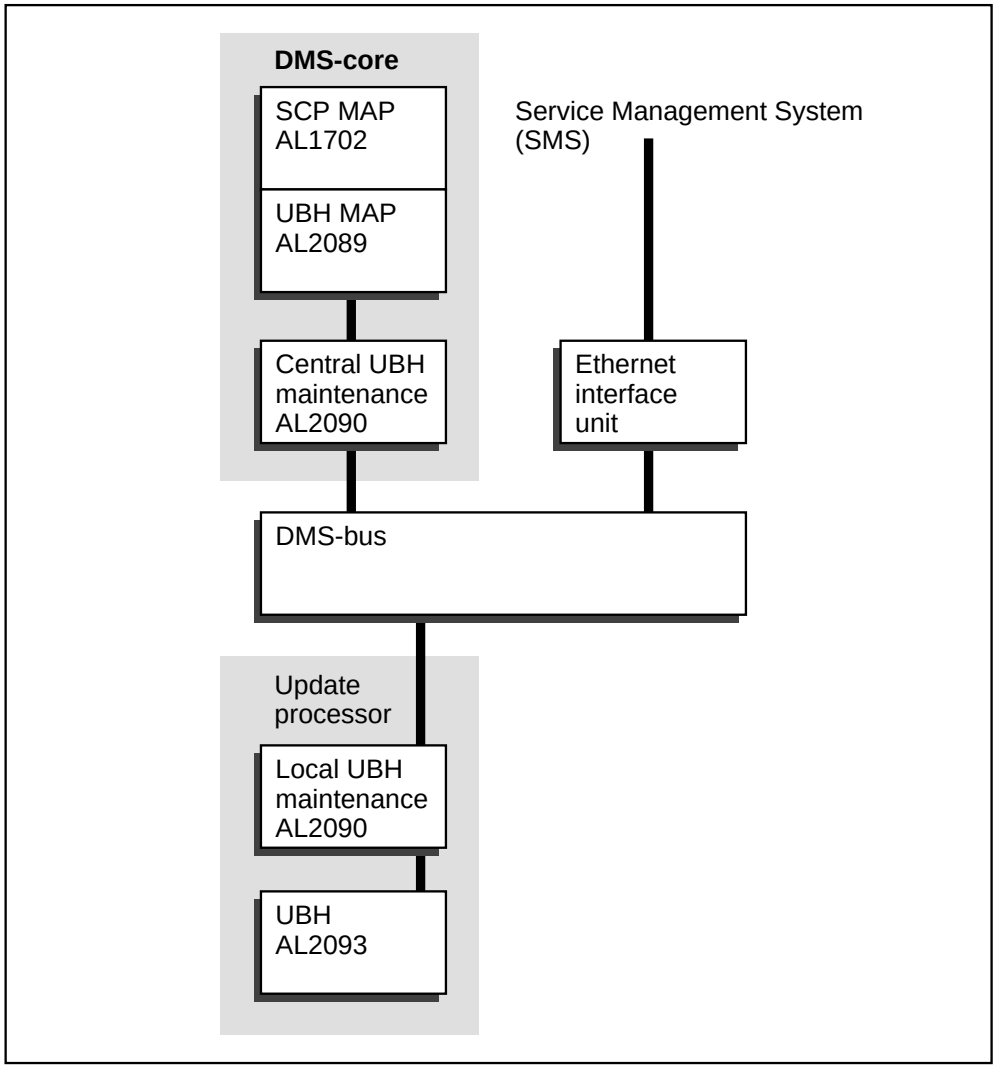
- AL2090 (Update Batch Handler Maintenance)
- AL1702 (SCP Maintenance MMI).

Figure 3-1 illustrates this relationship.

NTXN21AA (continued)
DMS-SCP Base (continued)

Figure 3-1 3-1x
Update batch handling features

FW-30646



Activation/deactivation by the end user

Not applicable

Billing

NTXN21AA does not affect billing.

Station Message Detailed Recording

NTXN21AA does not affect Station Message Detailed Recording (SMDR).

Datafilling office parameters

Not applicable.

Datafill sequence

The following tables require datafill to implement the NTXN21AA software package. The tables are listed in the order in which they are to be datafilled.

Datafill tables required for DMS-SCP Base

Table	Form	NTP	Purpose of table
SCPLOCSS	2475	297-1001-451	Defines the minimum number of SSIs required to process queries for a particular application
C7LOCSSN	2039A, B	297-1001-451	Provides information for the local subsystem
SCPSERV	2593A, B	297-1001-451	Defines the services and the configuration parameters that apply globally to the SCP
SCPDB	2592A, B	297-1001-451	Specifies the processors in which database instances reside and designates each instance as master or slave
SCPCOMP	2591A, B	297-1001-451	Lists the processor and database instance of each component service instance

Datafilling table SCPSERV

Table SCPSERV controls the display, input, and modification of system data for the SCP.

Datafill sequence

Table SCPSERV is datafilled before table SCPDB.

Table size

Table SCPSERV can contain up to 256 tuples.

The following procedure shows the datafill for table SCPSERV. This procedure contains only those fields that apply to NTXN21AA. Refer to *Customer Data Schema,* 297-1001-451, for a description of the other fields.

NTXN21AA (continued)
DMS-SCP Base (continued)

Datafilling table SCPSERV

Field	Subfield	Explanation and action
SERVICE		*Service name* Enter the service name, 800PLUS.
CNGONSET		*Congestion onset threshold* Enter a number from 10 to 2000 to specify the congestion threshold level (in milliseconds) of the query processor.
DSCONSET		*Discard onset threshold* Enter a number from 10 to 5000 to specify the amount of time during which a query can be responded to. If the query is not responded to during this time, it is discarded.
MAXBATCH		*Maximum number of updates in a batch* Enter a number from 1 to 10 000 to specify the maximum number of updates in a normal update batch.
EMDELTOL		*Emergency delay tolerance* Enter a number from 1 to 15 to specify the maximum delay allowed (in minutes) to apply emergency updates.
AUDINTVL		*Audit interval* This field is made up of subfields START_TIME and END_TIME.
	START_TIME	*Start time* This field is made up of subfields HOUR and MIN. See the appropriate subfields for definitions.
	END_TIME	*End time* This field is made up of subfields HOUR and MIN. See the appropriate subfields for definitions.
	HOUR	*Hour* Enter a number from 0 to 23 to specify the hour.
	MIN	*Minute* Enter a number from 0 to 59 to specify the time in minutes.
AUDENABL		*Audit enabled* Enter Y or N to specify whether the audit has been enabled.

Datafill example for table SCPSERV

The following example shows sample datafill for NTXN21AA in table SCPSERV. In the example, the service is 800PLUS and the maximum number of updates is 40.

Datafill example for table SCPSERV

Example of a MAP display:

```
SERVICE   CNGONSET     DSCONSET   MAXBATCH    EMDELTOL
   AUDINTVL                AUDENABL
-------------------------------------------------------
800PLUS     500          3000       40          5
   23  30   23  30               N
```

Error messages for table SCPSERV

The following example shows the error messages generated if incorrect datafill is entered in table SCPSERV. In certain cases, an additional reason message is also displayed.

Error messages for table SCPSERV

Error message	Explanation and action
`Cannot find tuple for service: 800PLUS.`	Tuple for 800PLUS service not found.
`Reason message: Invalid service.`	System could not find service. Wait 5 min and retry command. If problem persists, contact the system administrator.
`Cannot add tuple for service: 800PLUS.`	Tuple for 800PLUS service cannot be added.
`Reason message: Invalid service.`	A software error has occurred. Contact the system administrator.
`Reason message: Allocation failed.`	Ensure that an office image dump is not in progress. Otherwise, a memory allocation failure has occurred. Contact the system administrator.

-continued-

NTXN21AA (continued)
DMS-SCP Base (continued)

Error messages for table SCPSERV (continued)

Error message	Explanation and action
`Cannot delete tuple for service: 800PLUS.`	Tuple for 800PLUS service cannot be deleted.
`Reason message: Invalid service.`	A software error has occurred. Contact the system administrator.
`Reason message: Instance exists.`	All component instances for the requested service must first be deleted from table SCPCOMP. Also, ensure that all database instances for the requested service have been deleted from table SCPDB.
`Reason message: Database instance exists.`	All master/slave database instances for the requested service must first be deleted from table SCPDB.
`Reason message: Allocation failed.`	Ensure that an office image dump is not in progress. Otherwise, contact the system administrator.
`DSCONSET must be greater than CNGONSET.`	Discard onset must be greater than congestion onset.
`Service must be 800PLUS.`	800PLUS is the only service configured for this office.
`Service is already datafilled.`	A software error has occurred. Contact the system administrator.
`Maximum batch exceeded 40 updates per batch.`	Maximum batch size was greater than the maximum allowable number of updates per batch.

End

Datafilling table SCPDB

Table SCPDB specifies the processors in which database instances reside and designates each instance as either master or slave.

Modifying a tuple in table SCPDB

To modify a tuple in table SCPDB, first delete it, and then add a new tuple with the required information.

Datafill sequence

Datafill table SCPDB after tables APINV and SCPSERV and before table SCPCOMP.

Table size

Table SCPDB can contain up to 256 tuples.

The following procedure shows the datafill for table SCPDB. This procedure contains only those fields that apply to NTXN21AA. Refer to *Customer Data Schema*, 297-1001-451, for a description of the other fields.

Datafilling table SCPDB

Field	Subfield	Explanation and action
DBID		*Database instance ID* This field identifies database instances within a service and contains subfields SERVICE, DB_TYPE, and DB_INST. See the appropriate subfields for definitions.
	SERVICE	*Service name* Enter 800PLUS. This entry must already exist in table SCPSERV.
	DB_TYPE	*Database type* This field, together with the following field, specifies the name of the database instance. Enter either MASTER or SLAVE.
	DB_INST	*Database instance* Enter a number from 0 to 63 to provide the database instance for DB_TYPE above.
RPNAME		*Resource processor name* This field identifies the processor on which the service database resides and contains subfields NODETYPE and NODENUM. See the appropriate subfields for definitions.
	NODETYPE	*Node type* Enter FP to specify the file processor (FP). This field, together with the field NODENUM, identifies the processor. The FP must be datafilled in table APINV.
	NODENUM	*Node instance number* Enter a number from 0 to 99 to provide the node instance for NODETYPE above.

-continued-

NTXN21AA (continued)
DMS-SCP Base (continued)

Datafilling table SCPDB (continued)

Field	Subfield	Explanation and action
MASTERDB		*Master database ID* This field is the master database identification and must already exist in table SCPDB. It contains subfields SERVICE, DB_TYPE, and DB_INST. See the appropriate subfields for definitions.
	SERVICE	*Service name* Enter 800PLUS. This value must be datafilled in field SERVICE in table SCPSERV.
	DB_TYPE	*Database type* This field, together with field DB_INST, specifies the name of the database instance. Enter MASTER.
	DB_INST	*Database instance* Enter a number from 0 to 63 to provide the database instance for DB_TYPE above.

End

Datafill example for table SCPDB

The following example shows sample datafill for NTXN21AA in table SCPDB. In the example, 800 Service resides on the file processor. The first instance is designated as the master, and the copies are designated as the slave.

Datafill example for table SCPDB

Example of a MAP display:

```
DBID                RPNAME      MASTERDB
-------------------------------------------
800PLUS MASTER 0    FP 6        800PLUS MASTER 0

800PLUS SLAVE  0    FP 0        800PLUS MASTER 0

800PLUS SLAVE  1    FP 1        800PLUS MASTER 0
```

Error messages for table SCPDB

The following example shows the error messages generated if incorrect datafill is entered in table SCPDB. In certain cases, an additional reason message is also displayed.

Error messages for table SCPDB

Error message	Explanation and action
`Service: 800PLUS must be added to table SCPSERV first.`	Service can be datafilled in table SCPDB only after it has been datafilled in table SCPSERV.
`Node: FP2 must be datafilled first.`	The processor must first be datafilled in table APINV.
`Node must be an FP.`	Subfield NODETYPE must be FP.
`To modify RPNAME, delete existing tuple and add new tuple.`	Must delete existing tuple and add new tuple when modifying field RPNAME.
`SLAVE DB cannot be used as a MASTER DB.`	The MASTERDB field must contain a master database instance.
`Can only have one DB datafilled on each FP.`	Only one database is allowed per FP.
`Cannot find tuple for service: 800PLUS MASTER 0.`	Tuple for 800PLUS MASTER 0 not found.
`Reason message: Invalid instance.`	System could not find database instance. Wait 5 min and retry command. If problem persists, contact the system administrator.
`Cannot add tuple for service: 800PLUS MASTER 0.`	Tuple for 800PLUS MASTER 0 cannot be added.
`Reason message: Invalid database instance.`	If adding a master database instance, ensure that database ID in field DBID is the same as the master database ID in field MASTERDB. Otherwise, a system error has occurred. Contact the system administrator.
`Reason message: Invalid service.`	The service must be datafilled first in table SCPSERV.
`Reason message: Master database does not exist.`	Datafill a master database instance before a slave database instance.

-continued-

NTXN21AA (continued)
DMS-SCP Base (continued)

Error messages for table SCPDB (continued)

Error message	Explanation and action
`Reason message: Invalid database service.`	The slave database service must match the master database service.
`Reason message: Allocation failed.`	Ensure that an office image dump is not in progress. Otherwise, contact the system administrator.
`To modify, delete existing tuple and add new tuple.`	To modify information in a tuple, first delete that tuple, and then add a new one with the correct data.
`Cannot delete tuple for service: 800PLUS MASTER 0.`	Tuple for 800PLUS MASTER 0 cannot be deleted.
`Reason message: Invalid database instance.`	A software error has occurred. Contact the system administrator.
`Reason message: Database user exists.`	When deleting a database, ensure that all components in table SCPCOMP that use the database are deleted from table SCPDB.
`Reason message: Database instance exists.`	All master/slave database instances for the requested service must be deleted first from table SCPDB.
`Reason message: Slave database exists.`	All slave databases that use the requested master database must first be deleted. Also, ensure that all components in table SCPCOMP that use the master database are deleted.
`Reason message: Allocation failed.`	Ensure that an office image dump is not in progress. Otherwise, contact the system administrator.
`Invalid data in tuple.`	A software error has occurred. Contact the system administrator.

End

Datafilling table SCPCOMP

The SCP component inventory table lists the logical component instances that make up the 800 Service. Each tuple contains information about the processors and databases associated with the service component.

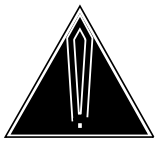
The following types of components are used to implement 800 Service:

- A query processor (QP) performs database transaction query processing.
- An update processor (UP) processes updates into the database copies. One UP is required for each database.
- A UBH provides the interface that allows the Service Management System (SMS) to perform database updates and retrievals.

The following restrictions apply to the UBH:

- Only one UBH can be datafilled per service.
- The UBH and the UPI of the same service must be datafilled on the same processor.
- The UBH must be datafilled after the UPI.
- Data cannot be deleted from the UPI before the UBH.

Modifying a tuple in table SCPCOMP



CAUTION
Loss of service
An FP that has been used as a QPI cannot be changed to a UPI. Similarly, an FP that has been used as a UPI cannot be changed to a QPI.

To modify a tuple in table SCPCOMP, first delete it, then use the PMRESET command to reset the software. Then add a new tuple with the required information.

Deleting a component from table SCPCOMP

The component must be offline before it can be deleted. When deleting a UPI, the associated UBH must be offline. When deleting a UBH, the associated UPI must be offline.

Datafill sequence

Table SCPCOMP must be datafilled after tables APINV, SCPSERV, and SCPDB.

Table size

Table SCPCOMP can contain up to 256 tuples.

The following procedure shows the datafill for table SCPCOMP. This procedure contains only those fields that apply to NTXN21AA. Refer to *Customer Data Schema*, 297-1001-451, for a description of the other fields.

NTXN21AA (continued)
DMS-SCP Base (continued)

Datafilling table SCPCOMP

Field	Subfield	Explanation and action
COMPID		*Component instance ID* This field contains subfields SERVICE, COMP_TYPE, and COMP_INST. See the appropriate subfields for definitions.
	SERVICE	*Service name* Enter 800PLUS. This field must already exist in table SCPSERV.
	COMP_TYPE	*Component type* Enter UPI, QPI, or UBH.
	COMP_INST	*Component instance number* Enter a number from 0 to 31 assigned to the processor in field COMP_TYPE, above.
RPNAME		*Processor name* This field identifies the processor on which the service database resides and contains subfields NODETYPE and NODENUM. See the appropriate subfields for definitions.
	NODETYPE	*Node type* Enter FP. This field identifies the processor. It must be datafilled in table APINV.
	NODENUM	*Node instance number* Enter the number from 0 to 99 assigned to the processor.
DBIDS		*Database ID* This field is a vector of up to five multiples of subfields SERVICE, DB_TYPE, and DB_INST. These database IDs must already exist in table SCPDB.
	SERVICE	*Service name* Enter 800PLUS. This value must be datafilled in field SERVICE in table SCPSERV.

-continued-

Datafilling table SCPCOMP (continued)

Field	Subfield	Explanation and action
DBIDS (cont)	DB_TYPE	*Database type* This field, together with DB_INST, specifies the name of the database instance. Enter either MASTER or SLAVE.
	DB_INST	*Database instance* Enter a number from 0 to 63 to specify a qualifier to the previous field to form the database instance.
End		

Datafill example for table SCPCOMP

The following example shows sample datafill for NTXN21AA in table SCPCOMP. In the example, the processor is an FP. In the first tuple, the component instance is a UPI and the database instance is a master. In the second and third tuples, the component instance is a QPI and the database instance is a slave. The fourth tuple is datafilled with a UBH.

Datafill example for table SCPCOMP

Example of a MAP display:

```
COMPID              RPNAME     DBIDS
-------------------------------------------------------
800PLUS  UPI 0      FP  6      (800PLUS MASTER 0) $

800PLUS  QPI 1      FP  0      (800PLUS SLAVE 0) $

800PLUS  QPI 2      FP  1      (800PLUS SLAVE 1) $

800PLUS  UBH 0      FP  6 $
```

Error messages for table SCPCOMP

The following example shows the error messages generated if incorrect datafill is entered in table SCPCOMP. In certain cases, an additional reason message is also displayed.

NTXN21AA (continued)
DMS-SCP Base (continued)

Error messages for table SCPCOMP

Error message	Explanation and action
`Service: 800PLUS must be added to table SCPSERV first.`	Service can be datafilled in table SCPCOMP only after it has been datafilled in table SCPSERV.
`Node: FP2 must be datafilled first.`	The processor must first be datafilled in table APINV.
`Node must be an FP.`	In field RPNAME, NODETYPE must be FP. See table APINV for datafilled FPs.
`To modify RPNAME, delete existing tuple and add new tuple.`	Must delete existing tuple and add new tuple when modifying field RPNAME.
`DB is not datafilled in table SCPDB for: 800PLUS MASTER 0.`	Database must be datafilled in table SCPDB.
`Exactly one DB must be specified for component type: 800PLUS MASTER 0.`	Only one database can be specified for each component.
`No database instance can be specified for the UBH.`	Enter $ in field DBIDS.
`Only one UPI is allowed per service.`	A UPI component is already datafilled for the service.
`QPI cannot specify MASTER DB.`	When datafilling a QPI, only slave database instances are allowed in field DBIDS.
`UPI cannot specify SLAVE DB.`	When datafilling a UPI, only a master database instance is allowed in field DBIDS.
`Only one UBH is allowed per service.`	A UBH is already datafilled for the required service.
`UBH and UPI in same service must be datafilled on the same RP.`	Datafill the UBH on the same FP that hosts the UPI.

-continued-

Error messages for table SCPCOMP (continued)

Error message	Explanation and action
`UPI for service must be datafilled first.`	Datafill a UPI before a UBH.
`Invalid database instance.`	The database instance must first be datafilled in table SCPDB.
`Cannot find tuple for service: 800PLUS UPI 0. Reason message: Invalid instance.`	Tuple for 800PLUS UPI 0 not found. System could not find component instance. Wait 5 min and retry command. If problem persists, contact the system administrator.
`Cannot add tuple for service: 800PLUS UPI 0.`	Tuple for 800PLUS UPI 0 cannot be added.
`Reason message: Invalid instance.`	Ensure that instance is not already datafilled. Otherwise, contact the system administrator.
`Reason message: Invalid service.`	Ensure that service is datafilled in table SCPSERV. Otherwise, contact the system administrator.
`Reason message: Invalid database instance.`	Ensure that service is datafilled in table SCPDB. Otherwise, contact the system administrator.
`Reason message: Allocation failed.`	Ensure that an office image dump is not in progress. Otherwise, contact the system administrator.
`Reason message: Database users number overflow.`	A software error has occurred. Contact the system administrator.

-continued-

NTXN21AA (continued)
DMS-SCP Base (continued)

Error messages for table SCPCOMP (continued)

Error message	Explanation and action
`Cannot delete tuple for service: 800PLUS UPI 0.`	Tuple for 800PLUS UPI 0 cannot be deleted.
`Reason message: Invalid instance.`	Ensure that instance has not already been deleted. Otherwise, contact the system administrator.
`Reason message: Allocation failed.`	Ensure that an office image dump is not in progress. Otherwise, contact the system administrator.
`To modify, delete existing tuple and add new tuple.`	In order to modify information in a tuple, first delete it, and then add a new tuple with the correct data.
`Component: 800PLUS UPI 0 must be offline to be deleted.`	Component must offline before it can be deleted. When deleting a UPI, the associated UBH must be offlined. When deleting a UBH, the associated UPI must be offlined.
`Only one component can be specified per FP.`	Cannot have more than one component per FP.
`DB service must match COMP service.`	Component and database must have the same service.
`Only ten QPIs are allowed per service.`	Each service can only have 10 QPIs.
`DB must reside on same node as COMP.`	The component instance must reside on the same node as the database instance in table SCPDB.

-continued-

Error messages for table SCPCOMP (continued)

Error message	Explanation and action
`Invalid data in tuple.`	A software error has occurred. Contact the system administrator.
`Component: 800PLUS UBH 0 must first be deleted.`	When removing a UPI from tthe table, the associated UBH must first be deleted.
	End

Datafilling table SCPLOCSS

Table SCPLOCSS defines the minimum number of SSIs that must be processing queries for a particular application to go into service, and the maximum number of SSIs that may be processing queries for a particular application at one time.

Modifying a field in table SCPLOCSS

Only fields MAXINST and MININSV can be modified.

Deleting a subsystem from table SCPLOCSS

All instances of this subsystem must be offline.

Datafill sequence

Datafill table SCPLOCSS after tables C7NETSSN, C7LOCSSN, C7RTESET, C7LINK, and C7LKSET.

Table size

Table SCPLOCSS can contain a maximum of 256 tuples.

The following procedure shows the datafill for table SCPLOCSS. This procedure contains only those fields that apply to NTXN21AA. Refer to *Customer Data Schema*, 297-1001-451, for a description of the other fields.

NTXN21AA (continued)
DMS-SCP Base (continued)

Datafilling table SCPLOCSS		
Field	**Subfield**	**Explanation and action**
SCPSNAME		*Service control point name* Enter SCPE800
MAXINST		*Maximum number of subsystem instances* Enter a number from 1 to 32 to specify the maximum number of SSIs that can be allocated to process queries.
MININSV		*Minimum number of in-service subsystem instances* Enter a number from 1 to 32 to specify the minimum number of SSIs needed for the subsystem to be declared in service. The DMS-SCPII does not process queries until the minimum number of SSIs is running.

Datafill example for table SCPLOCSS

The following example shows sample datafill for NTXN21AA in table SCPLOCSS. In the example, the SCP application is 800 Service. The minimum number of SSIs needed is one.

Datafill example for table SCPLOCSS

Example of a MAP display:

```
SCPSNAME        MAXINST             MININSV
-------------------------------------------
SCPE800         20                  1
```

Error messages for table SCPLOCSS

The following example shows the error messages generated if incorrect datafill is entered in table SCPLOCSS.

Error messages for table SCPLOCSS

Error message	Explanation and action
`Physical tuple not found in SCPLOSS table for SCPE800.`	Wait 5 min and retry command. If the problem persists, contact the system administrator.
`Subsystem SCPE800 not bound into SCCP.`	A software error has occurred. Contact the system administrator.
`SCMG unable to unprotect store.`	Ensure that an office image dump is not in progress. Otherwise, contact the system administrator.
`XXX is not an SCP subsystem.`	The only allowable subsystems are SCPE800, SCPACCS, and SCPBNS.
`The MAXINST is invalid.`	The value of MAXINST has exceeded the maximum allowable subsystem instance.
`The MININSV is invalid.`	The value of MININSV has exceeded the maximum allowable subsystem instance.
`The MININSV must be less than MAXINST`	The value entered in field MININSV must be less than the value of MAXINST.

-continued-

NTXN21AA (end)
DMS-SCP Base (end)

Error messages for table SCPLOCSS (continued)

Error message	Explanation and action
`ERROR: Unexpected from SCMG.`	A software error has occurred. Contact the system administrator.
`ERROR: Unexpected return code received from SCP LSS MGMT.`	A software error has occurred. Contact the system administrator.
`SSI 6 of SCPE800 already bound into SCCP.`	A software error has occurred. Contact the system administrator.
`SSI 4 of SCPE800 not OFFL, cannot unbound.`	A software error has occurred. Contact the system administrator.
`SSI 6 of SCPE800 is GTT related, cannot unbound.`	A software error has occurred. Contact the system administrator.
`SSI 3 of SCPE800 not bound to SCCP, cannot unbound.`	A software error has occurred. Contact the system administrator.

End

Service orders

Not applicable

NTX550AA
CCS7 Transaction Service Support

Package name

CCS7 Transaction Service Support

Package number

NTX550AA

Feature numbers

The NTX550AA feature package consists of the following features:

NTX550AA feature numbers and names

Feature number	Feature name
AC0108	SCCP/TCAP Real Time Enhancements
AD4446	Generic RDB Interface Patch
BC2282	TCAP ID Management
BC2284	TCAP CP Utilities
BF0657	CCS7 Transaction Capabilities

BCS applicability

BCS34 and up.

Description

This package requires datafill on the SSP. The CCS7 Transaction Service Support software package provides a set of procedures that can be used to support a variety of services, including 800 Service.

Package limitations and restrictions

Not applicable.

Feature interactions

Not applicable.

Activation/dactivation by end user

Not applicable.

Billing

Not applicable.

Station Message Detailed Recording

Not applicable.

NTX550AA (end)
CCS7 Transaction Service Support (end)

Datafilling office parameters

The SSP uses the engineered office parameter table (OFCENG). There is one office parameter for the CCS7 Transaction Service Support package. Refer to the *Office Parameter Reference Manual,* 297-1001-455, for more information on office parameters.

Office parameters used by SSP

Table name **Parameter**	**Explanation and action**
OFCENG TCAP_AUDIT_INTERVAL	This parameter controls the delay between TCAP audit cycles.

NTX555AB
800 Plus

Package name

800 Plus

Package number

NTX555AB

Feature numbers

The NTX555AB feature package consists of the following features:

NTX555AB feature numbers and names

Feature number	Feature name
AL0668	SSP/TOPS Interworking
AR0209	Northbound/Southbound for 800 Service
BV1858	CCS7 E800

BCS applicability

BCS34 and up.

Description

This package resides on the SSP. The 800 Plus software package provides support for 800 Service on the SSP. The SSP communicates with operating company databases by launching a CCS7 query to the SCP where the database is kept. The SSP routes the 800 number call using information received from the SCP in response to its query.

Translations flow table

The 800 Plus translation process is shown in the flowchart that follows.

Table HNPACONT determines whether the SSP 800 Service method (database query) should be used for 800 translations.

Table NSCSCRN defines the six-digit screening for SSP number service code (NSC).

Table SSPTKINF defines all incoming and two-way trunks which support SSP NSC calls to be datafilled in this table.

Table C7LOCSSN obtains the subsystem number for 800 Service.

Table C7GTTYPE obtains the attribute information necessary to format the message.

NTX555AB (continued)
800 Plus (continued)

Table C7GTT determines whether a point code or point code + SSN is sent in the message.

Table C7NETSSN verifies the status of the point code to see if it is available. If necessary, the status of the SSN is also checked.

Table C7RTESET obtains the numeric values for the DPC and determines which linkset is used.

Table C7LKSET determines the link within the linkset.

Table C7LINK provides the hardware location of the link

Table NSCDEFS lists the SSP options assigned to each number service code (NSC).

Table NSCSNPA maps special routing codes to the originating numbering plan area (NPA).

Table STDPRT provides standard pretranslator definitions used to determine whether a call is an 800 Service call.

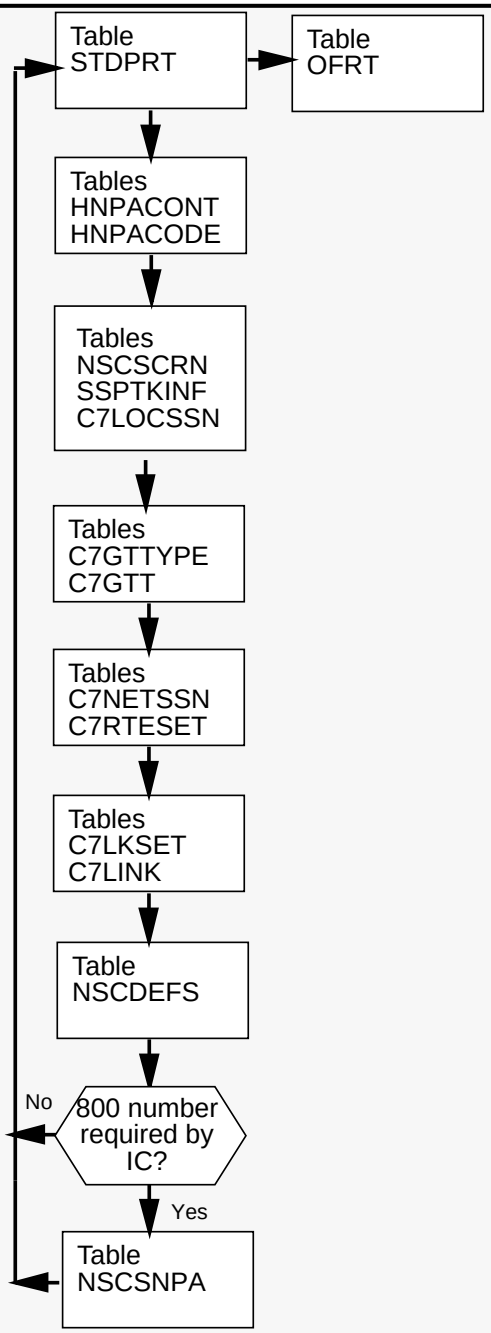
The MTP and SCCP tables listed below are detailed in the *CCS7 Translations Guide*, 297-5151-350.

- Table C7LOCSSN
- Table C7GTTYPE
- Table C7GTT
- Table C7NETSSN
- Table C7RTESET
- Table C7LKSET
- Table C7LINK

The SSP 800 Service translation process is shown in the flowchart that follows.

NTX555AB (continued)
800 Plus (continued)

Table flow for 800 Plus



Package limitations and restrictions

Not applicable.

NTX555AB (continued)
800 Plus (continued)

Feature interactions

Not applicable.

Activation/deactivation by end user

Not applicable.

Billing

Not applicable.

Station Message Detailed Recording

Not applicable.

Datafilling office parameters

The SSP uses the engineered office parameter table (OFCENG). There are five office parameters for the 800 Plus software package. Refer to the *Office Parameter Reference Manual*, 297-1001-455, for more information on office parameters.

Office parameters used by SSP

Table name **Parameter**	**Explanation and action**
OFCENG CREATE_PARTIAL_800_AMA	This parameter specifies whether the originating NPA will be included in AMA billing records for calls on which the complete calling number is not available.
OFCENG NUM_OF_NSC_EXT_BLK	This parameter sets the number of available Number Service Code extension blocks.
OFCENG NO_OF_TRANSACTION_IDS	This parameter allocates the number of transaction IDs available to the SSP for launching queries to an SCP database.
OFCENG SSP_EA_ACKWINK_DELAY_TIME	This parameter sets the interval the SSP waits to send an acknowledgement wink after receiving the called number from the equal access end office (EAEO).

Office parameters used by SSP	
Table name **Parameter**	**Explanation and action**
OFCENG SSP_NSC_CARRIER_ID	This parameter defines the special XXX code used to identify NSC calls coming from the EAEO.
OFCENG SOUTHBOUND	This parameter specifies the state of the Southbound feature on the SSP. It has three states: OFF, TRANSITION, and ON.

Datafill sequence

The following tables require datafill to support 800 Service on SSPs. The tables are listed in the order in which they are to be datafilled.

Datafill Tables required for 800 Plus			
Table	**Form**	**NTP**	**Purpose of table**
NSCDEFS	2040	297-1001-451	Lists the SSP options assigned to each number service code (NSC) service.
NSCSCRN	2041A-B	297-1001-451	Defines the six digit screening for SSP number service codes (NSC).
NSCSNPA	2042	297-1001-451	Maps special routing codes to the originating NPA.
SSPTKINF	2043A-B	297-1001-451	Defines all incoming and two-way trunks that support SSP NSC calls.
HNPACONT.HNPA CODE	2401A-B	297-1001-451	Accesses the 800 Service database to obtain special routing and call handling instructions.
STDPRTCT. STDPRT	2467A-D	297-1001-451	Contains pretranslation tuples.
LATANAME	2358A-B	297-1001-451	Maps LATA names to LATA numbers.

Datafilling Table NSCDEFS

The table below shows the datafill procedure for table NSCDEFS. This contains only those fields that apply to 800 Service. Refer to *Customer Data Schema*, 297-1001-451 for a description of the other fields.

NTX555AB (continued)
800 Plus (continued)

Datafilling table NSCDEFS

Field	Subfield	Explanation and action
NSCODE		*Number service code* This field contains subfield NSC_CODE.
	NSC_CODE	*Number service code* Enter 800P for 800 Service.
TIMEOUT		*SSP database response timeout* Enter the time, in seconds, to wait for a response from the SSP database. The default value is 3 seconds.
OPTION		*Options* This field contains subfield OPTION and its refinements. See the appropriate subfields for definitions.
	NSCNUM	*Three-digit service code number* Enter 800.
	NSC0ZZ	*0ZZ code* Enter 099
	NSC1NX	*1NX code* Enter 199
		End

Datafill example for table NSCDEFS

The following example shows sample datafill in table NSCDEFS. In the example, the waiting time for a response from the SSP is 3 seconds.

Datafill example for table NSCDEFS

Example of a MAP display:

```
NSCODE              TIMEOUT          OPTIONS
-------------------------------------------------
800P   099           3               800  099  199
```

Datafilling Table NSCSCRN

The table below shows the datafill procedure for table NSCSCRN. This contains only those fields that apply to 800 Service. Refer to *Customer Data Schema*, 297-1001-451 for a description of the other fields.

NTX555AB (continued)
800 Plus (continued)

Datafilling table NSCSCRN		
Field	**Subfield**	**Explanation and action**
NSCODE		*Number service code (NSC)* Enter 800P
FROMNXX		*From three-digit code* Enter a three-digit code which represents either one code or the first in a block of consecutive codes. N represents a number from 2 through 9 and X , a number from 0 through 9.
TONXX		*To three-digit code* Where field FROMNXX represents a single code, enter the same three-digit code in this field. Where field FROMNXX represents the first three-digit code in a block of consecutive three-digit codes, enter the last three-digit code in the block.
XLADATA		*Code type route reference* This field contains subfield CD and its refinements. See the appropriate subfields for definitions.
	CD	*Code type* Enter VCT
	RR	*Route reference index* Enter the route reference index of the route list in table HNPACONT subtable RTEREF to which translation is to proceed.
End		

NTX555AB (continued)
800 Plus (continued)

Datafill example for table NSCSCRN

The following example shows sample datafill in table NSCSCRN. In the example, the number service code is 800P.

Datafill example for table NSCSCRN

Example of a MAP display:

```
COMMAND NSCODE FROMXX  TONXX   XLADATA
-------------------------------------------
INP       800P    011    022        INW       O
```

Note: Once the call is recognized as an NSC call, the following tables are used to obtain the information required for an SCP query.

Datafilling Table NSCSNPA

Table NSCSNPA maps 00Y codes to originating NPA codes. In the SSP, the 800 number received from other offices may be in the form 00Y+NXX+XXXX. The corresponding SNPA for the calling office is retrieved from table NSCSNPA. If the 00Y is not found in table NSCSNPA, the 800 Service call receives vacant code treatment.

The table below shows the datafill procedure for table NSCSNPA. This contains only those fields that apply to 800 Service. Refer to *Customer Data Schema*, 297-1001-451 for a description of the other fields.

Datafilling table NSCSNPA

Field	Subfield	Explanation and action
SAC		*Special area code* Enter the special area code that is used by the end office or tandem office to indicate the originating NPA or NSC call is from a coin line.
SNPA		*Originating NPA* Enter the originating NPA. This field has a range from 000 through 999.
COINCALL		*Coin station call* Enter Y if the 00Y indicates calls from coin stations. Otherwise, enter N.

Datafill example for table NSCSNPA

The following example shows sample datafill for 800 Plus in table NSCSNPA. In the example, the SNPA is 613, and the call comes from a coin station.

Datafill example for table NSCSNPA

Example of a MAP display:

```
COMMAND    SAC    SNPA   COINCALL
-------------------------------------
  INP      000    613      Y
```

Datafilling Table SSPTKINF

Table SSPTKINF lets you assign the NXX based on the incoming trunk group. These calls are received over a direct trunk group from an end office with no calling number (for example: ONI/ANI_FAIL calls from SC/TOPS trunks, or calls from IT trunks). The NXX is required as part of the SSP database query information and is required in the SSP AMA record.

Datafill all incoming or two-way trunks which support SSP NSC calls. If the trunk is not datafilled in table SSPTKINF, calls receive vacant code treatment.

The table below shows the datafill procedure for table SSPTKINF. This contains only those fields that apply to 800 Service. Refer to *Customer Data Schema*, 297-1001-451 for a description of the other fields.

Datafilling table SSPTKINF

Field	Subfield	Explanation and action
SSPTK		*SSP trunk* This field contains subfield TK_KEY.
	TK_KEY	*Trunk Key* Enter the CLLI of the trunk group handling incoming or two-way NSC calls.
ORIGLATA		*Originating LATA number* Enter 000.
DIRECTTK		*Direct trunk* This field contains subfield DIRECT.

-continued-

NTX555AB (continued)
800 Plus (continued)

Datafilling table SSPTKINF(continued)

Field	Subfield	Explanation and action
	DIRECT	*Direct* Enter Y if this is a direct trunk group. Complete subfield NXX. Otherwise, enter N.
	NXX	*Originating office code* Enter the originating office code, NXX, for the trunk group if ANI is not available when DIRECTTK is Y.
COINTRAF		*Trunk traffic type* Enter COMB.
End		

Datafill example for table SSPTKINF

The following example shows sample datafill in table SSPTKINF. In the example, the originating office code is 621.

Datafill example for table SSPTKINF

Example of a MAP display:

```
COMMAND SSPTK ORIGLATA DIRECTTK NXX   COINTRAF
-------------------------------------------------
  INP    EAIN  000      Y       621     COMB
```

Datafilling subtable HNPACODE

The NSCCODE field in table HNPACONT subtable HNPACODE indicates that database queries should be used for 800 translations. If a routing component returned from an SCP includes a special routing indicator (transition number) or the routing component is itself an 800 number, then the SCP is not queried again, and regular INWATS routing is used.

This table accesses the 800 Service database to obtain special routing and call handling instructions.

The following procedure shows the datafill for subtable HNPACODE. This procedure contains only those fields that apply to 800 Plus. Refer to the *Customer Data Schema*, 297-1001-451, for a description of the other fields.

Datafilling subtable HNPACODE		
Field	**Subfield**	**Explanation and action**
CDRRTMT		*Code type, route reference and treatment* This field consists of subfield CD and its refinements. See the appropriate subfield for its definition.
	CD	*Code type* Enter NSC and complete subfield NSCCODE.
	NSCCODE	*Number service code* Enter 800P for 800 Service. This subfield must be datafilled in field NSCODE in table NSCDEFS.

Datafill example for table HNPACONT, subtable HNPACODE

The following example shows sample datafill for the 800 Plus Package in subtable HNPACODE. In the example, the code type is 800 PLUS.

Datafill example for table HNPACONT subtable HNPACODE

Example of a MAP display:

```
FROMDIGS  TODIG      CDRRTMT
001       009        NSC        800P
800       800        NSC        800P
```

Datafilling subtable STDPRT

The PRETRTE field in table STDPRTCT subtable STDPRT sets the SSP call translation parameters.

The following procedure shows the datafill for subtable STDPRT. This procedure contains only those fields that apply to 800 Plus. Refer to the *Customer Data Schema*, 297-1001-451, for a description of the other fields.

NTX555AB (continued)
800 Plus (continued)

Datafilling subtable STDPRT		
Field	**Subfield**	**Explanation and action**
FROMDIGS		*From digits* Enter the six digits outpulsed from the equal access end office. (Format is 0ZZXXX. XXX must equal the value of the SSP_NSC_CARRIER_ID office parameter.)
TODIGS		*To digits* Enter the same value entered in the FROMDIGS field.
PRETRTE		*Pretranslation route* This field consists of subfield PRERTSEL and its refinements. See the appropriate subfield for its definition.
	PRERTSEL	*Pretranslator route selector* Enter NSC
	TYPCALL	*Type of call* Enter DD on the AT/SSP office. Enter NP on the AT/SSP TOPS office.
	MINDIGS	*Minimum digits received* Enter 6
	MAXDIGS	*Maximum digits received* Enter 6
	NSCCODE	*NSC code* Enter 800P

Datafill example for table STDPRTCT, subtable STDPRT

The following example shows sample datafill for the 800 Plus Package in subtable STDPRT. In the example, the code type is 800 PLUS.

Datafill example for table STDPRTCT subtable STDPRT

Example of a MAP display:

```
FROMDIGS  TODIG        PRETRTE
001       009          NSC DD 6 6 800P
800       800          NSC DD 6 6 800P
```

NTX555AB (end)
800 Plus (end)

Datafilling Table LATANAME

Table LATANAME lets you assign LATA numbers to LATA names used at the SSP.

The table below shows the datafill procedure for table LATANAME. This contains only those fields that apply to 800 Service. Refer to *Customer Data Schema*, 297-1001-451 for a description of the other fields.

Datafilling table LATANAME

Field	Subfield	Explanation and action
LATANAME		*LATA name* Enter a LATA name used in the office.
LATANUM		*LATA number* Enter a LATA number for the LATA name.

Datafill example for table LATANAME

The following example shows sample datafill in table LATANAME.

Datafill example for table LATANAME

Example of a MAP display:

```
LATANAME    LATANUM
-------------------
   LATA1       000
   LATA2       001
```

SSP 800 Overflow Call Routing NTXQ40AA

Package name

NTXQ40AA

Package number

SSP 800 Overflow Call Routing

Feature numbers

The SSP 800 Overflow Call Routing feature package consists of the following features:

SSP 800 Overflow Call Routingeature numbers and names

Feature number	Feature name
AG2186	Overflow Call Routing for 800+
AR0173	800+E Overflow Call Routing with TOPS

BCS applicability

BCS34 and up.

Description

The SSP 800 Overflow Call Routing software package provides the Overflow Route (OCR) feature.

OCR extends 800 Service by providing special routing capabilities for dialed 800 numbers. Calls are routed to alternate 800 terminating directory numbers (DN) if the original terminating DN is busy. Calls overflow to the first available idle terminating DN. The SCP returns a list of up to four terminating DNs, or routing numbers, in response to an 800 query from the SSP. The SSP overflows from one terminating DN to the next, in the order the list was returned by the SCP, until an idle line is found.

Theory of operation

The SSP launches the initial query message to the SCP database to request the routing information. A typical database query occurs when an 800 Service call is placed by a subscriber. The query is sent to determine the interexchange carrier routing needed to deliver the call. The query is routed through an SSP in an access tandem office (AT), which then distributes the query through the necessary signaling transfer points (STP) to the appropriate SCP. The SCP performs the database lookup function to translate the 800 number into the actual telephone number of the destination and to determine appropriate routing. The return message is forwarded back

SSP 800 Overflow Call Routing (continued)
NTXQ40AA (continued)

through STPs to the originating SSP. Using the information obtained from the network database, the SSP routes the call to the appropriate line number.

Translations table flow

The NTXQ40AA translation process is shown in the flowchart that follows.

Table HNPACONT determines whether the SSP 800 Service method (database query) should be used for 800 translations.

Table NSCSCRN defines the six-digit screening for SSP number service code (NSC).

Table SSPTKINF defines all incoming and two-way trunks which support SSP NSC calls to be datafilled in this table.

Table C7LOCSSN obtains the subsystem number for 800 Service.

Table C7GTTYPE obtains the attribute information necessary to format the message.

Table C7GTT determines whether a point code or point code + SSN is sent in the message.

Table C7NETSSN verifies the status of the point code to see if it is available. If necessary, the status of the SSN is also checked.

Table C7RTESET obtains the numeric values for the DPC and determines which linkset is used.

Table C7LKSET determines the link within the linkset.

Table C7LINK provides the hardware location of the link

Table NSCDEFS lists the SSP options assigned to each number service code (NSC).

Table NSCSNPA maps special routing codes to the originating numbering plan area (NPA).

The MTP and SCCP tables listed below are detailed in the *Common Channel Signaling 7 Translations Guide*, 297-5151-350.

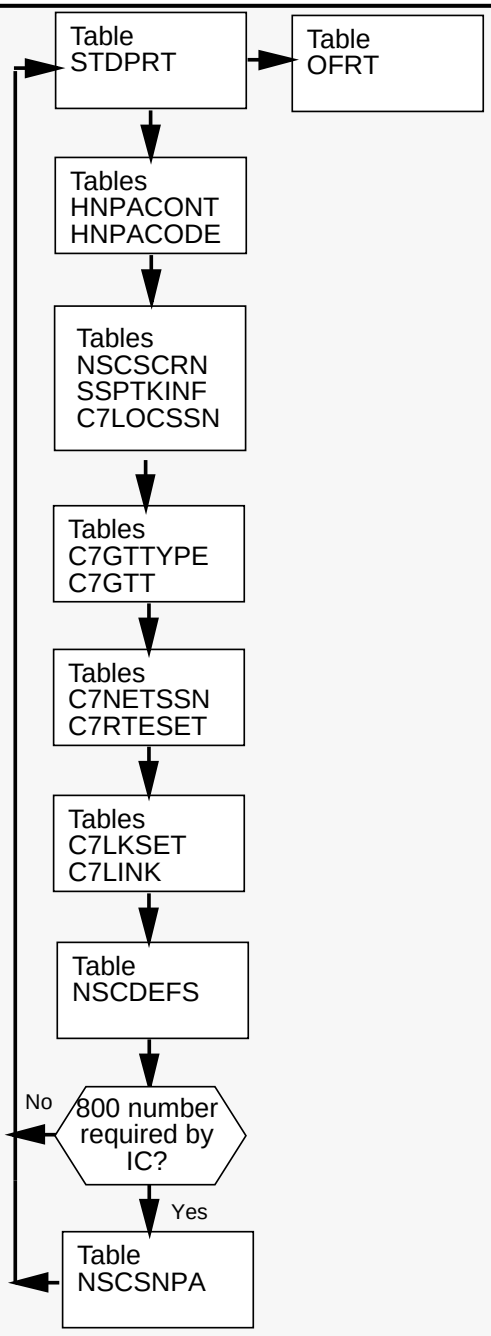
- Table C7LOCSSN
- Table C7GTTYPE
- Table C7GTT
- Table C7NETSSN

SSP 800 Overflow Call Routing (continued)
NTXQ40AA (continued)

- Table C7RTESET
- Table C7LKSET
- Table C7LINK

SSP 800 Overflow Call Routing (continued)
NTXQ40AA (continued)

Table flow for NTXQ40AA Overflow Call Routing



SSP 800 Overflow Call Routing (continued)
NTXQ40AA (continued)

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

Datafill example for NTXQ40AA						
Item	**Example data**					
code type	800P					
Datafill Table	**Example data**					
HNPACONT	001	009	NSC	800P		
NSCSCRN	INP	E800	011	022	INWO	
NSCDEFS	E800	3	099	199		
NSCSNPA	800P	300	INWO	0		
SSPTKINF	INP	EAIN	233	Y	621	COMB

Package limitations and restrictions

The following limitations apply to NTXQ40AA:

- CCS7 connectivity is necessary between the SSP and the far-end office so that an ISUP release with cause message can be returned to the SSP to report a non-idle indication on an 800 terminating line. A time-out facility is created by this feature in case full CCS7 connectivity is not available.
- A maximum of four terminating 800 routing numbers may be returned from an SCP in response to an SSP query message.
- If a call routes to an INWATS number during OCR call processing the 800 billing records are not produced for the call. Flags returned to an 800 billing record indicate that the OCR will not be generated for calls routed by the INWATS method.
- This feature does not support OCR lists returned to a TOPS position for 0-800 or 1+ hotel/motel feature calls (when ANI digits contain room numbers). For these calls the billing flags indicate that OCR is not active on the call.
- OCR lists are not supported from the Preset Conference feature.

Feature interactions

The 800 Service merely extends the capabilities 800 Service feature. However, route lists, billing, billing records for unanswered calls, and ISDN timers interact with the OCR.

SSP 800 Overflow Call Routing (continued)
NTXQ40AA (continued)

Route lists

Any terminating routing numbers in the OCR list returned from the SCP may translate to a routing list, defined in tables OFRT, HNPACONT, and RTEREF. This action does not adversely affect OCR call processing.

ISDN timer T (IAM)

The ISDN timer T(IAM), representing the initial address message, interacts with the OCRTIME value. T (IAM) is initiated after the IAM message is sent on the outgoing ISUP trunk. The timer waits for on-hook indications from the originator, or a release message (REL), answer message (ANM), or address complete message (ACM) from the outgoing circuit. The timer value is typically between 20 and 30 seconds.

The OCRTIME timer value may override the timer. For example, if no ISUP REL message is received before OCRTIME expires then OCR allows the call to complete and OCR call processing ceases to apply. However, T(IAM) may still be running, and as such, a REL message may eventually be received.

Activation/deactivation by the end user

Not applicable

Billing

This feature package does not affect billing.

Station Message Detailed Recording

This feature package does not affect Station Message Detailed Recording (SMDR).

Datafilling office parameters

The SSP uses the engineered office parameter table (OFCENG). There are two office parameters for the OCR feature. Refer to the *Office Parameter Reference Manual,* 297-1001-455, for more information on office parameters.

SSP 800 Overflow Call Routing (continued)
NTXQ40AA (continued)

Office parameters used by SSP *Table name* Parameter	Explanation and action
OFCENG NO_OF_HIS_CONTROL_BLKS	This parameter is required to hold the calling line information (CLI)
OFCENG NO_OF_HIS_DATA_BLKS	This parameter defines the maximum number of regular, large, and extra large history data blocks (HDB). Each extension block (that is, regular, large, and extra large) has a range from 0 to 655 360. The default value is 50 10 0.

Datafill sequence

The following tables require datafill to implement the SSP 800 Overflow Call Routing package. The tables are listed in the order in which they are datafilled.

Datafill Tables required for NTXQ40AA

Table	Form	NTP	Purpose of table
HNPACONT	2400A-B	297-1001-451	Defines whether the SSP 800+E method (database query) should be used for 800 translations.
HNPACONT.HNPA CODE	2401A-B	297-1001-451	Accesses the 800 Service database to obtain special routing and call handling instructions.
NSCSCRN	2041A-B	297-1001-451	Defines the six digit screening for SSP number service code (NSC).
NSCDEFS	2040	297-1001-451	Lists the SSP options assigned to each number service code (NSC) service.
NSCSNPA	2042	297-1001-451	Maps special routing codes to the original NPA.
SSPTKINF	2043A-B	297-1001-451	Defines all incoming and two-way trunks that support SSP NSC calls.

Datafilling table HNPACONT

This table defines whether database query should be used for 800 translations.

SSP 800 Overflow Call Routing (continued)
NTXQ40AA (continued)

Before datafilling table HNPACONT please note the following:

- NSCCODE 800P must be datafilled in field NSCCODE in table NSCDEFS.
- Ten digits must be presented for proper HNPA code translation. NSC 800-type calls with less than ten digits are given partial-dial treatment. They must be in the following format:
  - 800+ NXX+XXXX
  - OOY+NXX+XXXXX
  - special routing code (SRC)+NXX+XXXX
- 0XX and 1XX are invalid NXXs. Therefore, the following NSC 800 numbers are blocked and given vacant code treatment (VCT) in table HNPACONT, subtable HNPACODE:
  - 00Y+0XX+XXXX
  - 00Y+11XX+XXXX
  - 800+0XX+XXXX
  - 800+1XX+XXXX
- The following non-NSC calls should be datafilled in table HNPACONT, subtable HNPACODE with proper translation selector:
  - 800+0XX
  - 800+1XX.
  - 00Y+0XX
  - 00Y+1XX (if allowed).

The following procedure shows the datafill for table HNPACONT. This procedure contains only those fields that apply to NTXQ40AA. Refer to the *Customer Data Schema*, 297-1001-451, for a description of the other fields.

SSP 800 Overflow Call Routing (continued)
NTXQ40AA (continued)

Datafilling table HNPACONT		
Field	**Subfield**	**Explanation and action**
NPA		*Serving translation scheme (STS)* Enter the three-digit SNPA or STS code. In some loads this field is named STS. A Home or Serving NPA (SNPA) must have 1 or 0 as its middle digit and must be datafilled in one of the first 16 positions.
MAXRTE		*Number of route references* Enter a number from 1 to 1023 to specify the quantity of route reference numbers. Field MAXRTE is automatically extended to the highest route index used in subtable HNPACONT.RTEREF.
NOAMBIGC		*Number of ambiguous codes* Enter the number of ambiguous codes required.
Note: This table consists of subtable HNPACODE. See below for definition.		

Datafilling subtable HNPACODE

The NSCCODE field in subtable HNPACODE indicates that database queries should be used for 800 translations. If a routing component returned from an SCP includes a special routing indicator (transition number) or the routing component is itself an 800 number, then the SCP is not queried again, and regular INWATS routing is used.

This table accesses the 800 Service database to obtain special routing and call handling instructions.

The following procedure shows the datafill for subtable HNPACODE. This procedure contains only those fields that apply to Overflow Call Routing. Refer to the *Customer Data Schema*, 297-1001-451, for a description of the other fields.

SSP 800 Overflow Call Routing (continued)
NTXQ40AA (continued)

Datafilling subtable HNPACODE		
Field	**Subfield**	**Explanation and action**
FROMDIGS		*From digits* Enter the three-digit number to specify the office code within the Home NPA. This code may represent a single code or the first in a block of consecutive codes which have the same input data.
TODIGS		*To digits* Enter the same digit code as field FROMDIGS if that field represents a single code. Enter the last number in the block if field FROMDIGS represents the first number in a block of consecutive numbers.
CDRRTMT		*Code type, route reference and treatment* This field consists of subfield CD and its refinements. See the appropriate subfield for its definition.
	CD	*Code type* Enter NSC and complete subfield NSCCODE.
	NSCCODE	*Number service code* Enter 800P for 800 Service. This subfield must be datafilled in field NSCODE in table NSCDEFS.

Datafill example for table HNPACONT, subtable HNPACODE

The following example shows sample datafill for the NTXQ40AA Package in subtable HNPACODE. In the example, the code type is 800 PLUS.

Datafill example for table HNPACONT subtable HNPACODE

Example of a MAP display:

```
FROMDIGS   TODIGS        CDRRTMT
-------------------------------------
   001       009          NSC          800P

   800       800          NSC          800P
```

Datafilling table NSCSCRN

The six-digit (800+NXX) translation is provided in this table. All 800 calls with NXX datafilled in this table are translated using the datafilled translation selector and continues to be routed as an INWATS call. All 800

SSP 800 Overflow Call Routing (continued)
NTXQ40AA (continued)

calls with no NXX datafilled in this table are translated using the SSP database query method.

Table size

Table NSCSCRN can contain a maximum of 1600 tuples.

The following procedure shows the datafill for table NSCSCRN. This procedure contains only those fields that apply to NTXQ40AA. Refer to the *Customer Data Schema*, 297-1001-451, for a description of the other fields.

Datafilling table NSCSCRN

Field	Subfield	Explanation and action
NSCODE		*Number service code (NSC)* Enter 800P for 800 Service.
FROMNXX		*From three-digit code* Enter a three-digit code which represents either one code or the first in a block of consecutive codes. N represents a number from 2 through 9 and X, a number from 0 through 9.
TONXX		*To three-digit code* Where field FROMNXX represents a single code, enter the same three-digit code in this field. Where field FROMNXX represents the first three-digit code in a block of consecutive three-digit codes, enter the last three-digit code in the block.
XLADATA		*Code type route reference* This field contains subfield NSCCD and its refinements. See the appropriate subfields for definitions.

-continued-

SSP 800 Overflow Call Routing (continued)
NTXQ40AA (continued)

Datafilling table NSCSCRN

Field	Subfield	Explanation and action
XLADATA (cont)	CD	*Code Type* If the call is to be routed to a treatment, enter VCT and complete subfield TMT. Otherwise, enter one of the following code types and complete subfield RR: For home route, enter HRTE. For local route, enter LRTE. For home NPA, enter HNPA. For foreign NPA, enter FNPA For foreign NPA with blocking of “D” digit, enter FRTD. For INWATS originating CCIS, enter INWC. For INWATS originating, enter INWO. For INWATS terminating, enter INWS. For INWATS tandem, enter INWT. For number service code, enter NSC.
	TMT	*Treatment* Enter an alphanumeric string to specify the treatment used to index the appropriate TMTCNTL subtable.
	RR	*Route reference index* Enter an alphanumeric string to specify the route reference index of the route list in subtable HNPACONT.RTERF, where translations will proceed.

End

Datafill example for table NSCSCRN

The following example shows sample datafill for the NTXQ40AA Package in table NSCSCRN. In the example, the number service code is 800P.

Datafill example for table NSCSCRN

Example of a MAP display:

```
COMMAND NSCODE FROMXX   TONXX   XLADATA
INP     800P   011      022       INW       O
```

SSP 800 Overflow Call Routing (continued)
NTXQ40AA (continued)

Note: Once the call is recognized as an NSC call, the following tables are used to obtain the information required for an SCP query.

Datafilling table NSCDEFS

The Number Service Code (NSC) feature defines Inward Call Management features requiring access to operating company databases.

Table size

Table NSCDEFS can contain a maximum of 16 tuples.

The following procedure shows the datafill for table NSCDEFS. This procedure contains only those fields that apply to NTXQ40AA. Refer to the *Customer Data Schema*, 297-1001-451 for a description of the other fields.

Datafilling table NSCDEFS

Field	Subfield	Explanation and action
NSCODE		*Number service code* This field contains subfield NSC_CODE.
	NSC_CODE	*Number service code* Enter 800P for 800 Service.
TIMEOUT		*SSP database response timeout* Enter the time, in seconds, to wait for a response from the SSP database. The default value is 3 seconds.
OPTIONS		*Options* This field contains subfield OPTION and its refinements. See the appropriate subfields for definitions.
	OPTION	*Option* This field is a vector of up to 12 multiples of selector field OPTION and its refinements. The options and subfileds to be completed are listed in the following table:

Option	Complete subfield:
PVNSSP911	
VOLUNTHAUTH	
10DGTRTG	
COMFORT	

-continued-

SSP 800 Overflow Call Routing (continued)
NTXQ40AA (continued)

Datafilling table NSCDEFS

Field	Subfield	Explanation and action	
OPTIONS (cont)		PVNANIINFO	ANNINFO
		NSCNUM	NSCNUM
		SSPT2	TIMEOUT
		RETMET	METER
		STDACC	CODE
		OCRTIME	OCRTIME
		NSC0ZZ	NSC0ZZ
		See the appropriate subfields for definitions. Enter $ to signify the end of the vector.	
	ANIINFO	*ANI information digits* Enter 64, the HEX code assigned to the ANI II digits for PVN. This field has a range from 000 through 999.	
	NSCNUM	*Three-digit service code number* When the entry in field OPTIONS is NSCNUM, enter a three-digit service code number, for example, 800. This field has a range from 000 through 999.	
	TIMEOUT	*PVN T2 Timeout* Enter the PVN T2 timeout value, in seconds. The default value is 3 seconds.	
	METER	*Metering indication* Enter CHG for the ACM returned to the previous switch to have the metering indication field set to TRUE. Otherwise enter NOCHG.	
	CODE	*VPN standard access code* Enter the digit string to be in front of the dialed digits in the IAM or IAI message of all standard access calls. This digit string may contain 0 through 11 digits. Enter $ for a NIL digit string.	
	NSCOZZ	*Three-digit service code OZZ* Enter the OZZ code, where Z is a number from 0 to 9.	

End

SSP 800 Overflow Call Routing (continued)
NTXQ40AA (continued)

Datafill example for table NSCDEFS

The following example shows sample datafill for the NTXQ40AA Package in table NSCDEFS. In the example, the waiting time for a response from the SSP is 3 seconds.

Datafill example for table NSCDEFS

Example of a MAP display:

```
 NSCODE              TIMEOUT      OPTIONS
________________________________________________________
E800   099            3                099  199
```

Datafilling table NSCSNPA

Table NSCSNPA specifies the mapping from 00Y codes to the originating serving numbering plan area (SNPA) codes in an SSP office.

Table size

Table NSCSNPA can contain a maximum of 200 tuples.

The following procedure shows the datafill for table NSCSNPA. This procedure contains only those fields that apply to NTXQ40AA. Refer to the *Customer Data Schema*, 297-1001-451, for a description of the other fields.

Datafilling table NSCSNPA

Field	Subfield	Explanation and action
SRC		*Special routing code* This field contains subfield DIGILATOR_KEY.
	DIGILATOR_ KEY	Enter the special routing code for 800 Service. The routing code must be in the range of 000 through 009 (00Y). When MultiCarrier Routing is in use, enter 000 through 199.
SNPA		*Originating NPA* Enter the originating NPA. This field has a range from 000 through 999.
COINCALL		*Coin station call* Enter Y if the 00Y indicates calls from coin stations. Otherwise, enter N.

SSP 800 Overflow Call Routing (continued)
NTXQ40AA (continued)

Datafill example for table NSCSNPA

The following example shows sample datafill for the NTXQ40AA Package in table NSCSNPA. In the example, the SNPA is 613, and the call comes from a coin station.

Datafill example for table NSCSNPA

Example of a MAP display:

```
COMMAND     SRC    SNPA   COINCALL
-------------------------------------
   INP      000     613      Y
```

Datafilling table SSPTKINF

Table SSPTKINF provides the capability to assign the originating LATA number NXX, and coin traffic type to each incoming or two-way trunk group which handles number service calls.

Table size

Table SSPTKINF can contain a maximum of up to 8191 tuples.

The following procedure shows the datafill for table SSPTKINF. This procedure contains only those fields that apply to NTXQ40AA. Refer to the *Customer Data Schema*, 297-1001-451, for a description of the other fields.

Datafilling table SSPTKINF

Field	Subfield	Explanation and action
SSPTK		*SSP trunk* This field contains subfield TK_KEY.
	TK_KEY	*Trunk Key* Enter the CLLI of the trunk group handling incoming or two-way NSC calls.
ORIGLATA		*Originating LATA number* Enter the three-digit code of the originating LATA.

-continued-

SSP 800 Overflow Call Routing (end)
NTXQ40AA (end)

Datafilling table SSPTKINF(continued)		
Field	**Subfield**	**Explanation and action**
DIRECTTK		*Direct trunk* This field contains subfield DIRECT.
	DIRECT	*Direct* Enter Y if this is a direct trunk group. Complete subfield NXX. Otherwise, enter N.
	NXX	*Originating office code* Enter the originating office code, NXX, for the trunk group if ANI is not available when DIRECTTK is Y.
COINTRAF		*Trunk traffic type* Enter COMB when the trunk group handles coin and non-coin traffic. Enter COIN when the trunk group handles coin traffic only. Enter NON-COIN when the trunk group handles non-coin traffic only.
End		

Datafill example for table SSPTKINF

The following example shows sample datafill for the NTXQ40AA Package in table SSPTKINF. In the example, the originating LATA number is 233.

Datafill example for table SSPTKINF

Example of a MAP display:

```
COMMAND SSPTK ORIGLATA DIRECTTK NXX   COINTRAF
-------------------------------------------------
  INP    EAIN   233      Y       621    COMB
```

Service orders

Not applicable

NTXR35AA
800 Dialed Number Display and BCLID

Package name

800 Dialed Number Display and BCLID

Package number

NTXR35AA

BCS applicability

BCS34 and up.

Description

The 800 Dialed Number Display and BCLID software package provides support for delivery of 800 Caller Identifier and Dialed Number Identifier information to 800 Service subscribers.

Package limitations and restrictions

Not applicable.

Feature interactions

Not applicable.

Activation/deactivation by end user

Not applicable.

Billing

Not applicable.

Station Message Detailed Recording

Not applicable.

Datafilling office parameters

Not applicable.

Datafill sequence

The following table requires datafill to configure NTXR35AA.

Datafill SSP table to configure 800 Dialed Number Display and BCLID

Table	Purpose of table
BCLIDGRP	Specifies BCLID options on a customer group basis.

Datafilling Table BCLIDGRP

The table below shows the datafill procedure for table BCLIDGRP. This table controls BCLID options on a customer group basis.

NTXR35AA (end)
800 Dialed Number Display and BCLID (end)

This table contains only those fields that apply to 800 Service. Refer to *Customer Data Schema,* 297-1001-451 for a description of the other fields.

Datafilling Table BCLIDGRP		
Field	**Subfield**	**Explanation and action**
BCGRPNUM		*BCLID group number* Enter the bulk calling line identification group number. Range 0-2047.
DATE		*Date included* Enter N to allow dialed 800 numbers in BCLID
TIME		*Time included* Enter N to allow dialed 800 numbers in BCLID
DSP800DN		*Dialed 800 numbers in BCLID* Enter Y to include dialed 800 numbers in BCLID. Otherwise, enter N. Default N.

Datafill example for table BCLIDGRP

The following example shows sample datafill for 800 Service in table BCLIDGRP. In the example, the BCLID group is 4. The DSP800DN option is activated.

Datafill example for table BCLIDGRP

Example of a MAP display:

```
 BCGRPNUM  USP  BILLDN   DNDISP  DATE TIME INTRAGRP
  CFIND BSYSEND DSP800DN BCLNKLEN
-------------------------------------------------------
 15        Y  6135551212  FIRST   N     N    N
   N       N       Y      (HOST 0 0 0 3)$
```

AR0535
800Plus End-Office Display for ACD & Centrex Subscribers

Feature name

800Plus End-Office Display for ACD & Centrex Subscribers

Feature number

AR0535

BCS applicability

BCS34 and up.

Description

The 800Plus End-Office Display for ACD & Centrex Subscribers feature provides support for delivery of 800 Caller Identifier and Dialed Number Identifier information to automatic call distribution (ACD) and Centrex terminating telephone sets.

Package limitations and restrictions

Not applicable.

Feature interactions

Not applicable.

Activation/deactivation by end user

Not applicable.

Billing

No impact on billing results from this feature.

Station Message Detailed Recording

Not applicable.

Datafilling office parameters

Not applicable.

Datafill sequence

The following table requires datafill to configure AR0535.

Datafill SSP table to configure 800Plus End-Office Display for ACD & Centrex Subscribers

Table	Purpose of table
CUSTSTN	This table lists the station options assigned to each customer group.

AR0535 (end)
800Plus End-Office Display for ACD & Centrex Subscribers (end)

Datafilling Table CUSTSTN

The table below shows the datafill procedure for table CUSTSTN. This table enables and disabled CID and DNID options on a customer group basis.

This table contains only those fields that apply to 800 Service. Refer to *Customer Data Schema,* 297-1001-451 for a description of the other fields.

Datafilling Table CUSTSTN

Field	Subfield	Explanation and action
CUSTNAME		*Customer name* Enter the name of the customer group (1-16 characters).
OPTNAME		*Option name* Enter **800EOD**
	OPTION	*Options* Enter 800EOD Y Y to enable both CID and DNID Enter 800EOD Y N to enable CID and disable DNID Enter 800EOD N Y to disable CID and enable DNID Enter 800EOD N N to disable both CID and DNID

Datafill example for Table CUSTSTN

The following example shows sample datafill for 800 Service in table CUSTSTN. In the example, the customer group is CUSTGRP1. The CID option is activated, and the DNID option is not activated.

Datafill example for table CUSTSTN

Example of a MAP display:

```
CUSTNAME      OPTNAME         OPTION
-------------------------------------
  CUSTGRP1     800EOD          800EOD Y N
```

AR0536
800Plus End-Office Display for CMS Subscribers

Feature name

800Plus End-Office Display for CMS Subscribers

Feature number

AR0536

BCS applicability

BCS34 and up.

Description

The 800Plus End-Office Display for CMS Subscribers feature provides support for delivery of 800 Caller Identifier and Dialed Number Identifier information to call management services (CMS) terminating telephone sets.

Package limitations and restrictions

Not applicable.

Feature interactions

Not applicable.

Activation/deactivation by end user

Not applicable.

Billing

No impact on billing results from this feature.

Station Message Detailed Recording

Not applicable.

Datafilling office parameters

Not applicable.

Datafill sequence

The following table requires datafill to configure AR0535.

Datafill SSP table to configure 800Plus End-Office Display for CMS Subscribers

Table	Purpose of table
CUSTSTN	This table lists the station options assigned to each customer group.

AR0536 (end)
800Plus End-Office Display for CMS Subscribers (end)

Datafilling Table CUSTSTN

The table below shows the datafill procedure for table CUSTSTN. This table enables and disabled CID and DNID options on a customer group basis.

This table contains only those fields that apply to 800 Service. Refer to *Customer Data Schema,* 297-1001-451 for a description of the other fields.

Datafilling Table CUSTSTN

Field	Subfield	Explanation and action
CUSTNAME		*Customer name* Enter the name of the customer group (1-16 characters).
OPTNAME		*Option name* Enter **800EOD**
	OPTION	*Options* Enter 800EOD Y Y to enable both CID and DNID Enter 800EOD Y N to enable CID and disable DNID Enter 800EOD N Y to disable CID and enable DNID Enter 800EOD N N to disable both CID and DNID

Datafill example for Table CUSTSTN

The following example shows sample datafill for 800 Service in table CUSTSTN. In the example, the customer group is CUSTGRP1. The CID option is activated, and the DNID option is not activated.

Datafill example for table CUSTSTN

Example of a MAP display:

```
CUSTNAME      OPTNAME         OPTION
-------------------------------------
CUSTGRP1      800EOD          800EOD Y N
```

800 Service administration

This chapter describes 800 Service administration procedures by defining traffic-sensitive elements. It also contains information pertinent to long-range planning, provisioning engineering, and network design.

Refer also to your SCP-OAM and Service Management System (SMS) documentation.

Understanding 800 Service on page 4-2 provides a brief description of 800 Service.

Defining administrative functions on page 4-2 provides an overview of administrative functions.

Using OMs to evaluate 800 Service performance on page 4-5 provides a description of the operational measurements (OMs) that can be used to determine performance.

Evaluating 800 Service performance factors on page 4-42 provides information on how to evaluate performance factors.

Understanding 800 Service

800 Service uses service switching points (SSP) and service control points (SCP) in the common channel signaling 7 (CCS7) network to provide toll-reversed calling. Toll-reversed calling allows the called party to pay long distance charges. Businesses using these services can provide callers with convenient, cost-free access to telephone services.

When a caller dials an 800 number, the SSP at which the call originates sends a query to the SCP for routing information. The SCP retrieves the routing information from its 800 Service database, and sends this information to the SSP in a response message. The SSP then routes the call accordingly.

Defining administration functions

Role of the administrator

The administrator is responsible for monitoring the performance of the SCP. Typically, the administrator delivers SCP hardware and software performance information to the operating company's maintenance and engineering groups. The administrator collects data that is used to calculate provisioning requirements and provide early indications of system faults.

How administrators monitor service performance

The administrator should use the OMs described in this chapter to monitor the performance and efficiency of 800 Service and its associated components.

Performance factors

Performance factors are aspects of system performance that affect the efficient operation of 800 Service. 800 Service has several traffic-sensitive areas that may exceed engineered limits. Monitor these areas using the OMs described in this section. The system administrator must track congestion, usage, and traffic levels to aid with provisioning decisions. Some performance factors include the following:

- 800 Service availability
- database availability
- level of 800 Service query traffic
- query processor congestion
- query processor responsiveness
- query processor response times
- number of SMS requests

Performance is measured using performance indicators.

Performance indicators

Performance indicators are measurements or records of events that occur during a given period of time or in a time sequence.

Performance indicators show how well 800 Service software and signaling fulfill the purpose for which they were designed. Performance is measured by performance indicators such as operational measurements and log reports. Performance indicators include the following:

- availability
- performance metrics
- error rates

Operational measurements

Each SSP and SCP counts how many times certain key functions are performed. The counts are called OMs. OMs are data-containing records of events that occur during a given time period or in a given sequence. They are used as service level indicators as well as input for maintenance, hardware and software assignment, accounting, and provisioning decisions. OMs let you track functional performance levels.

OMs are available on the SSPs that support 800 Service, and on the SCP that carries the 800 Service database. The generation and collection of OMs are ongoing background processes that work in parallel with the other functions of the SCP and SSP.

OMs are presented in groups. Each group serves a specific purpose or describes a specific aspect of service operation.

For further general information about OMs, and complete descriptions of all DMS-100 Family OMs, refer to the *Operational Measurements Reference Manual*, 297-1001-814.

Log Reports

A log report is a machine-generated message indicating that an event has occurred in the switch or in one of its peripherals. Log reports include status and activity reports, hardware or software fault reports, reports on test results, and reports on other events or conditions. Complete descriptions of all DMS-100 Family log reports are contained in the *Log Report Reference Manual*, 297-1001-840.

800 Service system resources

The uninterrupted functioning of 800 Service depends on the operation of the SCP and all SSPs that act as sources and destinations of 800 Service calls. For system resource information, refer to *DMS SuperNode Signaling Point/Service Switching Point Planning and Engineering Guide*,

297-5121-101, and *DMS SuperNode Service Control Point II Planning and Engineering Guide,* 297-5131-101

800 Service component failures and system faults

Key components on SSPs include the following:

- CCS7 link interface units (LIU7) and associated links
- computing module (CM) and supporting equipment
- input/output cabinet (IOC) equipment

Key components on the SCP include the following:

- LIU7s and associated links
- CM and supporting equipment
- application processor (AP) cabinets
- IOC equipment

Key components on the SSPs and the SCP can fail, causing 800 Service degradation or failure. All hardware failures result in alarms or log reports at the MAP terminal.

If 800 Service degradation or failure occurs at one specific originating or destination SSP, check for alarms and log reports at that SSP.

If 800 Service degradation or failure occurs across the entire network, check for alarms and log reports at the SCP.

On the SCP

The operation of the SCP is crucial to the operation of 800 Service. The capacity of the SCP is expressed in three key areas:

- query processing
- update processing
- database storage capacity

If, in any way the SCP fails to provide data to the SSP, 800 Service will be unable to function.

On the SSP

The operation of the SSPs that act as sources and destinations of 800 Service calls are also crucial to the operation of 800 Service. The critical areas of SSP capacity relate directly to call processing and CCS7 messaging capacities. These capacities are described in the *DMS-SuperNode Signaling Point/Service Switching Point Administration Guide,* 297-5121-301.

Using OMs to evaluate 800 Service performance

This section provides information about the OM groups and registers associated with 800 Service.

The basic functions of the OMs associated with 800 Service are described here. The following tables list OM groups and individual registers in each group, the BCS when the register was created, and related registers.

SSP operational measurements

SSP OM groups help you evaluate the performance and efficiency of your network and 800 Service. Information on the following OM groups is presented here:

- NSC
- NSCACG
- TRMTCM

The OMs in these groups consist of sets of counters that are described in the following table.

800 Service operational measurements on the SSP		
Group	**Register**	**Information**
NSC		**Description:** NSC contains registers that indicate the level of service provided by the SSP **BCS history:** This group was created in BCS34.
	NSCORIG	**Description:** Total number of Number Service Code (NSC) line calls that have reached the dialing complete stage. **BCS history:** This register was created in BCS34.
	NSCATIN	**Description:** Total number of NSC calls incoming on trunks. **BCS history:** This register was created in BCS34.
	NSCTIOVF	**Description:** Total number of irregularities that occur when an SSP NSC call fails because of an NSC Transaction ID that was unavailable due to maintenance or engineering problems. **BCS history:** This register was created in BCS34.
	NSCSFLTO	**Description:** Total number of irregularities that occur when the SSP times out while waiting for a reply from the SCP. **BCS history:** This register was created in BCS34.
	NSCFLICM	**Description:** Total number of irregularities that occur when the SSP receives a response from the SCP that is undecipherable or contains bad data. **BCS history:** This register was created in BCS34.
	NSCFLICS	**Description:** Total number of irregularities that occur when the SSP receives a response from the SCP that contains an incomplete or out-of-sequence set of commands. **BCS history:** This register was created in BCS34.
	NSCABNBS	**Description:** Total number of irregularities that occur when an on-hook is received from the calling party after the SSP seizes an outgoing trunk, but before the call is answered. **BCS history:** This register was created in BCS34.
	NSCSFLEA	**Description:** Total number of failures that occur when the first stage of signaling indicates an NSC call, but either no second stage signaling is received, or the second stage is incomplete. **BCS history:** This register was created in BCS34.
	NSCINVY	**Description:** Number of times an invalid 00Y code is received. **BCS history:** This register was created in BCS34.

-continued-

800 Service operational measurements on the SSP (continued)

Group	Register	Information
NSC (cont)	NSCQUERY	**Description:** Number of database queries sent during call processing by way of transaction control application part (TCAP). **BCS history:** This register was created in BCS34.
	NSCFPRIQ	**Description:** Number of 800 calls that fail prior to launching a database query. This includes calls that encounter 800 Service invalid-called-digits, 800 Service subsystem-out-of-service, and 800 Service no-transaction-IDs-available. **BCS history:** This register was created in BCS34.
	NSCVACDR	**Description:** Number of times a database response indicates a vacant code. **BCS history:** This register was created in BCS34.
	NSCNSNPA	**Description:** Number of times the database returns an out-of-zone message as a special routingin the database response. **BCS history:** This register was created in BCS34.
	NSCOUTSV	**Description:** Number of database overloads. (Number of times a query is returned to the SSP from the SCP with SUBSYSTEM FAILURE status.) **BCS history:** This register was created in BCS34.
	NSCDBOVL	**Description:** Number of database overloads. (Number of times a query is returned to the SSP from the SCP with SUBSYSTEM CONGESTED status.) **BCS history:** This register was created in BCS34.
	NSCUNSOR	**Description:** Number of unsolicited responses and late responses received the SSP from the SCP. **BCS history:** This register was created in BCS34.
	NSCEIGHT	**Description:** Number of 800 numbers returned fro the SCP database that have not been switched to Enhanced 800 service. (Number of valid calls completed through retranslation using INWATS table.) **BCS history:** This register was created in BCS34.
NSCAGC		**Description:** NSCAGC stores the peg counts associated with NSC calls. **BCS history:** This group was created in BCS34.

-continued-

800 Service operational measurements on the SSP (continued)

Group	Register	Information
NSCAGC (cont)	NSCATMPT	**Description:** Total number of originating NSC calls reaching the SSP. **BCS history:** This register was created in BCS34.
	NSCBKVC	**Description:** Total number of NSC calls blocked for excessive calling to vacant codes from non-purchased NPAs. **BCS history:** This register was created in BCS34.
	NSCBKSOC	**Description:** Total number of NSC calls blocked by automatic call gapping (AGC) controls. (These calls receive GNCT treatment.) **BCS history:** This register was created in BCS34.
	NSCBKMCC	**Description:** Total number of calls blocked by ACG controls for 10-digit mass calling. (These calls receive BUSY treatment.) **BCS history:** This register was created in BCS34.
	NSCCONPN	**Description:** Total number of times an ACG control cannot be performed on a code because the control list is full. **BCS history:** This register was created in BCS34.
	NSCBKSIC	**Description:** Total number of NSC calls blocked by ACG controls initiated by SMS and forwarded through the SCP. (These calls receive RODR treatment.) **BCS history:** This register was created in BCS34.
	NSCCOSVC	**Description:** Total number of times an ACG control cannot be performed on a 6-digit code because the control list is full. (A maximum of 256 six-digit NSC can be controlled.) **BCS history:** This register was created in BCS34.
TRMTCM		**Description:** TRMTCM stores the number of calls routed to Changed 800 Number (CHAN) or Changed 800 Number Forwarded (CHAF) special-announcement treatment. **BCS history:** This register was created in BCS34.

-continued-

800 Service operational measurements on the SSP (continued)

Group	Register	Information
TRMTCM (cont)	CHAN	**Description:** Total number of calls that are routed to CHAN treatment. (This treatment is usually a recorded announcement informing the caller that the dialed number has been changed.) **BCS history:** This register was created in BCS34.
	CHAF	**Description:** Total number of calls that are routed to CHAF treatment. (This treatment is usually call rerouting to National Directory Assistance.) **BCS history:** This register was created in BCS34.

End

SCP operational measurements

SCP OM groups track activities in the 800 Service master database maintained in the SCP-OAM and in the 800 Service section of the slave database in the SCP equipment.

Information on the following OM groups is presented here:

- SCPQPQTC
- SCPQPQTT
- SCPQPQTM
- SCPQUMTC
- SCPQPUTM
- SCPUPTF
- SCPUPUT
- SCPUPUTM
- P8NPA
- P8NXX
- P8QUERY
- P8QUERY2
- P8SSP
- P8SSP2
- P8TEL

The OMs in these groups consist of sets of counters that are described in the following table.

OM integrity

It is possible for data in OM groups to become corrupted. Check the following OM registers to verify OM data integrity. The values in the registers should all be the same, and should indicate the number of data transfers scheduled for the measurement period. If the registers contain other values, the OM data may be suspect. The registers that must be verified are as follows:

- QPQTCTV
- QPQTRTTV
- QPQTMTV
- QPUMTCTV
- QPUDTTV
- UPUTTV
- UPMTCTV
- DBMTCTV

800 Service operational measurements on the SCP

Group	Register	Information
SCPQPQTC		**Description:** Counts the total number of query messages sent, received, and discarded by a query processing instance (QPI). This OM group can be used to check the query capacity of a QPI. **BCS history:** This OM group was created in BCS33.
	QPQTCTV	**Description:** Counts each time a complete group of OMs are transmitted from the file processor (FP) and fed into the DMS OM system. **BCS history:** This register was created in BCS33.
	QPQREC	**Description:** Counts the number of queries received by a QPI. **BCS history:** This register was created in BCS33.
	QPQREC2	**Description:** Extension register for QPQREC. **BCS history:** This register was created in BCS33.
	QPRSPST	**Description:** Counts the number of responses sent by a QPI. **BCS history:** This register was created in BCS33.
	QPRSPST2	**Description:** Extension register for QPRSPST. **BCS history:** This register was created in BCS33.
	QPDSCOS	**Description:** Counts the number of queries discarded while a specified QPI is out of service (OOS). **BCS history:** This register was created in BCS33.
	QPDSCOS2	**Description:** Extension register for QPDSCOS. **BCS history:** This register was created in BCS33.
	QPRECCG	**Description:** Counts the number of queries received by a specified QPI while it is congested. **BCS history:** This register was created in BCS33.
	QPRECCG2	**Description:** Extension register for QPRECCG. **BCS history:** This register was created in BCS33.
	QPDISC	**Description:** Counts the number of queries discarded by a specified QPI because the discard threshold is reached. **BCS history:** This register was created in BCS33.
	QPDISC2	**Description:** Extension register for QPDISC. **BCS history:** This register was created in BCS33.

-continued-

800 Service operational measurements on the SCP (continued)

Group	Register	Information
SCPQPQTC (cont)	QPDISFQ	**Description:** Counts the number of queries discarded due to a full queue. **BCS history:** This register was created in BCS33.
SCPQPQTT		**Description:** Tracks the time it takes a QPI to respond to a query. This OM group can be used to check the query capacity and performance of a QPI. **BCS history:** This OM group was created in BCS33.
	QPQTRTTV	**Description:** Counts each time a complete group of OMs are transmitted from the file processor (FP) and fed into the DMS OM system. **BCS history:** This register was created in BCS33.
	QPM0025	**Description:** Counts the number of messages handled in greater than 0 ms, but less than or equal to 25 ms. **BCS history:** This register was created in BCS33.
	QPM00252	**Description:** Extension register for QPM0025. **BCS history:** This register was created in BCS33.
	QPM0050	**Description:** Counts the number of messages handled in greater than 25 ms, but less than or equal to 50 ms. **BCS history:** This register was created in BCS33.
	QPM00502	**Description:** Extension register for QPM0050. **BCS history:** This register was created in BCS33.
	QPM0100	**Description:** Counts the number of messages handled in greater than 50 ms, but less than or equal to 100 ms. **BCS history:** This register was created in BCS33.
	QPM01002	**Description:** Extension register for QPM0100. **BCS history:** This register was created in BCS33.
	QPM0150	**Description:** Counts the number of messages handled in greater than 100 ms, but less than or equal to 150 ms. **BCS history:** This register was created in BCS33.
	QPM01502	**Description:** Extension register for QPM0150. **BCS history:** This register was created in BCS33.

-continued-

800 Service operational measurements on the SCP (continued)

Group	Register	Information
SCPQPQTT (cont)	QPM0200	**Description:** Counts the number of messages handled in greater than 150 ms, but less than or equal to 200 ms. **BCS history:** This register was created in BCS33.
	QPM02002	**Description:** Extension register for QPM0200. **BCS history:** This register was created in BCS33.
	QPM0300	**Description:** Counts the number of messages handled in greater than 200 ms, but less than or equal to 300 ms. **BCS history:** This register was created in BCS33.
	QPM03002	**Description:** Extension register for QPM0300. **BCS history:** This register was created in BCS33.
	QPM0500	**Description:** Counts the number of messages handled in greater than 300 ms, but less than or equal to 500 ms. **BCS history:** This register was created in BCS33.
	QPM05002	**Description:** Extension register for QPM0500. **BCS history:** This register was created in BCS33.
	QPM0750	**Description:** Counts the number of messages handled in greater than 500 ms, but less than or equal to 750 ms. **BCS history:** This register was created in BCS33.
	QPM07502	**Description:** Extension register for QPM0750. **BCS history:** This register was created in BCS33.
	QPM1000	**Description:** Counts the number of messages handled in greater than 750 ms, but less than or equal to 1000 ms. **BCS history:** This register was created in BCS33.
	QPM10002	**Description:** Extension register for QPM1000. **BCS history:** This register was created in BCS33.
	QPG1000	**Description:** Counts the number of messages handled in greater than 1000 ms. **BCS history:** This register was created in BCS33.

-continued-

800 Service operational measurements on the SCP (continued)

Group	Register	Information
SCPQPQTM		**Description:** This OM group tracks the time it takes a query processing instance (QPI) to respond to a query. This OM group can be used to indicate trouble by tracking the number and duration of state transitions that can affect query processing. **BCS history:** This OM group was created in BCS33.
	QPQTMTV	**Description:** Counts each time a complete group of OMs are transmitted from the file processor (FP) and fed into the DMS OM system. **BCS history:** This register was created in BCS33.
	QPQTMCT	**Description:** Counts the number of times the fast scan process in the FP checks the current OM group's useage registers. **BCS history:** This register was created in BCS33.
	QPISIT	**Description:** Counts the number of in-service to in-service trouble state transitions for a specified QPI. **BCS history:** This register was created in BCS33.
	QPSSMB	**Description:** Counts the number of times a specified QPI goes from the in-service (InSv) or in-service-trouble (ISTb) state to the manual busy (ManB) state. **BCS history:** This register was created in BCS33.
	QPSSSB	**Description:** Counts the number of times a QPI goes from the InSv or ISTb to system busy (SysB) state. **BCS history:** This register was created in BCS33.
	QPSSRB	**Description:** Counts the number of times a QPI goes from the InSv or ISTb to the resource busy (RBsy) state. **BCS history:** This register was created in BCS33.
	QPSSNA	**Description:** Counts the number of times a QPI goes from the InSv or ISTb to the not accessible (NA) state. **BCS history:** This register was created in BCS33.
	QPNASU	**Description:** Usage register with a 10-s scan rate. It records the time the specified QPI provides service while in a non-accessible state. **BCS history:** This register was created in BCS33.

-continued-

800 Service operational measurements on the SCP (continued)

Group	Register	Information
SCPQPQTM (cont)	QPMSRBU	**Description:** Usage register with a 10-s scan rate. It records the duration for which a QPI is unavailable for traffic because it is in the ManB, SysB or RBsy state. **BCS history:** This register was created in BCS33.
	QPNAU	**Description:** Usage register with a 10-s scan rate. It records the duration for which a specified QPI is in the NA state. **BCS history:** This register was created in BCS33.
	QPRBU	**Description:** Usage register with a 10-s scan rate. It records the duration for which a specified QPI is RBsy. **BCS history:** This register was created in BCS33.
	QPITU	**Description:** Usage register with a 10-s scan rate. It records the duration for which a specified QPI is ISTb. **BCS history:** This register was created in BCS33.
	QPQCG	**Description:** Counts the number of times query congestion occurs for a specified QPI. **BCS history:** This register was created in BCS33.
	QPQCGU	**Description:** Usage register with a 10-s scan rate. It records the duration for which a specified QPI is query congested. **BCS history:** This register was created in BCS33.
	QPOSBKLG	**Description:** Counts the number of times a QPI is taken out of service due to update backlog. **BCS history:** This register was created in BCS33.
	QPDBIT	**Description:** Counts the number of database ISTb conditions for a specified QPI. **BCS history:** This register was created in BCS33.
	QPDBCF	**Description:** Counts the number of database critical faults for a specified QPI. **BCS history:** This register was created in BCS33.

-continued-

800 Service operational measurements on the SCP (continued)

Group	Register	Information
SCPQUMTC		**Description:** Counts the number of query processing instance (QPI) update state transitions from a service-providing to a non-service-providing state. This OM group can be used to indicate trouble by tracking the number and duration of state transitions that can affect query processing. **BCS history:** This OM group was created in BCS33.
	QPUMTCTV	**Description:** Counts each time a complete group of OMs are transmitted from the file processor (FP) and fed into the DMS OM system. **BCS history:** This register was created in BCS33.
	QPUMTCCT	**Description:** Counts the number of times the fast scan process checks the current OM group's usage registers. **BCS history:** This register was created in BCS33.
	QPQUISIT	**Description:** Counts the number of in-service (InSv) to in-service trouble (ISTb) state transitions for a specified QPI update state. **BCS history:** This register was created in BCS33.
	QPQUSSMB	**Description:** Counts the number of times a QPI update state goes from the InSv or ISTb to the manual busy (ManB) state. **BCS history:** This register was created in BCS33.
	QPQUSSSB	**Description:** Counts the number of times a QPI update state goes from the InSv or ISTb to the system busy (SysB) state. **BCS history:** This register was created in BCS33.
	QPQUSSRB	**Description:** Counts the number of times a QPI update state goes from the InSv or ISTb to the resource busy (RBsy) state. **BCS history:** This register was created in BCS33.
	QPQUSSNA	**Description:** Counts the number of times a QPI update state goes from the InSv or ISTb to the not accessible (NA) state. **BCS history:** This register was created in BCS33.
	QPQUITU	**Description:** Tracks the amount of time a QPI is in the ISTb update state. **BCS history:** This register was created in BCS33.

-continued-

800 Service operational measurements on the SCP (continued)

Group	Register	Information
SCPQPUTM		**Description:** Counts the number of updates a QPI manipulates and the number of problems encountered with update distribution. This OM group can be used to indicate possible error conditions in lower layer software as it affects the processing of updates on a QPI. **BCS history:** This OM group was created in BCS33.
	QPUDTTV	**Description:** Counts each time a complete group of OMs are transmitted from the file processor (FP) and fed into the DMS OM system. **BCS history:** This register was created in BCS33.
	QPUDTCT	**Description:** Counts the number of times the fast scan process checks the current OM group's usage registers. **BCS history:** This register was created in BCS33.
	QPBKLGU	**Description:** Usage register with a 10-s scan rate. It records the duration for which a QPI was update backlogged. **BCS history:** This register was created in BCS33.
	QPBKLG	**Description:** Counts the number of times a QPI was update backlogged. **BCS history:** This register was created in BCS33.
	QPOBSOL	**Description:** Counts the number of times a QPI became obsolete due to update backlog. **BCS history:** This register was created in BCS33.
	QPSTDAPL	**Description:** Counts the number of standard updates made to a specified QPI. **BCS history:** This register was created in BCS33.
	QPSTDDIS	**Description:** Counts the number of standard updates distributed to a specified QPI. **BCS history:** This register was created in BCS33.

-continued-

800 Service operational measurements on the SCP (continued)

Group	Register	Information
SCPUPTF		**Description:** Counts the number of update and retrieve requests received from the service management system (SMS), as well as the number of responses sent, requests discarded, update requests skipped, retransmit requests received by the DMS-SCPII, and the number of resynchronizations issued by the SMS. **BCS history:** This OM group was created in BCS34.
	UPTFEURD	**Description:** Counts the number of emergency update requests discarded. **BCS history:** This register was created in BCS34.
	UPTFEURR	**Description:** Counts the number of emergency update requests received. **BCS history:** This register was created in BCS34.
	UPTFEURS	**Description:** Counts the number of emergency update responses sent. **BCS history:** This register was created in BCS34.
	UPTFNRRD	**Description:** Counts the number of normal retrieve requests discarded. **BCS history:** This register was created in BCS34.
	UPTFNRRR	**Description:** Counts the number of normal retrieve requests received. **BCS history:** This register was created in BCS34.
	UPTFNRRS	**Description:** Counts the number of normal retrieve responses sent. **BCS history:** This register was created in BCS34.
	UPTFNURD	**Description:** Counts the number of normal update requests discarded. **BCS history:** This register was created in BCS34.
	UPTFNURR	**Description:** Counts the number of normal update requests received. **BCS history:** This register was created in BCS34.
	UPTFNURS	**Description:** Counts the number of normal update responses sent. **BCS history:** This register was created in BCS34.

-continued-

800 Service operational measurements on the SCP (continued)

Group	Register	Information
SCPUPTF (cont)	UPTFPRRD	**Description:** Counts the number of priority retrieve requests discarded. **BCS history:** This register was created in BCS34.
	UPTFPRRR	**Description:** Counts the number of priority retrieve requests received. **BCS history:** This register was created in BCS34.
	UPTFPRRS	**Description:** Counts the number of priority retrieve responses sent. **BCS history:** This register was created in BCS34.
	UPTFRXRR	**Description:** Counts the number of retransmit requests received from the SMS. **BCS history:** This register was created in BCS34.
	UPTFRXRS	**Description:** Counts the number of retransmit request responses sent to the SMS. **BCS history:** This register was created in BCS34.
	UPTFSYNC	**Description:** Counts the number of resync requests processed. **BCS history:** This register was created in BCS34.
	UPTFURSC	**Description:** Counts the number of update retrieve requests skipped due to file corruption. **BCS history:** This register was created in BCS34.
	UPTFURSM	**Description:** Counts the number of update retrieve requests skipped due to not receiving a missing file from SMS. **BCS history:** This register was created in BCS34.
	UPTFURST	**Description:** Counts the number of update retrieve requests skipped due to not receiving a response to a retransmit request for a missing file. **BCS history:** This register was created in BCS34.
	UPTFTV	**Description:** Used during software design verification. **BCS history:** This register was created in BCS34.

-continued-

800 Service operational measurements on the SCP (continued)

Group	Register	Information
SCPUPUT		**Description:** Counts the number of normal and emergency updates and update batches that were applied, preempted, rejected, or backed out by an update processing instance (UPI). This OM group also records the amount of time it takes to apply updates. This OM group can be used to check whether updates are processed within appropriate time constraints. **BCS history:** This OM group was created in BCS33.
	UPUTTV	**Description:** Counts each time a complete group of OMs is transmitted from the file processor (FP) and fed into the DMS OM system. **BCS history:** This register was created in BCS33.
	UPEUBAP	**Description:** Counts the number of emergency update batches applied by a specified UPI. **BCS history:** This register was created in BCS33.
	UPNUBAP	**Description:** Counts the number of normal update batches applied by a specified UPI. **BCS history:** This register was created in BCS33.
	UPEUAP	**Description:** Counts the number of emergency updates applied by a specified UPI. **BCS history:** This register was created in BCS33.
	UPNUAP	**Description:** Counts the number of normal updates applied by a specified UPI. **BCS history:** This register was created in BCS33.
	UPNUPREM	**Description:** Counts the number of normal updates preempted for a specified UPI. **BCS history:** This register was created in BCS33.
	UPEUPRJT	**Description:** Counts the number of emergency updates rejected for a specified UPI. **BCS history:** This register was created in BCS33.
	UPNUPRJT	**Description:** Counts the number of normal updates rejected for a specified UPI. **BCS history:** This register was created in BCS33.

-continued-

800 Service operational measurements on the SCP (continued)

Group	Register	Information
SCPUPUT (cont)	UPBBUCON	**Description:** Counts the number of batch backouts from the database because of updating conflicts for a specified UPI. **BCS history:** This register was created in BCS33.
	UPUBUCON	**Description:** Counts the number of updates backed out because of updating conflicts for a specified UPI. **BCS history:** This register was created in BCS33.
	UPEU5S	**Description:** Counts the number of emergency updates applied in less than 5 s to a specified UPI. **BCS history:** This register was created in BCS33.
	UPEU20S	**Description:** Counts the number of emergency updates applied to a specified UPI in greater than or equal to 5 s, but less than 20 s. **BCS history:** This register was created in BCS33.
	UPEU1M	**Description:** Counts the number of emergency updates applied to a specified UPI in greater than or equal to 20 s, but less than 1 min. **BCS history:** This register was created in BCS33.
	UPEU5M	**Description:** Counts the number of emergency updates applied to a specified UPI in greater than or equal to 1 min, but less than 5 min. **BCS history:** This register was created in BCS33.
	UPEU15M	**Description:** Counts the number of emergency updates applied to a specified UPI in greater than or equal to 5 min, but less than 15 min. **BCS history:** This register was created in BCS33.
	UPEUG15M	**Description:** Counts the number of emergency updates applied to a specified UPI in greater than 15 min. **BCS history:** This register was created in BCS33.
SCPUPUTM		**Description:** This group counts state transitions on a specified update processing instance (UPI) that affect update processing throughput. **BCS history:** This OM group was created in BCS33.

-continued-

800 Service operational measurements on the SCP (continued)

Group	Register	Information
SCPUPUTM (cont)	UPMTCTV	**Description:** Counts each time a complete group of OMs is transmitted from the file processor (FP) and fed into the DMS OM system. **BCS history:** This register was created in BCS33.
	UPMTCCT	**Description:** Counts the number of times the fast scan process checks the current OM group's usage registers. **BCS history:** This register was created in BCS33.
	UPEBLKG	**Description:** Counts the number of times a specified UPI has an emergency update backlog. **BCS history:** This register was created in BCS33.
	UPEBKLGU	**Description:** Usage register with a 10-s scan rate. It records the duration a specified UPI is backlogged with emergency updates. **BCS history:** This register was created in BCS33.
	UPNBKLG	**Description:** Counts the number of times a specified UPI has a normal update backlog. **BCS history:** This register was created in BCS33.
	UPNBKLGU	**Description:** Usage register with a 10-s scan rate. It records the duration a specified UPI is backlogged with normal updates. **BCS history:** This register was created in BCS33.
	UPEUNAVL	**Description:** Usage register with a 10-s scan rate. It records the duration for which a specified UPI is unavailable for emergency updating. Emergency updating is in the manual busy (ManB), system busy (SysB), or resource busy (RBsy) state. **BCS history:** This register was created in BCS33.
	UPNUNAVL	**Description:** Usage register with a 10-s scan rate. It records the duration a specified UPI is unavailable for normal updating. **BCS history:** This register was created in BCS33.
	UPISITNP	**Description:** Counts the number of in-service (InSv) to in-service trouble (ISTb) state transitions for normal processing. **BCS history:** This register was created in BCS33.

-continued-

800 Service operational measurements on the SCP (continued)

Group	Register	Information
SCPUPUTM (cont)	UPISITEP	**Description:** Counts the number of InSv to ISTb state transitions for emergency processing. **BCS history:** This register was created in BCS33.
	UPSSMBNP	**Description:** Counts the number of times a UPI goes from the InSv or ISTb to the ManB state for normal processing. **BCS history:** This register was created in BCS33.
	UPSSMBEP	**Description:** Counts the number of times a UPI goes from the InSv or ISTb to the ManB state for emergency processing. **BCS history:** This register was created in BCS33.
	UPSSSBNP	**Description:** Counts the number of times a UPI goes from the InSv or ISTb to the SysB state for normal processing. **BCS history:** This register was created in BCS33.
	UPSSSBEP	**Description:** Counts the number of times a UPI goes from the InSv or ISTb to the ManB state for emergency processing. **BCS history:** This register was created in BCS33.
	UPSSNA	**Description:** Counts the number of times a UPI goes from the InSv or ISTb to the not accessible (NA) state for update processing. **BCS history:** This register was created in BCS33.
	UPNAUPU	**Description:** Usage register with a 10-s scan rate. It records the duration for in which the specified UPI provides update processing service (InSv or ISTb for emergency and/or normal update processing) while in a non-accessible state. **BCS history:** This register was created in BCS33.
	UPNAU	**Description:** Usage register with a 10-s scan rate. It records the duration for which a specified UPI is not available (NA). The UPI is NA when it is in the ManB, SysB, RBsy, and ISTb states. **BCS history:** This register was created in BCS33.
	UPSSRB	**Description:** Counts the number of times a UPI goes from the InSv or ISTb to the RBsy state. **BCS history:** This register was created in BCS33.

-continued-

800 Service operational measurements on the SCP (continued)

Group	Register	Information
SCPUPUTM (cont)	UPRBSYU	**Description:** Usage register with a 10-s scan rate. It records the duration for which a specified UPI is in the RBsy state. **BCS history:** This register was created in BCS33.
	UPITNPU	**Description:** Usage register with a 10-s scan rate. It records the duration for which a specified UPI is in the ISTb state for normal processing. **BCS history:** This register was created in BCS33.
	UPITEPU	**Description:** Usage register with a 10-s scan rate. It records the duration for which a specified UPI is in the ISTb state for emergency processing. **BCS history:** This register was created in BCS33.
	UPITDB	**Description:** Counts the number of database ISTb conditions for a specified UPI. **BCS history:** This register was created in BCS33.
	UPCFDB	**Description:** Counts the number of database critical faults for a specified UPI. **BCS history:** This register was created in BCS33.
P8NPA		**Description:** Provides statistics on the treatment of queries originating from a Canadian numbering plan area (NPA). This data is used to determine query throughput, to improve provisioning, and to indicate trouble. **BCS history:** This OM group was created in BCS33.
	P8NBADSK	**Description:** Counts the number of 800 Service queries received with a bad service key (SK). **BCS history:** This register was created in BCS33.
	P8NBASIC	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as Basic. **BCS history:** This register was created in BCS33.
	P8NCA	**Description:** Counts the number of times Call Allocator is used. **BCS history:** This register was created in BCS33.
	P8NCMDRT	**Description:** Counts the number of times a routing number flagged as International is encountered. **BCS history:** This register was created in BCS33.

-continued-

800 Service operational measurements on the SCP (continued)

Group	Register	Information
P8NPA (cont)	P8NCND	**Description:** Counts the number of times a routing number flagged as 800 Caller Identifier is encountered. **BCS history:** This register was created in BCS33.
	P8NCP	**Description:** Counts the number of times a routing number flagged as Call Prompter is encountered. **BCS history:** This register was created in BCS33.
	P8NCRSP	**Description:** Counts the number of times a routing number flagged as Courtesy Response is encountered. **BCS history:** This register was created in BCS33.
	P8NDMSTC	**Description:** Counts the number of records flagged as domestic 800 Service. **BCS history:** This register was created in BCS33.
	P8NDNID	**Description:** Counts the number of times a routing number flagged as Dialed Number Identifier is encountered. **BCS history:** This register was created in BCS33.
	P8NFLXRT	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as FlexRoute and a FlexRoute match is found. **BCS history:** This register was created in BCS33.
	P8NHIRES	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as Exchange Route and a Exchange Route match is found. **BCS history:** This register was created in BCS33.
	P8NINT	**Description:** Counts the number of times a routing number flagged as International is encountered. **BCS history:** This register was created in BCS33.
	P8NINTL	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as International 800 Service. **BCS history:** This register was created in BCS33.
	P8NISW	**Description:** Counts the number of times a southbound query originates from a DMS SP/SSP with an unknown point code. **BCS history:** This register was created in BCS34.

-continued-

800 Service operational measurements on the SCP (continued)

Group	Register	Information
P8NPA (cont)	P8NIZ	**Description:** Counts the number of in-zone routing numbers sent to a DMS SP/SSP in routing responses. **BCS history:** This register was created in BCS33.
	P8NLE	**Description:** Counts the number of times a routing number flagged as 800 Entry is encountered. **BCS history:** This register was created in BCS33.
	P8NLESVC	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as 800 Entry service. **BCS history:** This register was created in BCS33.
	P8NMREC	**Description:** Counts the number of times a record retrieval failed because there was no record for the dialed 800 Service number portion of the SK. **BCS history:** This register was created in BCS33.
	P8NNB	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as 800 Service - U.S. **BCS history:** This register was created in BCS33.
	P8NOCR	**Description:** Counts the number of times Overflow Route is performed. **BCS history:** This register was created in BCS33.
	P8NOOB	**Description:** Counts the number of queries that result in the standard announcement Out-of-Band Response. **BCS history:** This register was created in BCS34.
	P8NOOZ	**Description:** Counts the number of out-of-zone routing numbers sent to the DMS SP/SSP in routing responses. **BCS history:** This register was created in BCS33.
	P8NPROER	**Description:** Counts the number of processing errors that occur. **BCS history:** This register was created in BCS33.
	P8NROUTE	**Description:** Counts the number of routing responses that occur. **BCS history:** This register was created in BCS33.
	P8NSB	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as Southbound 800 Service. **BCS history:** This register was created in BCS33.

-continued-

800 Service operational measurements on the SCP (continued)

Group	Register	Information
P8NPA (cont)	P8NSCOM	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as SuperCom 800 Service. **BCS history:** This register was created in BCS33.
	P8NSGLNM	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as SingleNumber. **BCS history:** This register was created in BCS33.
	P8NTOTAL	**Description:** Counts the number of 800 Service queries received from a Canadian NPA. **BCS history:** This register was created in BCS33.
	P8NTRSN	**Description:** Counts the number of times a record retrieved is flagged as Transitional. **BCS history:** This register was created in BCS33.
	P8NTRT1	**Description:** Counts the number of times a record retrieved is flagged as Treatment #1. **BCS history:** This register was created in BCS33.
	P8NTRT2	**Description:** Counts the number of times a record retrieved is flagged as Treatment #2. **BCS history:** This register was created in BCS33.
	P8NVCNT	**Description:** Counts the number of times a record retrieved is flagged as Vacant. **BCS history:** This register was created in BCS33.
P8NXX		**Description:** Provides statistics on the treatment of queries destined for a Canadan telecom service. This data is used to determine query throughput, to improve provisioning, and to indicate trouble. **BCS history:** This OM group was created in BCS33.
	P8XBASIC	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as Basic. **BCS history:** This register was created in BCS33.
	P8XCA	**Description:** Counts the number of times Call Allocator is used. **BCS history:** This register was created in BCS33.

-continued-

800 Service operational measurements on the SCP (continued)

Group	Register	Information
P8NXX (cont)	P8XCMDRT	**Description:** Counts the number of times a routing number flagged as International is encountered. **BCS history:** This register was created in BCS33.
	P8XCND	**Description:** Counts the number of times a routing number flagged as 800 Caller Identifier is encountered. **BCS history:** This register was created in BCS33.
	P8XCP	**Description:** Counts the number of times a routing number flagged as Call Prompter is encountered. **BCS history:** This register was created in BCS33.
	P8XCRSP	**Description:** Counts the number of times a routing number flagged as Courtesy Response is encountered. **BCS history:** This register was created in BCS33.
	P8XDMSTC	**Description:** Counts the number of records flagged as Domestic 800 Service. **BCS history:** This register was created in BCS33.
	P8XDNID	**Description:** Counts the number of times a routing number flagged as Dialed Number Identifier is encountered. **BCS history:** This register was created in BCS33.
	P8XFLXRT	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as FlexRoute and a FlexRoute match is found. **BCS history:** This register was created in BCS33.
	P8XHIRES	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as Exchange Route and a Exchange Route match is found. **BCS history:** This register was created in BCS33.
	P8XINT	**Description:** Counts the number of times a routing number flagged as International is encountered. **BCS history:** This register was created in BCS33.
	P8XINTL	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as International 800 Service. **BCS history:** This register was created in BCS33.

-continued-

800 Service operational measurements on the SCP (continued)

Group	Register	Information
P8NXX (cont)	P8XISW	**Description:** Counts the number of times a southbound query originates from a DMS SP/SSP with an unknown point code. **BCS history:** This register was created in BCS34.
	P8XIZ	**Description:** Counts the number of in-zone routing numbers sent to the DMS SP/SSP in routing responses. **BCS history:** This register was created in BCS33.
	P8XLE	**Description:** Counts the number of times a routing number flagged as 800 Entry is encountered. **BCS history:** This register was created in BCS33.
	P8XLESVC	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as 800 Entry service. **BCS history:** This register was created in BCS33.
	P8XMREC	**Description:** Counts the number of times a record retrieval failed because there was no record for the dialed 800 Service number portion of the service key (SK). **BCS history:** This register was created in BCS33.
	P8XNB	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as 800 Service - U.S. **BCS history:** This register was created in BCS33.
	P8XOCR	**Description:** Counts the number of times Overflow Route is performed. **BCS history:** This register was created in BCS33.
	P8XOOB	**Description:** Counts the number of queries that result in the standard announcement Out-of-Band Response. **BCS history:** This register was created in BCS34.
	P8XOOZ	**Description:** Counts the number of out-of-zone routing numbers sent to the DMS SP/SSP in routing responses. **BCS history:** This register was created in BCS33.
	P8XPROER	**Description:** Counts the number of processing errors that occur. **BCS history:** This register was created in BCS33.
	P8XROUTE	**Description:** Counts the number of routing responses that occur. **BCS history:** This register was created in BCS33.

-continued-

800 Service operational measurements on the SCP (continued)

Group	Register	Information
P8NXX (cont)	P8XSB	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as Southbound 800 Service. **BCS history:** This register was created in BCS33.
	P8XSCOM	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as SuperCom 800 service. **BCS history:** This register was created in BCS33.
	P8XSGLNM	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as SingleNumber. **BCS history:** This register was created in BCS33.
	P8XTOTAL	**Description:** Counts the number of 800 Service queries received that are destined for a Canadian 800 Service NXX number. **BCS history:** This register was created in BCS33.
	P8XTRSN	**Description:** Counts the number of times a record retrieved is flagged as Transitional. **BCS history:** This register was created in BCS33.
	P8XTRT1	**Description:** Counts the number of times a record retrieved is flagged as Treatment #1. **BCS history:** This register was created in BCS33.
	P8XTRT2	**Description:** Counts the number of times a record retrieved is flagged as Treatment #2. **BCS history:** This register was created in BCS33.
	P8XVCNT	**Description:** Counts the number of times a record retrieved is flagged as Vacant. **BCS history:** This register was created in BCS33.
P8QUERY		**Description:** Provides statistics on the treatment of queries for an entire DMS-SCPII node. This data is used to determine query throughput, to improve provisioning, and to indicate trouble. **BCS history:** This OM group was created in BCS33.
	P8QBADSK	**Description:** Counts the number of 800 Service queries received with a bad service key (SK). **BCS history:** This register was created in BCS33.

-continued-

800 Service operational measurements on the SCP (continued)

Group	Register	Information
P8QUERY (cont)	P8QBASIC	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as Basic. **BCS history:** This register was created in BCS33.
	P8QBASI2	**Description:** Extension register for P8QBASIC. **BCS history:** This register was created in BCS33.
	P8QBCLID	**Description:** Counts the total number of 800 Service queries recieved with a bad calling line identifier (CLID). **BCS history:** This register was created in BCS33.
	P8QDMSTC	**Description:** Counts the number of records flagged as Domestic 800 Service. **BCS history:** This register was created in BCS33.
	P8QDMST2	**Description:** Extension register for P8QDMSTC. **BCS history:** This register was created in BCS33.
	P8QINTL	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as International 800 Service. **BCS history:** This register was created in BCS33.
	P8QISW	**Description:** Counts the number of times a southbound query originates from a DMS SP/SSP with an unknown point code. **BCS history:** This register was created in BCS34.
	P8QIZ	**Description:** Counts the number of in-zone routing numbers sent to the DMS SP/SSP in routing responses. **BCS history:** This register was created in BCS33.
	P8QIZ2	**Description:** Extension register for P8QIZ. **BCS history:** This register was created in BCS33.
	P8QLESVC	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as 800 Entry service. **BCS history:** This register was created in BCS33.
	P8QLESV2	**Description:** Extension register for P8QLESVC. **BCS history:** This register was created in BCS33.

-continued-

800 Service operational measurements on the SCP (continued)

Group	Register	Information
P8QUERY (cont)	P8QMREC	**Description:** Counts the number of times a record retrieval failed because there was no record for the dialed 800 Service number portion of the SK. **BCS history:** This register was created in BCS33.
	P8QMREC2	**Description:** Extension register for P8QMREC. **BCS history:** This register was created in BCS33.
	P8QNB	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as 800 Entry service. **BCS history:** This register was created in BCS33.
	P8QNB2	**Description:** Extension register for P8QNB. **BCS history:** This register was created in BCS33.
	P8QOOB	**Description:** Counts the number of queries that result in the standard announcement Out-of-Band Response. **BCS history:** This register was created in BCS34.
	P8QOOZ	**Description:** Counts the number of out-of-zone routing numbers sent to the DMS SP/SSP in routing responses. **BCS history:** This register was created in BCS33.
	P8QOOZ2	**Description:** Extension register for P8QOOZ. **BCS history:** This register was created in BCS33.
	P8QPROER	**Description:** Counts the number of processing errors that occur. **BCS history:** This register was created in BCS33. **Associated registers:** P8QROUTE, P8TRSN, P8QTRT1, P8QTRT2, and P8QVCNT
	P8QROUTE	**Description:** Counts the number of routing responses that occur. **BCS history:** This register was created in BCS33.
	P8QROUT2	**Description:** Extension register for P8QROUTE. **BCS history:** This register was created in BCS33.
	P8QSB	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as Southbound 800 Service. **BCS history:** This register was created in BCS33.

-continued-

800 Service operational measurements on the SCP (continued)

Group	Register	Information
P8QUERY (cont)	P8QSB2	**Description:** Extension register for P8QSB. **BCS history:** This register was created in BCS33.
	P8QSCOM	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as SuperCom 800 service. **BCS history:** This register was created in BCS33.
	P8QSCOM2	**Description:** Extension register for P8QSCOM. **BCS history:** This register was created in BCS33.
	P8QTOTAL	**Description:** Counts the number of 800 Service queries received at the DMS-SCPII. **BCS history:** This register was created in BCS33.
	P8QTOTA2	**Description:** Extension register for P8QTOTAL. **BCS history:** This register was created in BCS33.
	P8QTRSN	**Description:** Counts the number of times a record retrieved is flagged as Transitional. **BCS history:** This register was created in BCS33.
	P8QTRT1	**Description:** Counts the number of times a record retrieved is flagged as Treatment #1. **BCS history:** This register was created in BCS33.
	P8QTRT2	**Description:** Counts the number of times a record retrieved is flagged as Treatment #2. **BCS history:** This register was created in BCS33.
	P8QVCNT	**Description:** Counts the number of times a record retrieved is flagged as Vacant. **BCS history:** This register was created in BCS33.
P8QUERY2		**Description:** An extension of OM group P8QUERY that provides additional statistics on the treatment of queries for an entire DMS-SCPII node. **BCS history:** This OM group was created in BCS33.
	P8QCA	**Description:** Counts the number of times Call Allocator is used. **BCS history:** This register was created in BCS33.

-continued-

800 Service operational measurements on the SCP (continued)

Group	Register	Information
P8QUERY2 (cont)	P8QCMDRT	**Description:** Counts the number of times a routing number flagged as International is encountered. **BCS history:** This register was created in BCS33.
	P8QCND	**Description:** Counts the number of times a routing number flagged as 800 Caller Identifier is encountered. **BCS history:** This register was created in BCS33.
	P8QCP	**Description:** Counts the number of times a routing number flagged as Call Prompter is encountered. **BCS history:** This register was created in BCS33.
	P8QCRSP	**Description:** Counts the number of times a routing number flagged as Courtesy Response is encountered. **BCS history:** This register was created in BCS33.
	P8QDNID	**Description:** Counts the number of times a routing number flagged as Dialed Number Identifier is encountered. **BCS history:** This register was created in BCS33.
	P8QFLXRT	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as FlexRoute and a FlexRoute match is found. **BCS history:** This register was created in BCS33.
	P8QFLXR2	**Description:** Extension register for P8QFLXRT. **BCS history:** This register was created in BCS33.
	P8QHIRES	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as Exchange Route and a Exchange Route match is found. **BCS history:** This register was created in BCS33.
	P8QHIRE2	**Description:** Extension register for P8QHIRES. **BCS history:** This register was created in BCS33.
	P8QINT	**Description:** Counts the number of times a routing number flagged as International is encountered. **BCS history:** This register was created in BCS33.
	P8QLE	**Description:** Counts the number of times a routing number flagged as 800 Entry is encountered. **BCS history:** This register was created in BCS33.

-continued-

800 Service operational measurements on the SCP (continued)

Group	Register	Information
P8QUERY2 (cont)	P8QLE2	**Description:** Extension register for P8QLE. **BCS history:** This register was created in BCS33.
	P8QOCR	**Description:** Counts the number of times Overflow Route is performed. **BCS history:** This register was created in BCS33.
	P8QOCR2	**Description:** Extension register for P8QOCR. **BCS history:** This register was created in BCS33.
	P8QSGLNM	**Description:** Counts the number of times the 800 Service number record retrieved is marked as SingleNumber. **BCS history:** This register was created in BCS33.
	P8QSGLN2	**Description:** Extension register for P8QSGLNM. **BCS history:** This register was created in BCS33.
P8SSP		**Description:** Provides statistics on the treatment of queries from a specific originating DMS SP/SSP. This data is used to determine query throughput, to improve provisioning, and to indicate trouble. **BCS history:** This OM group was created in BCS33.
	P8SBADSK	**Description:** Counts the number of 800 Service queries received with a bad service key (SK). **BCS history:** This register was created in BCS33.
	P8SBASIC	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as Basic. **BCS history:** This register was created in BCS33.
	P8SBCLID	**Description:** Counts the total number of 800 Service queries received with a bad calling line identifier (CLID). **BCS history:** This register was created in BCS33.
	P8SCA	**Description:** Counts the number of times Call Allocator is used. **BCS history:** This register was created in BCS33.
	P8SCMDRT	**Description:** Counts the number of times a routing number flagged as International is encountered. **BCS history:** This register was created in BCS33.

-continued-

800 Service operational measurements on the SCP (continued)

Group	Register	Information
P8SSP (cont)	P8SCND	**Description:** Counts the number of times a routing number flagged as 800 Caller Identifier is encountered. **BCS history:** This register was created in BCS33.
	P8SCP	**Description:** Counts the number of times a routing number flagged as Call Prompter is encountered. **BCS history:** This register was created in BCS33.
	P8SCRSP	**Description:** Counts the number of times a routing number flagged as Courtesy Response is encountered. **BCS history:** This register was created in BCS33.
	P8SDMSTC	**Description:** Counts the number of records flagged as Domestic 800 Service. **BCS history:** This register was created in BCS33.
	P8SDNID	**Description:** Counts the number of times a routing number flagged as Dialed Number Identification is encountered. **BCS history:** This register was created in BCS33.
	P8SFLXRT	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as FlexRoute and a FlexRoute match is found. **BCS history:** This register was created in BCS33.
	P8SHIRES	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as Exchange Route and a Exchange Route match is found. **BCS history:** This register was created in BCS33.
	P8SINTL	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as International 800 Service. **BCS history:** This register was created in BCS33.
	P8SISW	**Description:** Counts the number of times a southbound query originated from a DMS SP/SSP with an unknown point code. **BCS history:** This register was created in BCS34.
	P8SIZ	**Description:** Counts the number of in-zone routing numbers sent to the DMS SP/SSP in routing responses. **BCS history:** This register was created in BCS33.

-continued-

800 Service operational measurements on the SCP (continued)

Group	Register	Information
P8SSP (cont)	P8SLE	**Description:** Counts the number of times a routing number flagged as 800 Entry is encountered. **BCS history:** This register was created in BCS33.
	P8SLESVC	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as 800 Entry service. **BCS history:** This register was created in BCS33.
	P8SMREC	**Description:** Counts the number of times a record retrieval failed because there was no record for the dialed 800 Service number portion of the SK. **BCS history:** This register was created in BCS33.
	P8SNB	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as 800 Service - U.S. **BCS history:** This register was created in BCS33.
	P8SOCR	**Description:** Counts the number of times Overflow Route is performed. **BCS history:** This register was created in BCS33.
	P8SOOB	**Description:** Counts the number of queries that result in the standard announcement Out-of-Band Response. **BCS history:** This register was created in BCS34.
	P8SOOZ	**Description:** Counts the number of out-of-zone routing numbers sent to the DMS SP/SSP in routing responses. **BCS history:** This register was created in BCS33.
	P8SPROER	**Description:** Counts the number of processing errors that occur. **BCS history:** This register was created in BCS33.
	P8SROUTE	**Description:** Counts the number of routing responses that occur. **BCS history:** This register was created in BCS33.
	P8SSB	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as Southbound 800 service. **BCS history:** This register was created in BCS33.
	P8SSCOM	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as SuperCom 800 service. **BCS history:** This register was created in BCS33.

-continued-

800 Service operational measurements on the SCP (continued)

Group	Register	Information
P8SSP (cont)	P8SSGLNM	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as SingleNumber. **BCS history:** This register was created in BCS33.
	P8STOTAL	**Description:** Counts the number of 800 Service queries recieved from the specified DMS SP/SSP. **BCS history:** This register was created in BCS33.
	P8STRSN	**Description:** Counts the number of times a record retrieved is flagged as Transitional. **BCS history:** This register was created in BCS33.
	P8STRT1	**Description:** Counts the number of times a record retrieved is flagged as Treatment #1. **BCS history:** This register was created in BCS33.
	P8STRT2	**Description:** Counts the number of times a record retrieved is flagged as Treatment #2. **BCS history:** This register was created in BCS33.
	P8SVCNT	**Description:** Counts the number of times a record retrieved is flagged as Vacant. **BCS history:** This register was created in BCS33.
P8SSP2		**Description:** An extension of OM group P8SSP that provides additional statistics on the treatment of queries from a specific originating DMS SP/SSP. This data is used to determine query throughput, to improve provisioning, and to indicate trouble. **BCS history:** This OM group was created in BCS33.
	P8SINT	**Description:** Counts the number of times a routing number flagged as International is encountered. **BCS history:** This register was created in BCS33.
P8TEL		**Description:** Provides statistics on the treatment of queries on records owned by a specific telephone company. This data is used to determine query throughput, to improve provisioning, and to indicate trouble. **BCS history:** This OM group was created in BCS33.
	P8TBASIC	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as Basic. **BCS history:** This register was created in BCS33.

-continued-

800 Service operational measurements on the SCP (continued)

Group	Register	Information
P8TEL (cont)	P8TBCLID	**Description:** Counts the total number of 800 Service queries recieved with a bad calling line identifier (CLID). **BCS history:** This register was created in BCS33.
	P8TCA	**Description:** Counts the number of times Call Allocator is used. **BCS history:** This register was created in BCS33.
	P8TCMDRT	**Description:** Counts the number of times a routing number flagged as International is encountered. **BCS history:** This register was created in BCS33.
	P8TCND	**Description:** Counts the number of times a routing number flagged as 800 Caller Identifier is encountered. **BCS history:** This register was created in BCS33.
	P8TCP	**Description:** Counts the number of times a routing number flagged as Call Prompter is encountered. **BCS history:** This register was created in BCS33.
	P8TCRSP	**Description:** Counts the number of times a routing number flagged as Courtesy Response is encountered. **BCS history:** This register was created in BCS33.
	P8TDMSTC	**Description:** Counts the number of records flagged as Domestic 800 Service. **BCS history:** This register was created in BCS33.
	P8TDNID	**Description:** Counts the number of times a routing number flagged as Dialed Number Identifier is encountered. **BCS history:** This register was created in BCS33.
	P8TFLXRT	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as FlexRoute and a FlexRoute match is found. **BCS history:** This register was created in BCS33.
	P8THIRES	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as Exchange Route and a Exchange Route match is found. **BCS history:** This register was created in BCS33.

-continued-

800 Service operational measurements on the SCP (continued)

Group	Register	Information
P8TEL (cont)	P8TINT	**Description:** Counts the number of times a routing number flagged as International is encountered. **BCS history:** This register was created in BCS33.
	P8TINTL	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as International 800 Service. **BCS history:** This register was created in BCS33.
	P8TISW	**Description:** Counts the number of times a southbound query originates from a DMS SP/SSP with an unknown point code. **BCS history:** This register was created in BCS34.
	P8TIZ	**Description:** Counts the number of in-zone routing numbers sent to the DMS SP/SSP in routing responses. **BCS history:** This register was created in BCS33.
	P8TLE	**Description:** Counts the number of times a routing number flagged as 800 Entry is encountered. **BCS history:** This register was created in BCS33.
	P8TLESVC	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as 800 Entry service. **BCS history:** This register was created in BCS33.
	P8TNB	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as 800 Service - U.S. **BCS history:** This register was created in BCS33.
	P8TOCR	**Description:** Counts the number of times Overflow Route is performed. **BCS history:** This register was created in BCS33.
	P8TOOB	**Description:** Counts the number of queries that result in the standard announcement Out-of-Band Response. **BCS history:** This register was created in BCS34.
	P8TOOZ	**Description:** Counts the number of out-of-zone routing numbers sent to the DMS SP/SSP in routing responses. **BCS history:** This register was created in BCS33.
	P8TPROER	**Description:** Counts the number of processing errors that occur. **BCS history:** This register was created in BCS33.

-continued-

800 Service operational measurements on the SCP (continued)

Group	Register	Information
P8TEL (cont)	P8TROUTE	**Description:** Counts the number of routing responses that occur. **BCS history:** This register was created in BCS33.
	P8TSB	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as Southbound 800 Service. **BCS history:** This register was created in BCS33.
	P8TSCOM	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as SuperCom 800 Service. **BCS history:** This register was created in BCS33.
	P8TSGLNM	**Description:** Counts the number of times the 800 Service number record retrieved is flagged as SingleNumber. **BCS history:** This register was created in BCS33.
	P8TTOTAL	**Description:** Counts the number of 800 Service queries received that are destined for the specified telephone company. **BCS history:** This register was created in BCS33.
	P8TTRSN	**Description:** Counts the number of times a record retrieved is flagged as Transitional. **BCS history:** This register was created in BCS33.
	P8TTRT1	**Description:** Counts the number of times a record retrieved is flagged as Treatment #1. **BCS history:** This register was created in BCS33.
	P8TTRT2	**Description:** Counts the number of times a record retrieved is flagged as Treatment #2. **BCS history:** This register was created in BCS33.
	P8TVCNT	**Description:** Counts the number of times a record retrieved is flagged as Vacant. **BCS history:** This register was created in BCS33.
		End

Evaluating 800 Service performance factors

This section provides a procedure to monitor switch performance and includes descriptions of 800 Service performance factors and data evaluation procedures.

Creating a performance monitoring plan

Planning and enabling switch-based measurement activities, including defining the performance factors, is usually the joint responsibility of operating company administration, engineering, and maintenance organizations.

Monitoring 800 Service performance factors

The following procedure explains how to create and execute a plan to monitor the performance of 800 Service.

Creating an 800 Service performance monitoring plan

Step	Action
1	Select the appropriate performance indicators. OMs and logs are listed in tables associated with each of the performance factors described in later sections of this chapter.
2	Activate the performance indicators in the switch and collect the outputs. To define and activate specific log reports, refer to procedures in *DMS-100 Family Input/Output System Reference Manual,* 297-1001-129. To set up OMs and route OM reports to output devices, refer to procedures in 297-1001-300, *DMS-100 Family Basic Administration Procedures.*
3	Analyze the results. Review output associated with the OMs reported in the reporting schedules set up in the previous step by doing the following: ▪ Look for service indications that exceed the established engineering criteria for 800 Service. ▪ Look for service indicators, such as log reports, that may indicate a maintenance or datafill problem. ▪ Capture the appropriate OM readings that indicate whether more facilities are needed or will be needed to meet engineering criteria.

-continued-

Creating an 800 Service performance monitoring plan (continued)

Step	Action
4	Report the results. Notify the engineering and maintenance organizations of service indications that require their attention.
5	You have completed this procedure.
	End

(end)

800 Service performance factors
800 Service availability

Description

The percentage of 800 calls connected is directly related to the productivity of the SCP. Operational measurements (OM) are provided to determine productivity as well as the following:

- the type of 800 Service being used
- the type of errors in queries received
- the number of queries relating to disconnected numbers
- the number of queries for numbers that do not serve the calling party's area

OM register P8QROUTE counts the number of routing responses that occur. Register P8QTOTAL counts the number of 800 queries received at the SCP.

Performance indicators for 800 Service availability

Operational measurements

Group	Register	Log reports
P8QUERY	P8QROUTE	
	P8QTOTAL	

How to evaluate factor performance

Monitor success rate of 800 Service call connections regularly during the office busy hour. An 800 Service call may not be completed for the following reasons:

- the number is not connected
- the call was made from an area not served by the number dialed
- the network failed to send a complete query to the SCP

Calculations used to evaluate factor performance

Use the following formula to determine percentage of 800 Service calls not connected.

$$\frac{\text{P8QROUTE}}{\text{P8QTOTAL}} \times 100 = \text{percentage of 800 Service calls connected}$$

800 Service performance factors (continued)
800 Service availability (end)

Data evaluation factor procedure

Calculate the percentage of 800 calls connected. If the completion rate of calls connected decreases, check registers P8QTRT1, P8QTRT2, and P8QVCNT in OM group P8QUERY. These registers are incremented when operating company service decisions result in an incomplete 800 Service call. If this is the case, no action is required. If this is not the case, refer to registers P8QBADSK, P8QBCLID, P8QISW, and P8QPROER in OM group P8QUERY. These registers are incremented when network problems result in 800 Service calls not being connected. Investigate the cause and rectify.

800 Service performance factors (continued)
Database availability

Description

The impact on query traffic handling when the database is not available depends on the network traffic received at the node. For example, in a mated SCP configuration, each node is engineered to handle 100% of the network traffic; if a SCP loses one of its query processors (QP), a second functioning QP is still able to handle the full network traffic load.

Operational measurements register DBNAU logs the amount of time the SCP database is not available.

Performance indicators for database availability

Group	Register	Log reports
SCPDBMTC	DBNAU	

How to evaluate factor performance

Track database availability whenever a QP or an update processor (UP) is out of service. An acceptable period of down-time per out-of-service occurrence is 15 min. A down time period of more than 15 min results if no manual recovery of the database is performed.

Update processor database availability

The UP performs local update validation and distribution to QPs on the SCP for the SCP services configured on the node. The UP performs database maintenance functions, such as backup and restore from disk or tape, coordination of local database audits for SCP services, and QP recovery.

All SCP UP disks are shadowed. In single disk failures, there is no data loss or service disruption. The failed disk is data-synched from its shadow during recovery.

Query processor database availability

The QP provides processing service for one or more SCP services in real time. A QPI is the software entity that resides on the QP and services SCP queries.

QP disks are optionally shadowed. If a non-shadowed QP disk fails, the SCP node's query processing capacity is decreased by the query capacity provided by one QP. All queries in the process of being handled by the QP are lost. The QP database is manually recovered using the UP.

Calculations used to evaluate factor performance

No calculation required.

800 Service performance factors (continued)
Database availability (end)

Data evaluation factor procedure

Determine the amount of time the database is unavailable. If this amount exceeds the recommended acceptable limit, determine the reason for the database failure and recover the database.

800 Service performance factors (continued)
Query traffic

Description

The query processor (QP) provides processing services for one or more SCP services in real time. A query processing instance (QPI) is the software entity that resides on the QP and services SCP queries.

Operational measurements (OM) registers QPQREC and QPQREC2 count the number of queries received by a specified QPI.

Performance indicators for query traffic

Group	Register	Log reports
SCPQPQTC	QPQREC	
	QPQREC2	

How to evaluate factor performance

Track the number of queries received in order to ensure that this number follows recommended engineering query capacities and that the SCP provides acceptable levels of service. Query rates exceed recommended maximums because of excess traffic or because QPIs are out of service. If QPIs do not meet traffic guidelines because of excess traffic, provision more QPIs.

To help ensure that query traffic remains within engineered capacities, track this performance factor daily.

Maximum and recommended query capacities

Cache hit ratio	Maximum queries per second	Recommended engineering capacity per second	QP query response time in milliseconds
0%	25	20	250
15%	27	22	250
40%	32	25	250
60%	38	30	250
100%	57	45	250

Calculations used to evaluate factor performance

No calculation required.

800 Service performance factors (continued)
Query traffic (end)

Data evaluation factor procedure

Determine the number of queries received. If the number of queries received is greater than the recommended capacity and the QPI is in service, provision more QPIs. If the number of queries received is greater than the recommended capacity and the QPI is out of service, ensure that the QPI is returned to service.

800 Service performance factors (continued)
QPI congestion

Description

Query congestion occurs when query processing instances (QPI) receive more queries than an SCP application can respond to in its defined time constraints.

Query congestion is caused by the following:

- an unexpected influx of queries arriving at the SCP over an extended period of time
- database or QPI failures that affect the SCP application's overall query capacity
- under-engineering of network traffic peaks

Operational measurements (OM) register QPQCGU logs the amount of time a specified QPI is congested. OM registers QPDSCOS and QPDSCOS2 count the number of queries discarded while a specified QPI is out of service. OM registers QPDISC and QPDISC2 count the number of queries discarded by a specified QPI because the discard threshold is reached. OM registers QPDISFQ and QPDISFQ2 count the number of queries discarded because a queue is full.

Performance indicators for QPI query congestion

Group	Register	Log reports
SCPQPQTM	QPQCGU	
SCPQPQTC	QPDSCOS	
	QPDSCOS2	
	QPDISC	
	QPDISC2	
	QPDISFQ	
	QPDISFQ2	

How to evaluate factor performance

The SCP service maintenance facilities monitor query congestion for each QPI. The impact on service depends on how many and for how long QPIs are congested.

When a few QPIs are congested, SCP service maintenance redistributes some of the query load to uncongested QPIs on the same node that provide the same SCP service. This redistribution offloads the congested QPIs and

800 Service performance factors (continued)
QPI congestion (end)

does not affect service. When congestion abates, the QPI returns to normal query processing service.

When query congestion is spread over many QPIs, SCP service maintenance suspends normal (but not emergency) update processing for the query congested service; query processing service is not affected.

If QPIs continue to be query congested, they discard queries that cannot be processed in the response time constraints defined for the affected application. In this case, service is affected, and discarded queries are pegged by registers QPDISC, QPDISFQ, and QPDSCOS in OM group SCPQPQTC.

Evaluate query congestion weekly or monthly. If query congestion repeatedly exceeds predetermined limits, queries may be discarded. If congestion is caused by greater than anticipated traffic, examine the possibility of provisioning more QPs.

Calculations used to evaluate factor performance

No calculation required.

Data evaluation factor procedure

Determine how long a QPI was congested over a predetermined period and how many queries, if any, were discarded. If the QPI was congested longer than the predetermined period, determine the extent of the congestion and provision more QPIs or SCPs. If queries were discarded, find out why and ensure that the problem is solved in order to maintain an acceptable level of service.

800 Service performance factors (continued)
QPI query response

Description

The query processor (QP) provides processing services for one or more SCP services in real time. A query processing instance (QPI) is the software entity that resides on the QP and services SCP queries.

Operational measurements (OM) registers QPQREC and QPQREC2 count the number of queries received by a specified QPI. OM registers QPRSPST and QPRSPST2 count the number of responses sent by a specified QPI.

Performance indicators for QPI query responses

Group	Register	Log reports
SCPQPQTC	QPQREC	
	QPQREC2	
	QPRSPST	
	QPRSPST2	

How to evaluate factor performance

The SCP provides a query completion rate of 99.999%. It discards queries that are not completed. Unanswered queries result from the SCP being out of service or congested, or a QPI having a full queue.

Track this performance factor weekly or monthly, and if more than 0.001% of queries are discarded, take action to ensure acceptable service levels.

Calculations used to evaluate factor performance

Use the following formula to determine the percentage of QPI queries answered.

$$\frac{QPRSPST + (QPRSPST2 \times 65\,536)}{QPQREC + (QPQREC2 \times 65\,536)} \times 100 = \text{percentage of queries answered}$$

800 Service performance factors (continued)
QPI query response (end)

Data evaluation factor procedure

Calculate the percentage of queries answered by a QPI. If the number of queries answered is less than 99.999%, correct the related problem.

800 Service performance factors (continued)
QPI query response time

Description

The query processor (QP) provides processing services for one or more SCP services in real time. A query processing instance (QPI) is the software entity that resides on the QP and services SCP queries. QPI query response time tracks how long a QPI takes to respond to queries.

Operational measurements (OM) registers QPRSPST and QPRSPST2 count the number of query responses sent by a QPI. The registers in OM group SCPQPQTT count the number of responses within specific time periods. For example, registers QPM0100 and QPM01002 count the number of queries responded to in greater than 50 ms, but less than or equal to 100 ms.

Performance indicators for QPI query response time

Group	Register	Log reports
SCPQPQTC	QPRSPST	
	QPRSPST2	
SCPQPQTT	QPM0750	
	QPM07502	
	QPM1000	
	QPM10002	
	QPG1000	
	QPG10002	

How to evaluate factor performance

The amount of time a QPI takes to handle a query depends on the following:

- the number of database accesses required to process a query
- the number of database accesses requiring disk versus cache access
- the complexity of the SCP application query processing algorithm
- the size of the query and response messages

Query reponse times should meet the following criteria:

- 99% of queries are responded to in less than or equal to 1000 ms
- 95% of queries are responded to in less than or equal to 500 ms
- the average query response time is less than or equal to 300 ms

800 Service performance factors (continued)
QPI query response time (end)

To keep track of service, measure query response times daily or weekly. To improve query response times, provision more QPIs.

Calculations used to evaluate factor performance

Use the following formula to determine the percentage of queries that are responded to in more than 1000 ms. This value should be less than 1%.

```
 QPG1000 + (QPG10002 x 65 536)
----------------------------  x 100  =  percentage query response > 1000 ms
QPRSPST + (QPRSPST2 x 65 536)
```

Use the following formula to determine the percentage of queries responded to in more than 500 ms. This value uses OM registers that count for greater than 500 ms, so the result of this formula gives the percentage of queries responded to in greater than 500 ms. This value should be less than 5%.

```
          QPM0750 + QPM1000 + QPG1000 +
(QPM07502 + QPM10002 + QPG10002) × 65 536))
---------------------------------------  x 100  =  percentage query response > 500 ms
        QPRSPST + (QPRSPST2 × 65 536)
```

To determine the average response time for answered queries, add the total time of all answered queries, then divide this number by the total number of queries answered for a QPI that is counted by registers QPRSPST and QPRSPST2.

Data evaluation factor procedure

Calculate the percentage of queries responded to in greater than 1000 ms, 500 ms, and the average query response time. If the numbers do not fall within the engineered specifications, the problem may be caused by congestion and under-engineering of network traffic peaks. To improve query response times, provision more QPIs.

800 Service performance factors (continued)
SMS requests

Description

The service management system (SMS) provides various administrative and maintenance functions. Customer database changes, such as address changes and phone card activations and terminations, are examples of the many functions SMS provides.

Update requests are designated as either normal or emergency. Retreive requests are designated as either normal or priority. A routine address change is considered a normal update, while a stolen or lost phone card constitutes an emergency update. Regular service operation is considered a normal retrieve, while a priority retrieve request occurs when someone accesses SMS for a particular record.

Operational measurements (OM) registers UPTFEURR, UPTFEURS, UPTFNURR, and UPTFNURS count the number of database update requests and responses. OM registers UPTFNRRR, UPTFNRRS, UPTFPRRR, and UPTFPRRS count the number of database retrieve requests and responses.

Performance indicators for SMS requests

Operational measurements		
Group	**Register**	**Log reports**
SCPUPTF	UPTFEURR	
	UPTFEURS	
	UPTFNRRR	
	UPTFNRRS	
	UPTFNURR	
	UPTFNURS	
	UPTFPRRR	
	UPTFPRRS	

How to evaluate factor performance

Tracking the success of update and retrieve requests that have been processed can be used for network management studies.

A retrieve or update request can be discarded for any one of the following reasons:

- a duplicate request was received

800 Service performance factors (end)
SMS requests (end)

- the number of records requested exceeds the allowable maximum
- UBH was unable to send a response file to SMS within the specified time
- resources not available

Monitor the success rate of update and retrieve requests during the office busy hour. Examine registers in OM group SCPUPTF when the percentage of update and retrieve requests successfully processed falls below the engineered service-level objective.

Calculations used to evaluate factor performance

Use the following formula to determine the percentage of update requests successfully processed.

$$\frac{\text{UPTFEURS} + \text{UPTFNURS}}{\text{UPTFEURR} + \text{UPTFNURR}} \times 100 = \text{percentage of update requests successfully processed}$$

Use the following formula to determine the percentage of retrieve requests successfully processed.

$$\frac{\text{UPTFNRRS} + \text{UPTFPRRS}}{\text{UPTFNRRR} + \text{UPTFPRRR}} \times 100 = \text{percentage of retrieve requests successfully processed}$$

Data evaluation factor procedure

Calculate the percentage of both update and retrieve requests successfully processed. Determine the cause of high failure rates when the percentages fall below the engineered service-level objective.

Use OM group SCPUPTF registers UPTFEURD, UPTFNURD, UPTFPRRD, and UPTFNRRD to determine the number of discarded requests in the time period used in the calculations. The reasons messages are discarded or skipped can be determined by examining SCPUPTF OM registers UPTFURSC, UPTFURSM, and UPTFURST.

Maintaining 800 Service

Use the information provided in this chapter to perform maintenance procedures and respond to log reports and alarms associated with 800 Service.

Overview of maintenance for 800 service on page 5-2 provides a brief description of 800 Service maintenance needs.

Routine maintenance procedures on page 5-2 provides information on finding and using procedures for routine maintenance on the service control point (SCP).

Recovery procedures on page 5-2 provides information on finding and using recovery procedures for the SCP.

Alarms on page 5-4 provides information on how to respond to alarms.

Log reports on page 5-5 gives a brief description of the log reports associated with 800 Service, and required maintenance responses.

Problem detection and trouble clearing on page 5-11 provides information about procedures used to detect problems with 800 Service components, and about clearing 800 Service database problems.

Commands on page 5-12 gives brief descriptions of some of the maintenance commands that are of particular interest to personnel maintaining 800 Service.

Overview of maintenance for 800 Service

Maintenance for 800 Service occurs on the service switching points (SSP) that originate and terminate 800 number calls, and on the SCP that carries the 800 Service database. 800 Service relies on the proper functioning of the network as a whole.

No maintenance is specifically required on SSPs to support 800 Service. SSPs must be able to process calls, including 800 number calls, and must be able to query the SCP for routing information. SSP failures and faults will impact all functions provided by the SSP. For information on SSP maintenance, refer to *DMS SuperNode Signaling Point/Service Switching Point Trouble Locating and Clearing Procedures*, 297-5121-544.

This section provides information concerning maintenance of 800 Service on the SCP.

Routine maintenance procedures

Routine maintenance procedures ensure that the SCP continues to operate normally and efficiently. Although all aspects of the SCP must be maintained, not all topics are discussed here. Maintenance of digital multiplex system (DMS) components is addressed in 297-1001 series documents. Refer to the Index of Publications, 297-1001-001 for a comprehensive list of related documents.

The following routine maintenance actions are required to support 800 Service on the SCP:

- Backing up the 800 Service database to DAT
- Recording an FP image on an SLM disk
- Scheduling an automatic REx test on an FP

For specific procedural information, refer to *DMS SuperNode Service Control Point II Routine Maintenance Procedures*, 297-5131-546.

Recovery procedures

Recovery procedures are available to respond to faults, failures and system outages that could affect 800 Service on the SCP.

If you experience file processor (FP) or 800 Service database failure, the following procedures are available:

- Recovering a file processor after a power outage
- Recovering a file processor from insanity
- Recovering disks in a shadow set
- Restoring a master database
- Restoring a slave database

- Restoring a update request volume
- Restoring a update response volume
- Clearing an update processing lockup
- Clearing an update distribution lockup
- Restoring query loss at the query processor

For specific procedural information, refer to *DMS SuperNode Service Control Point II Recovery Procedures*, 297-5131-545.

Alarms

800 Service does not generate alarms. It can be affected by congestion or fault conditions on the network, the SCP, or SSPs. These conditions may raise alarms regarding specific SSP or SCP components.

For more information on alarms, refer to *DMS SuperNode Service Switching Point/Signaling Point Alarm and Performance Monitoring Procedures*, 297-5121-543, and *DMS SuperNode Service Control Point II Alarm and Performance Monitoring Procedures*, 297-5131-543.

Alarm clearing

To clear an alarm on the SSP or SCP, refer to *DMS SuperNode Service Switching Point/Signaling Point Alarm and Performance Monitoring Procedures*, 297-5121-543, and *DMS SuperNode Service Control Point II Alarm and Performance Monitoring Procedures*, 297-5131-543 respectively.

If you fail to find the solution to a fault, or if you are instructed in procedures to contact Northern Telecom support services, perform the following steps:

1 Make a written record of actions that led up to the problem. Record relevant information such as: pertinent logs messages, operational measurements, and any suspect files that have been saved to tape.

2 Categorize the problem by severity according to the guidelines given in *DMS-100 Family Service Priority Classification Description*, 297-0201-019.

3 Contact Northern Telecom (NT) support services.

NT support services can be contacted at the following telephone numbers:

- Emergency (24 hours) 613-765-2080
- Non-Emergency (8 AM to 4 PM) 613-765-2422

NT support services has an Emergency Technical Assistance Service (ETAS) group which can provide rapid support in case of major malfunction.

Log reports

System logs are messages that the system generates and stores whenever a significant event occurs in the switch. For instance, if the machine is processing an 800 service query, and it detects an error in the datafill of one of the tables it accesses, it generates a log message. The administration personnel use the log messages to trace the error and correct it.

The SCP will generate a number of logs during normal operation and under fault conditions. Only those logs of specific interest to 800 Service personnel are discussed here. For information on other logs, refer to *DMS SuperNode Signaling Point/Service Switching Point Trouble Locating and Clearing Procedures*, 297-5121-544 and *DMS SuperNode Service Control Point Trouble Locating and Clearing Procedures*, 297-5131-544.

Responding to logs

When a log message appears on the printer, perform the following actions:

1 Look up the message in this section.

Note: If the message cannot be found in this section, look for it in *Log Report Reference Manual*, 297-1001-840.

2 Take the action indicated for the message.

800 Service logs

The logs described here are generated under the following conditions:

- software processing errors have occurred
- 800 Service datafill problems have occurred
- parameters have been changed
- data corruption errors specific to 800 Service have occurred
- operator-handled 800 calls have occurred

The logs described here include the following:

- SWERR
- NSC100
- CCS303
- E800
- SCP350

SWERR

Seriousness

This log is associated with a minor alarm.

Explanation

A software error has been detected in the application code.

Action

Contact your Northern Telecom representative.

Reference

Refer to *Log Report Reference Manual*, 297-1001-840.

NSC100

Seriousness

This log is not associated with an alarm, but may affect service.

Explanation

A received 00Y code cannot be found in table NSCSNPA.

Action

Check the datafill in table NSCSNPA.

Reference

Refer to *Log Report Reference Manual*, 297-1001-840.

CCS303

Seriousness

This log is for your information only.

Explanation

Parameter TCAP_AUDIT_INTERVAL has been changed in table OFCENG.

Action

Verify that this change was intentional. If it was not, restore the original parameter setting. If this log appears and the TCAP_AUDIT_INTERVAL parameter has not been changed, contact your next level of support.

Reference

Refer to *Log Report Reference Manual*, 297-1001-840.

E800

Seriousness

This log is associated with a minor alarm.

Explanation

This log is intended for use by the Service Management System (SMS) System Administrator. It is generated when the 800 service application discovers a problem with data needed to successfully process a call.

Record Type The type of record where the data inconsistency was found may be one of:

- time region
- statutory holiday
- Canadian NPA
- QP serving area
- SSP
- 800-NXX
- 800 number

Action

The SMS administrator should perform the task specified in the log report. The craftsperson should inform the SMS administrator of the problem.

Reference

Refer to *Log Report Reference Manual*, 297-1001-840.

SCP350

Seriousness

This log is produced for billing purposes.

Explanation

This log is generated for operator-handled 800 Service calls. It contains the AMA information associated with the call. A B6 record is output if the called number is domestic, and a B7 record is output for an overseas called number.

Action

No action is required.

Reference

Refer to *Log Report Reference Manual*, 297-1001-840.

Problem detection and trouble clearing

Use problem detection and trouble clearing procedures to identify and respond to 800 Service affecting problems that are not associated with SSP or SCP alarm conditions. Problem detection procedures should be performed periodically to diagnose problems before they become service affecting. Trouble clearing procedures should be used to respond to problems detected through routine diagnostics or through customer reports.

The following problem detection and trouble clearing procedures are available to support 800 Service on the SCP:

- Activating CCS7 links
- Estimating signaling link occupancy
- Scheduling an automatic REx test
- Responding to logs on the SCP

For specific procedural information, and for information on clearing other trouble conditions on the SCP, refer to *DMS SuperNode Service Control Point Trouble Locating and Clearing Procedures*, 297-5131-544. For information on clearing trouble conditions on the SSP, refer to *DMS SuperNode Signaling Point/Service Switching Point Trouble Locating and Clearing Procedures*, 297-5121-544.

Commands

A number of commands are available to maintenance personnel. Commands specific to 800 Service are listed below. For information on other available commands, refer to *Nonmenu Commands Reference Manual,* 297-1001-820 and *Menu Commands Reference Manual,* 297-1001-821.

E800VER

Use the E800VER command to verify the validity of CCS7 messages used by 800 Service. The E800VER command sends a database query without actually initiating a call. The format of the E800VER command is as follows:

>E800VER cgpa {lata} cdpa {timeout}

where

cgpa	is the originating DN (NPANXXXXXX) to be used in the query
lata	is the optional LATA for the originating DN
cdpa	is the terminating DN (NPANXXXXXX) to be used in the query
timeout	is an optional timeout period (default 15 s)

TESTSS

Use the TESTSS command to test the SCP database without placing an actual call. The TESTSS command verifies that CCS7 links are operating and that the 800 Service database information is valid. You can use the TESTSS command without fully datafilling the switches involved.

Access the TESTSS command from the SCCPLOC level of the MAP. To reach the SCCPLOC level from the CI level of the MAP, issue the following command:

>MAPCI;MTC;CCS;CCS7;SCCPLOC

The format of the TESTSS command is as follows:

>TESTSS cgpa {lata} cdpa {timeout}

where

cgpa	is the originating DN (NPANXXXXXX) to be used in the query
lata	is the optional LATA for the originating DN
cdpa	is the terminating DN (NPANXXXXXX) to be used in the query
timeout	is an optional timeout period (default 15 s)

TRAVER

Use the TRAVER command to simulate a telephone call in software and display the line, trunk, or position to which a call is routed, the translation and routing tables that the call accesses, and any additional tables accessed as a result of call screening enhancements. TRAVER verifies that the translation tables for a given call can be properly accessed.

If a call is being incorrectly routed to treatment, or it is taking the wrong route, TRAVER helps determine what data to change.

TRAVER can perform the following:

- display the tables used to translate and route a call
- display the tables accessed for call screening
- display each element of the routelist with digits outpulsed
- display each alternate conditional route

The format of the TRAVER command is as follows:

>TRAVER origtype origdigits npa rteref

where

origtype
- is L if a line is the originator
- is TR if an incoming trunk is the originator
- is C if an attendant console is the originator
- is V if a virtual facility group is the originator
- is R if a routing table is the originator

origdigits
- is the originating DN, when origtype is L
- is the originating DN, when origtype is TR
- is the trunk clli, when origtype is C
- is the virtual facility group number, when origtype is V
- is the routing table, when origtype is R

npa
- is the numbering plan area code or translator name, when origtype is R

rteref
- is the route reference subtable key, when origtype is R

PING

Use the PING command at the SNPINGCI level of the MAP to send echo packets to a destination on the IP network, checking the link between the SCP and the SMS. The command provides verification of connectivity, measurement of round trip delay time and packet loss.

The format of the PING command is:

>PING b b b b {size} {number} {tx delay} {rx delay} {display}

where

b b b b	is the destination IP address (each element separated by spaces and not decimals)
size	is the size of the echo packet data field
number	is the number of echo packets (pings) to send (Enter 0 to send continuous pings.)
delay	is the delay time between pings (in 100s of ms)
display	is either ON (to display PING data) or OFF (to hide PING data)

List of terms

A-link

A signaling data link that connects service switching points (SSP) and service control points (SCP) to signaling transfer points (STP). *See also* service control point, signaling data link, service switching point, signaling transfer point.

application-specific unit (ASU)

One of several hardware and software components that operate on the signals carried on the frame-transport bus (F-bus) in the link peripheral processor (LPP). Examples of ASUs are CCS7 link interface units (LIU7) and Ethernet interface units (EIU).

ASU

See application-specific unit (ASU).

BERT

See bit error rate test (BERT).

BH

See busy hour (BH).

bit error rate test (BERT)

A test that is used to measure the transmission quality of a loop. The BERT transmits a known bit pattern over a line and compares the reflected signal against the initial pattern.

busy hour (BH)

1. The uninterrupted period of 60 minutes, which is not necessarily a clock hour, for which the average intensity of traffic is at the maximum. 2. The busiest hour of the busiest day of a normal week, excluding holidays, weekends, and special event days. *See also* average busy season.

capability code

Allows a CCS7 node to identify itself by more than one point code. For example, each node of a signaling transfer point pair is identified by the

same capability code and by individual capability codes. *See also* point code.

CCS

See common channel signaling (CCS).

CCS7

See Common Channel Signaling 7 (CCS7).

CCS7 link interface unit 7 (LIU7)

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 paddle board that is provisioned in one of the link interface shelves of the link peripheral processor. *See also* link peripheral processor.

central processing unit (CPU)

Central processing unit (CPU) is the hardware unit of a computing system that contains the circuits that control and perform the execution of instructions.

central side (C-side)

The side of a node facing away from the peripheral modules (PM) and toward the central control (CC). Also known as control side. *See also* peripheral side (P-side).

C-link

The signaling data link (SDL) that connects the mates of a signaling transfer point (STP) pair. *See also* signaling data link *and* signaling transfer point.

CM

See computing module (CM).

CODEC

See coder-decoder (CODEC).

coder-decoder (CODEC)

An assembly comprising an encoder and a decoder in the same equipment. It produces a digital output from an analog input and an analog output from a digital input.

common channel signaling (CCS)

A signaling method in which information relating to a multiplicity of labelled messages is transmitted over a single channel using time-division multiplex (TDM) digital techniques.

Common Channel Signaling 7 (CCS7)

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

computing module (CM)

The processor or memory complex of DMS SuperNode.

connectionless signaling

A type of signaling used with CCS7 that is not associated with the take-down of a call. For example, signaling used to access a database for 800-number translations and maintenance signaling between signaling points is considered to be connectionless signaling.

connection-oriented signaling

Signaling used by CCS7 in the DMS-100 Family of switches to set up, monitor, and take down a call.

Consultative Committee on International Telephony and Telegraphy (CCITT)

The CCITT is one of the four permanent groups within the International Telecommunication Union (ITU). The CCITT is responsible for studying technical, operating, and tariff questions. This organization also prepares recommendations relating to telephony and telegraphy, including data and program services.

CPU

See central processing unit (CPU).

C-side

See central side (C-side).

data modification order (DMO)

A request to operating company personnel to change system information.

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. DMS is a trademark of Northern Telecom.

D-link

A signaling data link that connects a signaling transfer point (STP) of one STP pair to another STP pair in the network. *See also* signaling data link, signaling transfer point.

DMO

See data modification order (DMO).

DMS

See Digital Multiplex System (DMS).

DMS-bus

The messaging control component of DMS SuperNode. It consists of a pair of message switches.

DMS-core

The call management and system control portion of DMS SuperNode. It consists of a computing module and a system load module.

DMS-link

The networking software of DMS SuperNode. DMS-link consists of open and standard protocols that enable DMS SuperNode to function in a multi-vendor environment.

DMS-STP

Digital Multiplex System Signaling Transfer Point. DMS-STP is a trademark of Northern Telecom.

DMS SuperNode

A central control complex for the DMS-100. The two major components of DMS SuperNode are the computing module and the message switch. Both are compatible with the current network module, the input/output controller, and extended multiprocessor system (XMS)-based peripheral modules.

double-shelf network equipment (DSNE) frame

A frame that packages one network plane on a single shelf permitting two complete networks for each plane in a single bay.

DPCC

See dual-plane combined core (DPCC) cabinet.

DS-0

A protocol for data transmission that is used to represent one channel in a 24-channel DS-1 trunk.

DS-0A

An asynchronous DS-0. *See* DS-0.

DS-1

The 8-bit, 24-channel, 1.544-Mbps digital signaling format as used in the DMS-100 Family. 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 Mbps. The DS-1 signal is the standard signal used to interconnect Northern Telecom digital systems. The DS-1 signal carries 24 information channels (DS-0s) of 64 Kbps each.

DS30 link

1. A 10-bit, 32-channel, 2.048-Mbps speech-signaling and message-signaling link as used in the DMS-100 Family. 2. The protocol by which DS30 links communicate.

DS512 fiber link

The fiber optic transmission link implemented in DMS SuperNode. The DS-512 is used for connecting the computing module to the message switch. One DS-512 link is the equivalent of 16 DS-30 links.

DSNE

See double-shelf network equipment (DSNE) frame.

dual-plane combined core (DPCC) cabinet

One of the three cabinet models for DMS SuperNode. The DPCC packages two message switches and a system load module.

EIU

See Ethernet interface unit (EIU).

EMC

See enhanced multi-purpose cabinet (EMC).

end office (EO)

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

enhanced multi-purpose cabinet (EMC)

A cabinet containing one or more fiberized link interface shelves.

EO

See end office (EO).

Erlang (E)

Erlang (E) is an international dimensionless unit of the average traffic intensity (occupancy) of a facility during a period of time, usually a busy hour. One erlang equals 3600 call seconds. *See also* busy hour (BH).

Ethernet interface unit (EIU)

The unit that connects the DMS SuperNode to the local area network.

F-bus

See frame transport bus (F-bus).

F-bus tap

See frame transport bus (F-bus) tap.

fiberized link interface shelf (FLIS)

A shelf within an EMC cabinet that houses LIU7s and NIUs.

FLIS

See fiberized link interface shelf (FLIS).

frame transport bus (F-bus)

An eight-bit bus that provides data communications between a local message switch (LMS) and the link interface units that are provisioned in a link peripheral processor (LPP). To ensure readability, two load-sharing F-buses are provided in an LPP. Each F-bus is dedicated to one of the two LMSs. *See also* link interface module.

frame transport bus (F-bus) tap

Provides messaging access to a frame transport bus (F-bus). For Digital Multiplex System signaling transfer point (DMS-STP) applications, the tap is either part of the F-bus rate adaptor card that is used by the local message switch or is part of the CCS7 link interface unit (LIU7). *See also* frame transport bus (F-bus).

global title (GT)

An application address that does not explicitly contain the necessary information that would allow routing by the signaling connection control part (SCCP) of the message transfer part (MTP). The SCCP global title translation (GTT) function is required to translate a GT into a valid network address.

global title translation (GTT)

The process that translates an application-specific address (such as a dialed 800 number) into the CCS7 network address, usually that of the appropriate service control point.

GT

See global title (GT).

GTT

See global title translation (GTT).

ILLP

See inter link-to-link protocol (ILLP).

INode

See integrated node (INode).

input/output controller (IOC)

An equipment shelf that provides an interface between up to 36 input/output devices and the central message controller. The IOC contains a peripheral processor that independently performs local tasks, thus relieving the load on the central processing unit.

input/output equipment (IOE) frame

The IOE frame houses input/output devices.

integrated node (INode)

A combination of an STP and an SSP. It has all the functions of both, and requires fewer frames and cabinets.

integrated services digital network (ISDN)

A set of standards proposed by the CCITT to establish compatibility between the telephone network and various data terminals and devices. ISDN is a communications network that provides access to voice, data, and imaging services from a single type of connector.

inter link-to-link protocol (ILLP)

A level two CCS7 protocol that is used to detect message losses between CCS7 link interface units (LIU7). *See also* CCS7, LIU7.

IOC

See input/output controller (IOC).

IOC shelf

A hardware shelf that provides an interface between up to 36 I/O devices and the central message controller. *See also* input/output controller (IOC).

IOE

See input/output equipment (IOE) frame.

ISDN

See integrated services digital network (ISDN).

ISDN user part (ISUP)

A level of the Common Channel Signaling 7 (CCS7) layered protocol. The main functions of ISUP include the signaling functions required to provide switched services and user facilities for voice and non-voice applications in the integrated services digital network (ISDN). *See also* Common Channel Signaling 7 (CCS7), *and* integrated services digital network (ISDN).

ISUP

See ISDN user part (ISUP).

LAN

See local area network (LAN).

LATA

Local access transport area

LIM

See link interface module (LIM).

link

1. In a DMS, a connection between any two nodes. *See also* node. 2. 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 module controllers or input/output controllers to the central message controller.

link interface module (LIM)

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 (LMS) and two frame transport buses (F-bus). One LMS normally operates in a load sharing mode with the other LMS. This ensures LIM reliability in the event of an LMS failure because each LMS has adequate capacity to carry the full message load of an LPP. Each LMS uses a dedicated F-bus to communicate with the LIUs in the LPP.

link peripheral processor (LPP)

The DMS SuperNode equipment frame for DMS-STP that contains two types of peripheral modules: an LIM and an LIU. For DMS-STP applications, CCS7 link interface units 7 (LIU7) are used in the LPP. *See also* link interface module, CCS7 link interface unit 7.

linkset

A collection of links connecting two adjacent signaling points in N6, CCIS6, and CCS7. *See also* N6, CCIS6, CCS7.

LIU7

See CCS7 link interface unit 7 (LIU7).

LMS

See local message switch (LMS).

local area network (LAN)

A network which permits the interconnection and intercommunication of a group of computers, primarily for intercommunication and sharing of resources such as storage devices and printers. LANs cover short distances (less than 1km) and are usually contained within a single building or complex. *See also* wide area network.

local message switch (LMS)

A high-capacity communications hub that controls messaging between LIUs in an LPP. An LMS also controls messaging between the LPP and the DMS-bus. The link interface module uses a pair of LMSs to provide dual-plane redundancy.

LPP

See link peripheral processor (LPP).

magnetic tape drive (MTD)

In a DMS, a device used to record DMS-100 Family data. An MTD can be mounted on either an MTC frame or an input/output equipment frame.

maintenance and administration position

See MAP (maintenance and administration position).

maintenance trunk module (MTM)

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

MAP

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

MDR7

CCS7 message detail recording

message switch (MS)

A high capacity communications facility that functions as the messaging hub of DMS SuperNode. The MS allows DMS-100 components to communicate freely. For the purposes of redundancy, the MS uses two planes. Each plane provides an interface with the two planes of the computing module.

MPC

See multi-protocol controller (MPC).

MS

See message switch (MS).

MSB7

Message switch and buffer 7

MTD

See magnetic tape drive (MTD).

multi-protocol controller (MPC)

A general-purpose data communications card that allows data communications between a DMS-100 Family switch and an external computer (for example, between a central office billing computer and a DMS-100 Family switch). The MPC card resides on the input/output controller shelf. MPC card protocol software is downloaded from the DMS-100 central processing unit and then used to support software routines for data packet network communications.

network interface unit (NIU)

A peripheral module that provides the interface between LIU7s in an LPP or EMC and the DMS-bus.

network operation protocol (NOP)

A protocol that provides an interface between a DMS-100 Family switch and its remote systems.

Network Operations System (NOS)

A facility providing the DMS-100 with the capability of transferring data over communications links to a telephone network operating system.

NIU

See network interface unit (NIU).

node

The terminating point of a link. Node is a relative term in that its meaning depends entirely on the context in which it is used. For example, a circuit can be a node in the context of another circuit within a module; the module itself can be a node in the context of another component of the network, and so forth. Some common applications are

- in network topology, a terminal of any branch of a network or a terminal common to two or more branches of a network
- in a switched communications network, the switching points, including patching and control facilities

- in a data network, the location of a data station that interconnects data transmission lines
- a unit of intelligence within a system; in a DMS, includes the central processing unit, network module, and peripheral modules

NOP

See network operation protocol (NOP).

NOS

See Network Operations System (NOS).

OAM

See operation, administration, and maintenance (OAM).

OAS

See office alarm system (OAS).

octet

A byte composed of eight binary digits (bits).

office alarm system (OAS)

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

OM

See operational measurement (OM).

open systems interconnection (OSI) model

A 7-layer protocol model for communications networks developed by the International Standards Organization and adopted by the Consultative Committee on International Telephony and Telegraphy (CCITT) for an Integrated Services Digital Network (ISDN).

operation, administration, and maintenance (OAM)

All of the tasks necessary for providing, maintaining, or modifying the services provided by a switching system. These tasks include provisioning of hardware, creation of service, verification of new service, and trouble recognition and clearance.

operational measurement (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. The OM subsystem organizes the measurement data and manages its transfer to displays and records. The OM data is used as a basis for maintenance, traffic, accounting, and provisioning decisions.

OSI

See open systems interconnection (OSI) model.

paddle board (PB)

A short circuit pack based on the standard circuit pack. The PB carries the cable interfaces and local service functions, such as local clock sources and bus terminations or both, located on the back of a DMS SuperNode shelf.

PB

See paddle board (PB).

P-bus

See processor bus (P-bus).

PCM30

1. A 32-channel, 2.048-Mbps, speech-signaling, and message-signaling link used in international trunks. 2. The protocol by which PCM-30 links communicate.

PDC

See power distribution center (PDC).

PDTC

PCM30 digital trunk controller

PEC

See product engineering code (PEC).

peripheral module (PM)

A generic term referring to all hardware modules of DMS-100 Family systems that provide interfaces with external line, trunk, or service facilities. A PM contains 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. *See also* central side (C-side).

PM

See peripheral module (PM).

point code

The address of a signaling point.

power distribution center (PDC)

The frame containing the components for distributing office battery feeds to equipment frames of the DMS-100 Family systems. The PDC accepts A and B cables from the office battery and provides protected subsidiary feeds to each frame or shelf. It also contains noise suppression and alarm circuits, and provides a dedicated feed for the alarm battery supply.

PRI

See primary rate interface (PRI).

primary rate interface (PRI)

Carries nB+D channels over a digital DS-1 facility (23B+D in North America and 30B+D in Europe). PRI is used to link private networking facilities, such as PBXs, LANs, and host computers with a standardized architecture acting as the bridge between private switching equipment and the public network.

processor bus (P-bus)

The bus used in DMS SuperNode modules for processor communications.

product engineering code (PEC)

An 8-character code that provides a unique identification for each marketable product manufactured by Northern Telecom.

P-side

See peripheral side (P-side).

PVC

Permanent virtual circuit

reset terminal interface (RTIF)

In DMS SuperNode, a terminal that is used to re-boot and monitor the status of the system. The RTIF (also known as a *remote* terminal interface) can be either a local terminal or a remote terminal that is connected through a modem.

route

A path that follows a linkset into the signaling network that accesses a destination.

routeset

A logical group of CCS7 signaling paths with the same destination point.

RTIF

See reset terminal interface (RTIF).

SCC

SuperNode combined core

SCCP

See signaling connection control part (SCCP).

SCP

See service control point (SCP).

SDL

See signaling data link (SDL).

SEAS

See signaling engineering and administration system (SEAS).

service control point (SCP)

A node in a CCS7 signaling network that supports application databases. The function of an SCP is to accept a query for information, retrieve the requested information from one of its application databases, and send a response message to the originator of the request.

service order system (SERVORD)

A user interface used to change, add, or delete a subscriber line. Standard telephone industry command format is used.

service switching point (SSP)

A CCS7 signaling node that interacts with the SCP to implement special service code features.

SERVORD

See service order system (SERVORD).

signaling connection control part (SCCP)

A level of CCS7 layered protocol. It supports advanced services such as E800 and 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 data link (SDL)

A bi-directional transmission path for signaling. An SDL consists of two data channels operating together in opposite directions at the same data rate. It constitutes the lowest functional level (level 1) of N6, CCIS6, and CCS7 hierarchy.

signaling engineering and administration system (SEAS)

Provides a single administrative center that uses network signaling transfer points (STP) to monitor and coordinate the elements of a CCS7 network. The administration and engineering functions of the SEAS allow the operating company to process, store, and report traffic and performance data on a network-wide basis. This data can be used to evaluate network performance, to balance loads between STP nodes, and to perform other network management tasks.

signaling link (SL)

The term used to describe the first two levels of the CCS7 protocol: the physical level (level 1) and the link level (level 2). Level 2 functions, combined with a level 1 signaling data link, constitute an SL that is used for the reliable transfer of signaling messages between two signaling points.

signaling point (SP)

Any node in a CCS7 network that originates, terminates, or transfers signaling messages from one signaling link to another.

Signaling System 7 (SS7)

A version of Signaling System #7 that was developed for North American use.

signaling transfer point (STP)

A node in a 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.

SLM

See system load module (SLM).

SP

See signaling point (SP).

SSP

See service switching point (SSP).

STP

See signaling transfer point (STP).

system load module (SLM)

A mass storage system in DMS SuperNode that is used to store office images. From the SLM, new loads or stored images can be booted into the computing module.

T1

T1 is the standard, 24-channel, 1.544-Mbps pulse code modulation system used in North America. This digital carrier carries a signal whose designation is DS-1.

T-bus

See transaction bus (T-bus).

TCAP

See transaction capability application part (TCAP).

TME

See trunk module equipment (TME) frame.

transaction bus (T-bus)

An internal bus in the duplicated message switches of the DMS SuperNode. Messages are transmitted from port to port over the T-bus, a synchronous bus operating at 4.096 Mbps.

transaction capability application part (TCAP)

A proprietary Northern Telecom layer of the protocol developed for CCS7. TCAP provides the ability for the service switching point (SSP) to communicate with a service control point (SCP). TCAP is used by the ISDN network layer facility message to transport service information for transaction signaling, not associated with an active call, over PRI links.

trunk module (TM)

A peripheral module, in a trunk module equipment frame, that provides speech and signaling interfaces between a DS-30 network port and analog trunks.

trunk module equipment (TME) frame

A frame containing one or more trunk modules, maintenance trunk modules, or office alarm units.

DMS-100 Family

CCS7 Services Guide

297-5151-020

Publication number: 297-5151-020
Product release: BCS35 and up
Document release: Standard 01.01
Date: March 1993

Printed in Canada and printed in the United States of America.