DMS-100 Software Portfolio

A Comprehensive Catalog of Software Solutions

Published by Northern Telecom
Marketing Publications, Department 4262
Research Triangle Park, NC 27709

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DMS SuperNode Software Overview

A CENTURY OF INNOVATION

For over a century, Northern Telecom has delivered innovation, versatility, and value in voice and data telecommunications systems and services. We were the first vendor to announce a complete family of fully digital switching products-and, today, Northern Telecom sells more digital switching systems around the world than any other company.

With the DMS-100 Family of fully digital switches as a base platform, Northern Telecom systems are in use by hundreds of network providers, businesses, and other organizations world-wide.

Introductory Chapters

DMS SuperNode Software Overview

- summarizes the important concepts and terms associated with the new software structure.

How to Use the DMS-100 Software Portfolio *(beginning on page 7)*

- explains the format and conventions in this document.

THE IMPORTANCE OF SOFTWARE

At the heart of a digital switching system is the software: the instructions that automate the processing, switching, and billing of voice and data calls. Through sophisticated software design, Northern Telecom extends the power, versatility, and revenue-generating potential of the DMS-100 family so network providers can meet the demands of the marketplace today, and accommodate exponential growth in the future.

The *DMS-100 Software Portfolio* catalogs in summary form the new software structure of the DMS SuperNode in the North American market. Chapters in this book highlight the capabilities and benefits of each software product. For greater detail on any software product, please contact your local Northern Telecom representative, or call 1-800-NORTHERN (1-800-667-8437).

SOFTWARE EVOLUTION

Northern Telecom now delivers Product Computing-Module Loads (PCLs) rather than the custom-built Batch Change Supplement (BCS) loads or Universal Software Loads (USLs) delivered in the past.

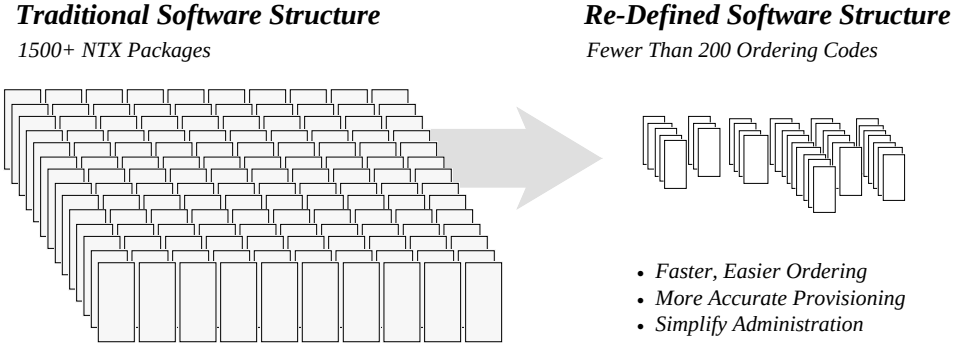
A PCL is a software load with all available features selected from a development stream for a certain DMS SuperNode switch type in a particular market. Every PCL is fully tested and verified in the exact basic configuration released to the customer.

With a new software platform and a host of new service enablers and access technologies, DMS Switching Evolution extends DMS services across multiple networks-including wireless and cable-and taps the power of Advanced Intelligent Networking (AIN) for a new breed of revenue-generating opportunities.

Northern Telecom is in a unique position to deliver these differentiating services. Today, we offer the largest menu of telephony and data services in the industry. DMS Switching Evolution is taking these services beyond their traditional networks, into cable plants, fiber-optic networks, and wireless environments. And DMS Switching Evolution will support true, multivendor AIN, which will allow fast custom development of new services and their network-wide deployment and management.

SOFTWARE SIMPLIFICATION

The goal of the new structure is to make it easier to provision the DMS SuperNode by reducing the number of software options that must be addressed. In the past, Northern Telecom's DMS SuperNode software consisted of hundreds of NTX packages. When provisioning a switch, the customer had to choose from among these packages and deal with software dependencies. In the new software structure, many hundreds of NTX packages are reduced to fewer software options for easier provisioning.



From Unrelated NTX Codes to Logically Grouped Ordering Codes

Each PCL contains many capabilities that are "standard" (no licensing decisions have to be made for these features). Also within a PCL are different options the customer can choose from to tailor the service set and meet the operational requirements of the switch.

Each option is associated with an eight-digit ordering code. Just like the existing NTX codes, they refer to a software capability within the switch that can be licensed and used. Unlike NTX codes, however, the software associated with every ordering code is already present in the PCL-there is no need to load new software before using a generally available feature.

LICENSING SWITCH OPTIONS

There are two ways to license switch options:

1. Right-to-Use Options

For NA002 and NA003 PCLs, optional ordering codes are licensed as Right-to-Use commercial options. That is, the customer purchases the right to use the option, and that software may be deployed by provisioning the associated hardware, parameters, and table datafill. No password is required. This can occur at provisioning or at a later time, as a service provider's needs change or its network expands. Right-to-Use fees will be assessed on the "honor system"-the customer reports which features are used on the switch, and Northern Telecom bills accordingly.

2. Software Optionality Control (SOC) Options

Beginning in NA004, all options will be managed through the Software Optionality Control (SOC) utility. Some options will be simply tracked through SOC; others will be monitored or controlled by the utility. For each option licensed by the customer, Northern Telecom will deliver a "password" file that enables the network provider to report its Right-to-Use and-for SOC-controlled options-to activate the capability.

The first SOC options appear in the TOPS003 release (this includes NA003 PCLs for DMS-100/TOPS combo switches) for a limited number of features. Non-TOPS switches first see the password-managed options in NA004 PCLs.

THE ORDERING CODES IN A PCL

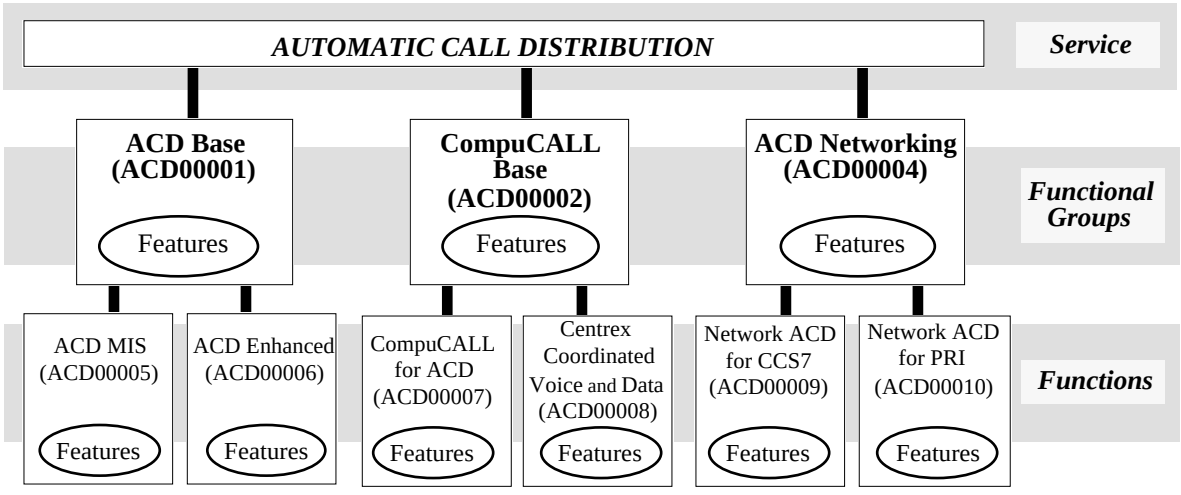
Aside from standard features, PCLs offer two kinds of software options: Functional Groups and Functions.

- ***Functional Groups*** are large groups of features that deliver a basic set of features for a particular service. Typically, several existing NTX packages have been combined into a Functional Group.
- ***Functions*** are options that enhance the feature set in the Functional Group.

The number of options in a typical DMS-100/200 has been reduced from over 1,500 NTX codes to around 200 ordering codes, simplifying provisioning and ordering.

Each software option is designated by an ordering code. In the example shown in the illustration below, for Meridian Automatic Call Distribution (ACD), the customer can license the Functional Groups ACD BASE, COMPUCALL BASE, and ACD NETWORKING, to receive a large group of features. The ordering code for each Functional Group appears underneath the option name.

These groups can be further enhanced by ordering one or more additional Functions. For example, after ordering ACD BASE, the customer may choose to order the Functions ACD MIS, or ACD ENHANCED, or both, to obtain an enhanced level of service.



Ordering Codes-Functional Groups and Functions-for a Service (ACD)

MAPPING NTX CODES TO ORDERING CODES

The new ordering codes contain the capabilities previously divided among many related NTX packages including, where possible, software dependencies. The charts below provide an example, showing how the ACD product has been restructured. The shaded heading of each chart shows the ordering code and name of each ACD Functional Group. Under that appear the NTX packages that are included in that software option. After ordering a Functional Group, the customer has the option of enhancing the service by ordering one or more Functions, shown in boldface under the pertinent Functional Group, followed by the NTX packages that are included in each optional Function.

An Example of How NTX Codes Map Into the New Software Structure

ACD00001 ACD Base

ACD00001 includes:

NTX407AB	ACD Call Processing Control	NTX727AD	ACD Load Management
NTX415AA	ACD Basic	NTXE09AB	ACD on 2500 Sets

ACD00005 ACD Management Information System (MIS)

After ordering ACD00001, the customer can choose ACD00005, containing:

NTX991AF ACD Management Reports Two-Way Data Stream
NTXA52AB ACD Remote Load Management

ACD00006 ACD Enhanced

After ordering ACD00001, the customer can choose ACD00006, containing:

NTXP53AA ACD Access Feature Grouping
NTX419AA ACD PIN Configuration and Control
NTX420AA ACD Nodal Service Observing

ACD00002 CompuCALL Base

ACD00002 includes: NTXJ59AC CompuCALL Base

ACD00007 ACD CompuCALL

After ordering ACD00002, the customer can choose ACD00007, containing:

NTXJ60AB CompuCALL Coordinated Voice and Data
NTXJ62AA Third-Party Call Control
NTXJ63AA Voice Processing Integration
NTXS22AA Third-Party Agent Control

ACD00008 Centrex Coordinated Voice and Data

After ordering ACD00002, the customer can choose ACD00008, containing:

NTXR89AA Centrex Coordinated Voice and Data

ACD00004 ACD Networking

ACD00004 includes: NTXE22AA ACD SuperGroup

ACD00009 Network ACD on CCS7

After ordering ACD00004, the customer can choose ACD00009, containing:

NTXN46AA Network ACD on CCS7

ACD00010 Network ACD on PRI

After ordering ACD00004, the customer can choose ACD00010, containing:

NTXN47AA Network ACD on PRI

As the DMS SuperNode evolves to the new PCL software release structure, NTX codes will be referenced in documents and ordering applications, to help customers who are familiar with these codes make the transition to ordering code nomenclature. Over time, NTX codes will be gradually phased out. The *BCS to PCL Mapping PSI* (Product/Service Information bulletin; number 50105.16) maps every DMS SuperNode NTX package to the new PCL structure.

MAPPING ORDERING CODES TO PCLS

Ordering codes intended for use in a number of switch types may appear in all Product Computing-Module Loads (PCLs), whereas ordering codes that support a certain switch type in a particular market may appear in only one of the PCLs available. The contents of a PCL have been carefully engineered to ensure that the network provider receives a full range of capabilities that can potentially be deployed on a switch type-while at the same time removing those ordering codes that do not pertain to a switch application or market.

This *DMS-100 Software Portfolio* always designates which PCLs contain an ordering code under "Availability and NTX Mapping" at the end of each ordering code's description. The text gives an NA00x (used as a timeframe for general availability) and the actual PCL names. The following describes each of these designations in greater detail.

"NA00*x*"-A CONVENIENT WAY TO TRACK THE GA OF A NUMBER OF PCLS

Features for all North American DMS-100 PCLs are developed in the North American DMS-100 ("NA") development stream. The NA development stream is updated approximately twice a year, and each new product release is given a sequential number (NA002, NA003, and so forth). The availability of a new NA version allows new PCLs to be assembled from the NA stream.

When Northern Telecom advertises availability for DMS SuperNode features intended to be resident in the Computing Module, it will give the NA product release in which the feature is available. For example, a feature may become available in "NA005." That means that PCLs built from NA005 will contain that particular software. Note that the PCL is the orderable software load. The NA product release is not orderable, but represents the vintage of software from which the PCL is built. This gives a convenient way to track the general availability dates of a number of PCLs.

This edition of the *DMS-100 Software Portfolio* summarizes the ordering codes available in PCLs built from NA002 and NA003.

HOW PCLS ARE IDENTIFIED IN THIS DOCUMENT

In this document, each PCL's name consists of:

- **PCL Definition.** Three or more letters at the beginning designate the specific switch and market type, such as:
  - **LEC** for U.S. local exchange carriers
  - **CDN** for Canadian local carriers
  - **LET** for U.S. local exchange carriers' DMS-100/200/TOPS
  - **LTT** for Canadian local carriers' DMS-100/200/TOPS
  - **TOPS** for North American TOPS office
- **NA Release.** The final numerals identify the NA release stream from which the PCL is built. For example, LEC00003 is built from the NA003 general development. This allows customers to easily map individual PCL availability with general NA00*x* developments.

In the future, beginning with NA004, there will also be an “A” or a “B” after the PCL definition. The “A” will designate loads with the new Generic Services Framework; “B” will designate loads that continue with today’s Basic Services Release architecture.

UNIQUE PCLS IN THIS DOCUMENT

Unique products, such as Traffic Operator Position System (TOPS) or DMS-STP (signaling transfer point), are built from development streams separate from NA00*x* releases. Their pertinent PCLs have names not seen elsewhere in the document (such as “TOPS003” or “STBA0002”), released in the associated NA timeframes (such as STSE0002 released with NA002).

For these reasons, the four common NA PCLs seen throughout this document (CDN0000*x*, LEC0000*x*, LET0000*x*, and LTT0000*x*) do not appear in the following chapters:

- Ordering code descriptions in the “DMS-STP” chapter identify availability through DMS-STP PCLs, such as “STBA0002” and “STSE0002.”
- Ordering code descriptions in the “Directory and Operator Services” chapter identify availability through TOPS PCLs, such as “TOPS003.”
- Some ordering code descriptions in the “Number Translation Services” chapter introduce the “CTOP0003” PCL, a Canadian-only version of TOPS003.

How to Use the *DMS-100 Software Portfolio*

IS THIS THE DOCUMENT YOU WANT?

The *DMS-100 Software Portfolio* catalogs the software products offered for the DMS-100 SuperNode in the North American market.

By providing summaries of the ordering codes available in the NA002 and NA003 timeframes, this document serves as a planning tool for network planners, marketers, and others in service provider companies who need an at-a-glance overview of our software offerings-and want to know how these ordering codes can help generate new revenue, cut costs, and streamline operations.

If you are already moderately familiar with Northern Telecom software products, and are interested in what new offerings will be available in future releases beyond NA003, refer to the *Feature Planning Guide* (50004.11). That document presents a two-year view of future software developments.

If you need greater detail on any software product, please contact your local Northern Telecom representative, or call 1-800-NORTHERN. They can provide you with marketing documents, such as *Product/Service Information* (PSI) bulletins, that discuss many of the services and ordering codes introduced in this document in greater detail.

Please Note

The *DMS-100 Software Portfolio* is a planning document that summarizes the applications and benefits of orderable software-and is not intended to be used as a provisioning guide. Some changes in availability may occur based on market need and engineering requirements. Although the DMS SuperNode software evolution significantly simplifies ordering, network planning and provisioning should be conducted in close cooperation with regional Northern Telecom representatives, and with reference to appropriate Northern Telecom technical publications.

HOW THIS DOCUMENT IS ARRANGED

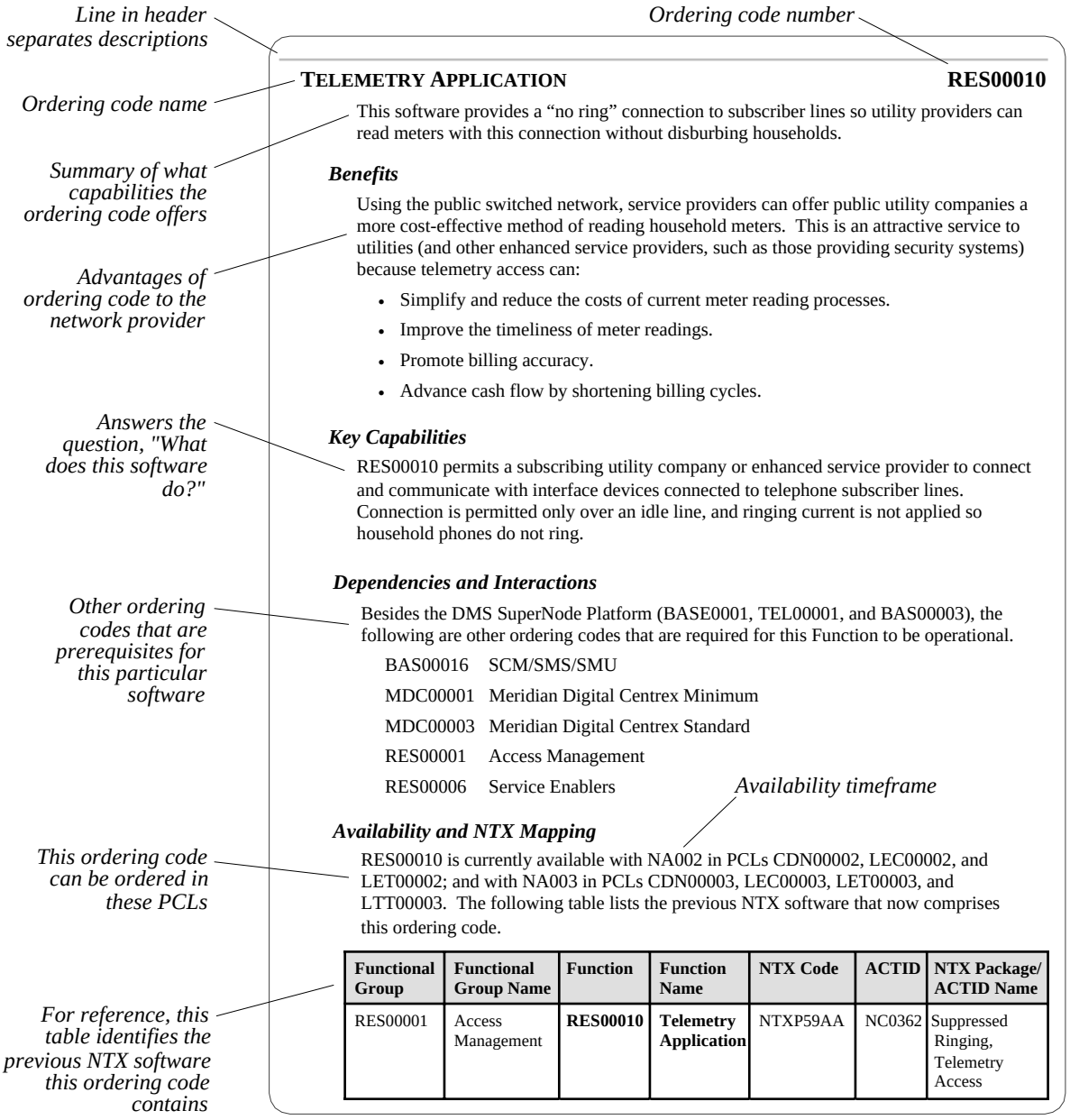
The layout of the *DMS-100 Software Portfolio* is modeled after the new software structure. Chapters of this document represent different *services*-as defined by the new software structure (such as "Meridian Digital Centrex" or "Advanced Intelligent Network"). Within each chapter appears:

- A brief overview of the service as a whole.
- Descriptions of each of the available ordering codes for that service.

The ordering code descriptions have been arranged for ease of use. For example, a description for a Functional Group is followed by descriptions for each of its optional Functions. Generally, the Functional Groups appear in numerical order, except in places where it helps the reader to have them arranged out of sequence (as in the case of a Functional Group that is a prerequisite for other Functional Groups).

HOW TO READ THE ORDERING CODE DESCRIPTIONS

The following example describes the typical layout of an ordering code description in this edition of the *DMS-100 Software Portfolio*.



Ordering code name For clarity, many of the acronyms used in ordering code names have been written in complete words. In some cases, this results in the ordering code name occupying the top two lines on the page. Please note that many ordering and provisioning tools identify these ordering codes with the acronyms intact.

Ordering code The actual ordering code number appears in the top righthand corner. This number is used much like NTX package codes (especially "master packages")

for ordering software in the past. Please note that although an ordering code's number stays the same from one PCL release to the next, it may have new capabilities added to it.

Summary

Under the ordering code name appears a brief synopsis of the capabilities provided by the software in the DMS SuperNode system.

"Benefits"

This area discusses the advantages an ordering code offers a service provider, especially in the areas of containing operating costs, generating new revenues, and offering competitive advantages.

"Key Capabilities"

The software's most important capabilities appear here. The text or list may include the emerging standards or regulatory requirements implemented by this ordering code. This summary is *not* meant to be an exhaustive listing of all the capabilities an ordering code offers.

"Dependencies and Interactions"

This area lists all the other ordering codes that are needed for the particular software to be operational. This list does *not* include the customer's choice of processing options (the BASE000*x* series, detailed in the "Required Ordering Codes" chapter). On occasion, an ordering code in the list may not appear to pertain to the particular software being described-in these cases it can be that the ordering code in question is actually a dependency of another prerequisite ordering code in the list.

This area of the software description might also contain:

- Other ordering code requirements that need text explanation.
- Non-required ordering codes that enhance the software's operation.
- Other ordering codes whose operations are enhanced by this software.

Please note these are software dependencies only; please consult with your Northern Telecom representative for any hardware dependencies involved.

"Availability and NTX Mapping"

This portion of the description lists the particular PCLs, in the North American market, that contain this ordering code. The PCL names appear in alphabetical order. The NA002 or NA003 designation (that coincides with the final digits in a PCL name) gives a timeframe for the availability of these releases.

At the end of each description appears a table that cross-references the previous NTX software that becomes part of the new ordering code, for those readers who are interested in tracking NTX capabilities into the new software structure. The table layout is patterned after the *BCS to PCL Mapping PSI* (50105.16), which maps all the NTX packages to the new ordering codes.

For clarity, one or more columns that do not contain information may be removed (typically, this is the ACTID column). Please note that it is normal for an ordering code that is a Functional Group to have the "Function" and "Function Name" columns empty.

The NTX mapping table will not appear if there were no previous NTX codes published in the past for the particular ordering code's present capabilities.

SYNONYMOUS TERMS

Used for variety, reading ease, and space considerations, the following different terms have similar meanings in this document.

- **ACTID** and **activity ID**
  -are used interchangeably to identify a development number used in the past to identify a particular feature.
- **Features** and **Capabilities**
  -are used interchangeably as descriptors of the functionalities offered by Northern Telecom software. In the past, each "feature" had a specific activity ID associated with it; under the new software structure the same term is used more generically.
- **Network Provider** and **Service Provider**
  -are used interchangeably as terms for a customer of Northern Telecom.
- **NTX Code** and **NTX Package**
  -are used interchangeably in the NTX Mapping column headings at the end of an ordering code description.
- **Subscriber** and **End User**
  -are used interchangeably as terms for a customer of the network provider.

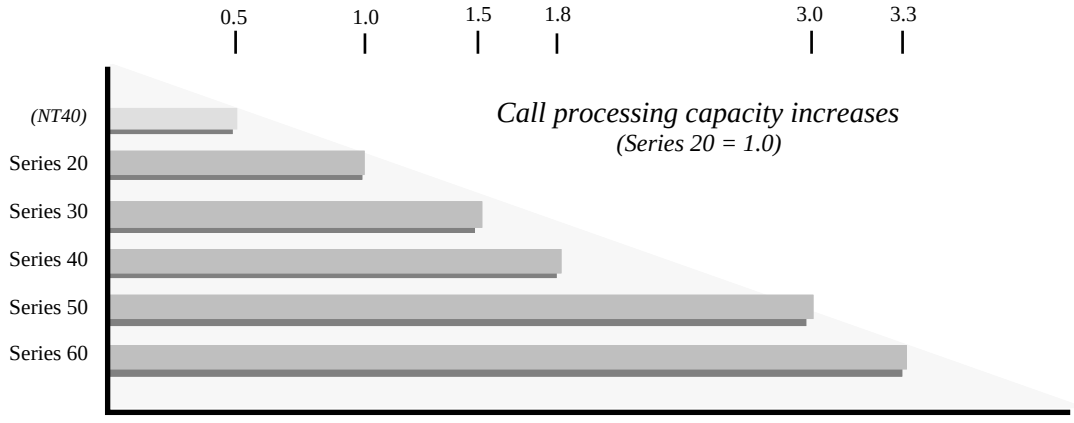
Required Ordering Codes

One of the many strengths of the sophisticated DMS SuperNode architecture is its flexibility: offering power and versatility for a constantly evolving network in the information age. Service providers can run many different switch applications on the system, from subscriber end office switching to an element in the intelligent Common Channel Signaling No. 7 (CCS7) network. This commonality lowers training costs, reduces the number of spares to inventory, and minimizes the cost of adding new revenue-generating services.

Just as there is a hardware platform that provides the foundation for a variety of applications, the DMS SuperNode system also hosts a software base that supports incremental additions for customizing applications and adding new service capabilities as they become available. Forming the core of this foundational software are the ordering codes described in this chapter.

No matter what the switch type or service mix will be, a DMS SuperNode system in North America requires the following ordering codes:

- **The customer's choice of processing option.** One of the processing options (BASE0002 through BASE0008) is required for realtime processing support in the DMS SuperNode Core. As shown in the illustration below, there are a number of increasingly more powerful options available to drive the Computing Module (the processing engine of the DMS SuperNode system).



Ever-Expanding Processing Options Offer Increased Processing Power

Descriptions of these processor options begin on the next page.

- **DMS SuperNode Platform**-a descriptive term referring to three DMS-100 ordering codes that provides the foundational infrastructure for all other ordering codes and offers a wide-ranging list of capabilities. A description of these mandatory ordering codes starts on page 17.

► PROCESSING OPTIONS

One category of required ordering codes is the network provider's choice of processing options. In the NA002 and NA003 timeframe there are seven options available, discussed in detail on the following pages.

The table below summarizes the processing available options, offering different levels of realtime capacity and addressable memory. The network provider selects the particular option that is most cost effective for a given switch, based upon current requirements and anticipated future growth and feature penetration. The processing options provide the realtime capacity required to support line and port growth and other revenue-generating features. Upgrades from one processing option to another can be easily made at any time. Each processor option is considered an optional Function of the "Base" Functional Group (ordering code BASE0001), discussed on page 17.

Processing Option Ordering Codes

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
BASE001	Base	**BASE0002**	**DMS SuperNode Series 20 Processor**	NTXF70AA	SN SR20 Processor
		BASE0003	**DMS SuperNode Series 30 Processor**	NTXF15AA	SN SR30 Processor
		BASE0004	**DMS SuperNode Series 40 Processor**	NTXF16AA	SN SR40 Processor
		BASE0005	**DMS SuperNode Series 50 Processor**	NTXF97AA	SN SR50 Processor
		BASE0006	**DMS SuperNode Series 60 Processor**	NTXR61AA	SN SR60 Processor
		BASE0007	**DMS SuperNode SE Series 20 Processor**	NTXF70AA	SNSE SR20 Processor
		BASE0008	**DMS SuperNode SE Series 60 Processor**	NTXR61AA	SNSE SR60 Processor

Please note that this BASE000*x* series can be confused with BAS0000*x* options. These processor options start with "BASE" whereas foundational service software options (discussed in the following two chapters) have "BAS" before the numerals.

DMS SUPERNODE SERIES 20 PROCESSOR BASE0002

The Series 20 is the initial DMS SuperNode system processing offering, capable of providing approximately twice the processing capacity of the NT40.

Key Capabilities

- Provides approximately twice the processing capacity of the NT40.
- Permits memory growth up to 212 megabytes with NT9X14DB 24 megabyte memory card.

Availability and NTX Mapping

BASE0002 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
BASE0001	Base	**BASE0002**	**DMS SuperNode Series 20 Processor**	NTXF70AA	SN SR20 Processor

DMS SUPERNODE SERIES 30 PROCESSOR BASE0003

The Series 30 processor provides 1.5 times the realtime capacity of the Series 20 processing option.

Key Capabilities

- Provides 1.5 times the realtime capacity of the Series 20 processing option.
- Permits memory growth up to 212 megabytes with NT9X14DB 24 megabyte memory card.

Availability and NTX Mapping

BASE0003 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
BASE0001	Base	**BASE0003**	**DMS SuperNode Series 30 Processor**	NTXF15AA	SN SR30 Processor

DMS SUPERNODE SERIES 40 PROCESSOR BASE0004

The Series 40 processor provides 1.8 times the realtime capacity of the Series 20 processing option.

Key Capabilities

- Provides 1.8 times the realtime capacity of the Series 20 processing option.
- Permits memory growth up to 212 megabytes with NT9X14DB 24 megabyte memory card.

Availability and NTX Mapping

BASE0004 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
BASE0001	Base	**BASE0004**	**DMS SuperNode Series 40 Processor**	NTXF16AA	SN SR40 Processor

DMS SUPERNODE SERIES 50 PROCESSOR BASE0005

The Series 50 processor provides 3.0 times the realtime capacity of the Series 20 processing option.

Key Capabilities

- Provides 3.0 times the realtime capacity of the Series 20 processing option.
- Permits memory growth up to 248 megabytes with NT9X14DB 24 megabyte memory card (additional 32 megabytes on-board memory is used for program store).
- Uses Reduced Instruction Set Computing (RISC) technology.
- Enhances operations, administration, and maintenance performance (such as reducing software load times and improving MAP response times).

Availability and NTX Mapping

BASE0005 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
BASE0001	Base	**BASE0005**	**DMS SuperNode Series 50 Processor**	NTXF97AA	SN SR50 Processor

DMS SUPERNODE SERIES 60 PROCESSOR BASE0006

The Series 60 processor provides a 3.3 times increase in realtime capacity over Series 20 option. This equates to approximately a 13% increase over the Series 50 offering.

Key Capabilities

- Provides 3.3 times increase in realtime capacity over Series 20 option, or 13% increase over Series 50 option through the implementation of “burst mode” processing.
- Permits memory growth up to 400 megabytes with NT9X14EA 96 megabyte memory card.
- Uses Reduced Instruction Set Computing (RISC) technology.
- Enhances operations, administration, and maintenance performance (such as reducing software load times and improving MAP response times).

Availability and NTX Mapping

BASE0006 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
BASE0001	Base	**BASE0006**	**DMS SuperNode Series 60 Processor**	NTXR61AA	SN SR60 Processor

DMS SUPERNODE SE SERIES 20 PROCESSOR BASE0007

The DMS SuperNode SE is a single-cabinet version of the core elements of the DMS SuperNode system, and is available as an alternative to the standard DMS SuperNode multi-cabinet lineup. The SuperNode SE delivers the same call processing features as the DMS SuperNode and is intended for applications that require small to mid-range circuit switching capacities.

BASE0007 “DMS SuperNode SE Series 20 Processor” is the initial DMS SuperNode SE offering.

Key Capabilities

- Provides approximately twice the realtime capacity of the NT40.
- Provides memory growth up to 200 megabytes with NT9X14EA 96 megabyte memory cards.

BASE0007, continued

Availability and NTX Mapping

BASE0007 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
BASE0001	Base	**BASE0007**	**DMS SuperNode SE Series 20 Processor**	NTXF70AA	SNSE SR20 Processor

DMS SUPERNODE SE SERIES 60 PROCESSOR BASE0008

The SE Series 60 processor provides 3.3 times the realtime capacity of the SE Series 20 processing option.

Key Capabilities

- Provides 3.3 times increase in realtime capacity over the Series 20 processing option.
- Uses burst mode processing.
- Uses Reduced Instruction Set Computing (RISC) technology.
- Enhances operations, administration, and maintenance performance (such as reducing software load times and improving MAP response times).

Availability and NTX Mapping

BASE0008 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
BASE0001	Base	**BASE0008**	**DMS SuperNode SE Series 60 Processor**	NTXR61AA	SNSE SR60 Processor

► DMS SUPERNODE PLATFORM

The remainder of this chapter discusses three ordering codes that are prerequisites for all other ordering codes in the North American DMS-100 SuperNode systems. For convenience, these three codes are together referred to as the "DMS SuperNode Platform" throughout this document.

BASE LAYER BASE0001

TELECOM LAYER TEL00001

BASE GENERIC BAS00003

Together, these three Functional Groups provide the foundational infrastructure for all other ordering codes and offer a wide-ranging list of capabilities.

Benefits

With three ordering codes, the network provider receives a broad collection of software capabilities, ranging from the foundational Bilge software to Multicomputing Resources support. By offering the equivalent functionality of more than 250 NTX software packages, the DMS SuperNode Platform significantly simplifies the provisioning of the DMS SuperNode system.

Key Capabilities

The three ordering codes provide a wide spectrum of different capabilities. The following descriptions summarize the key capabilities of the DMS SuperNode Platform. Refer to the long table under "Availability and NTX Mapping" for a listing of all the NTX codes that now comprise these large Functional Groups.

- **Base operating software** offers self-healing operation of the DMS SuperNode or DMS SuperNode SE, with elemental capabilities such as tables, office parameters, synchronization, data storage, disk shadowing, no restart switch in activity (SWACT), and other robustness features.
- **Basic telephony functions** support POTS and coin services, with basic capabilities such as tones (dial, call progress, and comfort tones), call setup, basic call processing features (such as hold and call forward), trunk hunting, digital announcements, echo suppression, conference calling, and more.
- **Software support of standard interfaces** permits interconnection with elements in the network-from PBXs to CCS7 nodes. In addition to a wide range of line/trunk types, this software supports DS-30, DS-1, X.25, Ethernet, and other industry-standard interfaces.
- **Connectivity with switch components** supports the long list of DMS Family equipment, including Enhanced Network (ENET), Multi-Protocol Controller, line cards (including Northern Telecom's new World Line Card), Message Switch, Link Peripheral Processor, Extended Peripheral Modules (XPMs), Subscriber Carrier Modules, and more.

DMS SuperNode Platform, continued

- **Advanced operations, administration, and maintenance capabilities** help reduce operating expenses through a long list of features, such as extensive diagnostics, enhanced security, centralized alarms, reports, network management, Maintenance and Administration Position (MAP), multicomputing platforms, patch administration, line and trunk test positions, service analysis, Switch Performance Monitoring System, and operational measurements (with thresholding and alarm capabilities).
- **Local and centralized billing**, through automatic message accounting and call detail recording, delivers detailed accurate facility usage information in industry-standard formats.
- **Computing Module support for other services** offers basic signaling and messaging capabilities, such as automatic number identification, that are required by other ordering codes, such as those for Advanced Intelligent Networking or Traffic Operator Position System (TOPS).

Dependencies and Interactions

Besides the provider's choice of processing options (BASE0002 through BASE0008), there are no other ordering codes required for BASE0001, TEL00001, and BAS00003 to be operational.

Please note that the PCLs described in the "DMS-STP" chapter require BASE0001 and TEL00001, but do *not* require BAS00003 "Base Generic." Otherwise, these three Functional Groups are prerequisites for all other ordering codes discussed in this document.

Availability and NTX Mapping

BASE0001, TEL00001, and BAS00003 are available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The table on the following pages lists the previous NTX software that now comprise these three large ordering codes.

ACTID	ACTID Name
AE1516	6x21D World Line Card Hardware Support
AF5300	MWL Provision Support
AF5334	SMA Assoc. Ctrl
AF5341	Event Handler Robustness III
AF5589	lNINV Prov 4 RDTL
AF5672	XLCM Outgoing Data Cltn
AF5674	XLCM Maintenance Enhanced
AF5795	XPM Cold SWAC Enhancement
AF5884	Remote Digital Terminal (RDT) Inv Table Control I
AF5885	RDT Inv Table Control II
AN0350	IRTU & VLC Table Control
AN0354	IRTU RFT Misc LT Support
AN0753	Software Status Reports
AN0754	Node Assessment Grph
AN0821	ILC Provision & RDTINV Ctrl
AN0934	SMA RDT Line Maintenance Robustness

NTX Code	NTX Package Name
NTX000AA	Bilge
NTX001AA	Common Basic
NTX006AA	Business Lines
NTX007AB	PBX Interface I
NTX008AB	PBX Interface II
NTX019AA	Civic Services
NTX020AC	Vert Services (POTS)
NTX021AA	Remote Call Forward
NTX029AA	Direct Dialing Overseas, Toll (Canada)
NTX041AB	CCS7 MTP/SCCP
NTX042AA	Local AMA
NTX043AA	Local CDR
NTX044AA	CAMA
NTX045AA	Usage Sen Pricing
NTX048AA	Synchronization
NTX048AB	Synchronization-Cesium Master Clock
NTX048BA	Synchronization-Stratum 3
NTX048CA	Synchronization-Stratum 2
NTX049AC	Circle Digit ID
NTX049AD	Sgl Pty Rev Call
NTX049AE	North Elec Automatic Number Identification Frmt
NTX049AG	ITT ANI Format (Rcv)
NTX049AH	Come Again Signaling
NTX049AL	Time and Temperature

DMS SuperNode Platform, continued

NTX Code	NTX Package Name
NTX051AA	Automatic Trunk Testing
NTX052AB	ROTL
NTX053AA	Maintenance Assistance Package
NTX054AA	Line Test Position (LTP)
NTX055AA	Trunk Test Position (TTP)
NTX055AB	TTP Digit Verification
NTX055AC	TTP-Transmission Measurement
NTX055BA	RONI Trunk Testing
NTX056AA	Enhanced Administration
NTX059AB	Poll OM Data via Dpk
NTX060AB	Network Management
NTX060BB	Enhanced Network Management
NTX063AA	Echo Suppresser
NTX065AA	Service Analysis
NTX066AB	Bilingual Interface
NTX074AA	Disk Data Storage System
NTX076AA	AMA-Enhanced
NTX077AA	Online Peripheral Software
NTX080AA	LAMA Enhanced
NTX080BA	Term Call Blng (NT)
NTX082AA	Sub Line Usage
NTX083AA	Feature Group A
NTX085AA	Traffic Sep Peg Count
NTX087AA	Traffic Sep Usage
NTX088AA	Traffic Sep Report
NTX089AA	Enhanced Coin Services
NTX090AA	Coin Services
NTX094AA	Digital Sub Svcs
NTX098AA	Bellcore CAMA Format
NTX099AA	OM Enhancements
NTX120AA	Office Hardware Inv Pkg
NTX121AA	Overlap Outpulsing (Trunk to Trunk)
NTX122AA	OM-Call Attempts Summary
NTX129AA	2Way Opr Office Trunk
NTX136AA	Automatic Transmission Measuring System
NTX139AA	Revert Pulse Dig Ln
NTX142AA	DS-1 64 Kbps Clear
NTX143AA	DS-1-ESF
NTX159AA	Bellcore LAMA Format
NTX160AA	Multiunit Msg Rt Svc
NTX174AA	Automatic Identification of Outward Dialing
NTX190AA	FGB AMA Tandem NT fmt
NTX192AA	4X Opr Bell Format ANI
NTX193AA	4X Opr AMR5 Format ANI
NTX195AA	Mech Loop Test Interface
NTX196AA	Clng No Announcement
NTX202AA	DMS-250 Operational Measurements
NTX206AA	Unauthorized Dgt Svc Detection
NTX209AB	FGB AMA End AT&T Format

NTX Code	NTX Package Name
NTX210AA	No. 2 SCC Interface
NTX211AB	FGB AMA Tndm AT&T Format
NTX215AA	SES No 2 Interface
NTX218AA	1A/1B EADAS I/F
NTX227AA	DMS-250 Time of Day Routing
NTX237AA	DMS-250 Conference Calling
NTX244AB	Enhanced Sequential Trunk Hunting
NTX268AA	FGB AMA End NT Format
NTX269AA	Universal Tone Receiver (Domestic)
NTX270AA	New Periph Maint Package
NTX272AA	XPM Maintenance
NTX273AA	Multi-protocol Controller BX.25
NTX274AA	DTC 30 Carrier Maintenance
NTX277AA	Dialable Line Ckt ID
NTX290AA	Tandeming/ Supervision and Treatment
NTX291AA	Enhanced Real Time Indicator
NTX292AB	Enhanced Security - with Password
NTX293AA	Enhanced Security Package II
NTX385AA	OM Thresholding and Alarms
NTX395AA	Remote MB via Scan Point
NTX437AA	Random Conditional Routing
NTX445AB	OM Selective Output

NTX Code	NTX Package Name
NTX455AB	1A EADAS Network Mngmnt
NTX479AA	Intl Univ Tone ACUR Support
NTX488AA	International Time of Day Routing
NTX558AA	CC EO DP/DTMF Genrtn
NTX559AA	CC SSP DP/DTMF Sprtn
NTX560AB	NOP-Generic RO Service
NTX562AA	NOS Data Collection
NTX712AA	CCS7 Data Port
NTX721AA	Interval Announcement Response Capability
NTX730AA	Multilink ASCII Driver
NTX738AC	Switch Performance Monitoring System
NTX801AA	Toll Features I
NTX802AA	Toll Features II
NTX806AA	Enhanced Call FWD (POTS)
NTX807AB	Call Waiting (POTS)
NTX808AA	Enhanced TWC (POTS)
NTX812AA	Centralized MAP
NTX813AA	Centralized Alarms
NTX821AA	Tandem Opr Svc Routing
NTX827AA	New Peripherals Performance Measurements
NTX881AC	Sw Bit Error Ratio Maintenance
NTX882AA	Bit Error Ratio Indicator for Toll Switches

DMS SuperNode Platform, continued

NTX Code	NTX Package Name
NTX883AA	InterOffice Trk Bit Error Rate Testing
NTX885AB	Switch Path Diagnostics
NTX892AA	MPC Multilink Management
NTX901AA	Local Features II
NTX902AA	Local Features II
NTX903AA	Transmission Measurements
NTX925AA	ISC Time of Day and Percentage Routing
NTX940AA	CM Bilge
NTX941AA	CM Common
NTX942AB	DMS - SuperNode System Load Module
NTX944AA	Base Mode Maintenance
NTX945AA	MS Base Link Maintenance
NTX950AA	MS Bilge
NTX951AA	MS Common
NTX987AA	Fiber Mtc Basic Mode
NTX989AA	Cxr Access Code Blocking
NTXA11AA	Patch Administration and Downloading via X.25
NTXA15AA	Call Progress / Comfort Tones
NTXA67AA	Extended XPM Diagnostics
NTXA89AA	SMDR Time Dump for BNM
NTXB01AA	Intl-Traffic Separation Report
NTXB74AA	EBI / A-LAW

NTX Code	NTX Package Name
NTXB91AA	411 Rec on Mag Tape
NTXE01AA	Enhanced Network-Basic
NTXE30AA	CCS7 Signaling Link Enhanced Maintenance for MSB7
NTXE54AA	System Load Module II
NTXE65AA	MPC X.25 Interface
NTXE98AA	High Speed MPC
NTXF04AA	File Processor
NTXF05AA	Ethernet Interface Unit (EIU)
NTXF06AA	Application Processor Base
NTXF07AA	Fault Tolerant File System
NTXF19AA	TCP/IP Protocols
NTXF20AA	LMS on LPP
NTXF26AA	Synchronization-BITS Composite Master
NTXF27AA	Synchronization-Cesium, Loran - C MA
NTXF46AA	Base SCM Access
NTXF71AB	SuperNode Enhanced Messaging
NTXG13AA	DMS Base Data Access Interface Session (DAIS)
NTXG18BA	DMS-250 Safe Store Tap
NTXH10AA	PCM-30 Maintenance Enhancements
NTXH11AA	M20 Enhancements

NTX Code	NTX Package Name
NTXH51AA	PCM-30 LGCO/DTCO Spt
NTXH62AA	Perform on PLGC/ PDTC/PRCC
NTXH63AA	DMS-300 ANSI ISUP to CCITT TUP Interworking
NTXH77AA	Channelized Access on LPP/LIS
NTXH91AA	DMS-300 Real Time File Transfer
NTXJ35AA	Maintenance Managers Report
NTXJ44AA	SLM File System
NTXJ58AA	Cancel Call Waiting
NTXJ94AA	Mandatory Parallel AMA
NTXK49AA	CCS7 Tst Maint.
NTXK50AA	TTP - Digital Jack - Ended Trunks
NTXK56AA	PCM-30 Time Slot Flexibility
NTXK63AA	International BERT
NTXK65AA	Eight Port DS-0 Carrier Maintenance
NTXK79AC	PCM-30 Unified Processor (UP) Support
NTXL22AA	MTX PDTC Interface
NTXM82AA	DMS-300 CCITT7 SCCP/TCAP Base
NTXN11AA	Enablers-10 Dig LIOD
NTXN16AA	Enhanced DRAM

NTX Code	NTX Package Name
NTXN18AA	FBUS - LIU Base
NTXN68AA	XPM Broadcast Patching
NTXN83AA	LIS Common - LMS Functionality on MS
NTXN85AA	MPC 1984 X.25
NTXP00AA	Line Card Monitor
NTXP10AA	Network Module Software
NTXP13AA	ENET Switch Path Diagnostics
NTXP14AA	DIRP Parallel Storage Size Increase
NTXP15AA	MAP Access via MPC Phase V
NTXP17AA	DMS-250 Billing Server Base
NTXP44AA	DMS SuperNode SE Common
NTXP72AA	ENET 16K Configuration
NTXP81AA	Remote Act of LLC
NTXP90AA	Meridian SuperNode Option 201
NTXP94AA	FTFS Disk Shadowing
NTXP97AA	IEM Basic Event Consolidation
NTXQ32AA	Digital Audio Tape (DAT) Storage
NTXQ51AA	MS SR512 LIS Controller
NTXQ52AA	Support for MS Resident, LIS Controller

DMS SuperNode Platform, continued

NTX Code	NTX Package Name
NTXQ96AA	IEM Base Phase III
NTXR21AA	EADAS Hardware Inventory Control
NTXR34AB	XPM PLUS
NTXR42AA	Firmware Downloading
NTXR46AA	Robustness Enhancements
NTXR70AA	CM Base for DMS SuperNode Data Manager
NTXS00AA	Interchangeable NPA
NTXS07AA	Telco Defined Login Banner
NTXS11AA	File Transfer Protocol (DARPA)
NTXS29AA	APU Maintenance
NTXS72AA	Software Support for EDRAM Uploading
NTXV00AA	DN Screening Database - Base
NTXV11AA	PCM-30 Digital Trunk Controller Interface
NTXV18AA	Message Transfer Part (MTP)
NTXV20AA	DMS-100 Automatic File Transfer (AFT)
NTXV26AA	DN Screen Enhancement III
NTXW00AA	World Line Card - Basic
NTXX98AA	DMS-MTX MNP

DMS-100 Base Service

Northern Telecom's DMS SuperNode system is the premier digital switching solution for delivering the full range of integrated network applications and services increasingly demanded by service providers and their customers. The DMS SuperNode system offers:

- Delivery of a full range of advanced services.
- A flexible platform with clear evolutionary paths for future services.
- A common modular hardware/software technology shared by all network applications (DMS-100/200, TOPS, STP, SCP, and National ISDN).
- Operations, administration, and maintenance (OAM) structures that ease new service introduction and integration of technologies.
- Support for multiple, autonomous application processors-and a flexible coupling of node processors and interfaces that enables the system to be efficiently reconfigured to respond quickly to changing service opportunities or network architectures.

Today's sophisticated DMS SuperNode system delivers the wide range of network applications and revenue-generating services Northern Telecom customers have come to expect.

AT A GLANCE

The ordering codes in this chapter provide the OAM foundations that support the service-based ordering codes detailed in the remainder of this book. Also, refer to the information about the external DMS SuperNode Data Manager in the *Feature Planning Guide* (50004.11) for more OAM capabilities. The ordering code descriptions in this chapter have been arranged in the following sequence.

GENERIC OAM (OPERATIONS, ADMINISTRATION, AND MAINTENANCE) BAS00004

This optional software offers time-saving OAM features to simplify maintenance procedures and increase new service velocity.

Benefits

The OAM capabilities of BAS00004 reduce the time and effort required for a network provider to introduce new features. This software also reduces maintenance costs by simplifying the day-to-day service provisioning procedures of the DMS system to enhance craft efficiency.

Key Capabilities

This Functional Group provides time-saving Maintenance and Administration Position (MAP) commands, including:

- ITALK-enhances the flexibility of the network provider's operations system (OS) by enabling the OS to use any BCS syntax (from BCS30 onward) to talk to the DMS-100.
- QCUST-uploads a customer's line/station data by querying a customer or customer group with a single command. QCUST can also be used to display all incremental changes made since the last database synchronization. This command provides an excellent way for an OS to remain current with station changes.
- QLEN-enables the retrieval of all features assigned to a directory number (DN) without requiring to know the station's assigned line equipment number (LEN).

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Functional Group to be operational (needed for the ITALK command).

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

MDC00009 Meridian Digital Centrex Pro

Availability and NTX Mapping

BAS00004 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
BAS00004	**Generic OAM**			NTXN31AA	Operations System Interface Enhancement

OFF-NETWORK ACCESS SERVICES BAS00024

With BAS00024, switch technicians can specify unique dial plans on a per-trunk group basis to enhance the use of Network Services Software and Meridian Offnetwork Access.

Benefits

Specifying dial plans unique to trunk groups extends the flexibility of the DMS switch to address differing end user requirements. The dialing plans can be overridden with specific types of calls, offering greater flexibility and privileges to the subscriber.

Key Capabilities

- Standardizes the various translation schemes for access to Network Services Software for hotline, senderized, and cut-through dialing.
- Enables the Network Class of Service (NCOS) datafill to be overridden by calls using 700, 800, or 900 dialing; travel card number; authorization code; or Automatic Number Identification screening on Feature Group D dialing.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the only other ordering code that is required for this Function to be operational is BAS00004 “Generic Operations, Administration, and Maintenance.”

Availability and NTX Mapping

BAS00024 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
BAS00004	Generic OAM	**BAS00024**	**Off-Network Access Services**	NTXE75AB	Offnet Access Services

AUTOMATIC NUMBER IDENTIFICATION BAS00002

This Functional Group enables the end office to generate Bellcore AMA records while, at the same time, forwarding Automatic Number Identification (ANI) for generation of billing records at a tandem office on direct dialed calls routed over outgoing or two-way trunks to Centralized Automatic Message Accounting (CAMA), Traffic Service Position System, or Traffic Operator Position System (TOPS).

Benefits

BAS00002 enables the network provider to have available local call records (not normally generated) to compare with billing records from a tandem office, to check the accuracy of revenue settlements.

Key Capabilities

This software produces call records not normally generated at the end office for direct dialed calls to:

- A tandem office with CAMA.
- An operator service center.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), no other ordering code is required for this Functional Group to be operational. BAS00002 enhances the Bellcore LAMA Format feature provided in the DMS SuperNode Platform.

Availability and NTX Mapping

BAS00002 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
BAS00002	**Automatic Number Identification**			NTX986AA	Automatic Number Identification with Automatic Message Accounting

LINE MAINTENANCE BAS00006

The BAS00006 Functional Group provides two tools that speed the transfer or cutover of an existing switch to a new DMS-100 Family switch: the Automatic Board-to-Board Test feature and its companion Line Cut feature.

Benefits

By integrating these two features into the Automatic Line Testing (ALT) sub-system, BAS00006 offers the following benefits:

- Permits the cutover of lines from an old switching exchange to the DMS-100 with minimal human intervention.
- Reduces the complexity of cutovers through Maintenance and Administration Position (MAP) integration, log generation, pass/fail counts, and scheduling of tests.

Key Capabilities

The integration of these software tools permits them to be integrated with DMS MAP, log, and alarm procedures.

- Automatic-Board-to-Board Test (ABBT) verifies the cross-connections made between the new switch and the subscriber loops and ensures there will be no service impact to the subscribers of the old switch as well as the already active (working) subscribers in the DMS-100.
- Line Cut (LM-CUT) provides an automated means to cut into service blocks of lines on Line Concentrating Modules (LCMs) by groups of directory numbers (DNs) or Line Equipment Numbers (LENs) during commissioning. A database stores and retrieves information about these lines.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), no other ordering code is required for this Functional Group to be operational.

Availability and NTX Mapping

BAS00006 is scheduled to be available with NA003 in PCLs CDN00003, LEC00003, and LET00003; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the activity IDs that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	ACTID	ACTID Name
BAS00006	**Line Maintenance**			AR0995	Hooking Board to Board Testing (BBT) into the Automatic Line Testing (ALT) sub-system
				AR0996	Cutting Lines under ALT
				AR0997	BBT Database
				AR0998	BBT under ALT

ENHANCED PERMANENT SIGNAL BAS00041

BAS00041 promotes proactive line fault detection by automatically providing an analysis of a line that has been detected as being off-hook for an extended period of time.

A subscriber who does not want to be interrupted by calls can leave a receiver off-hook. After a timeout, the network provider sends tones and announcements to alert the party to the off-hook condition. If the subscriber does not hang up, the line is taken out of service with a "permanent signal"-so its switch resources can be released for other calls.

A permanent signal can also be caused by shorts, like those that occur in faulty wiring. BAS00041 automatically verifies if this condition on a line is caused by a subscriber or by a fault.

Benefits

This software enables proactive fault detection by analyzing lines having a permanent signal, to identify faulty or hazardous line conditions. The network provider can be alerted by logs to take immediate action on resolving a problem-before a subscriber complains. This raises customer satisfaction and class of service, as well as protecting outside plant equipment from prolonged exposure to hazardous currents.

Key Capabilities

This Function automatically analyzes a line having a permanent signal condition and reports, by special log message to the Automatic Line Testing port, when a condition is caused by a ring-to-ground short or a hazardous potential.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the only other ordering code that is required for this Function to be operational is BAS00006 "Line Maintenance."

Availability and NTX Mapping

BAS00041 is scheduled to be available with NA003 in PCLs CDN00003, LEC00003, and LET00003; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the activity ID that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	ACTID	ACTID Name
BAS00006	Line Maintenance	**BAS00041**	**Enhanced Permanent Signal**	AG3884	Enhanced Permanent Signal

LOGS - LINE LOG REDUCTION BAS00007

To reduce the number of log messages received at a surveillance operations system (OS), this Functional Group analyzes certain LINE log messages and outputs only those messages that indicate current or potential troubles.

Benefits

By reducing the number of log messages sent to OSs, the network provider uses logging channels and OS resources more effectively (there are fewer messages to analyze, browse, parse, and store)-while at the same time improving alert indications of subscriber line and loop troubles.

Key Capabilities

This optional software analyzes the following LINE logs and passes only potential or current trouble reports to OSs:

- LINE102 line lockout on
- LINE103 line lockout off
- LINE105 permanent signal
- LINE106 partial dial
- LINE108 permanent signal & partial dial

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), no other ordering code is required for this Functional Group to be operational.

Availability and NTX Mapping

BAS00007 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
BAS00007	**Logs - Line Log Reduction**			NTXQ95AA	Line Log Reduction

AUTOMATIC MESSAGE ACCOUNTING WITH COOK ELECTRIC EQUIPMENT BAS00001

This Functional Group provides Computing Module support of a Distributed Processing Peripheral (DPP, from Cook Electric) to serve as an Automatic Message Accounting (AMA) teleprocessing system interface to a host office collector (HOC).

Benefits

Efficient billing becomes more important as the volume of AMA data expands with the dramatic growth of toll calling, local measured service, and new usage-based services-such as CLASS and packet-switched services. AMA teleprocessing is much more cost-effective than recording billing data on bulky magnetic tapes that must be transported to the revenue accounting office, risking erasure or damage along the way.

The DPP's reliable, fully redundant architecture and complete integration with the DMS system give it significant advantages over other AMA transmitters.

Key Capabilities

This Functional Group offers software support on the Computing Module for the following.

- Provides the DPP with call records formatted into the Bellcore AMA format.
- Supports transmission over direct or dial-up teleprocessing links at 1200, 2400, 4800, or 9600 bps, using Bellcore X.25 Issue 3A protocol.
- Integrates the DPP into the DMS-100 system, including alarms, log reports, and Maintenance and Administration Position (MAP) capabilities.
- Supports tracer records for auditing and tracking.

This system conforms to Bellcore data-collector and AMA-transmitter specifications in Bellcore TR-TSY-000385.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), no other ordering code is required for this Functional Group to be operational.

Availability and NTX Mapping

BAS00001 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
BAS00001	**Automatic Message Accounting-Cook**			NTX243AA	AMA Teleprocessing System

HIGH-CAPACITY DISTRIBUTED PROCESSING PERIPHERAL BAS00028

This optional Function of BAS00001 compresses AMA records over ordinary dial-up lines as the host office controller (HOC) polls the DMS system. The compression significantly expands the throughput to the network provider's billing system over ordinary dial-up lines, saving the costs of deploying dedicated polling links.

Benefits

With BAS00028, network providers can realize significant savings in data-transmission costs and dramatically increase the number of call records that can be polled by the HOC in a day. This compression cuts polling times to as little as 40% of the conventional, noncompressed method-increasing the effective polling speed by up to 180%.

This Function also gives the network provider the option to continue to send uncompressed AMA billing records, but now with support for 56 kbps transmission.

Key Capabilities

This Function offers software support on the Computing Module for the following.

- Uses industry standard Lempel-Ziv-Welch data compression algorithms adapted specifically to address Bellcore AMA format requirements.
- Supports HOCs equipped for compression at speeds from 2400 to 9600 bps.
- Offers support for non-compressed AMA transmission at 56 kbps for offices that handle large volumes of billable calls and must be polled frequently.
- Safeguards billing data by not "bulking" the AMA records and by storing billing data uncompressed on the DPP's disk drives.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the only other ordering code that is required for this Function to be operational is BAS00001 "Automatic Message Accounting with Cook Equipment."

Availability and NTX Mapping

BAS00028 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
BAS00001	AMA - Cook	**BAS00028**	**High-Capacity DPP**	NTXF14AA	High Capacity DPP

AUTOMATIC MESSAGE ACCOUNTING LAMA MODULES AMA00002

This optional Functional Group, for the Canadian market only, appends the following data into Bellcore Automatic Message Accounting (AMA) records that currently exist in Northern Telecom AMA records:

- Out-of-zone indicator for Canadian 800 Plus service.
- Call type information in tables TOLLENTC and BILLCODE.

With AMA00002, the network provider preserves this call information when transferring AMA records from Northern Telecom format to Bellcore format for Local Automatic Message Accounting (LAMA) purposes.

Benefits

As an extension of Basic 800 Service, 800 Plus permits out-of-zone calling (that is, calls made from outside the 800 service area are completed and charged at operator-assisted rates). Out-of-zone calling is a significant revenue source for the network provider, so it is important to have this information for billing and tracking purposes. AMA00002 appends this information, as module 304, when Northern Telecom AMA records are transferred to Bellcore AMA records.

Also, network providers who use tables TOLLENTC and BILLCODE in Northern Telecom AMA to identify certain call types can now append this information, as module 306, to Bellcore AMA records.

Key Capabilities

With AMA00002, the following call information, available in Northern Telecom AMA records, is kept when converting the call information to Bellcore AMA records.

- Appends module 304 for call code 142 to indicate out-of-zone 800 Plus calls.
- Appends module 306 to identify certain call types not requiring operator assistance (such as INWATS, LAMA Direct Distance Dialing, and LAMA Direct Dialed Overseas).

Without AMA00002, the above information would be discarded in the AMA conversion process.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), no other ordering code is required for this Functional Group to be operational.

Availability and NTX Mapping

AMA00002 is currently available in Canada with NA002 in PCL CDN00002; and with NA003 in PCLs CDN00003 and LTT00003.

The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
AMA00002	**Automatic Message Accounting LAMA Modules**			NTXE28AA	LAMA Modules

AUTOMATIC MESSAGE ACCOUNTING CAMA MODULES AMA00004

This optional Functional Group is similar to AMA00002, but tailored for use with Bellcore AMA records that will be used for Centralized Automatic Message Accounting (CAMA) purposes in the Canadian market.

Benefits

Refer to AMA00002.

Key Capabilities

Refer to AMA00002.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), no other ordering code is required for this Functional Group to be operational.

Availability and NTX Mapping

AMA00004 is currently available in Canada with NA002 in PCL CDN00002; and with NA003 in PCLs CDN00003 and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
AMA00004	**Automatic Message Accounting CAMA Modules**			NTXP82AA	CAMA Modules

LOCAL SERVICES LOC00001

This Functional Group simulates multi-party service for up to four individual subscriber lines by bridging them together using conference circuits. This software is the only way to group multi-party subscribers together when their individual lines are served by digitally integrated switch remotes or subscriber loop carrier systems.

Benefits

LOC00001 allows the network provider to maintain the differentiation between single-party and multi-party service even when all subscribers are served by individual lines. This feature is useful in multi-party to single-party upgrade programs, for special applications, or for providing multi-party service to their customers as a lower cost alternative to single-party service. The multi-party service provided by this software offers two enhancements to mechanical bridging:

- Only the called party in the multi-party group is rung.
- No special treatments or caller process is required for revertive calls.

This software can save the provider the cost of installing and maintaining mechanical bridge lifters at the main distribution frame-and realize administrative cost savings in standardizing one common software-based process for provisioning the service.

Key Capabilities

With this Functional Group, the network provider can continue to offer multi-party service for subscribers who are served by individual lines. The bridged multi-party group can include up to four subscriber lines connected to any peripheral, including those served by digitally integrated remotes and subscriber loop carrier systems.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), no other ordering code is required for this Functional Group to be operational.

Availability and NTX Mapping

LOC00001 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

PCL Package	PCL Package Name	Function	Function Name	NTX Code	NTX Package Name
LOC00001	**Local Services**			NTX297AA	Bridged Services

FUNCTIONS FOR BAS00003 "BASE GENERIC"

The remainder of this chapter discuss the optional Functions for BAS00003 "Base Generic." Discussion of the Base Generic Functional Group appears in the previous "Required Ordering Codes" chapter. Although BAS00003, as part of the DMS SuperNode Platform, is a required ordering code for all DMS-100 switches, its Functions (BAS00020, BAS00021, and BAS00022) are optional.

FLEXIBLE BELLCORE AUTOMATIC MESSAGE ACCOUNTING BAS00020

This Function of BAS00003 offers the network provider greater control of Bellcore Automatic Message Accounting (AMA) call recording mechanisms.

By enhancing the Universal Flexible AMA base provided by the DMS SuperNode Platform, this software enables the service provider to define certain AMA parameters, such as flexible assignments of AMA call type and service feature codes.

Benefits

This software enables the network provider to define custom AMA characteristics. Adapting call type and service feature codes to suit local tariffs is a convenient way to streamline billing and usage tracking by the downstream processing system.

Key Capabilities

BAS00020 enables customized assignment of Call Type and Service Feature AMA characteristics, compatible for both Local AMA and Centralized AMA applications.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), no other ordering code is required for this Function to be operational.

Availability and NTX Mapping

BAS00020 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
BAS00003	Base Generic	**BAS00020**	**Flexible Bellcore AMA**	NTX737AB	Flexible Bellcore AMA

MAINTENANCE AND ADMINISTRATION POSITION (MAP) TELNET ACCESS BAS00021

BAS00021 provides a full-screen MAP interface over Ethernet connections between the DMS switch and the new DMS SuperNode Data Manager (SDM), operating as a dedicated operations, administration, and maintenance (OAM) engine. For more information on the SDM, refer to the *Feature Planning Guide* (50004.11).

Benefits

This Function of BAS00003, in concert with the DMS SuperNode Data Manager, provides a highly efficient, secure, reliable, and fast MAP display to streamline maintenance tasks and to reduce the total number of MAP terminals required.

This Function is required to support "MAP Passthrough." This optional application on the SDM allows network provider technicians to conduct up to eight MAP sessions on a DMS switch remotely, using TELNET connections through a wide area network.

Key Capabilities

BAS00021 offers the following capabilities on behalf of OAM applications on the DMS SuperNode Data Manager.

- Enables high-speed transfer of MAP-based data over Ethernet interface.
- Supports fast, efficient MAP screen displays on SDM workstations.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), no other ordering code is required for this Function to be operational in the Computing Module. Of course, pertinent software on the DMS SuperNode Data Manager must be in operation for BAS00021 to provide any benefit to the network provider.

Availability and NTX Mapping

BAS00021 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
BAS00003	Base Generic	**BAS00021**	**MAP TELNET Access**	NTXF09AA	MAP TELNET Access

SUPERNODE DATA MANAGER TABLE ACCESS BAS00022

BAS00022 provides access to tables and office parameters for the DMS SuperNode Data Manager (SDM) applications, to reduce significantly the time and effort required to complete translations changes in a DMS SuperNode switch.

Benefits

This Function is required to achieve the benefits of the SDM's Streamlined Translations Application, used to streamline and automate certain translations procedures. For details on the Streamlined Translations Application's many OAM benefits, refer to "Streamlined Translations" in the *Feature Planning Guide* (50004.11).

Key Capabilities

This software completes base-level tasks on behalf of SDM applications, beginning with the Streamlined Translations Application. BAS00022 enables interworking between the SDM application and switch provisioning and translations data, with features such as:

- *Data Dictionary Access*, to provide accurate error checking without impacting call processing.
- *Reliable High Speed Data Access*, to speed the completion of translations tasks.

Dependencies and Interactions

BAS00022 provides mandatory Computing Module support for the "Streamlined Translations" application on the external SDM. Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), no other ordering code is required for this Function to be operational in the Computing Module.

Availability and NTX Mapping

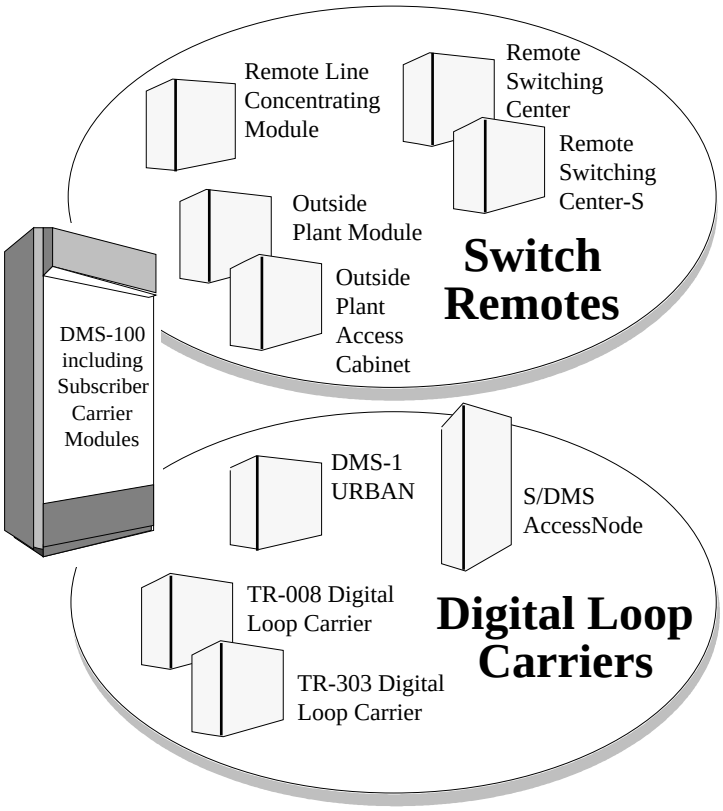
BAS00022 is scheduled to be available with NA003 in PCLs CDN00003, LEC00003, and LET00003; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the activity ID that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	ACTID	ACTID Name
BAS00003	Base Generic	**BAS00022**	**SuperNode Data Manager Table Access**	AR0946	SDM Table Access

Remote Access

Network providers have to deliver services to areas that are expanding rapidly, often making it difficult to plan adequately for that growth. While new businesses, residential developments, and shopping centers fuel the demand for new revenue-generating services, the pressure of rapid growth requires cost-effective solutions to extend these services to remotely located areas or areas currently served by analog switches. And in the new competitive environment, many providers are looking to economically extend their service portfolios into new markets or geographical areas.

The DMS-100 Remote Access family offers cost-effective solutions for this changing environment, delivering the full range of host DMS-100 services to remotely located subscribers, supporting applications to a maximum of 12,000 subscriber lines. These solutions offer pair gain and feeder relief, by minimizing the number of links back to the central office through concentration and intraswitching at the remote terminals. And, by extending the reach of DMS SuperNode technology, these remote access vehicles provide a powerful platform for digital integration, network simplification, and penetration into new markets or territories.



SWITCH REMOTES

For details on Northern Telecom's family of DMS-100 Switch Remotes, refer to the following ordering codes in this chapter.

BAS00012 Remotes Generic

BAS00009 Remote Switching Center-S

DIGITAL LOOP CARRIERS

For details on Northern Telecom's family of Direct Digital Interfaces (to integrate Digital Loop Carriers), refer to the following ordering codes in this chapter.

BAS00016 SCM/SMS/SMU

BAS00027 SMS-R Special Services

SMA00001 TR-303 Interface

REMOTES GENERIC BAS00012

This Functional Group provides the necessary software interface for all of Northern Telecom's family of DMS-100 Switch Remotes. The following products deliver a full range of host DMS-100 services to remotely located subscribers or customers currently served by analog switches.

- Remote Line Concentrating Module (RLCM) serves smaller applications up to 640 lines.
- Outside Plant Module (OPM) offers an outside plant version of the RLCM.
- Outside Plant Access Cabinet (OPAC) offers an expanded version of the OPM with added space for customer-mounted equipment.
- Remote Switching Center (RSC) offers a line capacity of 7,600 (POTS lines at 4.0 High Day Busy Hour ccs/line, 20% intraswitching) with DS-1 host links and Remote Concentrating Equipment frame packaging.
- The Remote Switching Center-S (RSC-S) is a higher-capacity RSC that supports a line capacity of 8,000 (POTS lines at 4.0 High Day Busy Hour ccs/line, 20% intraswitching) with cabinet packaging, National ISDN capabilities, and increased peripheral-side trunking capacity.

Benefits

Switch remotes substantially increase network provider revenues by extending deeper into the network the delivery of ISDN, CLASS, Meridian Digital Centrex voice and data, Automatic Call Distribution, and other advanced digital services. These products also minimize outside-plant expenditures and conserve host resources by:

- Centralizing operations, administration, and maintenance (OAM) at the host DMS Maintenance and Administration Position (MAP).
- Cutting expenses for training and spares inventories through commonality with the host and with other DMS-100 remote access vehicles.
- Reducing operating expenses through intraswitching, which allows calls originating and terminating on the RSC/RSC-S to be switched without using host links or host resources during a call, after call set-up.
- Simplifying network planning and conservation of host resources through "back-door" dynamic trunking, which links the RSC/RSC-S to subtending CDOs/PBXs-and supports "remotes-off-the-remote" configurations.

Key Capabilities

- *Simplified ordering* of switch remote software.
- *Intraswitching* enables calls that originate and terminate within a Remote Cluster Controller to be switched without using DS-1 links to the host, except during initial call setup, to save host resources and reduce DS-1 link requirements.
- *Emergency Standalone (ESA)* operation continues call processing for local POTS call service when lines are severed between a host and an RSC/RSC-S.
- *Additional Message Links* support an additional pair of messaging channels to reduce the possibility of an RSC-S entering ESA operation as a result of a single link failure (scheduled to be available in NA003).

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), no other ordering code is required for this Functional Group to be operational. The optional BAS00009 "RSC-S" Functional Group allows the Remote Switching Center-S (RSC-S) to be deployed at distances greater than 100 miles. Certain capabilities-such as ESA, Dual Remote Cluster Controller, or XPM Plus-may require incremental hardware.

Availability and NTX Mapping

BAS00012 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX software that now comprise this ordering code.

Functional Group	Functional Group Name	NTX Code	ACTID	NTX Package / ACTID Name
BAS00012	**Remotes Generic**		AF5807	Central Processor and Memory ACC REST
			AN0825	RCC2 Additional Messaging Links (scheduled for NA003)
		NTX023AB		Remote Line Module (RLM)
		NTX024AA		Intra-RLM Calling
		NTX025AA		RLM Emergency Standalone (ESA)
		NTX145AA		Remote Switching Center (RSC)
		NTX146AA		Remote Line Concentrating Module (RLCM)
		NTX147AB		Outside Plant Module (OPM/OPAC) Maintenance
		NTX149AB		RSC ESA OP (Lines and Trunks)
		NTX150AA		Intra-RSC Calling
		NTX152AB		RSC Trunking
		NTX154AA		RLCM-ESA
		NTX156AA		Intra-RLCM Calling
		NTX380AA		Dual RCC
		NTX381AA		RSC Remote-off-Remote
		NTXN82AB		RSC Enhanced ESA (Lines and Trunks)
		NTXP92AB		RSC-S Basic
		NTXQ12AA		RSC Enhanced ESA (Lines Only)
		NTXS05AA		XPM+ in RSC

REMOTE SWITCHING CENTER - S (RSC-S)

EXTENDED DISTANCE CAPABILITY BAS00009

Extended Distance Capability (EDC) software supports operation of the RSC-S switch remote at greater distances from the host office. Presently, the RSC-S is limited to about 100 miles, over copper-based facilities, from the host switch. EDC can extend the distance to about 500 miles over copper-based facilities (actual distance is based on transmission delay limits).

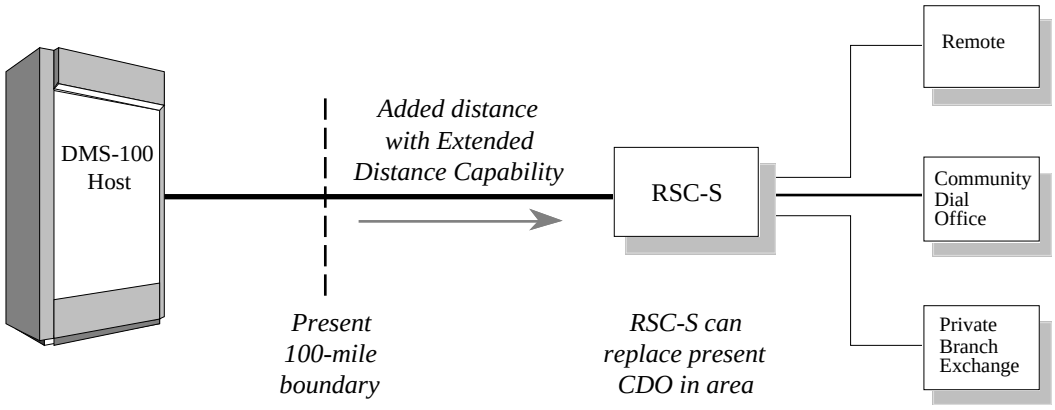
Benefits

With this software, Northern Telecom offers the furthest "reach" from a host to a remote in the industry. This offers significant advantages:

- By extending the reach served from a DMS-100 switch, network providers can now provide DMS services farther away from the host office without the need for new central office equipment.
- The significant distance supported by this software can help replace Community Dial Offices or older vintage switches-reducing capital expenditures and overall operating expenses.

Key Capabilities

This software supports copper-based connections between a DMS-100 and an RSC-S up to approximately 500 miles, based on the transmission performance parameters (such as bit error rate, jitter, and a round-trip delay no greater than 8 milliseconds).



The Extended Distance Capability Extends DMS-100 Network Penetration

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the only other ordering code that is required for this Functional Group to be operational is BAS00012 “Remotes Generic.” This ordering code enhances the operation of all features that operate off the RSC-S by extending them to a larger subscriber base than was possible previously.

BAS00009 requires Channel Supervisory Messaging circuit pack (NTMX76AA) hardware in both the host and remote.

Availability and NTX Mapping

BAS00009 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
BAS00009	**RSC-S Extended Distance Capability**			NTXR71AA	RSC-S Extended Distance Capability

SCM/SMS/SMU BAS00016

This Functional Group provides the software foundation for the following subscriber terminals in Northern Telecom's family of DMS-100 direct digital interfaces:

- The Subscriber Carrier Module-100S (SMS) integrates the installed base of TR-008 compliant Remote Digital Terminals.
- The Subscriber Carrier Module-100S Remote (SMS-R) extends end-to-end digital interfaces from the DMS-100 Family switch to remote TR-008 compliant Remote Digital Terminals.
- The Subscriber Carrier Module-100 URBAN (SMU) integrates Northern Telecom's DMS-1 URBAN to provide POTS and special services.
- The Enhanced Subscriber Carrier Module-100 URBAN (ESMU) extends the capabilities of the SMU to include NI-1 ISDN and Meridian Business Set services.

Refer to SMA00001, page 49, for software support of another subscriber terminal: the Subscriber Carrier Module-100 Access (SCM-100A), used to integrate Northern Telecom's S/DMS AccessNode and other vendor's TR-303-compliant Next Generation Digital Loop Carrier (NGDLC) systems.

Benefits

BAS00016 offers cost-effective methods to integrate pertinent Remote Digital Terminals to the DMS SuperNode system, eliminating the need for line cards in the central office. By extending high-demand services (such as ISDN) into the network, the service provider can generate higher revenues from subscribers.

See BAS00012, page 42, for a description of how Northern Telecom switch remotes substantially increase network provider revenues, conserve host resources, and minimize outside-plant expenditures.

Key Capabilities

This Functional Group provides a long list of features. The following are a few key capabilities.

- Simplifies ordering of DMS-100 direct digital interface software.
- Supports revenue-generating Special Services (Coin, Automatic Number Identification, Revertive Ringing, Metallic Test Access, and more) through the SMU.
- Delivers revenue-generating National ISDN-1 service through the ESMU.
- Supports Universal Processor circuit packs with the SMS and SMS-R.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), no other ordering code is required for this Functional Group to be operational.

Availability and NTX Mapping

BAS00016 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. In the following table, ACTID AF4250 “Enhanced SMU ISDN Support” is scheduled to be generally available in NA003. The following lists the previous NTX software that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	ACTID	NTX Package/ ACTID Name
BAS00016	**SCM/SMS/ SMU**				AF4250	ESMU ISDN Support
					AF5437	ESMU ETS
				NTX213AC		SCM
				NTX299AB		SMS Special Services
				NTX387AD		SMU Base
				NTX398AA		SMS Base
				NTX621AB		SMU Special Services
				NTXA85AB		SMS-R Base
				NTXT16AA	AN0463	MX77 for SMS
				NTXT17AA	AN0465	MX77 for SMS-R

SMS-R SPECIAL SERVICES BAS00027

This optional Function adds Special Services support through the SMS-R.

Benefits

Special Services provide monthly subscription revenues for service providers. Services such as INWATS, OUTWATS, and Coin are well known by the general public and are in particularly high demand in various markets. SMS-Rs extend these services from the DMS system to an installed base of TR-008-compliant Remote Digital Terminals. In many cases, extending these services from an installed SMS-R is a software-only expense.

Key Capabilities

BAS00027 extends the following services.

- Coin
- Automatic Number Identification
- Metallic Test Access
- Revertive Ringing
- INWATS
- OUTWATS
- Teletypewriter Exchange (TWX)
- PBX connectivity

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the only other ordering code that is required for this Function to be operational is BAS00016 “SCM/SMS/SMU.”

Availability and NTX Mapping

BAS00027 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
BAS00016	SCM/SMS/ SMU	**BAS00027**	**SMS-R Special Services**	NTXA86AA	SMS-R Special Services

GENERIC TR-303 INTERFACE SMA00001

SMA00001, for the Subscriber Carrier Module-100 Access (SCM-100A), integrates other vendor's TR-303 compliant Next Generation Digital Loop Carriers (NGDLCs) to the DMS SuperNode system. Digital integration of TR-303 based NGDLC systems enables network providers to expand service revenues, simplify network planning, and reduce operating costs.

Benefits

This Functional Group provides software support of cost-effective, digital integration of generic Remote Digital Terminals that comply with Bellcore's TR-TSY-000303 interface specification. SCM-100A support of these NGDLCs offers network providers:

- *Expanded service revenues.* The SCM-100A enables new digital services, such as ISDN, to be offered cost-effectively to remote locations.
- *Simplified network planning.* By supporting the sophisticated TR-303 generic interface, SCM-100A allows network providers to mix and match equipment from different vendors and position the access network for future broadband service delivery.
- *Reduced operating costs.* The SCM-100A greatly exceeds the operations capabilities currently available with generic interfaces based on TR-08, providing remote provisioning of NGDLC line terminations and enhanced surveillance capabilities.

Also, SMA00001 simultaneously supports S/DMS AccessNodes and other vendor's TR-303 NGDLCs off the same SCM-100A. (Ordering code BAS00003-one of the three ordering codes in the DMS SuperNode Platform-integrates the S/DMS AccessNode, Northern Telecom's TR-303 NGDLC, and is a prerequisite for SMA00001.)

Key Capabilities

SMA00001 provides software support on the SCM-100A for the following capabilities.

- Implements the sophisticated generic Bellcore TR-303 interface, so other vendors' TR-303 NGDLCs can be digitally integrated with the DMS SuperNode system, including interworking with the DMS MAP, alarms, operational measurements, and line maintenance capabilities.
- Simultaneously supports S/DMS AccessNode and other vendors' TR-303 compliant NGDLCs off the same SCM-100A.
- Extends the range of DMS SuperNode services, including ISDN Basic Rate Interface (BRI), to address remote applications cost-effectively.
- Supports large NGDLCs and concentration, resulting in significant savings of DS-1 facilities and switch ports.
- Performs its own routine maintenance and operation checks.
- Supports one-to-one protection switching for messaging channels (CSC/TMC and EOC) through the data link protection switching feature, enabling end-to-end protection against failures of message processing hardware in both the SCM-100A and the NGDLC.
- Enables remote provisioning of NGDLC line terminations within a TR-303 NGDLC.

SMA00001, continued

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), no other ordering code is required for this Functional Group to be operational.

Availability and NTX Mapping

SMA00001 is scheduled to be available in the United States market with NA003 in PCLs LEC00003 and LET00003; and with NA003 in PCLs LEC00003 and LET00003. The following table lists the NTX software that comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	ACTID	NTX Package/ ACTID Name
SMA00001	**Generic TR-303 Interface**			NTXT23AA	AF5923	SMA TR-303

Advanced Intelligent Network

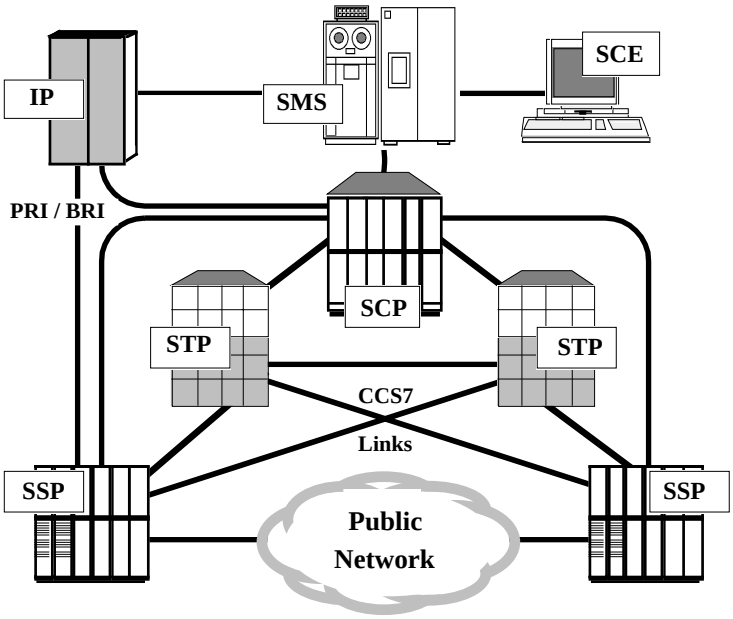
For years, Northern Telecom has been a driving force behind Advanced Intelligent Network (AIN) and Intelligent Network (IN) capabilities. The Common Channel Signaling No. 7 (CCS7) infrastructure serving as the global foundation for AIN/IN has been pioneered by Northern Telecom in public and private networks throughout the world.

As market demand for IN services intensifies, Northern Telecom is responding with complete end-to-end AIN/IN solutions focused to deliver services that add value, invite customer use, and maximize revenue potential for service providers. Committed to offering flexible and increasingly customized software for a variety of hardware platforms, Northern Telecom is evolving our AIN/IN offerings toward open interfaces, multivendor networks, and third-party service development.

INTELLIGENT NETWORK PORTFOLIO

Since introducing the industry's first CCS7 software in 1986, Northern Telecom has helped network providers define and deploy a wide range of IN capabilities. The IN portfolio of essential CCS7 network elements centers on the following platforms.

- *DMS-100 SSP (service switching point)*- a DMS-100, DMS-200, or DMS-100/200 switch equipped with signaling capabilities that enable it to originate or terminate CCS7 messages and queries to network service control points (SCPs).
- *DMS-STP (signaling transfer point)*-a highly reliable DMS SuperNode-based vehicle for routing messages through the CCS7 network and centralizing access to network SCPs.



Platforms in the Intelligent Network and ServiceBuilder Portfolios

SERVICEBUILDER PORTFOLIO

Northern Telecom's new ServiceBuilder family of IN products addresses the needs of all segments of the worldwide telecommunications market. ServiceBuilder IN products are built on flexible switching and computing platforms. By using cost-effective, open systems, ServiceBuilder will support new and existing UNIX-based applications-and allow service providers to use new AIN/IN applications created by third-party and in-house developers. The ServiceBuilder portfolio consists of the following service platforms:

- *ServiceBuilder SCP (service control point)*-combines industry-standard VME bus technology and UNIX SVID 5.4 processing to form a highly reliable and robust (50 to 1,700 queries per second) AIN/IN service controller. Because market needs vary, ServiceBuilder SCP will be produced for DMS-based configurations as well as for computer-based configurations in multivendor networks requiring flexible, open-interface AIN/IN databases.
  - The integrated *DMS-based configuration* lowers network-provider OAM and network upgrade costs by using the same DMS-Core, DMS-Bus, Input/Output Controller, and other equipment common to the DMS SuperNode system. There are fewer components to purchase and maintain because hardware is shared among several functions. Training and hardware sparing costs are lowered, because of commonality within the hardware modules and system operations. A standalone DMS-based option is also available for customers preferring a non-integrated solution.
  - The *computer-based configuration* applies the ServiceBuilder SCP software to commercial, UNIX-compliant computing platforms. This configuration is particularly beneficial to service providers requiring low start-up costs or where standalone solutions are appropriate (as an example, for enhanced service providers).
- *ServiceBuilder SMS (service management system)*-forms the critical interface between the AIN/IN network elements and the service provider's operations systems (OSs). Northern Telecom will offer a suite of ServiceBuilder SMS products with open, supported interfaces to give service providers the flexibility to roll out new AIN/IN services while retaining the ability to interwork with their current OS systems and third-party SMSs as well as build custom management applications.
- *ServiceBuilder SCE (service creation environment)*-uses a toolkit approach to give developers complete control over service definition and design, emphasizing end-to-end service creation from a single development environment. The ServiceBuilder SCE provides an enhanced Flexible Service Logic workbench consisting of a suite of service-independent building blocks for fast and flexible creation of high-quality services.
- *ServiceBuilder IP (intelligent peripheral)*-provides a single, highly scalable, and open platform for multimedia subscriber-service interactions based on Northern Telecom's advanced Flexible Vocabulary Recognition (FVR) technology.

AT A GLANCE

This chapter's ordering code descriptions appear in the following sequence:

► CCS7 ORDERING CODES

The ordering code descriptions, starting below and ending on page 59, are software offerings used to set up a CCS7 network. Each TEL0000*x* ordering code is considered to be a Function of the Telecom Layer Functional Group (ordering code TEL00001). Because it is part of the standard DMS SuperNode Platform, TEL00001 itself does not have to be ordered separately.

CCS7 BASE — TEL00008

This ordering code is required for the normal operation of a CCS7 node (specifically, the DMS-100 SSP, DMS-STP, and DMS-SCP).

TEL00008 is the prerequisite for all other CCS7-based software for both connection and connectionless services.

Benefits

TEL00008 is required to support Common Channel Signaling No. 7 (CCS7) traffic within the network. This Function, developed in compliance to pertinent Bellcore TRs, enables providers to maximize the control, reliability, and capacity for their networks.

Key Capabilities

This software contains a number of different features, including the following key capabilities.

- Message Transfer Part (MTP) and Signaling Connection Control Part (SCCP) provide the base CCS7 protocol capability for the Link Peripheral Processor (LPP) to process CCS7-level messages.

  Also included are Transaction Capabilities Application Part (TCAP) and TCAP Transaction Identifier (TRID) Expansion features.
- DS-0A Link Interface Unit allows the use of the CCS7 Link Interface Unit (LIU7) hardware in the LPP module.
- LIU7 Enhanced Maintenance reduces maintenance operating costs by providing DS-0A loopback and bit error rate test (BERT) features.
- V.35 Subrate Links enable the V.35 version of the LIU7 paddleboard to support subrates of 2.4 kbps through 19.2 kbps.
- MTP Preventative Cyclical Retransmission provides error recovery for CCS7 signaling data links (SDLs) that have high propagation delays.
- CCS7 Protocol Monitor Tool provides access to monitor key protocol areas of CCS7 messages.
- CCS7 External Routing allows the expansion of Digital Trunk Controllers (DTCs) and routesets in the network.

TEL00008, continued

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), no other ordering code is required for this Function to be operational. TEL00008 is a prerequisite for all other CCS7-based ordering codes.

Availability and NTX Mapping

TEL00008 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
TEL00001	Telecom	**TEL00008**	**CCS7 Base**	NTX550AA	CCS7 Transaction Service Support
				NTX836AA	V.35 Subrate Interface
				NTX839AB	LPP Enhanced Maintenance and BERT
				NTXE32AA	MTP-PCR (Satellite Links)
				NTXJ41AA	CCS7 Protocol Monitor Tool
				NTXN19AA	LIU7 for LPP-Based CCS7 Applications
				NTXR68AA	64 kbps CCS7 Link Interface Unit (LIU7)
				NTXR72AA	CCS7 MTP/ SCCP for LIU7

CCS7 CHANNELIZED ACCESS TEL00002

CCS7 Channelized Access software provides software support for DS-1 and PCM-30 interfaces for CCS7 network access through the Link Peripheral Processor, as an alternative to the standard CCS7 Link Interface Unit (LIU7) DS-0A and V.35 interfaces.

Benefits

The optional TEL00002 software offers the following benefits to the network provider:

- *Savings in equipment and operating costs.* CCS7 Channelized Access eliminates the requirements for external multiplexing hardware, while increasing the flexibility of LIU7 operation. This saves the network provider the costs of:
  - External channel banks.
  - External clock timing associated with the DS-0A and V.35 interfaces.
  - Dedicated connections between the transmissions links and the LIU7s.
- *Enhanced maintenance.* The software offers diagnostics that are integrated with the DMS system to reduce operations, administration, and maintenance costs.

Key Capabilities

- Separates the physical interface from the CCS7 functionality to enable dynamic mapping of LIU7 channels.
- Grants LIU7s direct access to network channels (Network Interface Units connect LIU shelves to the switching network).
- Provides hardware cost saving and improves LIU7 maintenance.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the only other ordering code that is required for this Function to be operational is TEL00008 “CCS7 Base.”

Availability and NTX Mapping

TEL00002 is currently available, for implementation on the Link Peripheral Processor, with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
TEL00001	Telecom	**TEL00002**	**CCS7 Channelized Access**	NTXH70AA	CCS7 Support for Channelized Access

GATEWAY SCREENING TEL00003

Gateway Screening enables the DMS-100 SSP or DMS-STP to restrict access to network services to only authorized users, thereby providing added security within CCS7 networks and between interconnecting CCS7 networks. This Function provides secure access between signaling points in CCS7 networks by enabling the DMS node to discard messages from unauthorized users.

Benefits

The optional TEL00003 software enables the network provider to control access to CCS7 nodes at the initial point of entry. Every linkset that interfaces to a DMS node can be assigned individual screening criteria, giving the network provider maximum flexibility in deploying the gateway capability without having to add hardware.

Key Capabilities

This security enhancement for CCS7 facilities offers the following capabilities.

- Screens incoming CCS7 messages as they enter a DMS CCS7 node to ensure authorized access. The message screening is performed at both the Message Transfer Part (MTP) and the Signaling Connection Control Part (SCCP).
- Enables customization of the screening criteria to meet the requirements of a network provider.
- Uses the standard Link Interface Unit (LIU) already provisioned in a DMS CCS7 node, so this capability requires no additional feature-gating hardware (however, different versions of the LIU impose varying provisioning limits, so an LIU upgrade may be necessary to support a high number of gateway “rules”).

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the only other ordering code that is required for this Function to be operational is TEL00008 “CCS7 Base.”

Availability and NTX Mapping

TEL00003 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
TEL00001	Telecom	**TEL00003**	**Gateway Screening**	NTX840AA	LIU7 Gateway Message Screening
				NTXJ40AA	LIU7 Gateway Verification Tools

CCS7 INTEGRATED LINK PROTOCOL TESTER TEL00006

This software enhances CCS7 link maintenance by enabling the DMS Maintenance and Administration Position (MAP) to build, send, and monitor CCS7 test messages without the need for external traffic simulation or monitoring equipment.

Benefits

The optional TEL00006 Function reduces the time and effort required to isolate and identify the source of improper datafill or hardware problems that are affecting CCS7 messaging over designated links (such as detecting circular routing problems). This enhances revenue generation by maximizing in-service time, while at the same time reducing operations, maintenance, and administration costs-with no new hardware requirements.

Key Capabilities

This software helps network providers isolate CCS7 protocol or hardware problems through the following capabilities.

- Enables up to two craftspersons from DMS MAPs to monitor CCS7 message traffic with a variety of protocol parameters to find a specific message or class of messages.
- Builds, displays, alters, and transmits CCS7 messages.
- Intercepts incoming CCS7 messages that match entries in a table.
- Permits message injection, monitoring, and interception (TRAP) in both directions (going out on a link and coming into the switch).
- Intercepts and monitors messages between the Integrated Processor and F-Bus Interface (IPF) and its associated Signaling Terminal (ST) in an LIU7.
- Informs the craftsperson through logs when monitoring or intercepting has been enabled or disabled on a particular LIU7.
- Offers enhanced password protection.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the only other ordering code that is required for this Function to be operational is TEL00008 “CCS7 Base.”

Availability and NTX Mapping

TEL00006 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
TEL00001	Telecom	**TEL00006**	**CCS7 Integrated Link Protocol Tester**	NTXQ89AA	CCS7 Integrated Link Protocol Test

CCS7 LINK FAULT LOCATOR TEL00007

This software reduces link maintenance downtime. Its Link Fault Sectionalization feature helps craftspersons rapidly identify faulty segments of a DS-0 CCS7 transmission path.

Benefits

This optional Function minimizes link downtime by reducing the time and effort required to isolate and identify faulty CCS7 signaling link transmission path segments. Intended for use after trouble notification has been detected by CCS7 Bit Error Rate Tests, Link Fault Sectionalization is a menu-driven procedure integrated at the MAP. This offers a manual method to isolate faults at remote nodes without having to dispatch a maintenance technician to the site.

Key Capabilities

TEL00007 permits the craftsperson to originate loopback test commands from the MAP to test specific CCS7 links sections to and from remote network nodes, according to the manual procedures defined in Bellcore TR-489.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the only other ordering code that is required for this Function to be operational is TEL00008 "CCS7 Base." Gating hardware for TEL00007 is the DS-0 Paddleboard Interface (N79X78DA).

Availability and NTX Mapping

TEL00007 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
TEL00001	Telecom	**TEL00007**	**CCS7 Link Fault Locator**	NTXS51AA	LIU Link Fault Sectionalization

SS7 TRUNK SIGNALING SS700001

This Functional Group supports intra- and interLATA trunking, using out-of-band signaling to perform call set-up and takedown. This software offers intelligent local and interexchange carrier connections to extend Meridian Digital Centrex (MDC), ISDN business services, and Custom Local Area Signaling Services (CLASS) residential features across LATA boundaries.

Benefits

Through its use of out-of-band signaling, CCS7 trunk signaling offers the network provider significant OAM savings over traditional multifrequency (MF) trunking. Also, this signaling is the transport platform for extending revenue-generating Intelligent Networking services across different switches.

Key Capabilities

The many capabilities offered by SS700001 include the following.

- Improves call setup times (includes 800 Service and Private Virtual Network calls).
- Provides the platform for transparently extending MDC business services nationwide to multi-location customers.
- Extends the reach of services for residential subscribers, such as CLASS, Calling Number Delivery, Calling Number Delivery Blocking, and Customer Originated Trace.

Northern Telecom's implementation of CCS7 trunk signaling conforms to the specifications in Bellcore Technical Reference document, TR-TSY-000394 *Switching System Requirements for Interexchange Carrier Interconnection using Integrated Services Digital Network User Part (ISUP).*

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), no other ordering code is required for this Functional Group to be operational. SS700001 is a prerequisite for some Meridian Digital Centrex ordering codes, including MDC00005 "Multilocation Business Group Minimum," and MDC00006 "Multilocation Business Group Standard."

Availability and NTX Mapping

SS700001 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
SS700001	**SS7 Trunk Signaling**			NTX167AB	SS7 Trunk Signaling Base
				NTX875AA	SS7 Mass Trunk Conversion
				NTXE66AA	SS7 ISUP Option Controls
				NTXJ54AA	SS7 FGD MF/SS7 Interworking
				NTXP48AA	SS7 2-Wire Emulation

► ADVANCED INTELLIGENT NETWORK ORDERING CODES

The remainder of the ordering code descriptions in this chapter detail the AIN 0.1 offering available in NA003 for the DMS-100, DMS-200, and DMS-100/200 SSP. Northern Telecom is fully committed to AIN initiatives in both the North American and world markets by supporting the rollout of Bellcore-defined AIN intermediate releases towards the introduction of the Release 1 feature set.

AIN ESSENTIALS REL. 1 AIN00002

AIN00002 helps the network provider to benefit immediately from rapid deployment of revenue-generating services through standard architectures and interfaces. This software for the DMS switch offers the provider a broad list of Intelligent Network capabilities that are service independent, with compliancy to Bellcore technical requirements for Advanced Intelligent Network functionality in the North American market.

Benefits

With this Functional Group, the network provider can create a vast number of revenue-generating services and deploy them on a network-wide basis, rather than on an office-by-office basis, to accelerate their introduction.

Through AIN00002, the feature logic and data for the customized services can be developed from a centralized service creation environment (SCE), while keeping services vendor-independent. This reduces the time required to implement new services. Network providers can deploy their own services, independent of vendor implementation, from a centralized service control point (SCP)-instead of having to introduce services on a switch-by-switch basis. This also permits the ability to initiate services across multiple switches in an area, regardless of switch vendor.

AIN Essentials addresses Bellcore TR-NWT-001284 and TR-NWT-001285 to deliver requirements needed to successfully launch customized AIN services into business and residential markets *today*-and offers a graceful evolution toward Bellcore-specified AIN 0.2, Release 1, and CS-1 international standards.

Key Capabilities

This Functional Group delivers the following key AIN SSP capabilities to reduce the time required to implement new services:

- Introduces core capabilities for the AIN Rel. 0.1 Basic Call Model applications, by providing:
  - The full call model for 0.1 implementation.
  - All five trigger detection points.
- Provides message transactions between the DMS SSP and an SCP, including all TR-defined call and error messaging, to enable deployment in a multi-vendor network.
- Establishes the protocol base for AIN and for increased message structure complexity for the future.

- Includes maintenance tools to analyze and troubleshoot service issues in an AIN environment.
- Functionally supports switch-based feature interaction as defined in Bellcore TRs, with selected DMS switch features.
- Enables access to AIN services from a DMS SSP for business and residential subscribers.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Functional Group to be operational.

TEL00008 CCS7 Base

SS700001 CCS7 Trunk Signaling

To enable Meridian Digital Centrex and Residential Enhanced Services line agents, the following basic Functional Groups are also required:

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

RES00006 Service Enablers

Availability and NTX Mapping

The capabilities of AIN00002 have been accelerated so they are now generally available in BCS36 by ordering the NTX feature packages listed in the table below. The early availability of this service causes it to be unavailable in NA002. AIN00002 is scheduled to be generally available next with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX software that now comprise this ordering code.

Functional Group	Functional Group Name	NTX Code	ACTID	NTX Package / ACTID Name
AIN00002	**AIN Essentials**	NTXQ42AA	AR0219	AIN SSP Base
		NTXQ43AA	AR0229	AIN Trigger Detection Points and Triggers
		NTXQ44AA	AR0329	AIN Test Tools
		NTXQ45AA	AR0226	AIN Generic Messaging
		NTXQ48AA	AR0374	AIN Messaging Encoder/Decoder
		NTXQ50AA	AR0223	AIN Local Base
		NTXQ55AA	AD4446	TCAP Monitor Enhance

CALL MANAGEMENT AIN00006

This Function of AIN00002 improves the administration of the Basic Call Model's Point in Call triggers, subjects forwarded calls to basic call model and triggers, and provides Service Control Point control for Primary Rate Interface (PRI) and ISDN User Part (ISUP) trunks.

Benefits

This optional software offers enhancements to basic AIN operations, administration, maintenance, and provisioning procedures. Also, this Function enables the creation of new network services that interwork Call Forwarding features with AIN.

Key Capabilities

- Permits calls that are forwarded to enter the AIN Basic Call Model.
- Provides answer indication on AIN calls originated by Primary Rate Interface, Public Telephone Service, or ISDN User Part trunks.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

TEL00008 CCS7 Base

SS700001 CCS7 Trunk Signaling

AIN00002 AIN Essentials

AIN00006 can interwork with call forward features of Meridian Digital Centrex and Residential Enhanced Services.

Availability and NTX Mapping

AIN00006 is scheduled to be generally available with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the activity ID that comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	ACTID	ACTID Name
AIN00002	AIN Essentials	**AIN00006**	**Call Management**	AG3296	Enhanced Call Control

DEFAULT ROUTING OPTIONS AIN00010

This Functional Group implements GR-1298 Default Routing requirements for AIN fault handling, to help complete revenue-generating service calls even when the DMS-100 SSP encounters some specific fault conditions.

Benefits

AIN00010 enhances call completion, thus increasing revenues and decreasing costs for a network provider. The software offers various options so the provider can define how an AIN service call will complete when the DMS-100 SSP encounters either of the following situations:

- A message requesting return-on-error.
- A T1 timeout for SSP messages sent to the Service Control Point.

Key Capabilities

- Provides default routing provisioning that goes beyond the specifications in Bellcore TR-1284.
- Supports Specific_Digit_String (3/6/10 trigger), Termination_Attempt, and N11 triggers as defined in Bellcore GR-1298-CORE (R) 7-57 Issue 1, November 1993.
- Supports the enabling of options on a trigger basis through table datafill.
- Options available are:
  - Route call to a specified DN.
  - Continue routing to the dialed DN.
  - Route Call to an announcement, and then one of the following:
    - ► Disconnect.
    - ► Route to a specified DN.
    - ► Route to the dialed DN.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Functional Group to be operational.

TEL00008	CCS7 Base
SS700001	CCS7 Trunk Signaling
AIN00002	AIN Essentials
AIN00006	Call Management

To enable Meridian Digital Centrex and Residential Enhanced Services line agents, the following basic Functional Groups are also required:

MDC00001	Meridian Digital Centrex Minimum
MDC00003	MDC Standard
RES00006	Service Enablers

AIN00010, continued

Availability and NTX Mapping

AIN00010 is scheduled to be generally available with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the activity ID that comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	ACTID	ACTID Name
AIN00010	**Default Routing Options**			AR1061	Default Routing

DMS-STP

The DMS-STP (signaling transfer point) is a highly reliable DMS SuperNode-based vehicle for routing messages to and from service switching points and service control points.

Based on state-of-the-art distributed processing technology, the DMS-STP delivers the message throughput, reliability, and signaling data link (SDL) capacity needed to economically provide both physical and virtual connections to local and non-local CCS7 network nodes.

Building on this CCS7 platform, network providers can ensure reliable signaling for revenue-generating advanced network applications, including Advanced Intelligent Networking (AIN), Private Virtual Networking (PVN), Personal Communications Service (PCS), Custom Local Area Signaling Services (CLASS), calling-card validation, 800 portability service, Meridian Network Services, and ISDN networking. Also, with the dependence of cellular and wireless communications on ANSI and ITU CCS7 signaling, the range of service applications that the DMS-STP can support will continue to expand.

The first fully featured STP on the market, the DMS-STP's distributed architecture hosts MC68000-series processors at each level of its hierarchy. This includes a separate 68030 for each CCS7 link, ensuring dedicated resources for nodal and network protection against unexpected traffic surges. This architecture enables enhanced capabilities such as global title translation (GTT) and gateway screening for up to 255 SDLs with only minimal impact on CCS7 message throughput.

Other key benefits include:

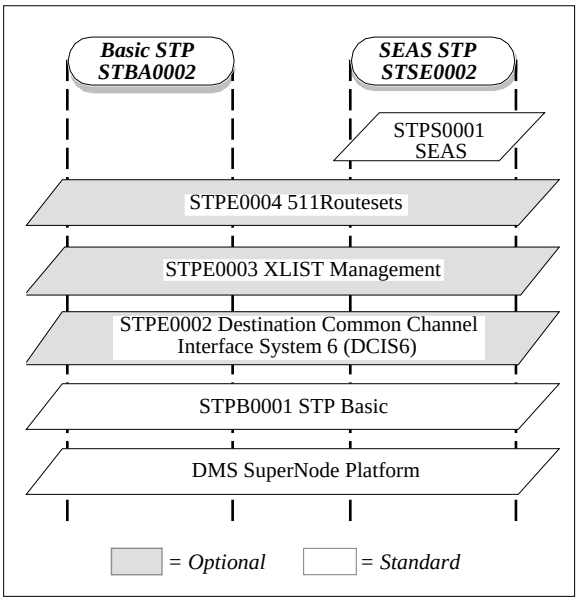
- Co-existence of ANSI Message Transfer Part (MTP) / Signaling Connection Control Part (SCCP) and ITU MTP with plans to support ITU SCCP for (but not limited to) GSM. IS41-based routing is also supported.
- A fault-tolerant architecture, based on duplex operating subsystems, enables the DMS-STP to exceed LSSGR Performance and Reliability Objectives (including cross-STP delay and weighted down time/outage downtime/incidents per system per year).
- Simple GTT administration by performing global title translations against a range of directory numbers "from and to"-for greater flexibility and capacity, as compared to administering each number individually.
- Commonality of maintenance, administration, and training procedures with DMS-100 SSP Family products (already in place) lowers start-up costs.
- Cost-effective integration with other DMS SuperNode system applications, including selected end-user applications associated with the DMS-100 SSP.
- The CCS7 Link Interface Unit (LIU7) can process incoming CCS7 messages during the installation of new software generics.
- A new software architecture enables "pay as you play" commercial pricing structures of key system expansion capabilities. This improves the service provider's budget and capital management outlay.
- A sophisticated maintenance toolset helps preserve service reliability objectives such as fault detection, message looping, and translation verification.

PCLs FOR DMS-STP

With the STP002 release, the DMS-STP has two unique PCLs, designed for different STP configurations:

- **Basic STP (STBA0002)**, offers basic and optionally enhanced STP functionality designated for North American and international customers not requiring enhanced capabilities, such as SEAS.
- **SEAS STP (STSE0002)**, offers basic and optional enhanced STP capabilities, designated for customers requiring Signaling, Engineering, and Administration System (SEAS) support.

Many of the Functional Groups and Functions in these PCLs are the same as those discussed elsewhere in this document. This chapter discusses the few ordering codes that are unique to STP PCLs, depicted in the illustration below.



The DMS-STP Software in Two PCLs

As a convenience to the network provider, selected Functional Groups are standard with the PCLs and do not need to be licensed separately. Only three Functions are optional: STPE0002, STPE0003, and STPE0004 (highlighted in gray in the illustration)-and are available for use with either PCL.

Functional Groups STPB0001 and STPS0001 both contain their own software. Functional Group STPE0001 does not have software associated directly with it; only its individual Functions contain software.

FOR MORE INFORMATION

For more details about the DMS-STP, refer to the *DMS-STP Planner* (50023.05/11-93). Also, detailed engineering and provisioning information appears in the appropriate DMS-STP *Northern Telecom Publications* (*NTPs*) and installation guides.

AT A GLANCE

This chapter's ordering code descriptions appear in the following sequence.

STP BASIC FUNCTIONAL GROUP STPB0001

This Functional Group, standard on both STP PCLs, contains basic CCS7 and operational capabilities specific to STP. This ordering code is required for all DMS-STP configurations.

Key Capabilities

STPB0001 provides the following baseline capabilities.

- *Interlink to Link Protocol (ILLP)*
  ILLP is an internal protocol supporting CCS7 Link Interface Unit (LIU7)-to-LIU7 communication without DMS Core intervention. Its two main functions are the detection of lost or missequenced messages and the detection of path failures (when one LIU7 cannot communicate successfully with another LIU7).
- *STP Message Transfer Part (MTP)*
  STPB0001 provides several MTP functions associated with STP only. This includes routeset management functions, such as the generation of transfer and transfer (cluster) signals when the STP detects there is a change in routing to a destination and responds to routeset test messages.
- *Alias Point Code*
  Alias codes, sometimes referred to as capability codes, are alternate point codes that may be used to address the STP by other than its actual network address. Up to 256 alias point codes can be datafilled (in table C7ALIAS).

MTP/SCCP routing capabilities and system maintenance common to both the DMS-100 SSP and DMS-STP reside in the DMS SuperNode Platform.

Dependencies and Interactions

The following are ordering codes that are required for this Functional Group to be operational.

BASE0001 Base Layer

TEL00001 Telecom Layer

TEL00008 CCS7 Base

TEL00003 “Gateway Screening” can enhance the operation of STPB0001 by protecting against unauthorized access to databases, facilities, and services in a CCS7 network.

Availability and NTX Mapping

STPB0001 is available with STP002 in PCLs STBA0002 and STSE0002. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
STPB0001	**STP Basic Functional Group**			NTX833AB	STP Operations

STP ENHANCED FUNCTIONAL GROUP STPE0001

The STPE0001 Functional Group supports the following three Functions (STPE0002, STPE0003, and STPE0004). By itself, STPE0001 does not provide any capabilities for the network provider.

DESTINATION COMMON CHANNEL INTERFACE SYSTEM 6 (DCIS6) FUNCTION STPE0002

This Function enables the DMS-STP to process Common Channel Interface System 6 (DCIS6) direct signaling messages imbedded in CCS7 Signaling Connection Control Part (SCCP) messages by a network provider's interworking unit.

Key Capabilities

This Function extends the existing CCS7 STP SCCP capabilities to include translation of DCIS6 addresses to CCS7 addresses, so DCIS6 messages can route to their destinations.

Dependencies and Interactions

The following are ordering codes that are required for this Function to be operational.

BASE0001 Base Layer

TEL00001 Telecom Layer

TEL00008 CCS7 Base

STPB0001 Signaling Transfer Point Basic

STPE0001 Signaling Transfer Point Enhanced

Availability and NTX Mapping

STPE0002 is available with STP002 in PCLs STBA0002 and STSE0002. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
STPE0001	STP Enhanced Functional Group	**STPE0002**	**Destination Common Channel Interface System 6 (DCIS6) Function**	NTX834AA	Destination Common Channel Interface System 6 (DCIS6)

XLIST MANAGEMENT FUNCTION STPE0003

This optional Function enhances message transfer part (MTP) cluster routing to track the routing status of other nodes that are members (XLIST) associated with point code routing.

Benefits

This software reduces the following:

- The quantity of network management messages transmitted by the DMS-STP.
- The amount of routing data provisioned in the DMS-STP.

Key Capabilities

With STPE0002 the DMS-STP maintains the individual routeset status of each member (node) belonging to an adjacent cluster that has been identified as a Partial Point Code Route.

Dependencies and Interactions

The following are ordering codes that are required for this Function to be operational.

BASE0001 Base Layer

TEL00001 Telecom Layer

TEL00008 CCS7 Base

STPB0001 Signaling Transfer Point Basic

STPE0001 Signaling Transfer Point Enhanced

Because the STP tracks the routing status of each member dynamically, this capability requires an NTEX22BA-LIU7 with 8 Megabytes of memory.

Availability and NTX Mapping

STPE0003, available with STP35 as NTXS04AA, is available with STP002 in PCLs STBA0002 and STSE0002. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
STPE0001	STP Enhanced Functional Group	**STPE0003**	**XLIST Management Function**	NTXS04AA	Enhanced Cluster Routing

511 ROUTESETS FUNCTION STPE0004

This optional Function expands the support of routesets supported on a standalone DMS-STP to a maximum of 511.

Benefits

STPE0004 allows the DMS-STP to support signaling to more nodes and CCS7 networks through the provisioning of additional routesets.

Key Capabilities

STPE0004 expands CCS7 message transaction part (MTP) capabilities to handle more than the DMS-STP base (STPB0001) limit of 255 routesets by increasing the maximum to 511.

Dependencies and Interactions

The following are ordering codes that are required for this Function to be operational.

BASE0001 Base Layer

TEL00001 Telecom Layer

TEL00008 CCS7 Base

STPB0001 Signaling Transfer Point Basic

STPE0001 Signaling Transfer Point Enhanced

This capability requires an NTEX22BA-LIU7 with 8 Megabytes of memory.

Availability and NTX Mapping

STPE0004, available with STP35 as NTXR37AA, is available with STP002 in PCLs STBA0002 and STSE0002. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
STPE0001	STP Enhanced Functional Group	**STPE0004**	**511 Routesets Function**	NTXR37AA	Routeset Expansion

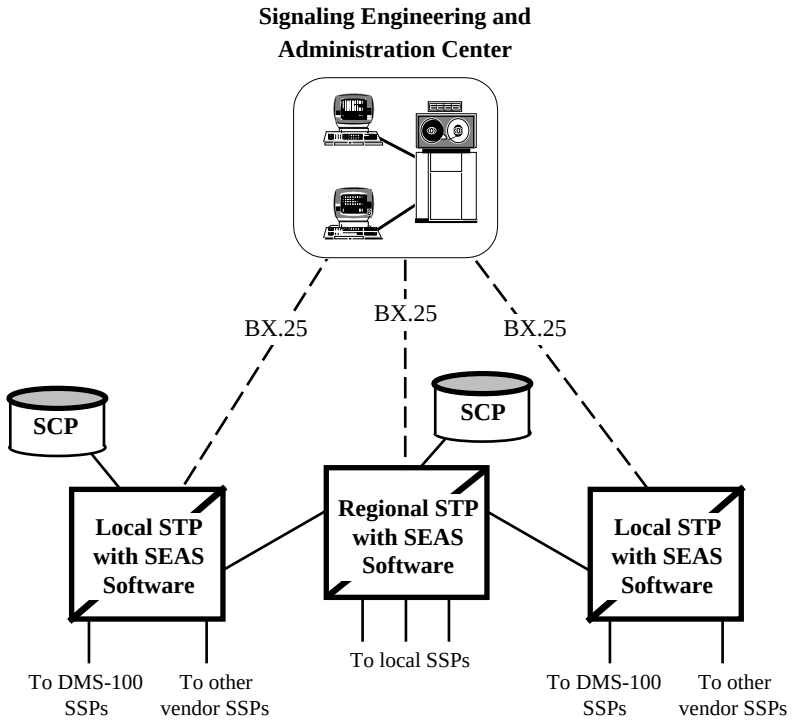
SIGNALING, ENGINEERING, AND ADMINISTRATION SYSTEM (SEAS) FUNCTIONAL GROUP STPS0001

This software, standard on PCL STSE0002 only, provides operations system personnel with support capabilities for provisioning, engineering, and administrating their CCS7 networks, signaling nodes, and signaling links.

The SEAS Functional Group facilitates the transfer of messages and operational data, in both directions, between the Signaling, Engineering, and Administration Center (SEAC) and the DMS-STP, to support the various operations performed by the SEAS applications.

Benefits

STPS0001 provides a cost-effective method of provisioning and administering the CCS7 network, STP nodes, and signaling links through a centralized BX.25 interface to the downstream operations system (OS). Capabilities include the monitoring of traffic characteristics and performance, data collection for analysis to ensure traffic-sensitive components are properly provisioned, and performing Recent Change and Verification of CCS7 and STP translations.



Interfaces to SEAS

STPS0001, continued

Key Capabilities

STPS0001 enables network providers to interact with SEAS by providing a number of capabilities associated with SEAS 1.1, 2.0, 3.0 and 4.0 releases:

- Supports BX.25 links to the Signaling, Engineering, and Administration Center (SEAC).
- Forwards key DMS-STP logs and operational measurements to the SEAC.
- Introduces two new MAP levels that allow local or remote access to DMS-STP specific functions-so administration personnel can monitor and modify interactions between the SEAS and the DMS-STP.
- Permits lab-to-lab and on-site testing of SEAS interface.
- Offers Recent Change and Verification commands.
- Provides the added messaging that occurs when TEL00003 “Gateway Screening” is provisioned.

Dependencies and Interactions

The following are ordering codes that are required for this Functional Group to be operational.

BASE0001 Base Layer

TEL00001 Telecom Layer

TEL00008 CCS7 Base

STPB0001 Signaling Transfer Point Basic

This software requires the provisioning of NT1X89AA Multi-Protocol Controller (MPC) hardware.

Availability and NTX Mapping

STPS0001, available with SEAS 4.0 capabilities associated with NTXR26AA in STP35, is available with STP002 in PCL STSE0002. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
STPS0001	**Signaling, Engineering, and Administration System (SEAS) Functional Group**			NTX835AA	SEAS 1.1
				NTXE24AB	SEAS 3.0
				NTXE55AB	SEAS 2.0
				NTXR26AA	SEAS 4.0

DMS-100 Integrated Services Digital Network

An Integrated Services Digital Network (ISDN) public network delivers integrated voice, circuit-switched data, and packet-switched data services over standard telephone lines. ISDN makes full use of the latest advances in digital technology to deliver low-cost voice and data solutions that are easily customized for specific needs.

ISDN services can be extended between switches by Common Channel Signaling No. 7 (CCS7) and PRI trunks, permitting more efficient use of network resources and allowing the delivery of advanced network services such as Calling Line Identification (CLID) across multiple switches, Area-Wide Centrex (AWC), Multilocation Business Groups (MBGs), and Dialable Wideband Services (DWS).

The many advantages of Northern Telecom ISDN deployment for the network provider include:

- Fully featured and fully integrated voice and data services.
- Access to multivendor public packet-switched networks.
- A central office-based data network.
- Complete interworking with all other DMS-based data services.
- On-site network management.
- Extension of ISDN services across different central offices.

NATIONAL ISDN

Northern Telecom actively participates in National ISDN implementation: a multi-stage plan to standardize ISDN service-announced in 1991 by the Corporation for Open Systems (COS) and defined by Bellcore TRs consistent with ANSI standards.

National ISDN-1 (also known as NI-1) removes the obstacles that have hindered ISDN implementation in the past. A single standard stops the proliferation of proprietary implementations, allowing terminal and switching equipment from different vendors to interwork. This helps lower ISDN equipment and training costs, reduce operating expenses, and improve service ubiquity.

The next step is National ISDN-2 (NI-2), which will build on the foundations established by NI-1, resolving additional interoperability issues and expanding functionality. Northern Telecom's current ISDN product already provides a substantial portion of the features defined by NI-2.

Beginning in NA004, full NI-2 deployment-and all subsequent National ISDN services-are scheduled to be delivered on A-stream PCLs built on the new Generic Services Framework (GSF) call processing architecture.

Northern Telecom will continue to add functionalities for National ISDN-3 and beyond, to support continued revenue generation from network provider investments in these advanced services.

REVENUE-GENERATING ISDN OFFERINGS

ISDN makes sophisticated data services available to businesses and organizations that would not normally be able to afford high-speed private lines for data networking. Aside from significant cost-savings, subscribers can increase productivity through Northern Telecom's many ISDN capabilities, grouped under the following major categories in this chapter.

- **Basic Rate Interface (BRI)** is the basic subscriber loop, delivering two 64-kbps B channels and one 16-kbps D channel over a standard twisted-pair loop. Each of the circuit-switched B channels can transmit voice or data-and they can be used simultaneously-and the D channel transmits call control messages and user packet data.

  DMS-100 ISDN is a complete business service that offers the largest number of productivity-enhancing voice features in the industry. With the sophisticated call coverage, call-handling, and cost-savings features delivered by ISDN, businesses can realize improved communications. For example, combining a Northern Telecom ISDN voice and data telephone with a personal computer gives the subscriber a functionally integrated voice and data workstation.

  There are two feature-set options for ISDN users:

  - *National ISDN* is a standard that allows local exchange carriers to offer a consistent set of feature-rich services to all customers, regardless of the serving switch-because these features are defined for the entire industry by Bellcore. Already, over 200 standard features have been introduced on Northern Telecom's National ISDN product.
  - *Meridian Feature Transparency (MFT)* gives an ISDN user access to the full range of Meridian Digital Centrex features, rather than the National ISDN features. MFT sets and National ISDN sets can be mixed on the same loop and in the same customer group.

- **Packet switching** is the most cost-effective transmission technology for "bursty" data applications. With its end-to-end error checking and correction, packet switching offers a superior level of data connectivity. For offices using a Link Peripheral Processor (LPP) for CCS7 and other applications, the DMS Packet Handler is a cost-effective way to provide ISDN packet services, because it reduces hardware requirements and simplifies network maintenance and administration.

  The DMS Packet Handler fully supports these packet services:

  - D-channel packet data up to 9.6 kbps using X.25 LAPD (CCITT/ITU 1988).
  - B-channel packet data (provisioned) up to 64 kbps using X.25 LAPB (CCITT/ITU 1984 and 1988).
  - X.75/X.75' networking up to 64 kbps clear-channel among multivendor packet networks.
  - Access to DataSPAN frame relay over the ISDN B channel.

- **Primary Rate Interface (PRI)** delivers 64 kbps clear channels and standardized out-of-band signaling. PRI can serve customer premises equipment-such as a private branch exchange (PBX), local area network (LAN) gateway, or host computer-or can serve as a trunk interface between central offices.

  PRI is a practical, cost-effective option that can deliver significant cost savings and service improvements, supporting access to Dialable Wideband Services, network-wide calling features, Integrated Services Access, and enhanced Equal Access.

- **Dialable Wideband Services (DWS)** allows public network providers to meet the needs of a growing wideband market. DWS offers on-demand, easily tracked connections of variable bandwidth over public facilities, potentially reaching any subscriber in the international numbering plan. As a circuit-switched service, DWS provides users up to 1.5 Mbps of bandwidth in 64-kbps increments.

- Another wideband data offering, **DataSPAN**, offers network providers virtual-circuit data services such as frame relay, X.25, and X.75/X.75' networking.

MAJOR CONTRIBUTOR TO S/DMS BUSINESSEXPRESS

Meridian Digital Centrex services play a major role in S/DMS BusinessExpress: a partnership solution to meeting the demands of subscribers in businesses and other organizations. Featuring rapid service delivery and a high degree of service choices, the S/DMS BusinessExpress approach combines ISDN voice and high-speed data access, Multilocation Business Groups and Tailored Centrex capabilities of Meridian Digital Centrex, dialable desktop video, wireless access, display terminals, Meridian Automatic Call Distribution, telecommuting services, and much more-to offer services and applications that can exploit network resources in almost limitless ways, with unmatched speed in delivery-to boost revenues, contain costs, and enhance the value of a service provider's existing network investments.

AT A GLANCE

This chapter's ordering code descriptions appear in the following sequence.

ISDN BASE NI000007

This Functional Group provides the base functionality necessary to support National ISDN services. All Basic and Primary Rate applications require NI000007.

Benefits

This software is among the prerequisites needed to deploy either National ISDN-1 Basic or Primary Rate Interface revenue-generating services, developed in compliance with National ISDN-1 standards to promote service ubiquity and interworking in a multivendor network.

Key Capabilities

NI000007 provides the software infrastructure to support revenue-generating NI-1 services with many foundational capabilities, such as:

- ISDN basic access and advanced signaling.
- ISDN and Packet Handler operations, administration, and maintenance, including test capabilities for Basic Rate Interface.
- Basic support for interworking with Northern Telecom's DPN Packet Handler.
- Computing Module support of XPM PLUS for ISDN Digital Trunk Controller.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the only other ordering code that is required for this Functional Group to be operational is MDC00001 "Meridian Digital Centrex Minimum."

Availability and NTX Mapping

NI000007 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX software that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	ACTID	ACTID Name
NI000007	**ISDN Base**			AQ1100	ISDN Line Concentrating Module Datafill Rstrns
				AQ1195	RSC-S Layer 2 Protocol Enhancement
				AR0727	High-Level ISDN Ln. Layer 1
				AR0993	Enhanced D Channel Handler Patcher Central Controller Part

NI000007 table, continued

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
NI000007	**ISDN Base**			NTX750AD	ISDN Basic Access
				NTX753AB	ISDN Advanced Signaling
				NTXF92AA	ISDN OAM Base: DPN Packet Handler
				NTXF93AA	ISDN Provisioning
				NTXF94AB	Integrated DPN Packet Handler Maintenance
				NTXF95AA	ISDN OAM Proc
				NTXJ48AA	DPN Packet Handler Maintenance
				NTXJ51AA	ISDN Test Access
				NTXS36AA	XPM+ for ISDN Digital Trunk Controller

NI-1 BASIC RATE INTERFACE NI000008

This software provides Northern Telecom's National ISDN-1 offering for the Basic Rate Interface (BRI). NI-1 BRI has been available since BCS34 and provides a compliant, feature-rich offering to meet today's sophisticated end-user needs. NI-1 supports simultaneous voice and data applications over existing twisted pair facilities.

Benefits

NI-1 is fundamental to supporting the voice and data needs demanded by today's subscribers who want advanced features using existing twisted pair. Supporting a wide range of Centrex voice features and data rates of up to 128 kbps, NI-1 BRI is ideal for the telecommuters, small businesses, and subscribers in a large Centrex environment.

Key Capabilities

The following are a few of the key capabilities supported by this Functional Group:

- ISDN Supplementary Services, including Flexible Calling and Additional Call Offering
- ISDN Electronic Key Telephone System (EKTS)
- CLASS on ISDN

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Functional Group to be operational.

MDC00001 Meridian Digital Centrex Minimum

NI000007 ISDN Base

The network provider can also offer NI000010 "NI-1 Packet Services" to enhance the service portfolio with BRI.

Availability and NTX Mapping

NI000008 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX software that now comprise this ordering code.

Functional Group	Functional Group Name	NTX Code	ACTID	NTX Package / ACTID Name
NI000008	**NI-1 BRI**		AF5530	Flex Call Interworking with E911
		NTX754AB		ISDN EKTS
		NTX755AC		ISDN Supplementary Services Compliance

NI000008 table, continued

Functional Group	Functional Group Name	NTX Code	ACTID	NTX Package / ACTID Name
NI000008	**NI-1 BRI**	NTX756AA		ISDN Display Services
		NTX757AA		ISDN / ISDN User Part Interworking
		NTX761AA		CLASS on ISDN
		NTX767AA		ISDN Routing
		NTX796AA		INFO+ Enhanced Number Delivery
		NTXS01AA		Multipoint Embedded Operations Channel

BASIC RATE INTERFACE ENHANCED MAINTENANCE NI000009

This Functional Group provides the machine-to-machine (TL-1) interface, the human-to-machine interface, and test hardware control required to test and maintain National ISDN lines. This integrated solution shortens the time required to complete commissioning, administration, troubleshooting, and recovery tasks.

Benefits

NI000009 helps to quickly qualify an ISDN line for service and significantly shortens the out-of-service time to run line tests as compared to an external test system. When properly executed, a suite of tests helps to sectionalize a problem quickly, so a technician can be dispatched to the proper location.

This flexible software can interwork with a multitude of operations systems (OSs)-through the TL-1 industry-standard interface-to provide NI-1 (IEEE P743) compliant wideband tests (such as Wideband Noise, Impulse Noise, Measure 2B1Q Level).

Key Capabilities

In NA002, this software offers the following ISDN line test capabilities.

- Offers ISDN loop qualification and functional test features through the Maintenance and Administration Position (MAP).
- Supports the sophisticated commands offered by the Transaction Language 1 (TL-1) interface defined by Bellcore in TR-NWT-000823, *Network Maintenance, Access, and Testing - ISDN*.
- Introduces Multipoint Embedded Operations Channel (mp-eoc) line maintenance.

In NA003, this software will provide additional TL-1 commands as well as loopback capabilities for the LT, LUNT, LULT, and NT1 components.

NI000009, continued

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Functional Group to be operational.

MDC00001 Meridian Digital Centrex Minimum

NI000007 ISDN Base

NI000008 National ISDN-1 Basic Rate Interface

Availability and NTX Mapping

NI000009 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX software that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	ACTID	NTX Package / ACTID Name
NI000009	**BRI Enhanced Maintenance**				AR0506	ESTU Download
					AR0507	ESTU ISDN Test Module Support
					AR0596	ESTU High Speed Interface
					AR1003	TL-1 Support for Multipoint Embedded Operations Channel
				NTXN87AB		Integrated Test Base
				NTXN89AA		Testing ISDN Services
				NTXN91AA		TL-1 Testing Interface Base
				NTXN93AA		TL-1 Test ISDN Services Interface
				NTXN94AA		Enhanced Services Test Unit Test Enable
				NTXR55AA		TL-1 Parsing Interface Base

NI-1 PACKET SERVICES NI000010

The DMS Packet Handler application became generally available on the DMS SuperNode system's Link Peripheral Processor (LPP) in BCS35. This software supports the packet-call processing and architecture for the National ISDN-1 compliant release of the DMS Packet Handler, including numbering plans, digit analysis, packet translations and routing, ISDN/Public Packet-Switched Network (PPSN) interworking, and packet-call screening.

This Functional Group provides the base software required for the DMS Packet Handler, the fully integrated ISDN packet-switching application on the Link Peripheral Processor (LPP). This foundational software provides full-featured, TR-compliant X.25 LAPB and LAPD processing and X.75/X.75' networking.

Benefits

► ***Benefits in central office planning.*** For the network provider seeking the most advantageous planning decisions, the DMS Packet Handler (DMS PH) offers the following key benefits.

- *Full compliance with National ISDN-1*. DMS Packet Handler features, facilities, and utilities are fully compliant with National ISDN-1 and are able to meet future standards as they are developed. DMS PH supports network provider initiatives to deploy and market the National ISDN-1 standard within a multivendor environment.
- *New revenue opportunities*. In corporate networks, data traffic is growing 10 times faster than voice traffic. DMS PH offers additional revenue opportunities for network providers by providing the tools to meet the data transmission requirements of many applications.
- *Optimal use of line facilities*. By permitting many users to access a standard loop simultaneously, DMS PH provides efficient and cost-effective line utilization that is well suited to on-demand, "bursty" data transfer.
- *Optimal use of existing hardware*. Adding DMS PH to an existing Link Peripheral Processor (36-link LPP), single-shelf LPP (SS LPP), or DMS SuperNode SE Link Interface Shelf (SNSE LIS) can add value to that investment by creating new revenue opportunities. The LPP is a robust, economical platform to launch new standards such as National ISDN-2, and new services such as calling card and 800/900 calling for packet data.
- *Conservation of DMS-Core resources*. Adding DMS PH services does not add a commensurate burden on DMS-Core processing. The DMS PH processes X.25, X.75, and X.75' network protocols and provides call routing and translation functions. Each packet call has approximately the same processing impact on the DMS-Core as a POTS call with Automatic Message Accounting (AMA) information.
- *Incremental growth*. Northern Telecom has made it easy to get into ISDN packet services and easy to grow the service over time. Start-up expenses are modest for a minimum configuration, and the office can expand packet handler capacity as needed, one ISDN packet processor at a time.

NI000010, continued

► ***Benefits in DMS-100 Integration.*** Northern Telecom's strategy of integrating packet handler services with other applications on the LPP offers the following benefits.

- *Reduced capital investment*. Network providers that have already installed an LPP for CCS7 simply add Link Interface Units (LIUs) for packet services. An entry-level investment includes two DMS PH interface units (one for X.25 protocols and one for X.75 protocols), one Network Interface Unit (NIU), and corresponding software. Because it is easy to add or change LPP applications, the LPP hardware investment is protected from obsolescence resulting from shifts in market demand for services.
- *Multiple configuration options*. DMS Packet Handler co-exists on the same Link Interface Shelf (LIS) with other applications such as Service Switching Point (SSP) for CCS7 messaging and DataSPAN frame relay networking.
- *Flexibility to add incremental services*. Network providers can individually assign service to only those ISDN B-channel ports or D-channel terminals requiring packet service.
- *Shared network management functions*. Operations, administration, and maintenance (OAM) functions are handled from the same DMS Maintenance and Administration Position (MAP) terminals used for other network management functions, using familiar commands and screen formats.
- *Reduced training requirements*. Shared OAM functions streamline work-freeing central office technicians for other tasks-and require less training for OAM than a standalone component.
- *A single Automatic Message Accounting (AMA) stream*. With DMS PH, circuit-switched and packet-switched ISDN services produce a single AMA stream that complies with structure codes set forth in Bellcore TR-862.

► ***Benefits for End Users.*** For the network provider that strives to be attentive to the changing needs of its customers, DMS PH offers the following key benefits.

- *Effective, fast data transmissions,* at a time when demand for data services is at an all-time high and continuing to climb. Industry analysts predict up to 20% annual growth in data communications lines, with even greater demand for higher data speeds. Data terminals account for more than half of all sales in the $80+ billion U.S. commercial telecommunications market.
- *Point-to-point connections for fast data transfer* that take advantage of the reach and reliability of ISDN; no end-user investment in private, high-speed lines is necessary.
- *Minimal line requirements*. Customer connections for as many as eight data terminals can be made through a single twisted-pair ISDN line.
- *Compatibility with multivendor data equipment*. ISDN and DMS PH let users share data among otherwise incompatible data devices and computing networks. No longer are users bound to "islands" of ISDN compatibility-our compliance with National ISDN-1 means worldwide reach to other packet terminals meeting the same North American standard.
- *Minimal requirements for special customer premises equipment*. Customers need only install sufficient terminal adapters, Network Termination 1 (NT1) devices, and ISDN Basic Rate Interface lines to support their needs.

Key Capabilities

DMS-100 National ISDN fully supports the following packet data services:

- *D-channel packet data* from 1.2 kbps to 9.6 kbps using X.25 LAPD (CCITT/ITU 1988).
- *B-channel packet data* up to 64 kbps using X.25 LAPB (CCITT/ITU 1984 and 1988).
- *X.75/X.75' networking* among multivendor packet networks.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Functional Group to be operational.

MDC00001 Meridian Digital Centrex Minimum

NI000007 ISDN Base

Availability and NTX Mapping

NI000010 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX software that now comprise this ordering code.

Functional Group	Functional Group Name	NTX Code	ACTID	NTX Package / ACTID Name
NI000010	**NI-1 Packet Services**		AQ1106	DMS Packet Handler Operational Measurements
		NTXP47AB		DMS Packet Handler Base
		NTXP75AA		DMS Packet Handler SERVORD

ISDN PRIMARY RATE INTERFACE BASE NI000022

This software provides the ISDN Primary Rate Interface (PRI) base code to support Northern Telecom's implementation of NI-1 PRI services-one of the most feature rich and flexible offerings in the industry.

Benefits

PRI can serve as a cost-effective trunking option for customer premises equipment (such as PBXs) that delivers significant cost savings and service improvements-or can serve as a highly robust trunk interface between central offices.

Key Capabilities

NI000022 not only provides base support for other PRI ordering codes, but this Functional Group also includes the following capabilities to increase call handling productivity.

- Calling Line Identification
- Redirected Number Delivery
- Call Forward Reason Display
- Connectivity to Meridian 1, SL-1, SL-100, and DMS-250, and PBXs from various vendors

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Functional Group to be operational.

MDC00001 Meridian Digital Centrex Minimum

NI000007 ISDN Base

Availability and NTX Mapping

NI000022 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
NI000022	**ISDN PRI Base**			NTX790AC	PRI Base

NI-1 PRIMARY RATE INTERFACE NI000011

This software provides the following additional NI-1 PRI capabilities: Call-by-Call, CCS7 interworking, D-channel backup, and Digital Test Access-as well as offering base capabilities for a number of other PRI ordering codes.

Benefits

Maintenance costs are decreased with Digital Test Access and trunk consolidation. Also, since Northern Telecom's PRI interworks with CCS7, PRI delivers calling features across the CCS7 public network, offering operational efficiencies (through improved service ubiquity) to increase customer satisfaction.

NI-1 PRI has all the NI-2 services required by Bellcore.

Key Capabilities

- Call-by-Call permits different call types over a single trunk (this efficiency is also known as Integrated Services Access).
- PRI, interworking with CCS7, extends the network across multiple switches and LATAs.
- D-channel backup provides increased robustness and survivability (a standby D channel automatically takes over for a failed primary D channel).
- PRI Digital Test Access offers simplified, proactive maintenance of PRI loops.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Functional Group to be operational.

MDC00001 Meridian Digital Centrex Minimum

NI000007 ISDN Base

NI000022 ISDN Primary Rate Interface Base

Availability and NTX Mapping

NI000011 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
NI000011	**NI-1 Primary Rate Interface**			NTX793AA	PRI Integrated Services Access
				NTX794AA	PRI CCS7 Interworking
				NTX795AA	PRI Enhanced Number Delivery
				NTXN53AA	Back-up D Channel
				NTXS12AA	PRI Digital Test Access

NI-1 PRIMARY RATE INTERFACE INTERWORKING WITH 4E/5ESS NI000012

This Functional Group supports Northern Telecom's NI-1 PRI interfaces to AT&T 4ESS and 5ESS switches.

Benefits

NI000012 extends the PRI network across a multivendor environment, providing ubiquitous network-wide calling features such as Calling Line Identification.

Key Capabilities

- Offers basic call control and connectivity with 5ESS.
- Supports Calling Line ID/Automatic Number Identification and Integrated Services Access/Call-by-Call Service Selection with 4ESS.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Functional Group to be operational.

MDC00001	Meridian Digital Centrex Minimum
NI000007	ISDN Base
NI000022	ISDN Primary Rate Interface Base
NI000011	National ISDN-1 Primary Rate Interface

Availability and NTX Mapping

NI000012 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
NI000012	**NI-1 PRI interworking with 4E/5ESS**			NTXE64AA	4ESS Interworking
				NTXJ43AA	5ESS Interworking

NI-1 PRIMARY RATE INTERFACE NETWORKING NI000013

This software supports Network Ring Again, Name Display, and Network Message Waiting Indication for hybrid configurations that span both private and public networks.

Benefits

NI000013 helps the service provider increase revenues by offering competitive hybrid network services.

Key Capabilities

NI000013 extends the following features across a network populated with Northern Telecom DMS-100 Family switches and Meridian 1, SL-1, and SL-100 PBXs.

- Network Ring Again
- Calling Name Display
- Network Message Waiting Indicator

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Functional Group to be operational.

MDC00001	Meridian Digital Centrex Minimum
NI000007	ISDN Base
NI000022	ISDN Primary Rate Interface Base
NI000011	National ISDN-1 Primary Rate Interface

Availability and NTX Mapping

NI000013 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
NI000013	**NI-1 PRI Networking**			NTX791AA	PRI Networking
				NTX792AA	PRI Network Display
				NTX797AB	PRI Message Waiting Indicator

DIALABLE WIDEBAND SERVICE NI000004

Standards-compliant Dialable Wideband Service (DWS) offers circuit-switched data transport over public facilities, potentially reaching any subscriber in the international numbering plan. The DWS subscriber over an ISDN PRI loop can request bandwidths from 128 kbps through 1.536 Mbps, on demand in 64 kbps increments, and pay only for the bandwidth actually used.

Benefits

DWS is an attractive offering to niche subscribers who prefer to pay for actual use of bandwidth, instead of leasing separate data lines.

As a public-network capability, DWS allows several sophisticated applications to be easily integrated into public and hybrid data networks. Since DWS and narrowband traffic can be mixed on the same PRI link, physical facilities can be efficiently allocated for a full spectrum of different services. A sample of DWS applications includes:

- Video transmission and videoconferencing for such visual applications as business meetings, distance learning, and remote surveillance.
- Other high-speed applications such as image processing and medical X-ray, records, and research.
- Backup of high-speed T1 facilities for additional capacity and for private-network failures.
- LAN/WAN interconnectivity, CAD/CAM, order transaction, bulk order input, inventory and site financials, and remote high-quality printing.

Northern Telecom's Dialable Wideband Service meets Bellcore-defined requirements, including TR-1203, to offer worldwide connectivity.

Key Capabilities

- Request bandwidth on a per-call basis (in 64 kbps increments from 128 kbps through 1.5 Mbps).
- Dial a single standard directory number (DN) instead of multiple DNs demanded by narrowband systems.
- Make a wideband connection to any DWS subscriber in the public network.
- Receive a bill that reflects Automatic Message Accounting-compliant records of wideband calls.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Functional Group to be operational.

MDC00001 Meridian Digital Centrex Minimum

NI000007 ISDN Base

NI000022 ISDN Primary Rate Interface Base

NI000011 National ISDN-1 Primary Rate Interface

NI000028 “Dialable Wideband Service Carrier Access” provides equal access signaling required to place a call through an Interexchange Carrier from a Local Exchange Carrier. NI000023 “Intertoll ISDN User Part and CCS7” is required for connectivity over CCS7 trunks to other destinations inside and outside the LATA.

Availability and NTX Mapping

NI000004 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
NI000004	**DWS**			NTXR49AA	DWS Primary Rate Interface (PRI) End Office
				NTXS08AA	Enhanced Time Switch
				NTXS25AA	DWS Base
				NTXS26AA	DWS PRI Base
				NTXS27AA	DWS PRI Test Tool

INTERTOLL ISDN USER PART AND CCS7 NI000023

This ordering code provides the CCS7 wideband trunking capability, call control, and messaging required for intra/inter-LATA DWS applications.

Benefits

This optional software permits the service provider to offer subscribers the many advantages of CCS7 connectivity (such as speed, robustness, and distance) for DWS.

Key Capabilities

NI000023 supports the intra/inter-LATA wideband connectivity over CCS7 trunks for wideband trunking between offices. This extends the reach of DWS connectivity, previously limited to locations served by Primary Rate Interface trunks. This capability conforms to North American CCS7 trunk standards.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001	Meridian Digital Centrex Minimum
NI000007	ISDN Base
NI000022	ISDN Primary Rate Interface Base
NI000011	National ISDN-1 Primary Rate Interface
NI000004	Dialable Wideband Service

Availability and NTX Mapping

NI000023 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
NI000004	DWS	**NI000023**	**Intertoll ISUP & CCS7**	NTXS09AA	DWS ISDN User Part Base
				NTXS28AA	DWS Intertoll Trunks ISUP

DIALABLE WIDEBAND SERVICE FLEXIBLE ACCESS NI000027

This feature provides flexible channel selection on the DWS PRI access loop to accommodate a wide variety of customer premises equipment (CPE).

Benefits

NI000027 allows service providers to offer DWS that supports a wide range of CPE

through three different access subscription options: fixed channel selection (the simplest method), floating channel selection, and flexible channel selection (the most sophisticated method). Northern Telecom's implementation complies with Bellcore specifications in TR-1203 to support customer devices from a variety of different CPE manufacturers.

Key Capabilities

This optional software supports flexible channel selection on the DWS PRI access loop, corresponding to the following CPE channel selection capabilities supported by the DMS-100 Family switch for DWS calls.

	Fixed Channel Selection	**Floating Channel Selection**	**Flexible Channel Selection**
Limited to Single T1	Yes	Yes	Yes
Starting Channels Allowed	1, 7, 13, or 19	Any channel, 1-24	Any channel, 1-24
Range of *n* Allowed	H0 (*n* = 6) or H11 (*n* = 24)	Any value of *n* (2-24)	Any value of *n* (2-24)
Non-contiguous Channel Selection Allowed	No	No	Yes
Mixing of Narrowband and Wideband Channels Allowed	Yes	Yes	Yes

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

NI000007 ISDN Base

NI000022 ISDN Primary Rate Interface Base

NI000011 National ISDN-1 Primary Rate Interface

NI000004 Dialable Wideband Service

Availability and NTX Mapping

NI000027 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	**Functional Group Name**	**Function**	**Function Name**	**NTX Code**	**NTX Package Name**
NI000004	DWS	**NI000027**	**DWS Flexible Access**	NTXR65AA	DWS Flexible PRI Access

DIALABLE WIDEBAND SERVICE CARRIER ACCESS NI000028

This software provides the CCS7 equal access wideband trunking capability and Feature Group D (FGD) support to allow local providers to send Dialable Wideband Service calls to destinations that cross LATA boundaries.

Benefits

NI000028 extends DWS network connectivity to include interexchange carriers (IECs). This optional software permits the local service provider to offer subscribers wideband connectivity outside the serving area (compare with CCS7 connectivity in NI000023). This software can also be used in an access tandem to coordinate traffic going to IECs.

Key Capabilities

- Supports wideband capability, call control, and messaging required for interLATA DWS connections over public facilities.
- Allows the call originator to use a presubscribed IEC or identify a preferred IEC before dialing the wideband call.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001	Meridian Digital Centrex Minimum
NI000007	ISDN Base
NI000022	ISDN Primary Rate Interface Base
NI000011	National ISDN-1 Primary Rate Interface
NI000004	Dialable Wideband Service

Availability and NTX Mapping

NI000028 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
NI000004	DWS	**NI000028**	**DWS Carrier Access**	NTXR66AA	DWS Carrier Access

NI-1 TANDEM NI000014

This software provides DMS-200 tandem offices with NI-1 BRI/CCS7 interworking and routing capabilities.

Benefits

NI000014 supports routing and ISDN User Part (ISUP) interworking of NI-1 voice and data calls through a DMS-200 Tandem switch. This provides NI-1 compliance through the toll network.

Key Capabilities

The following are key capabilities of this Functional Group for a DMS-200 tandem office:

- Routing and digit analysis
- ISUP and BRI interworking

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Functional Group to be operational.

MDC00001 Meridian Digital Centrex Minimum

NI000007 ISDN Base

NI000008 National ISDN-1 Basic Rate Interface

SS700001 CCS7 Trunk Signaling

Availability and NTX Mapping

NI000014 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
NI000014	**NI-1 Tandem**			NTX768AA	ISDN Routing
				NTX769AA	ISDN/ISUP Interworking

DPN PACKET HANDLER SUPPORT NI000003

The DPN Packet Handler (DPN PH) for providing ISDN packet service in conjunction with the DMS SuperNode is being phased out beginning in BCS34 with the introduction of the National ISDN-compliant DMS Packet Handler (DMS PH). This software allows the testing of individual ISDN packet data calls on DS-0 channels on the DS-1 links between the DMS-100 and the DPN PH.

Benefits

This optional ordering code should only be licensed if the service provider continues to maintain a DPN PH in their office to support ISDN packet data services. Once the service has been fully transitioned to the fully integrated DMS PH, this software will no longer be needed.

Key Capabilities

This maintenance software tests DPN PH operations over DS-0 channels through the following functionality.

- Completes a logical loopback in the D-Channel Handler (DCH) for a logical terminal (LTID).
- Provides MAP commands to start, stop, and query the loopback.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Functional Group to be operational.

MDC00001 Meridian Digital Centrex Minimum

NI000007 ISDN Base

Availability and NTX Mapping

NI000003 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
NI000003	**DPN Packet Handler Support**			NTXP38AA	DPN B/D Channel Loopback

DataSPAN NI000002

DataSPAN allows the network provider to offer frame relay switching services from a DMS SuperNode central office. With this software and Frame Relay Interface Units (FRIUs) in a DMS Link Peripheral Processor (LPP), the provider can cost-effectively offer frame relay network services or switched 56 kbps access services as an overlay to an existing frame relay network.

Benefits

NI000002 enables the network provider to economically introduce frame relay services to an existing DMS Link Peripheral Processor (LPP). For providers that have an existing frame relay network, DataSPAN's ISDN and Datapath switched access provides a competitive advantage to their usual private-line access.

DataSPAN allows the provider to generate revenue by offering a virtual private-line network for high-speed LAN and host computer inter-connection. DataSPAN's ISDN and Datapath switched access provides unique access options to typical private-line access and an opportunity to penetrate the growing telecommuting market.

DataSPAN's competitive advantages include:

- ISDN and Datapath switched 56 kbps access
- Full integration with DMS operations, processes, and procedures
- Inexpensive add-on to existing DMS LPPs and Single Shelf LPPs

DataSPAN implementation is compliant with CCITT/ITU, ANSI, and Frame Relay Forum standards for Frame Relay User Network Interface and Network-to-Network Interface. Frame Relay Forum compliance assures interworking with customer premises equipment as well as other switch vendors.

Key Capabilities

- Frame Relay Forum User Network Interface (UNI)
- ANSI T1.617 Annex D Local Management Interface (LMI)
- Frame Relay Forum Phase 1 Network-to-Network Interface (NNI)
- Access speeds at DS-0 (56 or 64 kbps), fractional DS-1 (384 kbps), and full DS-1 (1.544 Mbps)
- ISDN BRI and PRI switched 56 kbps access and BRI nailed-up 64 kbps access
- Datapath switched 56 kbps access
- AMA Billing
- Committed Information Rate (CIR)
- Forward and Backward Explicit Congestion Notification (FECN/BECN)
- Network and user configurable Discard Eligibility (DE) bit
- Discard priority based on DE bit

NI000002, continued

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), no other ordering code is required for this Functional Group to be operational.

Availability and NTX Mapping

NI000002 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
NI000002	**DataSPAN**			NTXF25AD	Frame Relay Basic
				NTXQ34AA	Frame Relay Base Billing
				NTXQ35AA	Frame Relay Local Exchange Carrier Billing
				NTXR28AA	Fractional T1

Meridian Digital Centrex

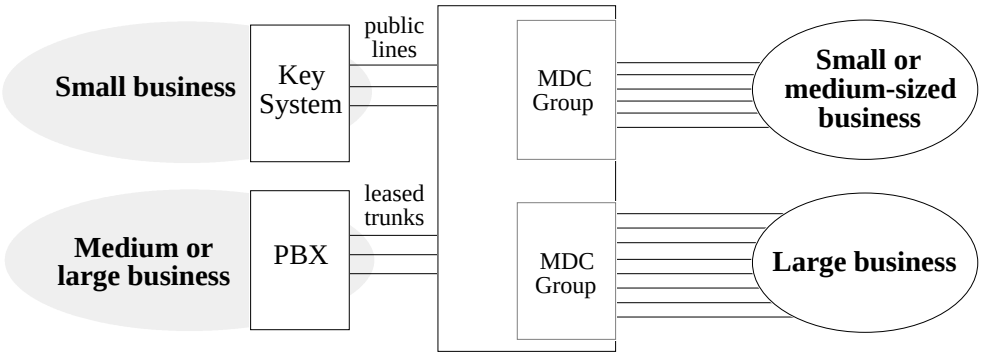
In today's competitive marketplace, business customers increasingly rely on the effectiveness of voice and data communications to enhance productivity and efficiency in the workplace.

The expanding portfolio of Northern Telecom's Meridian Digital Centrex (MDC) business communication solutions delivers the power of advanced digital services to the user's desktop, resulting in the most cost-effective, productivity-enhancing telecommunications system in the market today. Through Common Channel Signaling No. 7 technology, these powerful MDC services can be extended into the network for customers served by multiple switches.

COST-EFFECTIVE SOLUTIONS

MDC is a telecommunications service that does not require on-premises switching equipment-such as a key system or PBX. Instead, the resources of the public-network switch deliver services over lines already in place. DMS-100 central office software can be partitioned to create one or more virtual private business networks, each with more capabilities than a sophisticated on-premises system can offer, such as network-level call distribution and handling services, call accounting capabilities, and customization features.

To ensure that business customer can access the full power of today's public network, all MDC access technologies interwork seamlessly. This allows the network provider to match the most cost-effective technology to the challenges of business communications today, and in the Intelligent Network of the near future.



Private Solutions
- You may pay for unwanted features
- New services may be unavailable
- Ongoing maintenance concerns
- Potential for expensive upgrades

The MDC Solution
- ***Feature flexibility for any business***
- ***Ongoing service upgrades by provider***
- ***No maintenance worries***
- ***Never obsolete***

The Advantages of Meridian Digital Centrex

AT A GLANCE

This chapter's ordering code descriptions appear in the following sequence.

SCALABLE SOLUTIONS

The Meridian Digital Centrex ordering codes permit the network provider to expand Centrex capabilities as business conditions warrant. For example:

- MDC00001 "MDC Minimum" provides basic service for a network provider just starting out with Centrex offerings.
- MDC00003 "MDC Standard" provides intermediate service for the provider that wants to add new service offerings, Direct Inward System Access (DISA), and Station Message Detail Recording (SMDR) billing.
- MDC00009 "MDC Pro" provides advanced services that significantly reduce operating costs through customer maintenance controls, enhance billing capabilities, and expand call routing capabilities.

Ordering codes, and their dependencies, can be licensed at any time-as the network provider's Centrex service requirements change and expand. Examples of ordering codes with advanced services that can be added include MDC00004 (and its optional Functions) for enabling Custom Local Area Signaling Service (CLASS) features on MDC-and MDC00007 / MDC00008 for Meridian Business Set support.

NETWORK MDC

Of particular interest to network providers serving customers off multiple switches are MDC's networking capabilities. Multilocation Business Groups (MBGs) and Private Virtual Networking (PVN) eliminate the cost of expensive private or leased tie trunks, to offer new revenue potential and to promote service ubiquity. For more information, refer to the descriptions for MDC00005, MDC00006, MDC00011, and MDC00036 in this chapter.

FOR MORE INFORMATION

For more information about Meridian Digital Centrex, refer to the *MDC Library* (50034.11), or call 1-800-NORTHERN.

TAILORED CENTREX

Tailored Centrex-a newly packaged set of MDC features-positions service providers to compete successfully in today's rapidly growing small business market. With Tailored Centrex, Northern Telecom packages the following three distinct groups of MDC capabilities, across a number of different ordering codes, to generate additional revenue and reduce operating expenses for the service provider.

- Instant Change Order (ICO) allows individual MDC subscribers to quickly add, delete, and change features on their telephones without having to wait for a service order.
- Centrex Simplification Features for Cost Reduction permit service providers to group MDC features and then assign them to a line with a single command, as well as copy information from one line to another-to significantly reduce administrative costs and implementation time.
- Mini-Console Service supports a Meridian Business Set with optional add-on modules to serve as a low-cost call-coverage position.

For more information on Tailored Centrex, refer to the descriptions for MDC00012, MDC00013, MDC00014, MDC00015, MDC00016, and MDC00019 in this chapter.

INTERACTION WITH OTHER SERVICES

Meridian Digital Centrex interworks with other services on the DMS SuperNode to offer greater flexibility to service providers and their subscribers. The following serve as examples of this service interoperability.

- A full range of analog and digital data technologies, offered by ordering codes in other services, are supported through MDC-including the following:
  - Standards-compliant National ISDN-1.
  - Datapath, a digital data service that supports speeds up to 64 kbps.
  - DataSPAN frame relay, the fast-packet technology for LAN interconnection over the public network.
- Voice and data information can be simultaneously presented to a single-appearance Centrex station with the ACD00008 "Centrex Coordinated Voice and Data" Function. This CompuCALL-based software requires no ACD software or hardware but does require the CompuCALL Base, ordering code ACD00002. Refer to page 204 in the "Meridian Automatic Call Distribution" chapter for more information.

MAJOR CONTRIBUTOR TO S/DMS BUSINESSEXPRESS

Meridian Digital Centrex services play a major role in S/DMS BusinessExpress: a partnership solution to meeting the demands of subscribers in businesses and other organizations. Featuring rapid service delivery and a high degree of service choices, the S/DMS BusinessExpress approach combines the Multilocation Business Groups and Tailored Centrex features of MDC along with ISDN Point of Sale, dialable desktop video, wireless access, display terminals, Meridian Automatic Call Distribution, telecommuting services, and much more-to offer services and applications that can exploit network resources in almost limitless ways, with unmatched speed in delivery-to boost revenues, contain costs, and enhance the value of a service provider's existing network investments.

MDC MINIMUM MDC00001

This basic Functional Group enables network providers to establish Centrex customer groups, along with a long list of system and call processing features.

Benefits

MDC00001 is the most basic MDC package available, recommended for those network providers just getting started in Centrex, with many optional business service features that can start generating revenue immediately.

Key Capabilities

The following are many of the station features offered by MDC00001.

- Automatic Line
- Blind Transfer Recall
- Call Forward options
- Call Park, Call Pickup, and Call Waiting
- Camp-On
- Conferencing
- Custom Dialing Plan
- Distinctive Ringing
- Executive Busy Override
- Intragroup Calling
- Last Number Redial
- Music on Hold
- Permanent Hold
- Ring Again options
- Speed Calling options
- Three-Way Conference/Transfer

The following are many of the system-level features offered by MDC00001.

- Class of Service Restrictions
- Code Call / Code Restrictions
- Common Control Switching Arrangement
- Enhanced Private Switched Communication Service
- Direct Inward/Outward Dialing
- End-to-End Signaling
- FX, PBX, Special Services support
- Hunting options
- Off-Premises Stations/Extensions
- Operational Measurements
- Service Order System
- Uniform Call Distribution

The following are many of the attendant features offered by MDC00001.

- Access to Paging
- Attendant Console Call Hold Recall
- Autodial
- Automatic Recall
- Busy Station / Trunk Verification
- Call Park / Call Park Recall Timer
- Camp-On
- Conference
- Display Queued Calls
- Flexible Console Alerting
- Interposition Call and Transfer
- Multiple-Listed DNs
- Night Services
- Recorded Announcements
- Secrecy and Two-Way Splitting
- Speed Calling
- Through Dialing
- Transfer options

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), no other ordering code is required for this Functional Group to be operational.

Availability and NTX Mapping

MDC00001 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX software that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	ACTID	NTX Package / ACTID Name
MDC00001	**MDC Minimum**				AN0999	MDC CUSTENG Robustness
				NTX100AA		MDC Basic
				NTX101AA		Enhanced Business Services
				NTX435AA		MDC Superset
				NTX436AA		Enhanced Dialing Plan
				NTX573AA		2500 Sec Code
				NTX574AA		2500/MBS Sec Code
				NTX820AA		3-Way Chaining
				NTX824AB		Enhanced Call Waiting
				NTX898AA		Variable Speed Call Access Code

MERIDIAN SPECIAL ATTENDANT CONSOLE MDC00002

This Functional Group offers additional Attendant Console features to complement those found in MDC00001 “Meridian Digital Centrex Minimum.”

Benefits

The enhancements in this software offer greater flexibility, helping to raise productivity at attendant positions. Enhancements to Operational Measurements also help in force management and provisioning decisions.

Key Capabilities

MDC00002 offers the following enhancements to the Attendant Console.

- Support of languages in addition to English.
- Do Not Disturb (with several options to specify where calls will divert).
- Immediate notification to the attendant when an emergency call is queued.
- Operational Measurement enhancements.
- Alarm triggering when a predetermined number of calls fills a queue and when the oldest call in a subgroup has been in a queue longer than a predetermined period.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the only other ordering code that is required for this Functional Group to be operational is MDC00001 “Meridian Digital Centrex Minimum.”

Availability and NTX Mapping

MDC00002 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
MDC00002	**Meridian Special Attendant Console**			NTX110AA	Hospital
				NTX175AA	Multi-Bilingual Console
				NTX262AA	Priority Attendant Console Alert
				NTX410AA	Dynamic Attend-ant Console OMs
				NTX853AA	Console Alarm Call Status
				NTX856AA	Individual Console OMs
				NTXE33AA	MDC MSAC Enhancements

MDC STANDARD MDC00003

This Functional Group provides additional service offerings, Direct Inward System Access (DISA), Station Message Detail Recording (SMDR), and other important new capabilities to MDC00001. Meridian Digital Centrex ordering codes permit the network provider to expand Centrex capabilities as business conditions warrant (see MDC00009 "MDC Pro" for the next major MDC offering).

Benefits

MDC00003 is recommended for established Centrex network providers that now can benefit from the following advantages.

- *Increases Revenue with Additional Service Offerings*
  This software introduces advanced Call Forwarding, station-specific authorization code, conferencing, and personal call screening features-greatly enhancing a service provider's portfolio of business features.
- *Promotes Better Use of Network Resources*
  - DISA access can lower toll costs for businesses with geographically scattered employees needing to directly access a site's OUTWATS, foreign exchange, data, private network, or other high-demand facilities-without compromise to security.
  - Sophisticated trunk queuing capabilities include an alert to a user when a trunk becomes available and a tone to indicate the selection of an expensive route.
  - Variable Stutter Dial Tone changes message waiting indication (MWI) stutter dial tone to solid dial tone after a timeout, to allow electronic phone directories and other automated dialers to dial through.
  - Service Order (SERVORD) simplifications increase productivity and reduce maintenance costs.
  - Virtual Facility Group (VFG) offers a method of controlling traffic limits between a DMS-100 and an MDC group.
- *Enhances Billing*
  SMDR output includes the actual line number in the SMDR record for incoming calls over certain types of trunks. This allows more complete billing information and virtually eliminates the cross-referencing effort previously required at the billing processing center. Also, Attendants can enter account codes from consoles and users can be prompted to enter billing numbers for charge-back purposes.

Key Capabilities

This large Functional Group provides a long list of new capabilities, including the following key features and services.

- Provides advanced stations features including new Call Forwarding options, personal call screening capability, Meridian Business Set support, and more.
- Introduces Station Message Detail Recording (SMDR), for more complete and significantly simplified billing.
- Supports Direct Inward System Access (DISA), to optimize access and use of network resources.

MDC00003, continued

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the only other ordering code that is required for this Functional Group to be operational is MDC00001 “Meridian Digital Centrex Minimum.”

Availability and NTX Mapping

MDC00003 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

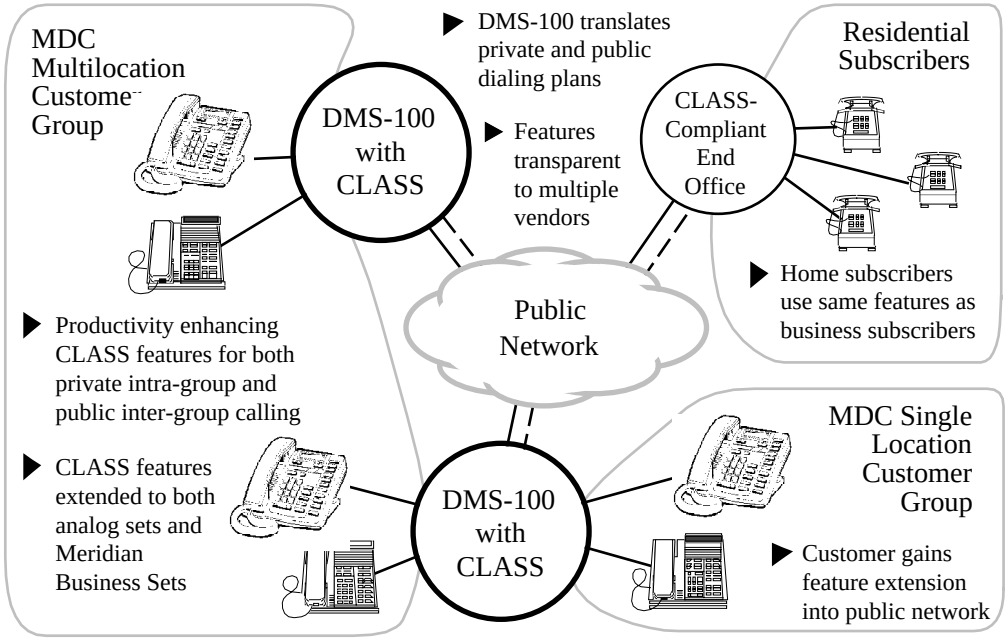
Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
MDC00003	**MDC Standard**			NTX102AA	SMDR
				NTX103AA	SMDR - Enhanced
				NTX103BA	Station Specific Authorization Codes
				NTX105AA	Trunk Queuing
				NTX111AA	Large Meet-me Conference (30)
				NTX112AB	Virtual Facility Group
				NTX119AA	Message Service Basic
				NTX260AA	Preset Conference
				NTX399AA	MBS & Emergency Service Bureau Compatibility
				NTX413AB	Enhanced Call Forward
				NTX414AA	Directed Call Park
				NTX431AA	Cut-through Dialing
				NTX733AE	Enhanced Service Order
				NTX734AA	MBS-PIC Via Service Order
				NTX877AB	Non-Data Link Cons.
				NTX899AA	CXR Enhanced
				NTXA30AA	Virtual Facility Group Look Ahead
				NTXA31AA	DISA 3rd Dial Tone
				NTXA32AA	Distinctive Call Waiting Ringback

MDC00003 table, continued

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
MDC00003	**MDC Standard**			NTXA73AA	Loudspeaker Page Answer
				NTXA79AA	IBN Trunks - ISDN User Part Signaling
				NTXE39AA	Call Forward Busy/ Don’t Answer-Internal/External Split
				NTXJ70AA	Call Forward of Call Waiting Calls
				NTXJ83AA	Call Pick-up First In First Out
				NTXJ84AA	Call Forward Busy-Inhibit Make Busy / Line Busy
				NTXJ93AA	Hunt Group SERVORD Simplification
				NTXR62AA	Variable Stutter Dial Tone
				NTXR80AA	Multiple Call Forward Control

CLASS ON MDC MDC00004

This Functional Group supports Custom Local Area Signaling Service (CLASS) Phase I features-such as Automatic Callback, Automatic Recall, and Customer Originated Trace-in the MDC business environment. CLASS, sometimes referred to as Call Management Service (CMS) in Canada, is a set of advanced calling capabilities-offering convenience and control beyond custom calling features-that the service provider can offer as subscription services to their established customer base.



CCS7 Network Signaling Extends CLASS Features Between Offices

Benefits

Aimed at small to medium Centrex markets, this software competitively expands a network provider's portfolio of services to include CLASS (Custom Local Area Signaling Service) features-with a generous list of powerful, convenient, and flexible services-to broaden the revenue stream and increase customer satisfaction. These Bellcore-conforming features can help open markets previously inaccessible without expensive equipment and create a foundation upon which the network provider can implement new advanced services as they become available in the future.

Key Capabilities

Specific station features enabled by MDC00004 include the following.

- The following features are provisioned by the network provider but activated by the subscriber:
  - Automatic Callback has the switch make repeated call attempts to a number whose line is busy.
  - Automatic Recall has the switch dial back the party whose incoming call went unanswered.

  - Customer Originated Trace has the switch trace annoying or prank calls without requiring a time-consuming and troublesome approval process. The trace is sent immediately to the network provider for further action by a designated law enforcement agency.
- Distinctive ringing patterns and distinctive call waiting tones can be assigned, identifying the intended receiver of an incoming call without having to answer the call first.
- The following display services offer visual aids to help subscribers get the most out of advanced services.
  - Calling Number Delivery and Dialable Number Delivery
  - Calling Name Delivery
  - Calling Number Delivery Blocking and Calling Name Delivery Blocking
  - Visual Message Waiting Indication

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Functional Group to be operational.

MDC00001	Meridian Digital Centrex Minimum
MDC00003	Meridian Digital Centrex Standard
RES00006	Service Enablers
RES00003	Display Functionality and Privacy
RES00004	Interface Functionality
RES00005	Non-Display Services

Availability and NTX Mapping

MDC00004 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	Package Name
MDC00004	**CLASS on MDC**			NTXE58AA	CLASS on Multiline Variety Package
				NTXF56AA	CLASS on MDC
				NTXF72AB	CLASS on Meridian Business Sets
				NTXQ81AA	CLASS Name - Multiple Appearance Directory Number (MADN)

CLASS ON MDC/MULTILINE VARIETY PACKAGE II MDC00010

This optional Function enables the service provider to assign CLASS Phase II features to MDC/Multiline Variety Package (MVP) lines, for subscribers with terminals that support screen display and edit features.

An "MVP" group is a set of business lines having a POTS public-network dial plan (7- or 10-digit dialing) and a subset of Meridian Digital Centrex features.

Benefits

These screen list editing features can interwork with other MDC features to create attractive solutions that can grow revenues and increase customer satisfaction.

For example, if a station has network call forwarding enabled to a distant destination, then the customer has to pay all toll costs-including calls that the party would consider unimportant. However, with Selective Call Forwarding enabled the user predetermines which calls will forward to the distant station, controlling toll charges without impacting the delivery of important calls. Similar interworkings can be used as solutions to harassment, security, and other station-specific problems.

Key Capabilities

The following are the screen list editing features enabled by MDC00010.

- *Selective Call Acceptance* stores up to 31 DNs that are the only originators that will ring a user's station. All other calls are routed to an announcement.
- *Selective Call Rejection* allows the subscriber to request that all calls from a list of up to 31 DNs will be rejected or blocked.
- *Selective Call Forwarding* permits subscribers to ensure that selected calls reach them when they are away from the premises.
- *Distinctive Ringing/Call Waiting* causes all incoming calls from a list of up to 31 DNs to be automatically identified by distinctive ringing or call waiting tones (depending on whether the set is off hook or on hook at the time of the call).

End users can change the status of features, edit the screening list, and obtain recorded announcements as a guide through editing procedures.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001	Meridian Digital Centrex Minimum
MDC00003	Meridian Digital Centrex Standard
MDC00004	CLASS on MDC
RES00006	Service Enablers
RES00003	Display Functionality and Privacy
RES00004	Interface Functionality
RES00005	Non-Display Services

Availability and NTX Mapping

MDC00010 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
MDC00004	CLASS on MDC	**MDC00010**	**CLASS on MDC/MVP II**	NTXF60AA	CLASS on MDC/MVP Phase II
				NTXJ78AA	CLASS Phase II on non-Meridian Business Sets

TEEN SERVICE MDC00035

MDC00035 permits the provisioning of up to four different directory numbers (DNs) to a single MDC line. Distinctive ringing patterns identify the directory number dialed, to signal the intended receiver of an incoming call. Differing Call Waiting tones are also available.

Benefits

Teen Service lets a subscriber know whether an incoming call is business, personal, or for another family member-before picking up the receiver. As a subscriber feature, Teen Service offers the network provider incremental revenues without costly upgrades to outside plant facilities or expensive hardware updates. Teen service is compatible with 1FR, 1MR, and RES line class codes, and should be immediately deployable under existing tariffs.

Key Capabilities

As an MDC line option, Teen Service has one primary DN and up to three secondary DNs-each offering a specific ringing pattern. All secondary DNs must be in the same Serving Numbering Plan Area as the primary DN, and have the same office code.

If provisioned, distinctive Call Waiting tones are available for the four separate DNs.

This feature is available to MDC lines equipped with Coded, Superimposed, or Frequency Selective Ringing (FSR); however, offices equipped with FSR can offer only two DNs per single line.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001	Meridian Digital Centrex Minimum
MDC00003	Meridian Digital Centrex Standard
MDC00004	CLASS on MDC
RES00006	Service Enablers
RES00002	Advanced Custom Calling Features
RES00003	Display Functionality and Privacy
RES00017	Teen Service
RES00004	Interface Functionality
RES00005	Non-Display Services

Distinctive ringing patterns (available with MDC00004) conflict with secondary DN ringing patterns and should not be assigned to a Teen Service line.

Availability and NTX Mapping

MDC00035 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous activity ID that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
MDC00004	CLASS on MDC	**MDC00035**	**Teen Service**	NTXJ47AA	Teen Service

MULTILOCATION BUSINESS GROUP MINIMUM MDC00005

This is the basic Multilocation Business Group (MBG) software that supports networking capability over public trunks. This offering is ideal for the network provider who wants to introduce Centrex networking to span customer groups across multiple switches.

Multilocation Business Group (MBG) is the Bellcore-defined term for a customer group extended across two or more switches over public CCS7 facilities. In an MDC environment, this means that MDC customer groups can be served by more than one switch, and internal calls can be placed on public CCS7 trunks and retain their customer-group identification.

Benefits

The major benefit to the MBG end user is private-network access and feature transparency over public-rather than dedicated-CCS7 facilities. Using public facilities, the network provider can offer private-network access to customers who could not justify dedicated tie trunks. Also, customers now leasing private lines can augment them by using public CCS7 facilities as an alternate route choice.

For the small or medium-sized MDC business that cannot currently justify tie trunks between central offices, MBG service brings many advantages:

- Extension dialing among all locations
- Ability to distinguish between internal and external calls
- Dialable calling number (displayed according to the customer's dialing plan)
- Calling name
- Call redirection reason display
- Network Ring Again

For customers currently using private tie trunks between offices, MBG services also provide network efficiencies and dynamic routing, and improve feature operation. In addition to offering the benefits listed above for non-networked customers, the customer moving from tie lines to an MBG enjoys:

- Network Attendant Console service across public CCS7 facilities
- Complete MBG information in billing records

By building a logical network, customers who have multiple locations served by different switches can allow users to use abbreviated calling numbers. For example, a company with locations across the country can establish a logical network so that an employee at one site can call an employee at another site by simply pressing a number key to access the network and then dialing an abbreviated calling number (for example: 8*1234).

Meridian switched-network features such as Network Class of Service (NCOS) continue to be available with MBG service and calls can be extended to PBX stations that do not have Direct Inward Dial (DID) service.

Northern Telecom's MBG offering is based on Bellcore TA-NWT-000868, *Multiswitch Business Group Structure for Conventional and ISDN Access*.

Key Capabilities

MDC00005 provides basic networking capabilities, including the following:

- Allows users on multiple switches to be in the same customer group, without tie trunks.
- Delivers Network Number/Reason Display and Network Name Display on MBG calls to subscribers using public MBG trunks.
- Permits the datafill of an alternate number that will appear in the terminating number field of the Automatic Message Accounting (AMA) record to streamline billing.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required (at each switch involved in the network) for this Functional Group to be operational.

MDC00001 Meridian Digital Centrex Minimum

SS700001 CCS7 Trunk Signaling

In general, features that depend on customer-group identification, or are limited to operation within a customer group, are enhanced in an MBG.

Availability and NTX Mapping

MDC00005 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
MDC00005	**MBG Minimum**			NTXJ68AA	IBN ISDN User Part Net. Info.
				NTXN01AB	MBG Base
				NTXR43AA	MBG Generic Address Parameter (GAP)
				NTXR74AA	Enabling of MBG Feature Networking
				NTXR78AA	MBG Feature Networking Control
				NTXR81AA	MBG Alternate Terminating Billing

MULTILOCATION BUSINESS GROUP STANDARD MDC00006

This Functional Group builds on the capabilities of MDC00005 by enabling full networking capabilities to MBG subscribers. As with MDC00005, these enhancements do not require tie trunks between switches.

Benefits

This Functional Group takes a number of station and attendant features and extends their operation across the multiple switches of the customer group. This offers unique efficiencies that save the customer time and increase the efficiency of resources.

The following gives a few examples of how features expand from intranodal to internodal operation with MDC00006.

- Expands the capabilities of the Meridian Business Set with display to show the directory number of calling and called parties from any network node.
- Supports Network Ring Again, to allow a Meridian Digital Centrex customer who encounters a busy station anywhere in his customer group, on any network node, to automatically call that station again.
- Enhances attendant services by enabling the attendant to extend call control over the network, to offer centralized attendant console service. For example, the attendant can now verify busy lines (in the same customer group) on any DMS-100 node within the attendant's network.
- Enables a message service to activate and deactivate a message waiting indicator (MWI) at a subscriber's set that is served by a node other than the node on which the message service resides.

Key Capabilities

In addition to the expansion of many station and attendant features to span networks listed above, MDC00006 also offers the following new capabilities.

- Provides the capability to format a calling party's number to be consistent with the customer's Meridian Switched Network dial plan. By reformatting the calling party's number, the called party can identify calls originating on other nodes.
- Greatly expands attendant services to operate transparently across switches (for stations in the same customer group) in a network, permitting such operations as Network Call-Hold/Recall, Network Camp-On/Recall, Network Busy Line Verification, Network Class of Service (NCOS) and Calling Line Identification (CLID) display, Network Attendant Control, and more.
- Permits multilocation business customers to extend private-network services to each of their branches without the expense of deploying dedicated facilities, through Virtual Access to Private Networks (VAPN).
- Permits Name Display, Reason Display, and Calling Number Display to be selectively assigned to only those stations in a network that need these services instead of across the entire customer group.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Functional Group to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00005 Multilocation Business Group Minimum

SS700001 CCS7 Trunk Signaling

Availability and NTX Mapping

MDC00006 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
MDC00006	**MBG Standard**			NTXA35AA	Network Number Display
				NTXA36AA	Network Ring Again
				NTXA39AA	Network Attendant Service
				NTXA68AA	Network Message Service
				NTXA80AA	Network Name Display
				NTXJ42AA	Virtual Access to Private Networks (Feature Group D)
				NTXR75AA	VCN 1A Billing
				NTXR76AA	VCN 1A OMs
				NTXR83AA	MBG Per Line Feature Control

MERIDIAN BUSINESS SET MINIMUM MDC00007

This Functional Group enables the service provider to provide basic display capabilities to end users that have the Meridian Business Set (MBS) equipped with the optional 32-character alphanumeric liquid crystal display (LCD).

Benefits

MDC00007 builds on the basic Meridian Business Set (MBS) feature sets of MDC00001 and MDC00003 to add important display capabilities. Where tariffed, the following high demand services can mean new revenue sources for the service provider.

- End users can complete sophisticated telephony features quickly and accurately-with increased satisfaction-using cost-effective sets. Users who become dependent on display-based telephony are readily open to new visual services as they become available.
- An attendant using a Meridian Business Set (MBS) with Display or an Electronic Business Set (EBS) can perform the role of a message center for a small company or a departmental group within a larger establishment by activating a single key on the set. The cumbersome and time-consuming commands previously required to approximate message-waiting capabilities are eliminated.

Key Capabilities

From requesting the current time and date to retrieving messages, the LCD display greatly expands the capabilities of the Meridian Business Set to increase employee productivity. The following are a few key features offered by MDC00007.

- A Meridian Business Set's LCD guides the user with visual feedback during origination, termination, programming, and feature activation operations.
- The LCD display enables end users to leave and retrieve messages at MBS stations. The displayed messages show the name and number of the calling party (or the number only) and an associated time stamp. Message-list editing capabilities allow the user to review and edit any or all the enqueued messages (without necessarily returning the calls).
- MBS sets with displays show the reason why a call has been forwarded from any type of telephone in addition to a display of both the caller's telephone number and the number being called.
- An MBS user can access up to three different Speed Call lists (personal, group, and network) by pressing Speed Call keys or dialing access codes.
- Three-Way Calling/Call Transfer enables a MBS user-active on an incoming call-to include a third party in the call, and to then transfer the original call (when required) to the third party.
- With Query Busy Station (QBS), a user can query the busy/idle status of a station within a group. If the station is busy when the query is made, the DMS-100 continues to monitor the line and alerts the querying set as soon as the station becomes idle.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Functional Group to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

Availability and NTX Mapping

MDC00007 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
MDC00007	**Meridian Business Set Minimum**			NTX106AA	Meridian Business Set (MBS)
				NTX108AA	Display Features
				NTX719AA	MBS Busy Indicator
				NTX822AA	MBS Message Center
				NTXE47AA	Meridian Display Communication

MERIDIAN BUSINESS SET STANDARD MDC00008

This Functional Group makes it possible for end users to derive additional value from Meridian Business Sets, especially those sets with display capabilities.

Benefits

Aimed at subscribers who want enhanced display functionalities, this software offers the following benefits.

- ***Enhances call handling***
  - The calling or called party's name displays, as datafilled through service order to correspond to particular directory numbers (DNs).
  - Call Forward Reason Display provides information on redirected calls.
  - When a call is put on hold, the caller can now hear music, announcement, silence, or a combination of the three treatments, datafilled on a customer-group basis or on a per-set basis.
- ***Improves call coverage***
  The Multiple Appearance Directory Number (MADN) Ring Forward feature ensures that if a station does not answer a call, the ring forwards to another member after a datafilled amount of time. Also, to make forwarding easier and faster, this software supports Call Forward Universal on a per-key basis.
- ***Offers new productivity features for MADN secondary members***
  Now secondary members of a MADN group do not have to rely on primary stations for call processing features. With MDC00008 these users can activate and deactivate Call Forward Fixed, Call Forward Intragroup, and Call Forward Universal features. Also, called parties in the customer group can now view the individual's name for calls originating from one of these stations.

Key Capabilities

MDC00008 offers a number of features, including the following.

- Name Display for MADN Secondary Members
- Call Forward Universal on a Per-Key Basis
- Music on Hold for MBS stations
- Call Park Recall Identification
- Group Intercom enhancements
- Last Number Redial Associated with Set
- Make Set Busy Except Group Intercom
- Privacy Release Conference
- Enhanced MADN Call Control, including MADN Cut-Off on Disconnect and MADN Bridging (3-Way Call)
- Originating/Terminating Line Select
- Ring Again on Idle MBS
- Repeated Alert for MBS

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Functional Group to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

MDC00007 Meridian Business Set Minimum

Availability and NTX Mapping

MDC00008 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
MDC00008	**MBS Standard**			NTX878AE	Enhanced EBS Services
				NTX946AB	MBS-Calling Name Display
				NTXA33AA	Multiple Appearance DN (MADN) Ring Forward
				NTXA72AA	Secondary MADN Call Forward
				NTXA84AA	EBS - Music On Hold
				NTXE62AA	MBS Call Forward Universal on a Per-Key Basis

MDC PRO MDC00009

The large number of sophisticated features bundled in this Functional Group completes a service provider's portfolio of advanced Centrex services. This software's collection of MDC customer control features is of particular interest to large Centrex customer groups desiring greater control of the operating parameters of their MDC service.

Benefits

MDC00009 is recommended for service providers who have full Centrex services and want to offer a list of self-maintenance capabilities to groups requesting greater control of their Centrex service. This software offers the following benefits to the service provider.

- *Significantly reduces operating costs through customer maintenance controls.*
  - Introduces Customer Data Change (CDC) to allow designated end users make moves, adds, and changes without involvement of the network provider (which greatly reduces administrative and technician expenses).
  - Allows customers to directly assign one of five origination-restriction levels to phones in the associated MDC customer group.
  - Permits MDC customer access to the trunk test position of the DMS-100 Maintenance and Administration Position (MAP) to allow end-user maintenance of private (leased) trunks. Also, the End User Trunk Testing feature permits end user maintenance personnel to evaluate return loss, noise, and other measurements of these leased trunks, in conjunction with a downstream processor.

    Access to MAP can also be used to define a Network Speed Calling list.
  - Allows customers to verify the availability of a designated trunk and establish the operability of a specific trunk group or member (with tones) to quickly learn a trunk's condition in response to user inquiries.
- *Enhances billing capabilities.*
  - Enables network providers to charge terminators (such as enhanced service providers) for usage through Automatic Message Accounting (AMA) records when calls terminate to a line or through a Virtual Facility Group. Billing can then be compiled for a service provider for access charges on every terminating call.
  - Generates billing records for all calls (not just external calls) on an MDC trunk.
  - Permits assigning a Common Channel Switching Arrangement (CCSA) option to an MDC station, which causes all calls made by that station to be billed, as well as to incoming MDC Virtual Facility Groups.
  - Allows the network provider to assign a Tandem Tie Trunk option to incoming Virtual Facility Groups as a billing method of identifying Centrex users who call other Centrex users (the LATA-Wide Billing feature).
  - Offers Customer Dialed Account Recording (CDAR) so account codes can be entered by users into Bellcore-format AMA billing records-in addition to Station Message Detail Recording (SMDR) records, supported in MDC00003.
  - Enables network providers to more easily derive SMDR records for subscribers of any AMA-billable calls, such as Outward Wide Area Telephone Service.

- *Expands network capabilities.*
  - Supports network information signaling between the DMS-100 and the nodes of a Meridian Switched Network or Electronic Tandem Network.
  - A Virtual Facility Group option, Toll Restriction, allows the Toll Denied (TDN) and Toll Diversion (TDV) restrictions for both direct-dialed and operator-assisted calls to be carried through to the second leg of translations.

Key Capabilities

- Provides access and security safeguards for end user access of SERVORD through the Customer Data Change service. The following is a partial list of parameters that can be changed (where permitted by the network provider).
  - Line option, feature, and DN assignments on MDC stations.
  - The Network Class of Service (NCOS), Line Screening Code (LSC), and Alternate Line Screening Code (ALSC) assigned to Meridian Digital Centrex trunks and Virtual Facility Groups.
  - The NCOS, LSC, ALSC, Terminating Restriction Code (TRC), and Alternate Terminating Restriction Code (ATRC) assigned to lines.
  - The current information in Time-of-Day (TOD) system.
  - Add, delete, and change the NCOS assigned to authorization codes.
  - Set up and maintain X.25 service data for logical terminals, change packet-switched and circuit-switched ISDN terminals, and define ownership of ISDN Packet Data Closed User Groups (CUGs).

  Also, privileged end users can view table information with Partitioned Table Editor and manually activate pending service orders through Enhanced Pending Order File.

- Offers the following station features:
  - Enables users to access International Direct Distance Dialing (IDDD) through Automatic Route Selection (ARS) for the fastest and most economical connections-with a single access code.
  - Expands Meet Me Conferencing capacity from 30 to 150 dial-in conferees.
  - Allows MBS users to log-in to Uniform Call Distribution groups by pressing a single key. This feature is particularly useful during busy periods when additional agents are needed to answer incoming calls.
  - Enables a caller to access a busy MADN appearance in the same customer group to establish a three-way call among the caller with Executive Busy Override on MADN (EBOM), the MADN member, and the other party on the original call.
- Introduces Series Completion (SCMP), a datafilled line option that automatically redirects a call from a busy DN to another specified DN served by the same DMS-100 system. SCMP is superior to Call Forward and hunt group options by enabling almost any hunting algorithm to be implemented, permitting a call to be forwarded up to 100 times, and using significantly fewer call processing resources.
- Provides interfaces between the DMS-100 and the family of voice mail systems manufactured by Voice Message Exchange (VMX, Inc.; Dallas).
- Supports Service Analysis, initiated and carried out by a service analyst, to evaluate the grade of service being provided by a particular office and the surrounding switching network.

MDC00009, continued

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Functional Group to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

Availability and NTX Mapping

MDC00009 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
MDC00009	**MDC Pro**			NTX165AA	ESN Detail Record
				NTX411AA	Voice Message Interface
				NTX412CB	Customer Data Change
				NTX418AA	Service Analysis
				NTX427AA	End User Trunk Testing
				NTX430AA	Meridian Switched Network Signaling
				NTX432AA	Network Speed Calling
				NTX433AA	Time of Day Routing
				NTX434AA	Time of Day Network Class of Service
				NTX563AA	BNM Station Administration
				NTX713AA	LATA-Wide Centrex Billing
				NTX717AB	Trunk Verification Designated Station
				NTX728AA	Station Message Detail Recording (SMDR) Data Access

MDC00009 table, continued

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
MDC00009	**MDC Pro**			NTX851AA	SMDR Derived from Bellcore AMA Records
				NTXA22AA	Enhanced Automatic Route Selection
				NTXA27AA	Executive Conference Meet Me Enhanced
				NTXA74AA	Outgoing Restriction Control
				NTXA77AA	Enhanced Uniform Call Distribution
				NTXE43AA	Terminating Billing Option
				NTXE44AA	Executive Busy Override Enhancement
				NTXE74AA	Preset Conference 30 Maximum
				NTXJ82AA	Call Hunting

MESSAGE DETAIL RECORDING VIA AUTOMATIC MESSAGE ACCOUNTING STREAM MDC00018

This optional Function interworks with MDC00009 to provide call data in an Automatic Message Accounting (AMA) stream back to the customer group. This data provides MDC station call information to customer groups that need near realtime billing, such as hotels and motels.

Benefits

This software offers a subscription service that can be marketed to specific businesses to provide incremental revenues for the network provider.

Key Capabilities

This software converts Station Message Detail Recording (SMDR) information for stations in a customer group to Bellcore AMA format and transmits these records in a data stream back to equipment at the customer premises. This offers efficiencies for groups that need this data for fraud detection and usage tracking.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

MDC00009 Meridian Digital Centrex Pro

Availability and NTX Mapping

MDC00018 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
MDC00009	MDC Pro	**MDC00018**	**Message Detail Recording Via AMA Stream**	NTXA88AA	Message Detail Recording via AMA Stream

ENHANCED WATS MDC00034

This optional Function of MDC00009 expands the capabilities of Outward Wide Area Telephone Service (OUTWATS) in the MDC environment. With MDC00034, a subscriber can select an OUTWATS carrier from a predefined list of up to five companies.

Benefits

This added functionality can increase customer satisfaction, enhance the service provider's portfolio, and improve revenues by encouraging higher use of toll calls. Without this software, MDC subscribers have one preconfigured carrier for outbound WATS service. With MDC00034, subscribers can specify any of up to five carriers-to make use of special price breaks different carriers offer-for special types of calls or calls completed at certain hours of the day.

Key Capabilities

MDC00034 provides translations that control OUTWATS routing to the appropriate Virtual Facility Group (VFG). This function occurs on the first leg of the call, so that results of the decisions can then influence call routing. Routing considerations include:

- Routing to certain VFGs, depending on which carrier is to handle the call.
- Routing to a different VFG, depending on the called WATS band.
- Choosing the carrier on the basis of called digits (and optionally on the access code dialed).
- Labeling a route as expensive on the basis of either the carrier or the called WATS band.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

MDC00009 Meridian Digital Centrex Pro

EQA00001 Equal Access Local

Availability and NTX Mapping

MDC00034 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous activity ID that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
MDC00009	MDC Pro	**MDC00034**	**Enhanced WATS**	NTXE96AA	Enhanced WATS

MDC PRIVATE VIRTUAL NETWORKING MDC00011

Private Virtual Networking (PVN) allows service providers to provide business customers with private network functionality that uses any combination of public network and leased facilities. Thus, subscribers enjoy cost-effective, customized networks from their service provider with access on a per-call basis to any interexchange carrier or private virtual network for their interLATA needs.

This Functional Group provides customer groups with PVNs in conjunction with the currently available Advanced Intelligent Network 0.0 release.

Benefits

MDC00011 offers a service that can be marketed to business customers desiring a high degree of customizable control and flexibility, to generate revenues for the network provider. This feature-rich software enables the network provider to offer a range of services, including:

- A uniform numbering plan tailored to each customer.
- Call screening through a centralized database to determine class-of-service level.
- Authorization codes to override class-of-service restrictions.
- Access to the PVN from off-network locations.

Key Capabilities

- Supports interworking with Advanced Intelligent Network 0.0 elements to form a Private Virtual Network.

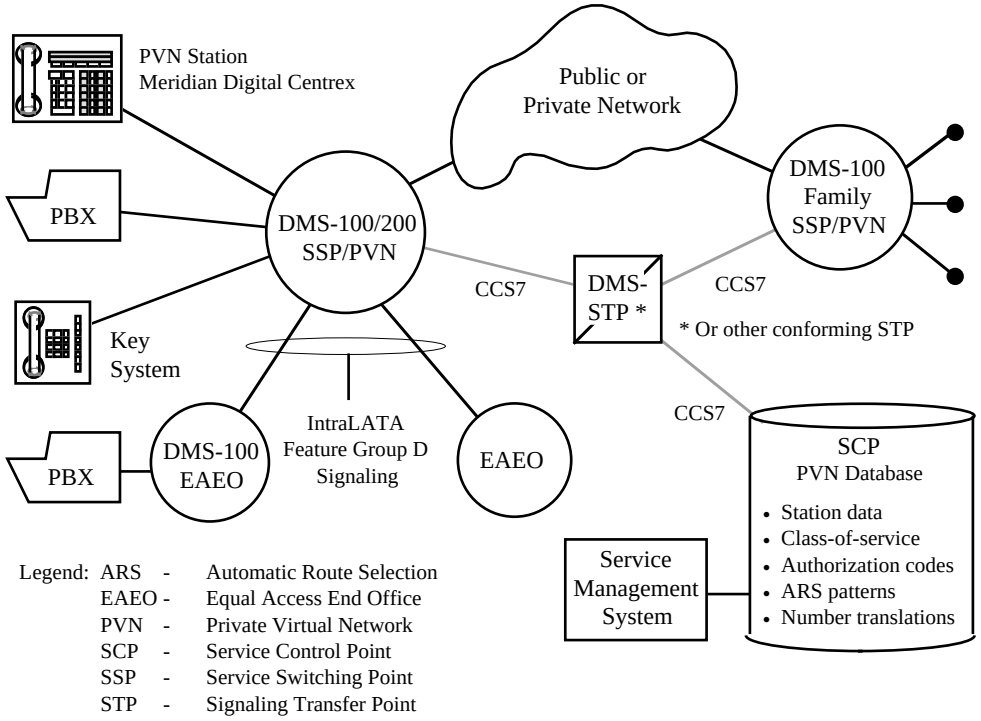
  A centralized database (Service Control Point) stores station data, class of service assignments, authorization code details, Automatic Route Selection patterns, and number translation information-and provides the following features:

  - Accepts Automatic Identification of Outward Dialing (AIOD) signaling from a subtending private branch exchange (PBX), and inserts the specific DN of the calling station into the PVN database query.
  - Exempts designated users from the Automatic Call Gapping controls that are implemented during network overload.
  - Accepts PVN incoming calls over CCS7 trunks and, following the PVN database query, routes the call once again over CCS7 facilities.
  - Provides PVN access to Network Number Delivery, Network Name Delivery, and Network Ring Again.

- Relaxes dialing rules so that Transaction Capabilities Application Part (TCAP) queries launched from the SSP to the SCP are consistent with the number of digits dialed by the subscriber.

  This “variable” dialing plan, as an alternative to the standard “uniform” dialing plan for incoming MDC agents, helps facilitate the interworking of Northern Telecom’s PVN offering with PVNs from other vendors.

- Extends additional capabilities to the Attendant Console so a PVN caller can obtain assistance from the attendant for an authorization code (for an on-network caller) or a personal identification number (for an off-network caller).



Include Any Combination of Public Network and Leased Facilities in a PVN

Northern Telecom's Private Virtual Network service uses a basic Common Channel Signaling No. 7 (CCS7) network consisting of a DMS-100/200 Service Switching Point (SSP) equipped with PVN software. The SSP interconnects, in conformance with specifications in Bellcore's TR-TSY-000402 (Issue 1, Nov. 1987), through a Signaling Transfer Point (STP) with a PVN database (a Service Control Point, conforming to Bellcore specification TA-TSY-00460) for centralized control over subtending DMS-100 end offices.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Functional Group to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

Also required are the CCS7 ordering codes needed to support the specific CCS7 implementation for the network provider. Refer to the "Advanced Intelligent Network" chapter for AIN ordering code options.

MDC00011, continued

Availability and NTX Mapping

MDC00011 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX software that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
MDC00011	**MDC Private Virtual Networking**			NTX983AB	Service Switching Point (SSP) PVN
				NTX984AA	SSP PVN Att Services

STATION MESSAGE DETAIL RECORDING FOR PRIVATE VIRTUAL NETWORK MDC00036

This Function builds on the basic Station Message Detail Recording (SMDR) capabilities offered by MDC00003, for use with the Private Virtual Network software of MDC00011. MDC00036 records the data returned by the Service Control Point (SCP) database in new SMDR extension records-for billing or usage tracking purposes.

Benefits

This optional software supports SMDR billing records to be collected for each MDC station in a PVN. This allows the network provider to supply immediate and complete billing information through a download to the PVN subscriber's office computer or by mail.

Key Capabilities

When a call is placed through a PVN, the SCP handling the PVN database generates a new SMDR extension record (using automatic number identification for the call's origin) that contains the following billing parameters:

- Alternate Billing Number
- Business Customer ID
- Additional Digits Dialed

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

MDC00011 Private Virtual Network

Availability and NTX Mapping

MDC00036 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
MDC00011	MDC Private Virtual Networking	**MDC00036**	**Station Message Detail Recording for Private Virtual Network**	NTXT15AA	Station Message Detail Recording for Private Virtual Network

TAILORED MDC 1 MDC00012

This Functional Group is the first of four Functional Groups collectively called Tailored Centrex: a newly packaged set of MDC features that can reduce costs and generate additional revenues for the service provider. The services and features of Tailored Centrex serve as key components of the S/DMS BusinessExpress portfolio.

This basic offering streamlines the provisioning of MDC and provides features that can help boost the productivity of users on Meridian Business Sets with display capabilities.

Benefits

MDC00012 is an entry level Tailored Centrex offering that provides the following benefits:

- Significantly reduces operating costs by removing the need to assign each feature to each line. Simplification of SERVORD process also ensures uniform feature assignment.
- Improves the call handling functionality of the Meridian Business Set to enhance customer satisfaction and increase revenue.

Key Capabilities

This optional Functional Group offers the following capabilities.

- Significantly simplifies the SERVORD system in feature assignment for both residential and business lines. Specifically, this software's Access Feature Grouping feature enables:
  - Grouping individual residential and business features into a logical group and then, with a single SERVORD command, assigning that group of features to a line. (This capability expands to copying from a physical line in MDC00014.)
  - Predefining the layout of feature keys for all types of Meridian Business Sets. The template is then assigned to the line, thereby eliminating the need to assign features to each key individually, and ensuring consistent feature key layout across the customer group.
- Enables the following MBS (with display) station features.
  - An Inspect key displays the features and directory numbers (including speed-calling numbers) assigned to individual buttons. With directory number buttons, the display shows both the number and the name associated with each button. With feature buttons, the display shows feature name and related information.
  - The Automatic Inspect Mode feature automatically displays incoming call details before a call is answered.
  - The Station Camp-On for Meridian Business Set feature enables the MBS user-when transferring a call to a busy line-to place the calling party on hold ("camped on") against the busy party's line until that party is free. Previously this capability was only available on the Attendant Console.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Functional Group to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

MDC00007 Meridian Business Set Minimum

Availability and NTX Mapping

MDC00012 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
MDC00012	**Tailored MDC 1**			NTXE40AB	MBS Inspect Key
				NTXF87AA	Service Order Simplification
				NTXJ98AA	MBS Camp-on

TAILORED MDC 2 MDC00013

This Functional Group is the second of four Functional Groups collectively called the Tailored Centrex service. This software introduces Instant Change Order, and features that provide improved answering-position capabilities for customer groups using MBSs.

Benefits

This Tailored Centrex offering provides the following benefits.

- Reduces operating costs through the Instant Change Order feature, which permits end users to update and personalize certain MDC features on their own sets instantly -without tying up service provider personnel or administrative resources.
- Enhances billing processes by producing logs and journal files detailing station use of the Instant Change Order feature for tracking, billing, or security purposes.
- Enables an increase in the volume of incoming calls that can be efficiently handled, with the Fast Transfer and Single Button Transfer features.

Key Capabilities

MDC00013 builds on the capabilities of MDC00012 by adding the following capabilities.

- Instant Change Order enables a general user (or designated administrator) to add, change, and delete many MDC features-as permitted by the network provider-simply by using a Power Feature key on a designated phone. Aside from key assignments and features the user can also update the network specific name associated with the set.
- The DMS-100 offers an audit trail of the use of the Instant Change Order feature in logs that can be captured, filtered, and formatted by an off-board processor for upload to any operations system database for tracking, billing, or security purposes.
- Expands station features:
  - A single key allows an MBS user to monitor the station status of a directory number (DN)-through the use of MBS lamp states-as well as permit direct dialing to a monitored DN.
  - Both the Fast Transfer feature-providing the Transfer on Release capability-and the Single Button Transfer feature speed up call handling for MBS users by reducing the number of keystrokes needed to transfer a call.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Functional Group to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

MDC00007 Meridian Business Set Minimum

MDC00012 Tailored MDC 1

Availability and NTX Mapping

MDC00013 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
MDC00013	**Tailored MDC 2**			NTXF88AB	MBS Interactive Display
				NTXJ97AA	Direct Station Selection/Busy Lamp Field for MBS
				NTXN50AA	MDC Single Button Transfer
				NTXN65AA	Fast Transfer for MBS
				NTXR44AA	Power Feature Audit Trails

MERIDIAN BUSINESS SET INSTALLER TOOLS MDC00019

This optional Function of MDC00013 reduces the service provider's operating costs by enabling on-site Centrex maintenance personnel or an administrator to complete many station-based feature changes without having to consult the central office.

Benefits

On-site Centrex installers can complete many station-based feature changes without having to consult the central office staff, saving time and costs for both the installer and network provider.

Key Capabilities

After entering an installer identification and password for verification, installers can:

- Add, delete, or modify any station feature available from the Power Features unrestricted menu.
- Perform on-site, semi-automated MBS installation and testing.
- Verify Line Equipment Number (LEN) information in the switch.

Customers with Customer Data Change or off-board Service Management Systems can verify LEN/DN mapping for internal service support and for communications with the service provider.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum
MDC00003 Meridian Digital Centrex Standard
MDC00007 Meridian Business Set Minimum
MDC00012 Tailored MDC 1
MDC00013 Tailored MDC 2

Availability and NTX Mapping

MDC00019 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous activity ID that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	ACTID	ACTID Name
MDC00013	Tailored MDC 2	**MDC00019**	**MBS Installer Tools**	AR0307	MBS Installer Tools

TAILORED MDC 3 MDC00014

This Functional Group is the third of four Functional Groups collectively called Tailored Centrex. This optional software offers new MBS call-handling capabilities and the following new time-saving provisioning features.

- *Copy Feature Set* permits the network provider to use the feature set on one line as the basis for assigning a similar feature set to other lines.
- *Access Feature Grouping (AFG) Add Option* makes it possible to add or subtract features from a specific line without affecting an AFG.

Benefits

This optional software offers the following benefits to the network provider.

- Two major features in this Functional Group offer new speed, flexibility, and operating costs savings.
  - *Copy Feature Set* can cut costs, hasten the deployment of sought-after services, and make it easier for network providers to offer the Centrex capabilities defined in their local tariffs. The network provider can use the competitive advantage gained from this software to expand its Centrex customer base and generate higher revenues. In addition, this feature enables network providers to comply with tariff requirements that allow single-feature assignments on an exception basis.
  - The *AFG Add Option* represents another significant operating cost savings by streamlining the adding or subtracting of a feature from a specific line without chaining the AFG itself or to other lines in the group.
- Added MBS features can enhance customer satisfaction and, where tariffed, increase revenue.

Key Capabilities

MDC00014 builds on the capabilities of MDC00012 and MDC00013 by adding the following capabilities.

- Offers two features that streamline provisioning.
  - *Copy Feature Set* expands on the provisioning feature of MDC00012 (that permits copying from a logical group). With MDC00014 the network provider can use the feature set on one line as the basis for assigning a similar feature set to other lines-copying information such as line options, line class codes, network class of service, customer group configurations, MBS key assignments, and LATA and numbering plan information.
  - *AFG Add Option* permits adding or subtracting features for a specific line using simple SERVORD commands.
- Adds the following features to the Power Feature key MBS users employ to make changes in the configuration of their own sets.
  - Separate public and private name programming.
  - Ability to enforce passwords.
  - Compatibility with Call Forward separate key lists.
  - Compatibility with Call Pickup separate keys.

MDC00014, continued

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Functional Group to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

MDC00007 Meridian Business Set Minimum

MDC00012 Tailored MDC 1

MDC00013 Tailored MDC 2

Availability and NTX Mapping

MDC00014 is scheduled to be generally available with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003-and is currently planned to be released as a software bridge in the NA002 stream. The following table lists the previous NTX software that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	ACTID	NTX Package / ACTID Name
MDC00014	**Tailored MDC 3**				AF5644	MDC Copy Feature Set
				NTXF87AB	AF5645	MDC Access Feature Group Add Option
				NTXF88AC	AF5646 AF5647 AF5648 AF5649	MBS Interactive Display

TAILORED MDC 4 MDC00015

This is the last of four Functional Groups collectively called Tailored Centrex: a newly packaged set of MDC features that can reduce costs and generate additional revenues for the service provider. This software supports two new features that enhance the operation of an M5209 or M5312 Meridian Business Set as a low-cost "Mini-Console" answering position.

Benefits

An answering position that can monitor the status of stations in a small business or department and handle incoming calls provides an important service to any business. Previously, this required either an attendant console or an expensive system with special wiring-beyond the reach of many small businesses. M5209/M5312 sets and add-on M518 or M536 modules can be used as a "Mini-Console" that can easily monitor the busy/idle status of other Meridian Business Sets and 2500-type sets, answer and screen incoming calls, and pick up unanswered calls. This offers two attractive benefits to the customer:

- *Uses standard Meridian Business Set*
  The only hardware needed is a standard Meridian Business Set and optional add-on modules. There is no need to purchase and maintain expensive, single-use console equipment.
- *No special wiring*
  Most other systems require a physical link to each line to monitor line status. The Meridian Business Set Mini-Console answering position requires none because it monitors Meridian Business Sets and 2500-type sets from the central office.

MDC00015 offers two new features that enhance the call handling capabilities of the Mini-Console, further driving the productivity of this answering position.

Key Capabilities

This Functional Group adds to the functionality (such as the Fast Transfer, Call Forward, Camp-On, and other features-see table on the next page for details) already offered for "Mini-Console" option through ordering codes MDC00001, MDC00003, MDC00007, MDC00009, MDC00012, and MDC00013.

- *Direct Station Select/Busy Lamp Field-Set Based*
  -allows the MBS user to monitor the off-hook status of a station (as opposed to DN status) directly from a set, without the hard-wired connections to the monitored set required by other systems.
- *Single-Line Queue for Mini-Console*
  -queues calls on a single DN without the use of Uniform Call Distribution or Automatic Call Distribution software. The intent is to provide a simple queue capability for the small business with limited numbers of incoming lines having a need for versatile answering capabilities.

The capabilities for a Mini-Console position are actually the capabilities available on regular MBS sets. The following table lists these features along with the ordering codes that support them.

MDC00015, continued

Ordering Code	Mini-Console Feature
Tailored Centrex Features	
MDC00012	Camp-On-allows the Mini-Console answering center to extend a call to a busy station
MDC00013	Direct Station Select/Busy Lamp Field (DSS/BLF)-single-key selection of station DNs and easy line-status monitoring Fast Transfer-allows the Mini-Console to transfer a call with a single keystroke
MDC00015	DSS/BLF-Set Based-monitors station status as opposed to DN status Single-Line Queue for Mini-Console-queues multiple calls against a single MDC line
Optional MDC Features	
MDC00001	Call Pickup-allows Mini-Console answering position to pick up ringing calls that are not being answered • With Barge-in • No Barge-in
MDC00001 MDC00007 MDC00003 MDC00007 MDC00007	Call Forward All Calls (CFU)-forwards calls to the answering center when employees want their calls screened or will be out of the office • Multiple Call Forward Attempts • Station Activation of CFU • Call Forward Reason Display
MDC00001 MDC00007 MDC00003 MDC00003 MDC00003 MDC00007	Call Forward No Answer (CFD)-forwards calls to the answering center when the employee's phone goes unanswered • Multiple Call Forward Attempts • Station Activation of CFD • Internal/External Split • Call Forward Reason Display
MDC00001 MDC00007 MDC00003 MDC00003 MDC00003 MDC00007	Call Forward Busy (CFB)-forwards calls to the answering center when the called employee is on the telephone • Multiple Call Forward Attempts • Station Activation of CFB • Internal/External Split • Call Forward Reason Display
MDC00001 MDC00007 MDC00001 MDC00001	Group Intercom-on-hook intercom for point-to-point or broadcast voice announcements to Meridian Business Sets • Individual Page from Group Intercom • Group Intercom All Calls (Broadcast Paging)
MDC00007	Message-Center Capabilities
MDC00009	Universal Call Distribution Queuing-queues calls made to the published DNs on the Mini-Console answering position

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Functional Group to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

MDC00007 Meridian Business Set Minimum

Optionally, MDC00012 can be used for Camp-On; MDC00013 can be used for Fast Transfer and Direct Station Select/Busy Lamp Fields; and MDC00009 can be used for Uniform Call Distribution Queuing (to queue calls made to the published DNs on the answering position).

Availability and NTX Mapping

MDC00015 is scheduled to be generally available with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX software that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	ACTID	NTX Package / ACTID Name
MDC00015	**Tailored MDC 4**			NTXQ66AA	AN0727	MDC DSS/BLF-Set-Based
					AN0728	MDC Single Line Queue

TAILORED MDC NETWORK ACCESS REGISTERS MDC00016

With this software, network providers have a streamlined alternative to Virtual Facility Groups for provisioning Network Access Registers (NARs). The NAR is a peg count used to set the maximum volume of traffic between a DMS-100 and an MDC group.

Benefits

This software is part of Northern Telecom's larger thrust to maximize efficiencies and enable MDC customer definition through the development of time-saving features and service-enabling software. With MDC00016, there are no difficult translations and no change orders.

This software also benefits the small and large Centrex user through more efficient use of MDC facilities.

Key Capabilities

This method of implementing NARs provides additional data fields within the common block translation tables with additional flagging and routing capabilities based on required and provisioned overflows. A new data table, NARDATA, defines the NAR, the NAR size, and an overflow capability ranging from an announcement to treatments-to an overflow NAR.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Functional Group to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

MDC00009 Meridian Digital Centrex Pro

Availability and NTX Mapping

MDC00016 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
MDC00016	**Tailored MDC - Network Access Registers**			NTXR88AA	Network Access Registers

NAME/DIRECTORY NUMBER BLOCKING MDC00033

This Functional Group enables the service provider to block Calling Name/Number display feature on a per-line or per-call basis for the Centrex group.

Benefits

This ordering code addresses regulatory requirements in those areas where public utility commissions require that subscriber-determined display/blocking preferences be supported. Privacy-sensitive subscribers also appreciate the security offered by this software.

Key Capabilities

MDC00033 enables the service provider to set Calling Name/Number defaults in the following "toggle" fashion.

- A line or group can be set to always *support* Calling Name/Number except when disabled on a call-by-call basis.
- A line or group can be set to always *block* Calling Name/Number except when enabled on a call-by-call basis.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Functional Group to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

MDC00007 Meridian Business Set Minimum

MDC00008 Meridian Business Set Standard

Availability and NTX Mapping

MDC00033 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
MDC00033	**Name/DN Blocking**			NTXE46AA	Name/Number Blocking

Residential Enhanced Services

The residential and small business market is the backbone of the telecommunications industry, providing today's service providers with the bulk of their customers and a substantial portion of their revenues. As competition in this sector of the market intensifies, network providers want cost-effective features and services that can make their residential and small business offerings more compelling to subscribers.

Success in this market depends on the ability to strongly differentiate a provider's portfolio from competitors-through call management features that can be easily accessed and customized by the end user. With both costs and revenues strongly tied to making sure that each call gets to its intended destination the first time it is dialed, features that enhance call completion are becoming more strategic.

Recognizing the need to respond quickly and cost-effectively to these market conditions, Northern Telecom offers the industry's most extensive and innovative portfolio of subscriber services. A growing list of switch-based features-organized into the following three broad categories-can leverage individual service provider strengths into unique revenue-generating opportunities:

- **Nodal Services:** Custom Calling and Advanced Custom Calling features designed to work within a single switching node.
- **Network Services:** Custom Local Area Signaling Service (CLASS) features, also known as Call Management Services (CMS) in Canada, designed to work within a CCS7-compliant network.
- **Advanced Voice Recognition Services:** provided by the Network Applications Vehicle (NAV), an adjunct multimedia, multi-application processing platform, uses state-of-the-art speech processing technology to offer a variety of new revenue opportunities.

Northern Telecom's subscriber services software provides multiple opportunities for new revenue growth in the residential and small business marketplace, helping providers succeed by:

- **Enhancing call management capabilities,** with:
  - *Subscriber Programmable Ringing*, enhancing voice mail and call forwarding services by allowing users to determine how many times the phone will ring before the call is forwarded (RES00037).
  - *Utility Telemetry Access*, providing no-ring access for utility companies and other enhanced services providers to communicate with devices such as meter readers at the subscriber's site (RES00010).
  - *Automatic Recall Blocking to Private Numbers*, preventing automatic recall activation to blocked numbers (RES00036).
  - *Speech-Activated Intelligent Dialing*, allowing users to dial the phone by speaking the name of the person they want to call and to invoke features such as call forwarding by voice rather than access codes (for application software, see page 184; for switch software, see the "Speech-Activated Intelligent Dialing" chapter on page 185).

- **Enhancing ease of use,** to lower barriers to feature usage, stimulate growth of services, and increase customer satisfaction by reducing feature changes.
  - *Industry leading voice-recognition technology*, allowing readers to dial, activate features, call a business location, and increase security- all through the sound of their voice (see page 184 and also the "Speech-Activated Intelligent Dialing" chapter).
  - *Universal Access to CLASS*, encouraging subscribers to use non-display CLASS features by the activation of features on a pay-per-use basis (RES00011).
  - *User friendly display-based telephony*, using the new Analog Display Services Interface (ADSI) protocol, allowing users to activate features through context-sensitive softkeys and a display on the telephone set (RES00006).

- **Improving call completion,** to increase revenues and lower costs through:
  - *Message Delivery Service*, allowing users to leave messages when they cannot get through to a called party (see page 184).
  - *Long-Distance Alert*, increasing toll revenues by letting subscribers know through a distinctive ring or call waiting tone when a toll call is incoming (RES00038).
  - *Spontaneous Call Waiting Display*, presenting the waiting caller's phone number (RES00025).
  - *Call Waiting Display with Disposition*, not only identifying a caller but also providing easy options for handling the call (RES00026).

One of the keys to success in the residential and small business marketplace is demonstrating the value of available services to potential customers. The *Subscriber Services Handbook* (50030.08) is an advance-planning tool designed to assist in the successful marketing and deployment of subscriber services available through a DMS-100 central office. The document provides functional descriptions of current and future services, service applications, and general software and hardware provisioning requirements, as well as marketing strategies. To order a copy, call 1-800-NORTHERN.

AT A GLANCE

The RES/CMS Functional Groups (followed by descriptions of each of their Functions) appear in this chapter in the following sequence:

Ordering Code Name	Code	Page
Service Enablers	RES00006	145
Access Management	RES00001	146
Advanced Custom Calling	RES00002	150
Display Functionality and Privacy	RES00003	161
Interface Functionality	RES00004	169
Non-Display Services	RES00005	173
Signaling, Routing, and OAM	RES00007	182
Call Management Services (CMS) CLASS	CMS00001	183

Also, a summary of available Voice-Activated Services appears on page 184.

SERVICE ENABLERS RES00006

This software provides foundational support for all residential enhanced services (RES). Additionally, it provides many basic RES operations, administration, and maintenance (OAM) functions-making this a prerequisite ordering code for all other RES features.

Benefits

RES software offers service providers great flexibility, unsurpassed in the industry, in marketing services to their subscribers. Functional Group RES00006 must be in service for any of the remaining RES software to be operational. Also, its OAM capabilities are required for proper and cost-effective maintenance.

Key Capabilities

- *RES base*: the platform upon which all other RES services interwork and function.
- *Enhanced RES services*: the base platform for CLASS services.
- *ADSI services protocol*: the software required for all services based on Analog Display Services Interface (ADSI) standards.
- *Screening list editing*: the base capability for call screening features.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the only other ordering code that is required for this Functional Group to be operational is MDC00001 “Meridian Digital Centrex Minimum.”

Availability and NTX Mapping

RES00006 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
RES00006	**Service Enablers**			NTXA64AA	Enablers-RES Base
				NTXA82AA	Enablers-CLASS LIOD
				NTXE56AA	Enablers-Screening List Editing
				NTXP91AA	Analog Display Services Interface (ADSI) Protocol
				NTXQ90AA NTXQ90AB	Enablers-Enhanced RES Services

ACCESS MANAGEMENT RES00001

This software allows the availability of specific CLASS display features to remote locations that are served by a TR-008-compliant digital loop carrier (DLC) hosted by a Remote Switching Center (RSC or RSC-S).

Benefits

By delivering CLASS display services to locations served by DLCs, RES00001 broadens a service provider's market base. This increases revenue opportunities and allows providers to extend services to areas that otherwise would not be exposed to advanced residential services such as Calling Number Delivery.

Key Capabilities

This Functional Group extends the following CLASS display capabilities to distant metropolitan and rural areas served by remotes:

- Calling Number Delivery
- Dialable Number Delivery
- Visual Message Waiting
- Bulk Calling Line Identification

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Functional Group to be operational.

BAS00016 SCM/SMS/SMU

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

RES00006 Service Enablers

Plus, at least one of the following CLASS display services:

RES00003 Display Functionality and Privacy

RES00023 Call Number Display Software/Transaction Capabilities Application Part

RES00027 Visual Message Waiting

To derive any benefit from RES00001, at least one of the CLASS display services needs to be in operation and the correct customer premises equipment (with display capabilities) needs to be installed.

Availability and NTX Mapping

RES00001 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
RES00001	**Access Management**			NTXE38AB	Display Services on SCM/SMS

TELEMETRY APPLICATION RES00010

This software provides a "no-ring" connection to subscriber lines so utility providers can read meters with this connection without disturbing households.

Benefits

Using the public switched network, service providers can offer public utility companies a more cost-effective method of reading household meters. This is an attractive service to utilities (and other enhanced service providers, such as security systems) because telemetry access can:

- Simplify and reduce the costs of current meter reading processes.
- Improve the timeliness of meter readings.
- Promote billing accuracy.
- Advance cash flow by shortening billing cycles.

Key Capabilities

RES00010 permits an utility company or enhanced service provider to connect and communicate with interface devices connected to telephone subscriber lines. Connection is permitted only over an idle line, and ringing current is not applied so household phones do not ring.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

BAS00016 SCM/SMS/SMU

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

RES00001 Access Management

RES00006 Service Enablers

Availability and NTX Mapping

RES00010 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX software that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	ACTID	NTX Package/ ACTID Name
RES00001	Access Management	**RES00010**	**Telemetry Application**	NTXP59AA	NC0362	Suppressed Ringing, Telemetry Access

UNIVERSAL ACCESS TO CLASS RES00011

This software provides an alternative method of implementing non-display CLASS services. Universal access allows service providers to make one or more of these features available office-wide to all RES lines-eliminating the need for conventional service orders. This Function promotes easy market implementation of pay-per-use pricing strategies to subscribers.

Benefits

RES00011 offers flexibility and convenience to the service provider and offers the following benefits:

- *Generates new revenue.* By allowing non-display CLASS services to be accessed "on demand," service providers can offer subscribers a pay-per-use option. Now service providers can capture a market that otherwise would not subscribe to these services on a monthly basis. Market trials ("try it, you'll like it" promotions) greatly increase awareness of CLASS services in the residential market.
- *Reduces operating costs.* A service provider can offer selected features universally to every RES line in the office. This eliminates the need to assign each feature as a line option to individual subscribers, with corresponding reductions in service order churn and memory requirements in the switch.

One of the non-display CLASS features, Customer-Originated Trace, has been mandated by public service utilities in some areas. RES00011 offers a simple way of providing this service.

Key Capabilities

This software provides an alternative method of implementing non-display CLASS services on an office-wide basis. This capability allows the subscriber to access non-display CLASS features without having to contact their local service provider. The following are the features which can be deployed universally.

- Automatic Callback
- Automatic Recall
- Customer-Originated Trace
- Anonymous Caller Rejection
- Calling Number Delivery Blocking
- Calling Name Delivery Blocking
- Distinctive Ringing / Call Waiting
- Selective Call Acceptance
- Selective Call Forwarding
- Selective Call Rejection

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

BAS00016 SCM/SMS/SMU

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

RES00001 Access Management

RES00006 Service Enablers

Availability and NTX Mapping

RES00011 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
RES00001	Access Management	**RES00011**	**Universal Access to CLASS**	NTXQ70AA	Universal Access to CLASS

ADVANCED CUSTOM CALLING RES00002

This software provides more sophisticated services beyond those traditionally offered in the Custom Calling arena. These advanced custom calling services are especially appealing to telecommuters and other "work-at-home" subscribers.

Benefits

RES00002 offers service providers with greater opportunity for vertical growth within the installed base of custom calling users. Revenue potential increases by making more service offerings available to subscribers.

Key Capabilities

This Functional Group enables:

- Single-party intercom.
- Distinctive ringing patterns for each extension, so that incoming calls can be effectively transferred to the appropriate party.
- The ability to place a call on hold and then continue the conversation, either from the same set or from a more convenient location.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Functional Group to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

RES00006 Service Enablers

Availability and NTX Mapping

RES00002 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
RES00002	**Advanced Custom Calling**			NTXF82AA	Single Line Variety
				NTXJ69AA	Call Hold

LONG-DISTANCE ALERT RES00038

This unique software helps increase the completion of toll calls by providing distinctive ringing and call waiting tones to alert the subscriber to an incoming long-distance call.

Benefits

Partnerships between local carriers and interexchange carriers (IECs) enable both to benefit from profitable long-distance calling. Since subscribers generally value long-distance calls, and are more likely to answer them, helping them distinguish between local and long-distance calls increases the revenue stream for both the local carrier and IEC.

Long-Distance Alert can be offered as a standalone service or can be bundled as part of a package of Custom Calling features. As subscribers become accustomed to distinguishing long-distance calls, Long-Distance Alert can help stimulate demand for interLATA Caller ID services.

Key Capabilities

RES00038 permits subscribers to identify long-distance calls through distinctive alerting tones, resulting in increased toll call completion. The tones used are:

- A distinctive ringing cadence if the subscriber is on-hook.
- A distinctive call-waiting tone if the subscriber is currently off-hook.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001	Meridian Digital Centrex Minimum
MDC00003	Meridian Digital Centrex Standard
RES00002	Advanced Custom Calling
RES00006	Service Enablers

Availability and NTX Mapping

RES00038 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the activity ID that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	ACTID	ACTID Name
RES00002	Advanced Custom Calling	**RES00038**	**Long-Distance Alert**	AQ1127	Toll Alert

LONG-DISTANCE INDICATOR RES00008

This software visually presents call type information to differentiate incoming long-distance calls from incoming local calls. This visual display functionality is specific to the Canadian market.

Benefits

Canadian network providers can offer display indications of long-distance calls. This allows subscribers to make more informed decisions regarding incoming calls before they answer. Subscribers will pay a monthly fee for this capability, which provides incremental revenue to the network provider.

Key Capabilities

This software indicates long-distance calls on subscriber terminal displays so users can make more informed decisions regarding screening calls.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

RES00002 Advanced Custom Calling

RES00003 Display Functionality and Privacy

RES00006 Service Enablers

Offering this functionality in conjunction with other display capabilities (such as Calling Number Delivery) can strengthen a Canadian service provider's portfolio of display services.

Availability and NTX Mapping

RES00008 is currently available with NA002 in PCL CDN00002, and with NA003 in PCLs CDN00003 and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
RES00002	Advanced Custom Calling	**RES00008**	**Long-Distance Indicator**	NTXA87AA	Long-Distance Indicator

EXTENSION BRIDGED SERVICES RES00013

This software allows one DN for multiple locations. This provides an off-premises extension with custom-calling options.

Benefits

With RES00013, a service provider can offer subscribers great flexibility in obtaining their incoming calls. This represents a revenue opportunity wherever this feature can be tariffed.

This capability is particularly useful for multi-line residences, small businesses, or small businesses with multiple locations. In addition, "work-at-home" candidates may find this feature helpful when they maintain an office at their residence as well as in an office environment. Call Forward and Speed Calling can be assigned to the primary DN and controlled by any extension within the Extension Bridged arrangement.

Key Capabilities

This software permits one directory number in multiple locations, similar to a Multiple Appearance Directory Number (MADN) feature. Unlike MADN, RES00013 permits the implementation of Call Forward Variable on the primary station-with control offered to any extension. Also, Speed Calling lists can be modified by either the primary or secondary DN.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

MDC00007 Meridian Business Set Minimum

MDC00008 Meridian Business Set Standard

RES00002 Advanced Custom Calling

RES00006 Service Enablers

Availability and NTX Mapping

RES00013 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
RES00002	Advanced Custom Calling	**RES00013**	**Extension Bridged Services**	NTXA81AA	Extension Bridged Services

CALL WAKE-UP SERVICE RES00014

This software allows subscribers to program a specific time to be called by the DMS switch for an automated message or treatment.

Benefits

RES00014 enhances a service provider's feature offering to a wide range of subscribers. This represents a revenue opportunity wherever this feature can be tariffed. This service provides subscribers the benefit of being awakened, or reminds them of a meeting or deadline.

Key Capabilities

At a time requested by a subscriber, the DMS switch with RES00014 calls a directory number with an automated message.

Using access codes, subscribers program the time they wish to be rung back by an announcement (this call must be requested within a 24-hour period). If the first call is not answered, a second call is made. If the second call is not answered, the event is recorded at the central office, but no further attempt is made.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

MDC00007 Meridian Business Set Minimum

RES00002 Advanced Custom Calling

RES00006 Service Enablers

Availability and NTX Mapping

RES00014 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
RES00002	Advanced Custom Calling	**RES00014**	**Call Wake-Up Service**	NTXP57AA	Call Wake-Up Service

SUBSCRIBER-ACTIVATED CALL BLOCKING RES00015

This software allows a subscriber to block certain types of outgoing calls. For example, parents can protect themselves from unwanted toll charges that may be incurred by children or others in the household.

Benefits

This service provides subscribers more control of the kinds of outgoing calls that are allowed or disallowed from their telephone set. Subscribers will pay for this feature on a monthly basis, thus increasing the service provider's revenue opportunity.

Key Capabilities

RES00015 gives the subscriber more control and protection from unwanted outgoing calls by using an access code and a personal identification number (PIN). The particular treatment involved is set by datafill at the switch. The subscriber can activate and deactivate the feature and also override the restriction (when activated) with the PIN. Other types of calls (such as local, emergency, and calls to operators) can still be made from the line.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

RES00002 Advanced Custom Calling

RES00006 Service Enablers

Availability and NTX Mapping

RES00015 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
RES00002	Advanced Custom Calling	**RES00015**	**Subscriber-Activated Call Blocking**	NTXA18AA	Subscriber-Activated Call Blocking

EXPANSION SERVICES RES00016

This software introduces four advanced custom calling features: Group Intercom, Call Pickup, Call Transfer, and Make Set Busy.

Benefits

RES00016 extends advanced custom calling functionality to residences and small businesses so service providers can collect incremental monthly revenue from subscribers.

Key Capabilities

The following summarizes each of the custom calling features contained in this Function:

- *Group Intercom* allows individuals within a designated intercom group to contact each other by using an access code and abbreviated dialing, which permits dialing with one, two, three, or four digits. This functionality makes communication faster, easier, and more convenient for residential and small business subscribers alike.
- *Call Pickup* permits a multi-line subscriber to answer calls that are incoming to another line by dialing the call pickup access code and answering the call at a more convenient location.
- *Call Transfer* enables the transferring of calls to another directory number (DN). It is activated by entering a transfer access code followed by the destination's DN.
- *Make Set Busy* allows subscribers to make their telephone lines appear busy to all incoming calls.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001	Meridian Digital Centrex Minimum
MDC00003	Meridian Digital Centrex Standard
RES00002	Advanced Custom Calling
RES00006	Service Enablers

Availability and NTX Mapping

RES00016 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
RES00002	Advanced Custom Calling	**RES00016**	**Expansion Services**	NTXA94AA	Expansion Services

TEEN SERVICE RES00017

This software allows the assignment of up to four separate DNs (one primary and up to three secondary) to a single-party line. A distinctive ringing cadence identifies incoming calls to separate DNs. Call forwarding can be activated from any of the secondary DNs.

Benefits

RES00017 opens an incremental revenue opportunity for the service provider, targeted at those residences that need to identify phone calls for different household members before answering. This is an appealing, cost-effective alternative to installing additional lines.

Key Capabilities

This Function offers four different ringing cadences for up to four separate DNs assigned to the same single-party line-without having to add a secondary line to the household. All billing for this capability is assigned to the primary DN.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

RES00002 Advanced Custom Calling

RES00006 Service Enablers

RES00019 Call Forward Remote Activation

MDC00035 is the equivalent software for Meridian Digital Centrex lines.

Availability and NTX Mapping

RES00017 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
RES00002	Advanced Custom Calling	**RES00017**	**Teen Service**	NTX219AB NTXE94AA	Teen Service

RESIDENTIAL AND MERIDIAN DIGITAL CENTREX WARM LINE RES00018

This software automatically dials a predesignated DN after a specified off-hook time. While continuing to offer normal access to a telephone, this service also provides a safety measure in emergency situations where the user may reach for the telephone to summon assistance and be unable to do more than knock the phone off-hook.

Benefits

RES00018 is a tariffable feature that offers potential subscribers “peace of mind”-that help can be summoned even in emergency situations where the subscriber is not able to dial a telephone number. This capability is especially popular with elderly people who live alone.

Key Capabilities

With this capability, a call is automatically dialed to a predesignated telephone number (such as 911) when the telephone goes off-hook and no dialing occurs within a defined timeframe.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

RES00002 Advanced Custom Calling

RES00006 Service Enablers

Availability and NTX Mapping

RES00018 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
RES00002	Advanced Custom Calling	**RES00018**	**RES and MDC Warm Line**	NTX127AA	Warm Line
				NTXJ38AA	MDC Warm Line

CALL FORWARD REMOTE ACTIVATION RES00019

This software allows the subscriber to activate and deactivate various versions of Call Forward from a remote line. This software also provides Station Programmable PIN (SPP), which allows subscribers to change their Personal Identification Number (PIN) from their own telephone.

Benefits

This tariffed software enhances a service provider's Custom Calling feature portfolio and offers incremental revenue potential. In addition, this software lowers operating costs through the SPP capability: the work that has traditionally been administered by switch technicians can now be controlled by the subscriber, thus reducing administrative overhead.

Key Capabilities

This software allows the subscriber to activate and deactivate Call Forward Universal, Call Forward Intragroup, or Call Forward Fixed from a remote line. This software also provides Station Programmable PIN (SPP), which allows subscribers to change their Personal Identification Number (PIN) from their own telephone without having to contact the service provider.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

RES00002 Advanced Custom Calling

RES00006 Service Enablers

Availability and NTX Mapping

RES00019 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
RES00002	Advanced Custom Calling	**RES00019**	**Call Forward Remote Activation**	NTXN75AA	Call Forward Remote Activation

SUBSCRIBER PROGRAMMABLE RINGING FOR CFDA RES00037

This software gives subscriber control over the number of rings delivered to the customer premises before an incoming call forwards to a remote station when Call Forward Do Not Answer (CFDA) is active.

Benefits

RES00037 offers incremental revenue opportunities for the service provider by offering to the subscriber greater control of incoming call forwarding. When away from the premises, especially for an extended time, the subscriber can set the timeout low (say, two). Otherwise, the subscriber can set the timeout at a higher level (up to nine) for normal call coverage.

Also, this function lowers network provider administrative and operating costs. Without RES00037 only the service provider can control the ring timeout for the basic CFDA feature.

Key Capabilities

A subscriber can now control the number of rings heard before an incoming call is forwarded to a remote station. The user simply dials an access code in the form of *xx from a DTMF set or 11xx from a rotary set, then specifies the number of rings.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

RES00002 Advanced Custom Calling

RES00006 Service Enablers

When coupled with voice mail, this service provides a powerful combination that offers more flexibility to the subscriber than voice answering machines. Subscribers can alter, as needed, the number of rings heard before an incoming call forwards to a voice mail service.

Availability and NTX Mapping

RES00037 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the activity ID that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	ACTID	ACTID Name
RES00002	Advanced Custom Calling	**RES00037**	**Subscriber Programmable Ringing for CFDA**	AQ1267	Subscriber Programmable Ringing Ctl

DISPLAY FUNCTIONALITY AND PRIVACY RES00003

This software displays the number of the calling party on the called party's telephone set. This feature also provides privacy to subscribers who choose not to have their number displayed on the terminating display set.

Benefits

RES00003 offers high-demand features in one Functional Group. Many subscribers are willing to pay to see who is calling before answering-and at the same time would like to maintain their privacy.

All features comply with Bellcore's Delivery/Blocking TRs.

Key Capabilities

RES00003 offers the following three capabilities:

- Calling Number Display
- Calling Number Delivery Blocking
- Dialable Number Delivery

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Functional Group to be operational.

MDC00001	Meridian Digital Centrex Minimum
MDC00003	Meridian Digital Centrex Standard
RES00006	Service Enablers

Availability and NTX Mapping

RES00003 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
RES00003	**Display Functionality and Privacy**			NTXA01AA	Calling Number Display
				NTXA41AA	Calling Number Delivery Blocking
				NTXE27AA	Dialable Number Delivery Blocking
				NTXP73AA	Calling Number Delivery Blocking Office-wide Activation

ANONYMOUS CALLER REJECTION RES00021

This software allows subscribers with or without Calling Number or Calling Name Delivery to reject calls that have calling name/number intentionally blocked.

Benefits

This Function is an incremental revenue source that offers privacy-sensitive subscribers additional flexibility in diverting unwanted calls.

Key Capabilities

RES00021 offers subscribers a deterrent to harassing or malicious calls by automatically rejecting incoming calls that have calling name/number intentionally blocked.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

RES00003 Display Functionality and Privacy

RES00006 Service Enablers

Availability and NTX Mapping

RES00021 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
RES00003	Display Functionality and Privacy	**RES00021**	**Anonymous Caller Rejection**	NTXP12AA	Anonymous Caller Rejection

CALLING NAME DELIVERY BLOCKING RES00022

This software offers privacy to subscribers who choose not to have their name displayed on the called party's display set.

Benefits

RES00022 offers service providers an incremental revenue source for a high-demand service: many callers want the ability to protect their privacy when making calls to Caller ID subscribers. Also, this software addresses the regulatory requirements of some local public utility commission mandates to offer this feature in a service area.

Key Capabilities

On a call-by-call basis, the subscriber can request that their name be blocked from appearing at the called party's display set, to maintain subscriber privacy and comply with regulatory requirements.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

RES00003 Display Functionality and Privacy

RES00006 Service Enablers

MDC00033 is the equivalent software for Meridian Digital Centrex lines.

Availability and NTX Mapping

RES00022 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
RES00003	Display Functionality and Privacy	**RES00022**	**Calling Name Delivery Blocking**	NTXQ29AA	Calling Name Delivery Blocking

CALL NAME DISPLAY
TRANSACTION CAPABILITIES APPLICATION PART RES00023

This Function allows a subscriber to view a caller's name on a CLASS terminal display before answering, giving the called party an opportunity to personalize a response.

Benefits

RES00023 is the Bellcore-compliant version of Calling Name Display. Many subscribers prefer name display over number display and are willing to pay for Calling Name Display on a monthly basis.

This software complies with Bellcore TR-1188, *Calling Name Delivery*, which provides a standard for consistent implementation across the network.

Key Capabilities

This TR-compliant software makes use of Transaction Capabilities Application Part (TCAP) signaling and a service control point (SCP) database to display the name of a calling party on a subscriber's display between the first and second ringing cycles.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

TEL00008	CCS7 Base
MDC00001	Meridian Digital Centrex Minimum
MDC00003	Meridian Digital Centrex Standard
RES00003	Display Functionality and Privacy
RES00006	Service Enablers
RES00022	Calling Name Delivery Blocking

Availability and NTX Mapping

RES00023 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
RES00003	Display Functionality and Privacy	**RES00023**	**Call Name Display TCAP**	NTXE52AA	Calling Name Delivery Switch-Based
				NTXR95AA	Name Display TCAP

VISUAL SCREENING LIST EDITING AND CALL LOGGING RES00024

RES00024 contains two high-demand features:

- *Visual Screening List Editing* (VSLE) provides a user interface to the CLASS feature set associated with SLE (Screening List Editing). Now subscribers can easily list and edit information using a telephone display.
- *Call Logging* provides a switch-based Incoming Callers List (ICL) of special value to home offices and small businesses.

Benefits

These value-added features provide incremental revenue potential for the service provider. This software introduces the previously unavailable Call Logging capability.

Key Capabilities

RES00024 enhances the network provider's display service offerings by providing:

- *Visual Screening List Editing* provides a visual interface for subscribers to create lists of directory numbers from which calls will be accepted, rejected, forwarded, or identified by a distinctive ring or call waiting tone.
- Switch-based *Call Logging* keeps a list of a subscriber's unanswered, busy, and forwarded calls. By highlighting an entry and pressing the Dial softkey, the subscriber can call someone directly from the Call Log list.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001	Meridian Digital Centrex Minimum
MDC00003	Meridian Digital Centrex Standard
RES00006	Service Enablers
RES00003	Display Functionality and Privacy
RES00005	Non-Display Services
RES00032	Selective Call Forwarding
RES00033	Selective Call Rejection
RES00034	Distinctive Ringing / Call Waiting
RES00035	Selective Call Acceptance

Availability and NTX Mapping

RES00024 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
RES00003	Display Functionality and Privacy	**RES00024**	**VSLE & Call Logging**	NTXP95AA NTXP96AA	VSLE Editing Call Logging

SPONTANEOUS CALL WAITING DISPLAY RES00025

This software displays the name/number associated with a call-waiting call immediately when the call arrives at the subscriber's line. This helps the subscriber decide whether to continue the call in progress or to answer the incoming call.

Benefits

This feature is tariffable by service providers, or can be packaged free with the intention of gaining incremental revenue from RES00026 "Call Waiting Display with Disposition."

Key Capabilities

This capability identifies who is on an incoming call-waiting call for the subscriber . Subscribers can make informed decisions and be selective about the call waiting calls they choose to answer.

Customer premises equipment with display capability is required to receive and display the incoming information.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

RES00003 Display Functionality and Privacy

RES00006 Service Enablers

This display-based feature significantly enhances the basic call-waiting functionality offered in the DMS SuperNode Platform.

Availability and NTX Mapping

RES00025 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX software that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	ACTID	NTX Package/ ACTID Name
RES00003	Display Functionality and Privacy	**RES00025**	**Spontaneous Call Waiting Display**	NTXN97AA	AF2830 AG2073	Call Waiting Display
				NTXT12AA	AN0616 AN0631	Call Waiting Display TR Compliancy

CALL WAITING DISPLAY WITH DISPOSITION RES00026

RES00025 (see previous page) makes it possible for subscribers to see who is on a call-waiting call. RES00026 enhances this capability by adding softkey options that allow subscribers to handle a waiting call in different ways, including redirecting the call.

Benefits

RES00026 offers incremental revenue potential for service providers with sophisticated tariffed features of special interest to home office and small business subscribers.

Key Capabilities

This Function provides additional Call Waiting capabilities and information about a waiting call, depending on the CLASS display services assigned to the SCWID (Spontaneous Call Waiting Display) line. Additional functionality, accessed via softkeys, includes the ability to:

- Forward a call.
- Place a call on hold.
- Send a call to presubscribed central office treatment.
- Answer a call while placing an existing call on hold or dropping an existing call.

Northern Telecom is one of the first vendors to offer these enhanced call waiting display capabilities.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001	Meridian Digital Centrex Minimum
MDC00003	Meridian Digital Centrex Standard
RES00006	Service Enablers
RES00003	Display Functionality and Privacy
RES00022	Calling Name Delivery Blocking
RES00023	Call Name Display TCAP
RES00025	Spontaneous Call Waiting Display

Some of the CLASS features (such as call hold/call forward) enhance the operation of this ordering code.

Availability and NTX Mapping

RES00026 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
RES00003	Display Functionality and Privacy	**RES00026**	**Call Waiting Display with Disposition**	NTXQ91AA	Enhanced Call Waiting Display (DSCWID)

VISUAL MESSAGE WAITING RES00027

This software supports visual display options so subscribers can see when messages have been left for them.

Benefits

This tariffable feature offers incremental revenue potential.

Key Capabilities

Visual Message Waiting Indication offers four choices for the indication of a waiting message:

- Audible indication (intermittent dial tone).
- Visual indication only (indicator lamp and message display).
- Both an audible and a visual indication.
- No indication, for subscribers without visual display telephones who request no audible indication of a message and wish only to call the messaging services to retrieve messages.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001	Meridian Digital Centrex Minimum
MDC00003	Meridian Digital Centrex Standard
MDC00005	Multilocation Business Group Minimum
MDC00006	Multilocation Business Group Standard
RES00006	Service Enablers
RES00003	Display Functionality and Privacy
SS700001	CCS7 Trunk Signaling

Availability and NTX Mapping

RES00027 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
RES00003	Display Functionality and Privacy	**RES00027**	**Visual Message Waiting**	NTXJ39AA	Visual Message Waiting

INTERFACE FUNCTIONALITY RES00004

This Functional Group serves as the prerequisite software for a number of Functions that support special interfaces for specific capabilities. Also, this software supports special SMDI (Simplified Message Desk Interface) data link interfaces so voice mail systems can operate in a Residential Enhanced Services environment.

Benefits

This software is needed in a RES environment to support voice mail services.

Key Capabilities

Through the implementation of this package, transmission rates of higher than 1200 bits per second are possible over the SMDI data link.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Functional Group to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

RES00006 Service Enablers

Availability and NTX Mapping

RES00004 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
RES00004	**Interface Functionality**			NTX732AA	Simplified Message Desk Interface (SMDI)
				NTXN10AA	High-Speed SMDI

REMOTE CALL FORWARD ENHANCEMENTS RES00020

Many business subscribers rely on Remote Call Forward (RCF) lines to enable customers to reach them without incurring a long-distance charge. The customer dials what appears to be a local directory number and the call forwards to the business location in another calling area. Without RES00020, RCF calls to a voice mail system can route to a generic message only. With RES00020, calls can route to specific mailboxes within a remote voice mail system, significantly enhancing the value of voice-messaging applications.

Benefits

RES00020 adds additional flexibility to the existing RCF capability to make the service more attractive to business subscribers that who use voice mail to announce promotions and to allow callers to leave an address or phone number to receive follow-up information. This software enhancement makes it possible for the business to customize different mailboxes within the same voice mail system for different promotions, language, or originating areas.

Key Capabilities

This software ensures that a call includes calling line identification (CLID) signaling when RCF routes the call over:

- *CCS7 ANSI ISDN User Part (ISUP) trunk*-carries the CLID signaling as the forwarded call passes from one switch to another.
- *Simplified Message Desk Interface (SMDI) line group*-uses the CLID signaling to deliver the call to its proper destination within a voice mail system.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

RES00006 Service Enablers

RES00004 Interface Functionality

Availability and NTX Mapping

RES00020 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the activity ID that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	ACTID	ACTID Name
RES00004	Interface Functionality	**RES00020**	**Remote Call Forward Enhancements**	AQ1245	Remote Call Forward Enhancements

BULK CALLING LINE ID RES00028

This software allows service providers to deliver key information about incoming calls to the premises of individuals (or groups of subscribers) for immediate use, or for storage and later retrieval.

Benefits

This tariffable feature offers incremental revenue potential to service providers. The target market for this service is a business that has scattered offices and needs to have local access to call data from all the offices.

Key Capabilities

RES00028 enhances the delivery information about incoming calls for all lines in a Bulk Calling Line ID group (BCLID), including:

- The date and time the call was received.
- The calling and called directory numbers.
- The busy/idle status of the called line.
- The calling line type.

The information is sent to the customer's printer, computer, or other computer premises equipment on a BCLID data link that uses Class Modem Resource (CMR) technology. In Canada only, this functionality extends to include the dialed 800 number as part of the CLID messages transmitted for a call.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

RES00006 Service Enablers

RES00004 Interface Functionality

Availability and NTX Mapping

RES00028 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
RES00004	Interface Functionality	**RES00028**	**Bulk Calling Line ID**	NTXF55AA	Bulk Calling Line ID

SIMPLIFIED MESSAGE DESK INTERFACE
CALLING LINE IDENTIFICATION DISPLAY SUPPRESSION RES00039

This software allows the network provider to override Simplified Message Desk Interface (SMDI) restrictions on Calling Line Identification Display (CLID) among members of a Uniform Call Distribution (UCD) group.

With RES00039, the network provider can tailor message services to business clients regardless of serving area CLID regulatory requirements. The software also allows the blocking of group members' CLID for any calls made outside the group.

Benefits

RES00039 offers incremental revenue potential to service providers.

Key Capabilities

This Function overrides Simplified Message Desk Interface (SMDI) restrictions on CLID among members of a UCD group.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

RES00006 Service Enablers

RES00004 Interface Functionality

Availability and NTX Mapping

RES00039 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
RES00004	Interface Functionality	**RES00039**	**SMDI CLID Suppression**	NTXN07AA	SMDI CLID Suppression
				NTXN07AB	SMDI CLID Suppression

NON-DISPLAY SERVICES RES00005

This Functional Group provides the software foundation for a number of features that do not require displays, described on pages 174 through 181. Additionally, RES00005 offers two high-demand features: Automatic Callback and Automatic Recall.

Benefits

The call features in RES00005 can be tariffed, offering incremental revenue potential to the service provider. Revenues can be generated either on a monthly subscription or pay-per-use basis for most non-display services.

Key Capabilities

With **Automatic Callback**, the subscriber can automatically re-originate the last call made -without having to redial the DN-by entering an activation code, regardless of whether the call was answered, unanswered, or busy. Subscribers can use this service to contact parties they have been unable to reach or to continue an interrupted conversation.

With **Automatic Recall**, subscribers have the convenience of recalling the last incoming call without having to know the originating DN of the call. The network provider can offer this feature two ways:

- *1-Level Activation:* After entering an activation code, RES00005 automatically places the call. If the DN is busy, the subscriber is notified of this by an announcement. Automatic processing of the call continues until both lines are idle; at that time the calling party hears a special ring.
- *2-Level Activation:* After entering an activation code, the subscriber hears an announcement identifying the DN of the last incoming call. The subscriber then has the choice of continuing the recall or aborting the recall simply by going on-hook.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following ordering codes are required for this Functional Group to be operational.

MDC00001 Meridian Digital Centrex Minimum

RES00006 Service Enablers

Availability and NTX Mapping

RES00005 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
RES00005	**Non-Display Services**			NTXA00AA NTXA00AB NTXA00AC	Automatic Callback / Automatic Recall

AUTOMATIC RECALL ENHANCEMENTS RES00029

This software enhances the announcements a subscriber hears using the "2-Level Activation" version of the Automatic Recall feature (offered in RES00005; see previous page).

Benefits

Automatic Recall is a subscription service that offers incremental revenue potential to the service provider. The enhancements offered by RES00029 help make the feature easier and more appealing to subscribers.

Key Capabilities

This optional software enhances the "2-Level Activation" Automatic Recall feature in the following ways:

- Adds to the recall announcements a message, alerting the subscriber whenever a recall will result in toll charges. In the United States, calls within an area code but outside a LATA are toll calls, and are not easily identifiable from the dialing number alone.
- Enhances feature operation by repeating an announcement if the user happens to press the wrong key or wait too long to respond. Without RES00029, these conditions cause a reorder tone.
- Expands the maximum number of digits in the announcement that informs the subscriber of a calling party's number from seven to eleven digits. This dialable directory number (DDN) expands the recall capability from local to long-distance calls.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

RES00006 Service Enablers

RES00005 Non-Display Services

Availability and NTX Mapping

RES00029 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
RES00005	Non-Display Services	**RES00029**	**Automatic Recall Enhancements**	NTXP80AA	Automatic Recall Enhancements

CUSTOMER-ORIGINATED TRACE RES00030

This software allows a subscriber to activate an immediate trace of the last incoming call, without prior approval or intervention from the network provider.

Benefits

Customer-Originated Trace is perceived as a "public service," enhancing the network provider's image and customer loyalty. In addition, activation of this feature does not require manual intervention from the service provider, allowing providers to save on administrative costs. This feature is tariffed in many areas (it can be offered on a subscription or pay-per-use basis), and has been declared mandatory by a number of public utility commissions.

Key Capabilities

Customer-Originated Trace allows subscribers who have been receiving harassing or prank calls to activate an immediate trace of the last incoming call, without requiring prior approval and costly manual intervention by network provider personnel.

After a harassing or prank call terminates, a subscriber goes off-hook and dials the Customer-Originated Trace activation code. Upon completion of the search, the subscriber receives an announcement confirming that the trace was successful and should now contact the network provider's business office for further assistance (the subscriber does not have access to the trace; it is kept as a DMS log at the central office).

Since Customer-Originated Trace is activated on a per-call basis, the service is deactivated when the subscriber goes back on-hook.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

RES00006 Service Enablers

RES00005 Non-Display Services

Availability and NTX Mapping

RES00030 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
RES00005	Non-Display Services	**RES00030**	**Customer Originated Trace**	NTXA02AA	Customer Originated Trace

CUSTOMER-ORIGINATED TRACE ENHANCED RES00031

This software allows the subscriber to select the language for the recorded announcements delivered by Customer-Originated Trace.

Benefits

RES00031 widens the market base that can potentially subscribe to Customer-Originated Trace (RES00030) to include non-English groups.

Key Capabilities

This Function offers flexibility in choosing the language that is associated with the announcement that plays during a customer trace. Available options are English, French, or bilingual.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

RES00006 Service Enablers

RES00005 Non-Display Services

RES00030 Customer Trace

Availability and NTX Mapping

RES00031 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
RES00005	Non-Display Services	**RES00031**	**Customer Originated Trace Enhanced**	NTXN35AA	Customer Originated Trace Enhanced

SELECTIVE CALL FORWARDING RES00032

This software ensures that selected calls reach subscribers when they are away from home or office.

Benefits

This tariffed feature offers incremental revenue potential to the service provider.

Key Capabilities

RES00032 offers flexibility to subscribers who are on the move, but would still like selected incoming calls to reach them. The subscriber dials a service-specific access code and follows instructions given by recorded voice prompts to press keys on the keypad to:

- Activate or deactivate this call forward feature.
- Select (or modify) up to 31 DNs that will forward to another location.
- Specify the destination for the forwarded calls.

Call from DNs that are not on the 31-DN list can still be picked up at the primary DN, or receive whatever treatment the subscriber has arranged, such as answering machines or voice mail.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001	Meridian Digital Centrex Minimum
MDC00003	Meridian Digital Centrex Standard
RES00006	Service Enablers
RES00005	Non-Display Services

Coupling this capability with voice mail provides a powerful marketable combination.

Availability and NTX Mapping

RES00032 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
RES00005	Non-Display Services	**RES00032**	**Selective Call Forwarding**	NTXA95AA	Selective Call Forwarding

SELECTIVE CALL REJECTION RES00033

This software enables a subscriber to program a list of up to 31 DNs from which calls are to be rejected or blocked. Incoming calls that are on the list are routed to an announcement informing the caller that the called party does not wish to receive the call.

Benefits

This tariffed feature offers incremental revenue potential to the service provider.

Key Capabilities

The subscriber dials a service-specific access code and follows instructions given by recorded voice prompts to press keys on the keypad to:

- Activate or deactivate this feature.
- Select (or modify) up to 31 DNs that will not be accepted at the subscriber's line.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

RES00006 Service Enablers

RES00005 Non-Display Services

Selective Call Rejection can be used in conjunction with Customer-Originated Trace. After activating Customer-Originated Trace, the subscriber can program Selected Call Rejection to block calls from the last incoming (and unwanted) number.

Availability and NTX Mapping

RES00033 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
RES00005	Non-Display Services	**RES00033**	**Selective Call Rejection**	NTXA96AA	Selective Call Rejection

DISTINCTIVE RINGING / CALL WAITING RES00034

This software allows subscribers to be alerted with distinctive ringing (if on-hook) or call waiting tones (if off-hook) at the arrival of incoming calls from a list of DNs they have specified.

Benefits

This tariffable feature offers incremental revenue potential to the service provider.

Key Capabilities

The subscriber dials a service-specific access code and follows instructions given by recorded voice prompts to press keys on the keypad to:

- Activate or deactivate this feature.
- Select (or modify) up to 31 DNs whose calls will produce distinctive ringing and call waiting tones.

Calls from all other DNs produce standard ringing and call waiting tones.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001	Meridian Digital Centrex Minimum
MDC00003	Meridian Digital Centrex Standard
RES00006	Service Enablers
RES00005	Non-Display Services

Availability and NTX Mapping

RES00001 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
RES00005	Non-Display Services	**RES00034**	**Distinctive Ringing / Call Waiting**	NTXA42AA	Distinctive Ringing / Call Waiting

SELECTIVE CALL ACCEPTANCE RES00035

This software screens incoming calls against a list of subscriber-specified DNs and accepts any calls from those DNs. Calls from any other DN route to an announcement that the subscriber does not wish to receive a call.

Benefits

This tariffable feature offers incremental revenue potential to the service provider. This is especially convenient, for example, to subscribers who do not wish to be interrupted by unwanted calls-such as sales calls during dinner-but want to ensure that important calls -such as calls from relatives-get through.

Key Capabilities

The subscriber dials a service-specific access code and follows instructions given by recorded voice prompts to press keys on the keypad to:

- Activate or deactivate this feature.
- Select (or modify) up to 31 DNs that will be accepted over the subscriber line.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001	Meridian Digital Centrex Minimum
MDC00003	Meridian Digital Centrex Standard
RES00006	Service Enablers
RES00005	Non-Display Services

Availability and NTX Mapping

RES00035 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
RES00005	Non-Display Services	**RES00035**	**Selective Call Acceptance**	NTXA45AA	Selective Call Acceptance

AUTO-RECALL BLOCKING TO PRIVATE NUMBERS RES00036

This software ensures that subscribers with private directory numbers will not have their numbers revealed as part of an Automatic Recall attempt.

Benefits

This tariffable feature, of special interest to security-sensitive subscribers, offers incremental revenue potential to the service provider. Some areas have been mandated to offer Automatic Recall private line blocking to local and long-distance destinations. RES00036 offers network providers maximum flexibility for meeting whatever regulatory mandates affect them, now or in the future.

Key Capabilities

This function addresses regulatory mandates to protect the privacy of subscribers who have specifically identified their telephones as being private. Automatic Recall attempts by other subscribers will not include revealing the private directory number.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

TEL00008	CCS7 Base
SS700001	CCS7 Trunk Signaling
MDC00001	Meridian Digital Centrex Minimum
MDC00003	Meridian Digital Centrex Standard
MDC00004	CLASS on Meridian Digital Centrex (for MDC lines)
MDC00007	Meridian Business Set Minimum (for Meridian Business Set lines)
RES00006	Service Enablers
RES00003	Display Functionality and Privacy
RES00004	Interface Functionality
RES00005	Non-Display Services

Availability and NTX Mapping

RES00036 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the activity ID that comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	ACTID	ACTID Name
RES00005	Non-Display Services	**RES00036**	**Auto-Recall Blocking to Private Numbers**	AQ1244	Auto-Recall Blocking

SIGNALING, ROUTING, AND OPERATIONS, ADMINISTRATION, AND MAINTENANCE RES00007

This Functional Group provides the operations and administrative capabilities required for network providers to maintain CLASS feature operation through the "permissive dialing period" for those subscribers who are to be reassigned from an existing to a new Numbering Plan Area (NPA) or "area code."

Benefits

RES00007 maintains the functionality of CLASS services for those subscribers affected by an NPA split during a permissive dialing period when two different numbers can be called to reach the same subscriber line. This software offers the following benefits:

- Prevents the loss of revenue by continuing the support of CLASS services, such as Automatic Callback and Automatic Recall, through the permissive dialing period.
- Enables cost-effective administration of affected subscriber lines.

Key Capabilities

- Permits Automatic Recall and Automatic Callback features to continue to operate during the permissive dialing period.
- Supports screening list services (such as Distinctive Ringing, Selective Call Forwarding, and Selective Call Rejection) during the permissive dialing period.
- Updates screening list editing capabilities to include permissive dialing requirements.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), no other ordering code is required for this Functional Group to be operational. Of course, CLASS software (such as RES00003 Display Functionality and Privacy) must already be in operation for those features to continue working through the permissive dialing period.

Availability and NTX Mapping

RES00007 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
RES00007	**Signaling, Routing, and OAM**			NTXR59AA	CLASS NPA Split

CALL MANAGEMENT SERVICES (CMS) CLASS CMS00001

This feature, available in the Canadian market only, enhances the signaling capabilities of analog stored program controller (SPC) switches to integrate some CCS7-based network features such as Calling Number Display, Automatic Call Setup, and Screening List Editing features. This is achieved by adding a central office data processor (CODP)-an outboard adjunct processor-which provides CCS7 network interface capabilities to the analog SPC.

Northern Telecom was the first in the industry to make it possible for offices with analog SPCs to offer these CLASS-type services.

Benefits

This ordering code, together with the adjunct processor (CODP), enables the network provider to grow incremental revenues by offering a subset of Call Management Services without replacing the analog SPC switch with a digital switch. The enhancement enables an existing switch, such as an SP-1/2W or 1ESS, to transmit calling line information to the CCS7 network.

The adjunct processor complies with Bellcore specifications in TR-317, *CCS7 ISUP*.

Key Capabilities

- Expands CMS (CLASS) feature coverage by allowing Calling Line Identification Display data processing capabilities from analog SPC switches.
- Minimizes the service provider's initial capital investment by deferring analog SPC switch replacements.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the only other ordering code that is required for this Functional Group to be operational is TEL00008 "CCS7 Base."

Availability and NTX Mapping

CMS00001 is currently available in the Canadian market with NA002 in PCL CDN00002; and with NA003 in PCLs CDN00003 and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
CMS00001	**Call Management Services CLASS**			NTXE21AA	NAC Interface

ABOUT VOICE-ACTIVATED SERVICES

Voice-Activated Services use the human voice speaking everyday phrases-instead of pushing buttons in hard-to-remember sequences-to unleash powerful time-saving consumer and business services.

The expanding portfolio of Northern Telecom's Voice-Activated Services places the industry's most powerful speech processing technology in the hands of service providers through a flexible voice processing platform, a number of ready-for-service applications, and a set of software tools and interfaces. These resources, along with third-party software packages, can be used to customize services to specific markets.

Serving as central network resources, Northern Telecom's multimedia processing platforms employ open, industry-standard processing and interfaces. By interacting with digital switches and gateway or resource control points, the platforms provide new standalone service opportunities-as well as enhancing traditional switch services such as Meridian Digital Centrex and residential and small business subscriber services.

The leading-edge services in the Voice-Activated Services portfolio develop independently of the NA development stream and are not associated with ordering codes. Contact your Northern Telecom representative for ordering information on the following.

- ***Message Delivery Service (MDS)-***allows 0+ toll callers to leave messages for the called party when the line is busy or there is no answer. Support for 0+ calls is available today. Support for 1+ toll calls is currently scheduled to be generally available in 4Q95.
- ***Assisted Service-***offers speech-controlled services that make features easier to use by providing Voice-Activated Dialing (VAD) and Voice-Activated Network Control (VANC)-services that allow users to activate key network features without having to remember access codes. Refer to the "Speech-Activated Intelligent Dialing" chapter starting on the next page for details on the ordering codes that provide Computing Module support to these services.
- ***Voice-Activated Premier Dialing (VAPD)-***enables callers to access businesses by speaking the business name, instead of having to look up and dial a number. General availability is currently scheduled for 4Q95.
- ***Auto Attendant-***allows corporations to provide efficient, user-friendly access to incoming callers. Like VAPD, above, this service employs interactive announcements and advanced speech recognition technology to automatically transfer a caller to a particular department or employee. General availability is currently scheduled for 4Q95.

Speech-Activated Intelligent Dialing

Network providers can offer voice-activated dialing *today*, without waiting for full implementation of Advanced Intelligent Networking. Northern Telecom currently offers a service that makes it possible to access voice-activated dialing (VAD) through the DMS switch. Speech-Activated Intelligent Dialing (SAID) provides a call-processing interface between the caller and a voice-activated dialing platform called an Intelligent Peripheral (IP). The IP controls the VAD functions and manages a database of personal voice directories.

With SAID, the user has several options for accessing services on the IP. In one option, a subscriber picks up a local phone and connects immediately to an internal DMS receiver and the external IP. The party may either speak or dial. If the person speaks, the IP translates the spoken request into a digit string and passes those digits to the DMS system to route the call and provide billing. This software works with switch hardware commonly found in the DMS system and accommodates rotary as well as DTMF phones. In fact, subscribers can now use rotary phones to perform functions requiring DTMF input, such as account inquiries to bank card centers.

SAID supports Intelligent Peripherals from different vendors. Northern Telecom's IP is the Network Applications Vehicle (NAV) platform, which offers "Assisted Service" software. With its Voice Activated Dialing (VAD) and Voice Activated Network Control (VANC), users can activate key network features without having to remember access codes.

SAID features provide a number of important benefits, including the following:

- *New revenue-generating opportunity* through monthly or usage-based charges for voice dialing-a high-demand service that promotes customer convenience and increases customer satisfaction. SAID Plus (SAID0002) increases subscriber interest with its ability to activate specific CLASS and other Residential Enhanced Service features with spoken requests.
- *Cost-effective operation* that requires no special equipment at the switch or customer premises, other than the IP. SAID is designed to work in DMS-100 offices as they are generally equipped today.
- *Deployment flexibility* permits this service to be deployed in a wide range of networks and markets. SAID offers several access methods and provides customized dialing directories.

ADDED ADVANTAGES OF SAID ENHANCED SIGNALING PROTOCOL

By using out-of-band signaling, SAID's Enhanced Signaling Protocol (ESP) can send additional information to the IP, including:

- *Call context* - the DMS system provides the IP information about the subscriber's features immediately as the user makes a SAID call.
- *User information* - the IP may request and receive subscriber information from the DMS system any time during a call.
- *Call Forward programming* - the subscriber may call forward without validation, saving time over the normal call processing interface to the feature.

SAID ESP is available in NA002 for residential subscribers and is planned to be available for business subscribers in NA004.

UNIVERSAL SAID FOR NON-SUBSCRIBERS

Universal SAID (USAID) makes access to voice dialing capabilities available to cellular users and potentially to any caller. USAID provides anyone access to SAID services through direct inward system access (DISA). There are no restrictions on the sets originating the calls and no requirement that the call be originated on the same DMS as the USAID directory number (DN).

USAID is ideal for cellular or wireless use. For a cellular call, the calling party can dial a DISA number or an access code (* SEND, for example) which routes the call through the network to the DMS system hosting the IP. At that point, the user has access to a personal directory for making voice calls.

A potential application of USAID can involve non-subscribers. In this usage, a business can have its own directory in an IP that has speech recognition and be assigned a DISA DN. The DISA DN could be published and used by anyone with a telephone. Unknown to the user, the DISA number accesses the DMS system and links the call to the IP, which can prompt the party for call destination. The user can respond with "accounts receivable" or "Miami"-and the call will be completed as requested. USAID AMA records provide reports needed to bill the business, if desired, or the caller.

SOFTWARE AND HARDWARE REQUIREMENTS

Switch - The SAID feature is based on existing DMS-100 call processing software, including basic RES and MDC software. SAID can be used with the universal tone receiver (UTR) or the digitone receiver (DTR).

Intelligent Peripheral - Voice-activated dialing devices are available from Northern Telecom as well as from third-party vendors.

Northern Telecom's SAID interface protocol may be available for use by vendors to develop VAD applications.

Northern Telecom's VAD offering is built on the modular Network Application Vehicle (NAV) platform. This platform provides an advanced network architecture for deploying a wide range of speech recognition and other telephony-based services. There are many advantages associated with delivering multiple services on a single platform. Along with reduced costs for the platform itself, service providers will also benefit from reduced sparing and training costs.

Northern Telecom's VAD service is a multi-lingual system based on speaker dependent technology that is compatible with both DTMF and rotary dial sets. It is one of two initial applications being developed as part of Northern Telecom's Assisted Service program. The other service is called Voice-Activated Network Control (VANC), offering the potential for significant increases in CLASS/CMS and Custom Calling Feature revenues by substantially simplifying subscriber access to these services on a pay-per-use basis. For a summary of other advanced services offered by the NAV platform, see page 184 in the "Residential Enhanced Services" chapter in this book.

SAID IN THE ADVANCED INTELLIGENT NETWORK

Voice-activated dialing support is planned for Advanced Intelligent Network (AIN) Release 0.2, now being defined. SAID in AIN will comply with specific sections of Bellcore's GR-1298 and will be delivered as part of Northern Telecom's planned AIN Service Enablers product. When SAID is offered as an AIN service, it will have significant enhancements. The network provider will have the option to upgrade to the SAID product supported in the AIN Service Enablers or remain with the current version of SAID.

SAID products based on the current technology support a defined interworking and per-line coassignment capability with Northern Telecom's AIN Essentials product based on AIN 0.1. This interworking/coassignment capability will continue for SAID in future Service Enabler products based on AIN 0.2.

SAID BASICS SAID0001

SAID is a pre-AIN call processing feature, involving the DMS-100 and an external Intelligent Peripheral (IP), that provides Voice-Activated Dialing (VAD) capabilities. SAID0001 provides basic software support in the Computing Module for basic VAD deployment. SAID0002 is required for voice activation of features.

Benefits

SAID provides VAD-*today*! Market studies indicate a 20% annualized growth rate of sales in advanced voice processing technologies. The quicker the features are made available, the sooner revenues are generated. This advanced service is deployable in all DMS-100F offices with minimal hardware and software costs, available to both dial pulse and DTMF customers. Northern Telecom was the first vendor to market a voice-activated product: SAID has been generally available since BCS35. To date, SAID has more subscribers than any other comparable product.

Key Capabilities

- Available now!
- Available to both residential and business customers on analog lines
- Available to both Dial Pulse and DTMF subscribers
- Deployable in all DMS-100 offices (with minor prerequisites)
- Supports interworking/interaction for the following selected switch based features:
  - Account/Auth. codes
  - Automatic callback
  - Call forwarding
  - Call hold
  - Call pickup
  - Call request activation
  - Call transfer
  - Call waiting
  - Executive busy override
  - Group intercom
  - Last number redial
  - Meet-me conferencing
  - Ring again
  - Speed calling
  - Three-way calling

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following ordering codes are required for this Functional Group to be operational.

MDC00001 Meridian Digital Centrex Minimum

RES00006 Service Enablers

The above software is for the switch's Computing Module. The Intelligent Peripheral for SAID has its own hardware and software requirements. SAID0001 provides basic VAD capabilities; all the other SAID ordering codes can enhance this Functional Group.

Availability and NTX Mapping

SAID0001, introduced in BCS35, is available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following lists its previous NTX software.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	ACTID	NTX Package / ACTID Name
SAID0001	**SAID Essentials**			NTXR25AA	NC0418 NC0497	SAID Basics

SAID PLUS SAID0002

SAID Plus provides voice activation of features, Automatic Message Accounting (AMA) enhancements, and additional line and trunk support.

Benefits

SAID Plus enhances the functionality of other SAID ordering codes, increases the user base, and provides greater flexibility in billing. SAID0002 makes voice-activated services more attractive to subscribers by providing voice control of features which previously had to be dialed. This allows verbal instructions for more than one digit stream, for example, *"Forward my calls to Mary."* SAID Plus reduces costs by simplifying AMA processing and increases ways to bill SAID services. Also, SAID Plus expands peripheral and remote support to include Remote Cluster Controller, Subscriber Carrier Module-100 Access, and ISDN Digital Trunk Controller, to offer a larger base of potential SAID subscribers.

Key Capabilities

- Supports enhanced voice control of the following features:
  - Authorization / account code dialing
  - Call forward programming
  - Call park
  - Call request delete specific
  - Calling name and number blocking
  - Cancel call waiting
  - Directed call park store
  - Directed call pickup
  - Directed call pickup barge in
  - Loudspeaker paging answerback
  - Speed call programming
- Line and trunk expansion to include Remote Cluster Controller, Subscriber Carrier Module-100 Access, and ISDN Digital Trunk Controller.
- AMA enhancements for simplified downstream processing of records and increased flexibility in generating billing records.

No other vendor offers a comparable product for the service provider.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

RES00006 Service Enablers

SAID0001 SAID Basic

Availability and NTX Mapping

SAID0002 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX software that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	ACTID	NTX Package / ACTID Name
SAID0001	SAID Essentials	**SAID0002**	**SAID Plus**	NTXR25AB	AN0434 AN0849 AN0435	Stringing of digits Line/trunk exp AMA enhncmnt

SAID ENHANCED SIGNALING PROTOCOL SAID0003

By using out-of-band signaling, SAID Enhanced Signaling Protocol (ESP) improves performance, supplements subscriber information to the IP, provides call forwarding without subscriber validation, and synchronizes database information between the DMS switch and the IP.

Benefits

SAID ESP provides quicker access to the IP, making call forwarding more user-friendly and enabling new IP-based services.

The improvement in the Call Forwarding feature in SAID ESP can draw additional subscribers. SAID ESP communicates more data at a higher speed, making the IP more powerful and flexible-and enabling additional service creation on the IP. SAID0003 can also reduce service provider costs by automatically synchronizing DMS and IP subscriber information.

Key Capabilities

This software supports out-of-band signaling for the following.

- *Call context*-provides the IP with information about the subscriber's features immediately as the party is making a call.
- *Call forwarding*-the IP can modify call forwarding status and destination by bypassing the normal call processing interface.
- *Query*-the IP may request and receive subscriber information from the DMS system.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

RES00006 Service Enablers

SAID0001 SAID Basic

SAID ESP is available in NA002 for residential subscribers and is planned to be available to business subscribers in NA004.

Availability and NTX Mapping

SAID0003 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous activity ID that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	ACTID	ACTID Name
SAID0001	SAID Essentials	**SAID0003**	**SAID Enhanced Signaling Protocol**	AN0831	X.25 Signaling

UNIVERSAL SAID SAID0004

Universal Speech Activated Intelligent Dialing (USAID) makes access to SAID services available to cellular callers and potentially to any subscriber through direct inward system access (DISA).

Benefits

Both cellular and business customers will be interested in the features offered with Universal SAID.

- For cellular or wireless subscribers, USAID provides convenient access to Voice-Activated Dialing. The increased ease in dialing and simplicity of use are especially attractive to these potential users.
- For business users, USAID enables improved customer service and greater accessibility by customers. A voice-activated directory for incoming calls can route calls not only to a specific department, but also to a different location of that business (the features provided and the human-machine interface will be defined by the IP).

Key Capabilities

SAID0004 includes the following universal access features.

- Line/trunk access via DISA:
  - Local or remote originators.
  - Cellular or wireless origination accepted.
- Flexible billing: bill to caller DN or to destination DN.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

RES00006 Service Enablers

SAID0001 SAID Basic

Availability and NTX Mapping

SAID0004 is scheduled to be generally available with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous activity ID that now comprises this ordering code.

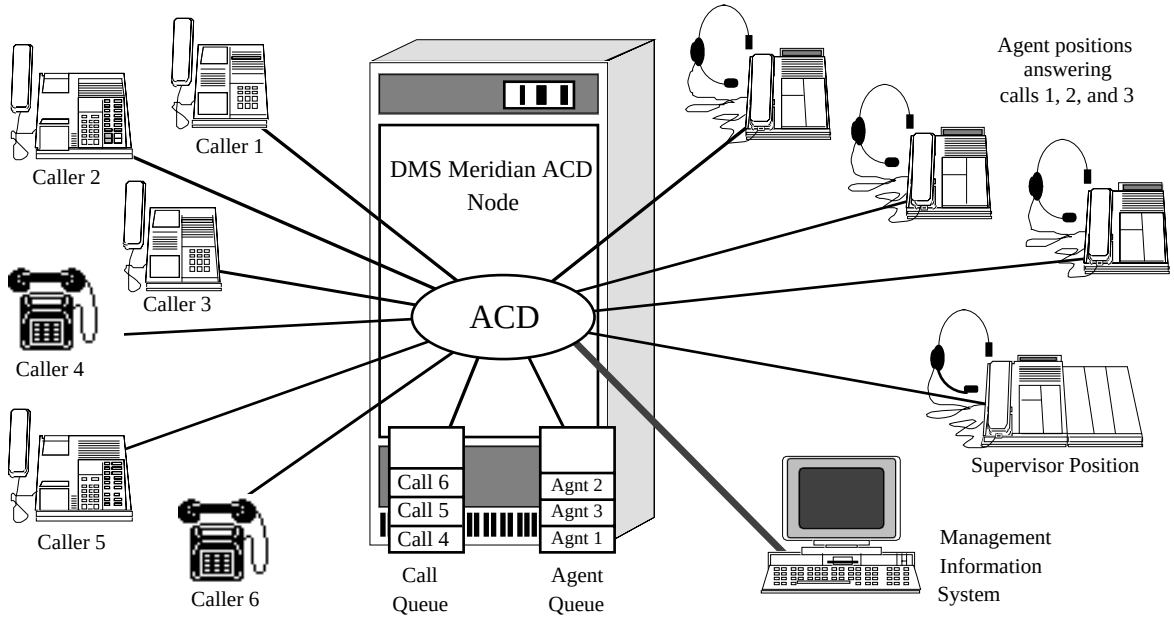
Functional Group	Functional Group Name	Function	Function Name	ACTID	ACTID Name
SAID0001	SAID Essentials	**SAID0004**	**Universal SAID**	AN1034	SAID Universal

Meridian Automatic Call Distribution

DMS Meridian Automatic Call Distribution (ACD) is a sophisticated system for complete telemanagement-flexible enough to answer the needs of the smallest customer group and robust enough to handle the complexities of the largest ACD operation. By effectively eliminating the busy signal, DMS Meridian ACD has become a highly effective business tool for mail order companies, service centers, telemarketing firms, and other enterprises that rely on the telephone for their revenues and services.

DMS Meridian ACD eliminates the need for costly hardware and software to reside on the customer's premises-instead, it offers a range of services supplied by the service provider. Just as businesses enjoy Centrex features like call forward and conference calling, they can now use ACD services without the disadvantages associated with standalone systems.

An ACD system handles a large volume of incoming calls efficiently by distributing them equally among a designated group of answering positions. With DMS Meridian ACD, up to 17 directory numbers (DNs) can be assigned to a group of answering positions rather than to single lines. The DMS Meridian ACD node then queues the positions and presents the first incoming call to the agent who has been idle longest. If all agents are busy, calls are queued and answered in the order of their arrival (see figure below).



DMS Meridian Automatic Call Distribution (ACD)

Along with its sophisticated feature set and Management Information System (MIS) offering that generates both realtime and historical reports on agent and group performance, DMS Meridian ACD's capacity-up to 4,000 agents and 256 ACD groups-gives service providers the tool to compete head-to-head with PBX and standalone systems. In addition, small and medium-sized businesses that traditionally have been unable to afford ACD services can now enjoy its benefits.

PLATFORM OPTION 1: CENTREX-BASED ACD

The flexible call processing and networking capabilities of Centrex-based DMS Meridian ACD offer significant advantages to both service providers and subscribers.

Network providers gain:

Sophisticated Call Center Services When subscribers' needs include ACD, service providers can respond with a public-network offering that is competitive with CPE-based ACD vehicles.

New Revenues from Existing Central Office Resources For a DMS-100 office, a single, relatively low investment in ACD can serve a wide range of customers. And for non-DMS-100 offices, DMS Meridian ACD can be offered from the DMS Meridian ACD Server, allowing the network provider to offer the same premium ACD service throughout its serving area.

Benefits to subscribers are equally impressive:

Full Integration with MDC Features ACD capabilities are fully integrated with other popular Meridian Digital Centrex features, such as Ring Again and Calling Name Display.

Reduced Capital Investments Subscribers enjoy the advantages of sophisticated ACD service without a large capital expense for a stand-alone system or other private equipment.

- Small businesses can now afford ACD capabilities that were previously prohibitively expensive.
- Large customers can have ACD service that can be continually tailored to meet their changing needs. For example, a second large capital investment is not required if the growth of a division was underestimated.

Customer Control While the service provider is responsible for ACD system installation, maintenance, and upgrades, the subscriber-through flexible Call Center (CC) MIS tools-retains all the management information and control associated with standalone systems.

CC MIS also enables call center managers to optimize available resources by changing load management parameters. For example, they can reconfigure inbound agent positions to outbound telemarketing stations. Idle agents can be redeployed quickly based on the amount of traffic in the network.

Enhancement Without Continual Expenses Subscribers are assured that their ACD systems will remain up-to-date without continual expenditures on system operation, administration, maintenance, and expansion.

Access to the Power of the Public Network Meridian ACD network options can manage ACD groups at widely dispersed sites as if they were at a single location. Public networking saves the customer from purchasing, installing, and maintaining ACD nodes at each call-center location, and avoids the high cost of private trunks to carry the phone traffic between locations.

Unparalleled Reliability of Central Office-Based Services To achieve central office reliability in a standalone system, a customer incurs costs for fully redundant processors and battery backup that require constant monitoring. With DMS Meridian ACD, a subscriber avoids costs for both hardware expenditures and additional personnel time.

Improved Customer Service Through Integrated Voice and Data Capabilities Subscribers have the option of evolving to ISDN, which allows agents to send and receive data transmissions while simultaneously answering calls over a single Basic Rate Interface (BRI) loop.

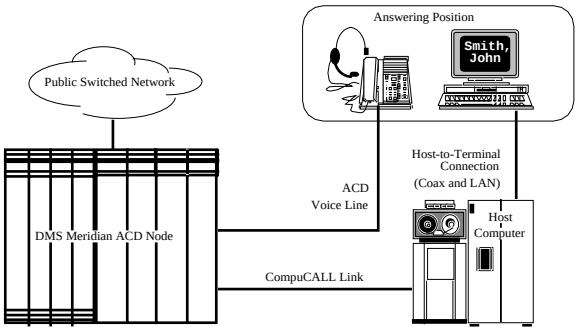
PLATFORM OPTION 2: STANDALONE SERVER

DMS Meridian ACD service can also be provided from wire centers equipped with other manufacturers' switches through a collocated Meridian ACD Server. The Meridian ACD Server is a self-contained, standalone automatic call distribution system that can be connected to virtually any central-office switch over standard trunking facilities.

The Meridian ACD Server is not currently available in Canada.

COMPUCALL: VOICE AND DATA WORKING TOGETHER

Meridian ACD CompuCALL enables a DMS system or Meridian ACD Server to communicate with a call center's business computer so a call center can coordinate information in its data banks with incoming and outgoing telephone calls. For example, an employee can receive a customer telephone call and simultaneously receive the customer's file for viewing on a desktop workstation.



Coordinated Voice/Data Delivery with Meridian ACD CompuCALL Options

AT A GLANCE

This chapter's ordering code descriptions appear in the following sequence.

Ordering Code Name	Code	Page
Meridian Automatic Call Distribution Base	ACD00001	194
ACD Management Information System	ACD00005	195
ACD Enhanced	ACD00006	196
CompuCALL Base	ACD00002	198
CompuCALL for Automatic Call Distribution	ACD00007	200
Centrex Coordinated Voice and Data	ACD00008	202
ACD Networking	ACD00004	203
Network ACD on CCS7	ACD00009	204
Network ACD on PRI	ACD00010	204

MERIDIAN AUTOMATIC CALL DISTRIBUTION BASE ACD00001

This Functional Group provides the basic operation, call distribution, and call-queuing software required for Meridian Business Sets and 2500 sets to serve as ACD answering positions. This package also supports basic supervisory functions.

Benefits

- *Improves customer satisfaction* by efficiently handling large volumes of incoming calls to increase call-handling capacity. Call center businesses can operate more profitably and efficiently.
- *Permits tailoring of the service* to the particular needs of an organization. Examples of customizable features include:
  - Overflow routing details (including overflow to a different ACD group, and then to a directory number, if unanswered).
  - Enhanced announcement options (including play of an original ACD group's announcements to calls overflowing to a second ACD group).
- *Lowers operating costs and enhances productivity* by offering many sophisticated agent features such as allowing the agent to enter the Not Ready state automatically by pressing a secondary DN key, allowing agents to park calls (with timed recall), and more.
- *Lowers operating costs and reduces maintenance time* by eliminating the private trunks previously required to carry the customer's phone traffic. This Functional Group also offers maintenance enhancements to shorten the time to conduct administration and troubleshooting.

Key Capabilities

- Provides call queuing and routing capabilities for effective call center operations.
- Enables supervisory capabilities required to enable managers to:
  - Supervise their ACD groups effectively.
  - Perform basic load management tasks.
- Supports ACD answering positions on the Meridian Business Set and 2500 sets.
- Offers unique night service treatments for each ACD group.
- Allows agents to maintain their logged-in status and to continue receiving calls after switch events.
- Provides a visual indication of an ACD group's queue status via a lamp on the agent or supervisor Meridian Business Set.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes required for this Functional Group to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

MDC00007 Meridian Business Set Minimum

Availability and NTX Mapping

ACD00001 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003.

The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
ACD00001	**ACD Base**			NTX407AB	ACD CP Control
				NTX415AA	ACD Basic
				NTX416AJ	ACD Enhanced
				NTX727AD	ACD Load Mgmnt.
				NTXE09AB	ACD on 2500 sets

ACD MANAGEMENT INFORMATION SYSTEM ACD00005

This Function enables a management information system (MIS) data stream from the DMS ACD system to the customer-premises MIS processor.

Benefits

This optional software offers a number of benefits, including:

- Provides a full-service offering to ACD users, enhancing the call-handling capabilities of ACD00001.
- Allows the service provider to offer their customers greater flexibility and control of their own ACD environment, without having to involve central office personnel.
- More accurate and more detailed reports are possible by:
  - Tracking of Line-of-Business and walkaway code activities.
  - Reporting on agent call processing feature usage, including call hold, call transfer, call supervisor, and forceout.

Key Capabilities

This optional software provides the following capabilities.

- Enables a DMS-100 central office connection, via an X.25 link, to a customer-premises MIS processor.
- Provides customers, through the Management Information System, the ability to conveniently reconfigure parameters in their Centrex ACD configuration, such as queue size, recorded announcements, and agent assignments.

ACD00005, continued

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

MDC00007 Meridian Business Set Minimum

ACD00001 Meridian Automatic Call Distribution Base

Availability and NTX Mapping

ACD00005 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
ACD00001	ACD Base	**ACD00005**	**ACD Management Information Systems**	NTX991AF	ACD Management Reports Two-Way Data Stream
				NTXA52AB	ACD Remote Load Management

ACD ENHANCED ACD00006

This Function provides additional supervisor functions and configuration flexibility to enhance the base offering, including monitoring of the level of service provided to an incoming caller. Also, this software allows the service provider to predefine ACD set layouts.

Benefits

- Lowers the implementation costs of providing ACD service to end users by simplifying the following service order and datafill procedures:
  - Significantly reduces the time to add agents and supervisor sets, and to establish new ACD groups, by permitting the network provider to pre-define a template layout of ACD feature keys for Meridian Business Sets.
  - Offers new flexibility and operating costs savings in the assignment of Personal Identification Numbers (PINs). This software provides each group with its own PIN partition-to permit duplicate PINs to exist across different groups-reducing administrative number management tasks and offering maximum flexibility for PIN assignments.

- Allows the network provider to offer business managers an enhanced tool to evaluate their call center service. A flexible call observing feature permits the supervisor with a Meridian Business Set to monitor service on a per-call rather than per-agent basis, offering a clearer view to evaluate the service level of the whole call center, as opposed to just assessing the performance of particular agents.

Key Capabilities

- Permits the creation of MBS feature key templates, so the network provider can add a new agent or supervisor set using a single service order command.
- Allows the assignment of duplicate PINs across multiple customer groups. Each group is assigned a partition, and is able to select PINs from the entire range from 0001 to 9999.
- Permits supervisors to automatically observe selected call types, to assess the service level provided by the call center. Observation can be made on a per-ACD-DN, ACD-group, or specific-ACD-supervisory-subgroup basis.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

MDC00007 Meridian Business Set Minimum

ACD00001 Meridian Automatic Call Distribution Base

Availability and NTX Mapping

ACD00006 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
ACD00001	ACD Base	**ACD00006**	**ACD Enhanced**	NTX419AA	ACD PIN Configuration and Control
				NTX420AA	ACD Nodal Service Observing
				NTXP53AA	ACD Access Feature Grouping

COMPUCALL BASE ACD00002

CompuCALL gives service providers the ability to offer their business customers a way to quickly retrieve data information pertinent to telephone calls. CompuCALL is an interactive link between a DMS-100 switch-or Meridian ACD Server-and a business computer. This link makes it possible for the business to coordinate information resident in their business computers with incoming and outgoing telephone calls. For example, a company representative can receive a customer telephone call and simultaneously receive the customer's file for viewing on a desktop workstation.

The ACD00002 Functional Group provides foundation support for the two following Functions:

- ACD00007-for use in the ACD environment
- ACD00008-for use in the Meridian Digital Centrex environment

Benefits

CompuCALL can increase productivity in a variety of telemarketing applications, including catalog sales, airline reservations, and customer service. With the provisioning of either ACD00007 or ACD00008, the CompuCALL service offers the following benefits.

- Significantly reduces an ACD agent's call-handling time, since the agent no longer has to ask the caller's name or for the originating telephone number, key it in, and wait for delivery of the relevant information on the agent's data terminal.
- Offers callers better service since CompuCALL saves time and virtually eliminates the chances of the business computer receiving incorrect call-related information because of agent typing errors.
- Provides new standards for measuring agent productivity by offering ACD agents a broader range of tools to service callers.

Key Capabilities

ACD00002 provides foundational support for Functions ACD00007 and ACD00008 by providing the following baseline capabilities.

- Interface to the X.25 transport for the SCAI (Switch-to-Computer Application Interface) link.
- Application login/logoff procedure.
- SCAI operational measurements and logs for engineering and maintenance information.
- Directory number association.
- Flow control and link reliability, with support for multiple application sessions over a single CompuCALL link.

CompuCALL is Northern Telecom's central-office implementation of the SCAI protocol standards, as defined by American National Standards Institute's (ANSI's) T1S1 committee.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Functional Group to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

MDC00007 Meridian Business Set Minimum

To be of benefit to the network provider, either ACD00007 or ACD00008 must also be in operation.

External software requirements include the application programming interface (API) software, as well as business application software for the subscriber's computer system-both provided by computer and software vendors. (The API, which resides in the subscriber's computer system, converts SCAI messages into information that can be used by the computer's business application software.)

Availability and NTX Mapping

ACD00002 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
ACD00002	**CompuCALL Base**			NTXJ59AC	CompuCALL Base

COMPUCALL FOR AUTOMATIC CALL DISTRIBUTION ACD00007

This Function offers simultaneous delivery of voice and data information to ACD agents- as well as capabilities for call conferencing, transferring, and interworking with interactive voice response (IVR) systems.

This software supports an external host computer to log ACD agents in and log out through Switch-to-Computer Application Interface (SCAI) signaling. It also allows the host computer to request that an ACD agent be made ready or not ready to receive ACD calls, as well as accept walkaway reason code input from agents.

Benefits

In addition to the CompuCALL benefits discussed in ACD00002, the key advantages of ACD00007 include the following.

- Intelligently controls call destination, to promote the customer's business needs. Information stored in a customer file in the business computer can dictate the redirection of a call. For example, a customer with a delinquent account dialing to a sales order desk can be automatically redirected to the accounting department. For maximum flexibility, the redirected directory number does not have to be on an ACD line.
- Enhances the service provider's portfolio of ACD services, by supporting interaction with host applications for expanded announcements, logging agents in and out, and basic computer-based telephony.

Key Capabilities

- Provides the ability for an agent to receive information about a caller concurrently with receipt of an incoming call. CompuCALL messages are flexible and can include:
  - Calling number, if the network can provide this number (ANI, CLID).
  - Called number.
  - Call identification number, for tracking purposes.
  - ACD position where the call appears.
  - A forwarding number and the forwarding reason (busy or no answer) for a forwarded call.
- Permits a customer's computer to interact with Coordinated Voice and Data to place outgoing calls and provide telephony control from a call center computer.
- Interworks with a host application in support of announcements through an Interactive Voice Response (IVR) system or Voice Response Unit (VRU).
- Queries the status of calls in queue to calculate a total wait time for any new incoming call. This information can be played to the calling party through a IVR/VRU so the caller can be informed of the expected time before being serviced. The calling party may then request that the IVR/VRU transfer the call to another group, station, or voice mail (if the IVR/VRU has this capability).
- Enables an external host computer to log-in and log-out ACD agents through SCAI signaling.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

MDC00007 Meridian Business Set Minimum

ACD00001 Meridian Automatic Call Distribution Base

ACD00002 CompuCALL Base

Availability and NTX Mapping

ACD00007 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
ACD00002	CompuCALL Base	**ACD00007**	**CompuCALL for ACD**	NTXJ60AB	CompuCALL Coordinated Voice and Data
				NTXJ62AA	Third-Party Call Control
				NTXJ63AA	Voice Processing Integration
				NTXS22AA	Third-Party Agent Control

CENTREX COORDINATED VOICE AND DATA ACD00008

This Function supports CompuCALL in the Meridian Data Centrex (MDC) environment. With ACD00008, voice and data information can be simultaneously presented to a single-appearance Centrex station.

Benefits

As with ACD00007 software, ACD00008 combines the presentation of an incoming call with simultaneous display by the host computer of call-related information. This reduces call handling times, increasing the number of transactions an agent can perform as well as the business customer's total call capacity.

Key Capabilities

Together with ACD00001 software, ACD00008 provides messaging for MDC lines to support delivery of data screens (supplied by a host computer application) with a voice call.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

MDC00007 Meridian Business Set Minimum

ACD00002 CompuCALL Base

Note that ACD00001 (ACD Base) is not required for this particular Function.

Availability and NTX Mapping

ACD00008 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
ACD00002	CompuCALL Base	**ACD00008**	**Centrex Coordinated Voice and Data**	NTXR89AA	Centrex Coordinated Voice and Data

ACD NETWORKING ACD00004

This Functional Group is the prerequisite ordering code for other ACD networking software. ACD00004's "SuperGroup" capability enables up to 48 groups served by the same switch to answer calls as though they were a single large group.

Benefits

Some of the benefits of "SuperGroup" intranodal networking include:

- Reduces the number of agents required, through equitable load balancing.
- Assists in trunk cost management and improves service level through Best Group Selection.

Key Capabilities

This software allows groups of up to 256 agents to be networked with other groups served by the same DMS switch and its associated remotes. This networking offers the following to the network provider:

- Routes incoming calls to the particular group in the SuperGroup that can provide the fastest answering time.
- Permits a single DMS Meridian ACD node to support multiple SuperGroups, providing it does not exceed the following nodal parameters: no more than 4,000 agents across no more than 48 groups (each group can have no more than 256 agents).

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Functional Group to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

MDC00007 Meridian Business Set Minimum

ACD00001 Meridian Automatic Call Distribution Base

Availability and NTX Mapping

ACD00004 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
ACD00004	**ACD Networking**			NTXE22AA	ACD SuperGroup

NETWORK ACD ON CCS7 ACD00009
NETWORK ACD ON PRI ACD00010

These two Functions support multinode ACD networking across the network, so agents in dispersed locations can work as a single group. To communicate load-status information across the network, ACD00009 uses CCS7 (Common Channel Signaling No. 7) trunking, and ACD00010 uses Primary Rate Interface (PRI) trunking.

Benefits

Networking offers optional functionality that extends the reach and range of ACD base, enhanced, and optional software to multi-switch call centers. Networking ACD groups is especially well-suited for high-volume service companies with widely dispersed groups of answering agents. ACD00009 or ACD00010 offers the following added benefits, in addition to the basic networking advantages listed on the previous page, for ACD00004:

- Offers flexibility to support city-wide and network-wide services, supporting as many as 12,000 agents spread across 12 widely dispersed nodes.
- Reduces operating costs by centralizing service-level administration tasks.
- Supports telecommuting setups throughout the network.

Key Capabilities

Multiple groups served by DMS Meridian ACD nodes across a network can be treated:

- As a single group.
- As teams that provide overflow protection for one another.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum
MDC00003 Meridian Digital Centrex Standard
MDC00007 Meridian Business Set Minimum
ACD00001 Meridian Automatic Call Distribution Base
ACD00004 ACD Networking

Availability and NTX Mapping

ACD00009 and ACD00010 are currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise these ordering codes.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
ACD00004	ACD Networking	**ACD00009**	**Network ACD on CCS7**	NTXN46AA	Network ACD on SS7
		ACD00010	**Network ACD on PRI**	NTXN47AA	Network ACD on PRI

DMS-100 Datapath Service

Datapath is a circuit-switched data access solution, offering end-to-end digital connections through the public switched network over standard twisted-pair wiring. Introduced in 1984, this highly flexible narrowband technology employs rate adaptation and handshaking protocols to free end users from having to set transmission parameters for each call.

As part of a portfolio of DMS-100 access technologies, Datapath provides a cost-effective solution for a wide range of data networking requirements-including switched 56 kbps service (see next column).

DMS-100 Family Remotes can be used to extend this digital service beyond the normal serving area of an office. Datapath offers full duplex, end-to-end digital data transmission at the rates shown in the following table.

	Synchronous Transmission	Asynchronous Transmission
Lowest Baud	1.2 kbps	110 bps
Highest Baud	64 kbps	19.2 kbps

SIMPLIFY DATA CONFIGURATION

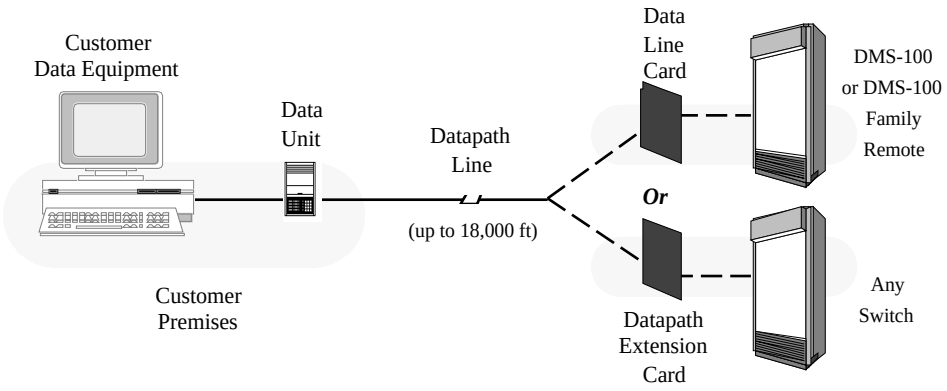
Basic Datapath services require the following:

- A Datapath-compatible data unit (such as a high-speed 56 kbps data unit) connected to the data terminal equipment.
- A Datapath line (standard twisted-pair wiring; up to 18,000 feet) running from the data unit to the switching office.
- Either a Data Line Card in the DMS-100, or a Datapath Extension card in a channel bank on any switch.

PROVIDE SWITCHED 56 KBPS DATA SERVICE

Because it is economical and widely deployed, "Switched 56" is the most commonly used switched digital service available today, enabling the subscriber to transmit data at full-duplex, digital synchronous 56 kbps at about the price of a telephone call. This digital transport offers the following benefits:

- Delivers a faster and more reliable service than analog modems.
- Provides greater cost savings to subscribers than private lines.
- Offers the flexibility to extend the boundaries of existing networks.



Basic Datapath Service Configuration

EXTEND SERVICES ANOTHER 100 MILES

Datapath services can be extended beyond the normal serving area of a DMS-100 with a Datapath Extension (DPX) card installed in a Northern Telecom DE-4E channel bank, or the intelligent DE-4E Smart channel bank. The DPX card transports 24 Datapath calls over a standard T1 trunk up to 100 miles from the channel bank to the DMS-100 Family remote. This also enables two-wire service to be extended to third-party vendor switching systems such as the 1A, 4ESS, 5ESS, and GTD-5.

DATAPATH DTP00001

DTP00001 is the foundational software for all Datapath services, offering data communication equipment flexible access to multiple hosts and peers, transparent interworking with all other DMS-100 access technologies, and closed user group security. This Functional Group includes the new enhancements to software support of Datapath Extension cards that can transport Datapath calls for 24 subscribers up to 100 miles from a channel bank to the switch.

Benefits

Datapath offers dependable, switched data services at a cost comparable to using analog modems, but at much higher speeds, while eliminating or reducing requirements for expensive private-line networks.

This robust service offers a cost-effective way to support lower-bandwidth applications in offices that have not yet implemented National ISDN data services. Datapath coexists with ISDN and other data services, allowing a barrier-free migration path to National ISDN at some future time. This narrowband service offers the convenience and cost-effectiveness of twisted-pair transmission. Network management is simplified because the existing voice switching network is used for switching the service.

Datapath can be implemented from any DMS-100 Family/DMS-10 system or DMS-100 Family remote with a minimum of hardware, software, and datafill-with equipment and technology that is available today.

Key Capabilities

The following are a few of the capabilities of this Functional Group.

- Offers transport services for PC-to-PC or PC-to-host data communications as well as DS-0 gateway access to high-speed wideband networks (such as DataSPAN). At 56/64 kbps it is particularly suited to for dial-up Group IV facsimile and compressed video teleconferencing.
- Frees end users from having to know and set transmission parameters for each call to digital devices.
- Interworks with a full range of Meridian Digital Centrex calling features and DMS-100 security features, to enhance productivity and data network performance.
- Blocks incoming calls from unauthorized parties through the Closed User Group security feature.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the only other ordering code that is required for this Functional Group to be operational is MDC00001 “Meridian Digital Centrex Minimum.”

The following Meridian Digital Centrex (MDC) features can make Datapath services more enticing to subscribers: Automatic Dial, Hunt Groups, Speed Calling, Ring Again, Station Message Detail Recording (SMDR), and Automatic Message Accounting (AMA) Billing. Refer to the “DMS-100 Meridian Digital Centrex” chapter for information on these MDC capabilities.

As well, DMS-100 security capabilities-such as Automatic Line, Closed User Groups, Host-System Disconnect Timeout, and Network Class of Service features-offer additional privacy and protection options for subscribers.

This ordering code enhances the operation of DataSPAN, ordering code NI000002, by offering DS-0 gateway access to this high-speed wideband network.

Availability and NTX Mapping

DTP00001 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
DTP00001	**Datapath**			NTX250AA	Datapath Basic
				NTX251AA	Datapath Modem Pooling
				NTX256AA	Datapath Loop Extension
				NTX257AA	Datapath Closed User Group
				NTX259AA	Datapath Extension Unit
				NTX426AA	Asynchronous Interface Line Card
				NTXE25AA	Outbound Modem Pool
				NTXE60AA	Datapath Closed User Group
				NTXN99AA	Inbound Modem Pool

CLASS FOR DATAPATH DTP00002

This ordering code offers three CLASS features that widen the subscriber's control over security. Enabling subscribers to dictate who can dial up over their Datapath lines enhances satisfaction with the service and routes incoming data calls more efficiently.

Benefits

DTP00002 enhances customer satisfaction of a network provider's service by offering immediate security control without having to coordinate changes with the network provider.

Feature activation is simple: a user goes off-hook and presses a designated key. Voice prompts over the built-in Data Unit speaker guide the user (through menu choices) to activate or deactivate a feature or to edit the screening list.

This ordering code helps the network provider contain operating costs by permitting subscribers to use the feature at their own convenience, without tying up central office technicians or translations personnel.

Also, these features can be creatively combined or used with other Datapath ordering codes to create new offerings that further ensure security and efficiency. For example, combining Selective Call Forwarding with Selective Call Acceptance ensures that calls from other data lines on the subscriber's directory number list either get through to the subscriber's line or are forwarded to the correct equipment.

Key Capabilities

DTP00002 adds the following CLASS screen list editing features to Datapath:

- *Selective Call Acceptance* accepts incoming calls from a list of directory numbers (DNs) designated by the subscriber. Calls from other DNs are blocked.
- *Selective Call Forwarding* forwards incoming calls from a list of DNs (designated by the subscriber) to a remote DN of the subscriber's choosing.
- *Selective Call Rejection* blocks incoming calls from a list of DNs (designated by the subscriber).

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

DTP00001	Datapath
MDC00001	Meridian Digital Centrex Minimum
MDC00003	Meridian Digital Centrex Standard
MDC00004	CLASS on Meridian Digital Centrex
MDC00007	Meridian Business Set Minimum
MDC00010	CLASS on Meridian Digital Centrex / Multiline Variety Package II
RES00006	Service Enablers
RES00003	Display Functionality and Privacy

RES00004 Interface Functionality

RES00005 Non-display Services

Other DMS-100 applications that can interwork with these CLASS features are Directory Number Hunt groups and assignment of Datapath service to non-Centrex lines.

Availability and NTX Mapping

DTP00002 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
DTP00001	Datapath	**DTP00002**	**CLASS for Datapath**	NTXR94AA	CLASS for Datapath

DATACALL TESTER DTP00003

The DataCall Tester (DCT) Network Tool offers a simple way for service testing personnel to verify data network performance. Using the DMS Maintenance and Administration Position (MAP), maintenance personnel complete and test data calls to integrated bit error rate test (IBERT) devices over trunk loopbacks.

Benefits

The DCT Network Tool is used by data service testing and repair personnel to perform network performance and diagnostic analysis for data calls through the switched network. This software, together with either an Integrated Bit Error Rate line card (IC) or a Digital Test Unit (DTU), offers the following benefits.

- *Integrated design.* As an integrated maintenance utility, DCT uses MAP terminals and commands instead of external control equipment.
- *Easy operation.* The available commands can be used to tailor the test environment to an individual tester's needs.
- *Simple storage and retrieval.* DCT stores test results that can be retrieved at a later time in summaries and in five-minute result bins.

Together, these advantages reduce the time required to install, commission, verify, and troubleshoot twisted-pair data lines.

Key Capabilities

- Measures network performance through Bit Error Rate Testing (BERT).
- Permits control by user commands from the DCT MAP level.
- Stores test results.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

DTP00001 Datapath

Availability and NTX Mapping

DTP00003 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
DTP00001	Datapath	**DTP00003**	**DataCall Tester**	NTXS17AA	DataCall Tester

DATAPATH PROVISIONING DTP00004

DTP00004, available in the Canadian market only, extends Datapath capabilities to users in the public network in a POTS environment-so those not subscribing to Meridian Digital Centrex lines are able to subscribe to Datapath. This Function has the added benefit of enabling a subset of MDC-only features to POTS users.

Benefits

DTP00004 expands data service possibilities in a serving area to include non-business subscribers. This revenue source is expanding, especially in areas where telecommuting is growing in popularity.

To keep operating costs low, this software simplifies translations by keeping the datafill requirements for a POTS Datapath line very similar to those of an MDC Datapath line. As well, service order prompts and commands are kept closely identical.

Key Capabilities

- Allows subscribers in the public network to use data units to connect to a special POTS version of Datapath. In the same switch, POTS Datapath and Centrex Datapath services co-exist and function independently (interworking between the two services is through standard POTS/Centrex interfaces).
- Offers the following features that are normally not available in a POTS environment: automatic dial, data unit profile, last number redial, make set busy, and network resource selection.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

DTP00001 Datapath

Availability and NTX Mapping

DTP00004 is currently available in the Canadian market with NA002 in PCL CDN00002, and with NA003 in PCLs CDN00003 and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
DTP00001	Datapath	**DTP00004**	**Datapath Provisioning**	NTX255AA	Datapath Provisioning (Canada)

Equal Access

Equal Access in the United States is the result of the 1982 Modification of Final Judgment (MFJ), a decree by the United States Department of Justice that called for the divestiture of American Telephone and Telegraph and the Bell operating companies. A major consequence of this decree was to change the public telephone network in the United States into a system that would accommodate many long-distance interexchange carriers (IECs).

After divestiture, operating companies were required to provide all IECs with local access to their exchanges on an equal basis. Telephone subscribers in the United States have come to expect access to several competitive interexchange (long-distance) carriers on a per-call basis, or through presubscription to a specific carrier.

DMS-100 SuperNode software not only complies with regulatory demands, but also offers the subscriber many ease-of-use features that encourage toll traffic-to benefit the revenue stream for both local exchange carriers and interexchange carriers.

The software in this chapter offers specific signaling options and routing capabilities so different types of service provider offices can comply with regulations resulting from the MFJ ruling.

AT A GLANCE

This chapter's ordering code descriptions appear in the following sequence.

EQUAL ACCESS LOCAL EQA00001

Through Equal Access, a service provider permits its subscribers to choose for themselves their long-distance carrier. This ordering code permits direct connection to interexchange and international carriers on a per-call basis or by presubscription. Also included are reports that provide a listing of directory numbers (DNs) by Primary InterLATA Carrier (PIC) and a summary of the total number of DNs served by each carrier.

Benefits

This software allows a DMS-100 local office, known as an Equal Access End Office (EAEO) to have direct connection to IECs and International Exchange Carriers (INCs), in strict compliance to several Bellcore documents. One of the primary references is FSD 20-24-0000, *LATA Switching System General Requirements (LSSGR) IC/INC Interconnection*.

Key Capabilities

Aside from Equal Access End Office capabilities, EQA00001 offers EAEO enhancements, including presubscription reports.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), no other ordering code is required for this Functional Group to be operational.

Availability and NTX Mapping

EQA00001 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
EQA00001	**Equal Access Local**			NTX186AB	Equal Access End Office
				NTX711AB	Equal Access End Office Enhancements

CELLULAR INTERCONNECT - END OFFICE EQA00003

Intended for end offices connected to cellular mobile carrier (CMC) switching systems, EQA00003 provides Automatic Message Accounting (AMA) records for cellular calls.

Benefits

CMCs provide telephone service to mobile customers through radio links from cell sites. This software enables an end office having Type 1 and 2B interconnections to CMCs to communicate AMA information, using multifrequency (MF) signaling, so the end office can share in the revenues from fast-growing cellular services.

Key Capabilities

This Function of EQA00001 supplies call codes 063 and 065 AMA records for an end office in support of the following configurations:

- Type 2B interconnection
- Type 1 interconnection

Software operations comply with Bellcore TR-NPL-000145, which defines the interconnection of a wireless service provider and a local exchange carrier network.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the only other ordering code that is required for this Function to be operational is EQA00001 “Equal Access Local.”

Availability and NTX Mapping

EQA00003 is currently available with NA002 in PCLs LEC00002 and LET00002; and with NA003 in PCLs LEC00003 and LET00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
EQA00001	Equal Access Local	**EQA00003**	**Cellular Interconnect - End Office**	NTXE23AA	Cellular Interconnect - End Office

CELLULAR INTERCONNECT - ACCESS TANDEM EQA00004

Intended for a DMS-200 Access Tandem connected to cellular mobile carrier (CMC) switching systems, EQA00004 provides Automatic Message Accounting (AMA) records for cellular calls.

Benefits

CMCs provide telephone service to mobile customers through radio links from cell sites. This software enables an access tandem having Type 2A interconnections to CMCs to communicate AMA information, so the office can share in the revenues from fast-growing cellular services.

Key Capabilities

This Function of EQA00001 supplies call codes 064 and 066 AMA records in compliance with Bellcore TR-NPL-000145, which defines the interconnection of a wireless service provider and a local exchange carrier network.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

EQA00001 Equal Access Local

EQA00002 Equal Access Toll

Availability and NTX Mapping

EQA00004 is currently available with NA002 in PCLs LEC00002 and LET00002; and with NA003 in PCLs LEC00003 and LET00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
EQA00001	Equal Access Local	**EQA00004**	**Cellular Interconnect - Access Tandem**	NTX843AB	Cellular Interconnect

CCS7 ISDN USER PART INTERLATA CONNECTION FOR EQUAL ACCESS END OFFICE EQA00006

This software allows the local exchange carrier's EAEO to send Feature Group B and D signaling containing carrier information to the access tandem (AT) by means of CCS7 signaling.

Benefits

This Function decreases the post-dial delay associated with the implementation of 800 service. Using CCS7 signaling between a local exchange carrier and an IEC can yield faster call setups for the subscriber. This software also permits the exchange of more information between switching systems than is possible using inband signaling techniques. Thus, the use of CCS7 signaling may allow a local exchange carrier to offer additional exchange access features, such as display services, to the end user.

Key Capabilities

EQA00006 sends the following information to an Interexchange Carrier:

- End-user carrier selection.
- CCS7 service code parameter.

This software addresses requirements defined by Bellcore GR-394-CORE, *Switching System Generic Requirements for Interexchange Carrier Interconnection Using the Integrated Services Digital Network User Part.*

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the only other ordering code that is required for this Function to be operational is EQA00001 "Equal Access Local."

Availability and NTX Mapping

EQA00006 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
EQA00001	Equal Access Local	**EQA00006**	**CCS7 ISDN User Part InterLATA Connection for EAEO**	NTXE13AB	CCS7 ISDN User Part InterLATA Connection for EAEO

EQUAL ACCESS FOR ALTERNATE SWITCHING POINT EQA00007

This software allows a special EAEO called an Equal Access Switching Point (EASP) to pass through Equal Access calls. The EASP, placed between an existing EAEO and an access tandem, is meant to be used as an alternate switching point under emergency conditions.

Benefits

To protect the integrity of the network, this software allows a service provider to continue Equal Access services if trunking to an access tandem fails-by rerouting traffic through an EASP. This helps protect revenue, class of service, and customer satisfaction during emergency conditions (such as severed trunking or natural disasters).

Key Capabilities

EQA00007 enables the EASP to relay Equal Access calls from the EAEO to the access tandem during emergency conditions, in compliance with the emergency operation portion of Bellcore FSD 20-24-0000, *InterLATA-Carrier / International-Carrier Interconnection*.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the only other ordering code that is required for this Function to be operational is EQA00001 “Equal Access Local.”

Availability and NTX Mapping

EQA00007 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
EQA00001	Equal Access Local	**EQA00007**	**Equal Access for Alternate Switching Point**	NTX803AA	Equal Access for Alternate Switching Point

POTS INTRALATA PRIMARY INTERLATA CARRIER EQUAL ACCESS END OFFICE EQA00008

This software allows subscribers of EAEOs the opportunity to select a carrier to provide their intraLATA service. If no intraLATA carrier is chosen, the subscriber's intraLATA calls are handled in the usual way, according to local practice and regulation. This software affects calls from POTS and coin lines only.

Benefits

This Function allows POTS and coin line users to select their carrier of choice to provide intraLATA service similar to the way they currently choose a Primary InterLATA Carrier (PIC) for interLATA services. This generates network traffic that results in new revenues and greater customer satisfaction.

This software may be needed in areas where the public utility commission (PUC) has considered it appropriate to allow subscribers the opportunity to select a carrier of their choice for intraLATA traffic.

Key Capabilities

EQA00008 enables the optional selection of an intraLATA carrier on a presubscribed or per-call basis.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the only other ordering code that is required for this Function to be operational is EQA00001 "Equal Access Local."

Availability and NTX Mapping

EQA00008 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
EQA00001	Equal Access Local	**EQA00008**	**POTS IntraLATA Primary InterLATA Carrier EAEO**	NTXF58AA	POTS IntraLATA Primary InterLATA Carrier EAEO

INTEGRATED BUSINESS NETWORK INTRALATA PRIMARY INTERLATA CARRIER EQUAL ACCESS END OFFICE EQA00009

This software provides IntraLATA carrier pre-subscription, screening, and routing capabilities for Meridian Digital Centrex (MDC) stations and Private Exchange trunks of an EAEO. This ensures that MDC end users, including ISDN subscribers, can choose a primary carrier for intraLATA services, on per-individual station or on a per-customer group basis.

Benefits

This Function allows MDC subscribers to select their carrier of choice to provide intraLATA service similar to the way they currently choose a Primary InterLATA Carrier (PIC) for interLATA services. This generates network traffic that results in new revenues and greater customer satisfaction.

This software may be needed in areas where the public utility commission (PUC) has considered it appropriate to allow subscribers the opportunity to select a carrier of their choice for intraLATA traffic.

Key Capabilities

EQA00009 enables the optional selection of an intraLATA carrier on basis of any of the following.

- By MDC station.
- By MDC customer group.
- By ISDN subscriber line.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the only other ordering code that is required for this Function to be operational is EQA00001 “Equal Access Local.”

The following MDC packages can enhance the operation of this ordering code.

MDC00002 MDC Meridian Special Attendant Console

MDC00003 MDC Standard

MDC00004 CLASS on MDC

MDC00005 Multilocation Business Group Minimum

MDC00006 Multilocation Business Group Standard

MDC00007 Meridian Business Set Minimum

MDC00008 Meridian Business Set Standard

MDC00009 MDC Pro

Availability and NTX Mapping

EQA00009 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
EQA00001	Equal Access Local	**EQA00009**	**Integrated Business Network IntraLATA PIC EAEO**	NTXF69AA	Integrated Business Network IntraLATA PIC EAEO

ENHANCED WATS OPERATION (POTS) EQA00010

This software provides expanded capabilities to the basic outward Wide Area Telephone Service (WATS) features available in the DMS SuperNode Platform, and adds greater flexibility of outward WATS band arrangements.

Benefits

This software provides enhancements that allow the central office to provide better service to WATS subscribers and to the carriers that offer WATS.

Key Capabilities

EQA00010 complies with TR-TSY-000508, *LATA Switching System Generic Requirements (LSSGR) Section 8.1 Automatic Message Accounting*, and other Bellcore documents, to offer the following capabilities.

- Extends the reach of the service by expanding the range of outward WATS band numbers from 0 to 126 (previous range was 0 to 12).
- Allows inband screening of interLATA WATS calls from an enhanced WATS facility to be optionally disabled on a per-carrier basis. This allows all calls of this type to be forwarded straight to the carrier (if it isn't blocked for another reason).
- Permits the enhanced WATS of EQA00010 to co-exist with the basic WATS software of the DMS SuperNode Platform, to allow a smooth transition.
- Extends the number of carriers that can be assigned to an enhanced WATS line to a total of five. This allows a subscriber to select different providers for different bands; however, access to other than the primary provider will be by way of 10XXX or 101XXXX dialing.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

UDD00001 U.S. Direct Distance Dialing

EQA00001 Equal Access Local

Availability and NTX Mapping

EQA00010 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
EQA00001	Equal Access Local	**EQA00010**	**Enhanced WATS Operation (POTS)**	NTXA16AA	Enhanced WATS Operation (POTS)

EQUAL ACCESS OPERATOR SERVICES SYSTEM EQA00011

This software on the EAEO provides the operator services center with all the information necessary to process calls arriving on a single combined trunk group. This enables the network provider to combine operator traffic with non-operator traffic on the same trunk group.

Benefits

EQA00011 reduces operating expenses by optimizing traffic over trunking facilities for an operator services center (also known as an operator services system).

Key Capabilities

This Function increases efficiency in trunking facilities by allowing operator and non-operator traffic to be combined on the same trunk group from an EAEO.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the only other ordering code that is required for this Function to be operational is EQA00001 "Equal Access Local."

Availability and NTX Mapping

EQA00011 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
EQA00001	Equal Access Local	**EQA00011**	**Equal Access Operator Services System**	NTX888AA	Equal Access Operator Services System

EQUAL ACCESS TOLL EQA00002

This Functional Group enables a network provider with a DMS-200 Access Tandem (AT) to collect interLATA traffic from many end offices at a single location, rather than provide trunk lines from each end office to each interexchange carrier.

Benefits

This software reduces operating costs by significantly reducing trunking requirements between EAEOs and carriers, in compliance with several Bellcore requirements, including those in FSD 20-24-0000, *LATA Switching System General Requirements (LSSGR) Interexchange Carrier/International Carrier Interconnection*.

Key Capabilities

EQA00002 provides the following capabilities for the access tandem office.

- Performs digit translation and carrier screening capabilities for the Equal Access environment.
- Supports three-digit or four-digit Carrier Identification Codes (CIC) over combined trunk groups (trunks that can handle Equal Access traffic as well as other types of traffic; the access tandem determines if each call is Equal Access or not).
- Implements Feature Group D CIC expansion from 970 up to 10,000 assignable codes.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), no other ordering code is required for this Functional Group to be operational.

Availability and NTX Mapping

EQA00002 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	NTX Code	ACTID	NTX Package / ACTID Name
EQA00002	**Equal Access Toll**	NTXT18AA	AN0925	Carrier Expansion for LEAS
		NTXQ73AA		ISUP Multifrequency Two-Stage Outpulsing

EQUAL ACCESS FOR INTERMEDIATE TANDEM EQA00005

This Function of EQA00002 permits the network provider to extend Equal Access capabilities for long-distance carrier service to subscribers served off non-conforming end offices by means of an Equal Access Intermediate Tandem (EAIT).

In some rural areas served by independent network providers, there are clusters of small electromechanical end offices with the nearest access tandem office too far away for economical provisioning of Equal Access-based service. EQA00005, used in conjunction with the LATA Equal Access System (LEAS) software (LEA00001), provides a DMS-100/200 or DMS-200 office with the capability of transferring interLATA carrier (IC) calls sent from non-conforming end offices to an access tandem. Alternatively, the calls can be routed directly to an IC, provided the IC has a point of presence (POP) at the EAIT office.

Benefits

The EAIT provides cost-effective Equal Access capabilities to local providers that have non-conforming end offices (and would otherwise be unable to provide this type of service).

Key Capabilities

EQA00005 offers the following capabilities through software support of an EAIT office.

- Provides Equal Access (EA) capabilities for non-conforming end offices (NCEOs) too far away for economical provisioning of EA service at a LEAS Access Tandem.
- Provides the ability to tandem EA traffic from NCEOs through an EAIT to an access tandem or directly to the carrier (provided the carrier has a point of presence at the EAIT). Billing will be done at the EAIT for calls coming from NCEOs.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

EQA00002 Equal Access Toll

LEA00001 LATA Equal Access System Toll

UDD00001 U.S. Direct Distance Dialing

Availability and NTX Mapping

EQA00005 is currently available with NA002 in PCLs LEC00002 and LET00002; and with NA003 in PCLs LEC00003 and LET00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
EQA00002	Equal Access Toll	**EQA00005**	**Intermediate Tandem**	NTXE67AA	Intermediate Tandem

CCS7 ISDN USER PART INTERLATA CONNECTION FOR ACCESS TANDEM EQA00012

This software transmits Feature Group D (FGD) signaling by CCS7 trunking between an EAEO and the IEC.

The telephone network of the 1980s used inband interoffice signaling that did not transport caller ID. In the 1990s, out-of-band signaling-Common Channel Signaling No. 7 (CCS7)-is being deployed to introduce new network services. CCS7 signaling can transmit caller ID and other information as a foundation for the Intelligent Network.

Benefits

Not only does CCS7 make it possible for network providers to realize new trunking efficiencies (to cut operating expenses), but it also enables the deployment of new, revenue-producing subscriber services quickly and cost-effectively throughout the network.

EQA00012 can help generate revenue by providing features-such as caller ID based services-and can increase customer satisfaction through faster call setup.

Key Capabilities

This software supports the passing of Feature Group D information from the EAEO to carriers with CCS7 signaling, to provide the following capabilities.

- Intelligent trunking is a key enabler for networking CLASS, Residential Enhanced Services, and Centrex features based on caller ID.
- The configuration serves as a platform to accommodate future services such as personal communications services (PCS).
- Service databases offer centralized control.
- Robust CCS7 trunking enhances network reliability and survivability.

These capabilities are implemented in compliance with several Bellcore documents, such as GR-394-CORE.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the only other ordering code that is required for this Function to be operational is EQA00002 “Equal Access Toll.”

Availability and NTX Mapping

EQA00012 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
EQA00002	Equal Access Toll	**EQA00012**	**CCS7 ISDN User Part InterLATA Connection for Access Tandem**	NTXE14AB	CCS7 ISDN User Part InterLATA Connection for Access Tandem

LATA EQUAL ACCESS SYSTEM TOLL LEA00001

The LATA Equal Access System (LEAS) software adds many of the capabilities of an Equal Access End Office (EAEO) to an end office that does not conform to Equal Access (a non-conforming end office, NCEO). This Functional Group enables the routing of incoming calls from an NCEO to the DMS-200 access tandem for completion to carriers. The LEAS does this by performing screening and translations functions similar to those of an EAEO. This software also provides the capability to provide a intraLATA primary carrier to an NCEO.

Benefits

LEAS is the only system in the marketplace today that permits end office conversion to Equal Access without costly equipment additions or office replacement. Using the LEAS software, older end offices can offer revenue-generating Equal Access service without incurring the high cost of either a central office replacement or installation of adjunct devices.

Key Capabilities

- Interworks LEAS calls with CCS7 trunks.
- Allows Feature Group D (FGD) Carrier Identification Code (CIC) expansion.
- Provides capability to provide an intraLATA primary carrier to a non-conforming end office.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Functional Group to be operational.

EQA00002 Equal Access Toll

UDD00001 U.S. Direct Distance Dialing

Availability and NTX Mapping

LEA00001 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
LEA00001	**LEAS Toll**			NTX710AB	Interchangeable Numbering Plan Areas LEAS
				NTX829AA	IntraLATA Primary Carrier LEAS

CCS7 INTERWORKING WITH LEAS OFFICE LEA00003

This software reduces post-dial delay for calls routing from an end office to a LEAS tandem. LEA00003 gives software support for the replacement of current multifrequency (MF) trunking with a CCS7 interface between an Equal Access end office and a LEAS access tandem.

Benefits

With this software, network providers can increase customer satisfaction and network traffic by reducing access time for all Equal Access calls-while retaining the efficiencies of centralized administration for their Equal Access capabilities.

Key Capabilities

This software offers the following capabilities to the end office.

- Replaces MF trunking with an CCS7 interface.
- Improves access time and reduces post-dial delay for calls routing from an end office to a LEAS tandem.

These capabilities operate in compliance with GR-317-CORE, *Switching System Requirements for Call Control Using the ISDNUP* and GR-394-CORE, *Switching System Generic Requirements for Interexchange Carrier Interconnection Using the ISDNUP*.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

EQA00002 Equal Access Toll

LEA00001 LATA Equal Access System Toll

UDD00001 U.S. Direct Distance Dialing

Availability and NTX Mapping

LEA00003 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	ACTID	ACTID Name
LEA00001	LEAS Toll	**LEA00003**	**CCS7 Interworking with LEAS**	AN0342	CCS7 Interworking with LEAS

LATA EQUAL ACCESS SYSTEM LOCAL LEA00002

This software allows the network provider to deny toll access from a subscriber station to a maximum of 21 carriers. It also supports outpulsing of all Equal Access call types exactly as they were dialed, so that a DMS-200 LEAS office can provide Equal Access services for the DMS-100.

Benefits

This software lowers lost revenue by enabling the network provider to deny access to toll carriers for a subscriber who is delinquent paying for toll calls. It also allows a DMS-100 to act as a non-conforming end office and enables LEAS in a DMS-200 to provide Equal Access services for the DMS-100.

Key Capabilities

The key features provided by LEA00002 include the following.

- Carrier Toll Denial
- Increase Digit Outpulsing

Dependencies and Interactions

The following lists the other ordering codes-other than the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003)-that are required for this Functional Group to be operational, depending on the office type.

Option #1		Option #2	
EQA00001	Equal Access End Office	EQA00002	Equal Access Toll
		LEA00001	LEAS Toll
		UDD00001	U.S. Direct Distance Dialing

Availability and NTX Mapping

LEA00002 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
LEA00002	**LEAS Local**			NTXN12AA	Equal Access NCEO / LEAS Interface
				NTXA24AA	Enhanced Carrier Toll Denial

Direct Distance Dialing

With Direct Distance Dialing (DDD), a caller can pick up a phone and dial an international location. Keeping this service easy and hassle-free encourages toll traffic, which financially benefits the local exchange provider, the interexchange carriers, and international carriers involved.

Northern Telecom DDD software provides basic end office international calling capabilities including:

- Country code screening.
- International routing translations.
- Multifrequency (MF) two-stage outpulsing to a toll office or gateway for direct dial and operator assisted calls.

Certain other capabilities are available for some offices, such as:

- Permits the network provider to assign an Automatic Number Identification (ANI) information code to a line class and transmit this code to an interLATA carrier or Operator Service System.
- Captures trunk group number, trunk member number, and trunk direction information and inserts the information into Automatic Message Accounting records.

AT A GLANCE

This chapter's ordering code descriptions appear in the following sequence.

CANADIAN DIRECT DISTANCE DIALING LOCAL SERVICES CDD00001

This Functional Group, engineered for the Canadian market, provides basic end office international calling capabilities. See the descriptions of the optional Functions for CDD00001 for enhancements to this basic service.

Benefits

This software offers basic international calling capabilities so the network provider can earn a share of the revenue generated by international calls.

Key Capabilities

CDD00001 enables basic end office capabilities for international calls in the Canadian market, including:

- Country code screening.
- International routing translations for direct dial (prefix 011) and operator assisted (prefix 01) calls.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), no other ordering code is required for this Functional Group to be operational.

Availability and NTX Mapping

CDD00001 is currently available with NA002 in PCL CDN00002, and in NA003 with PCLs CDN00003 and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
CDD00001	**Canadian Direct Distance Dialing Local Services**			NTX028AA	Direct Distance Dialing Overseas, Local

TWO-DIGIT AUTOMATIC NUMBER IDENTIFICATION END OFFICE LOCAL AUTOMATIC MESSAGE ACCOUNTING CDD00003

This Function of CDD00001 extends flexible Automatic Number Identification (ANI) service to Canadian end offices with LAMA (Local Automatic Message Accounting) that do not provide equal access. This function also provides the ability to include the ANI information code in an appended module (code 306, “originating line information” parameter) to the Bellcore AMA record.

Benefits

Flexible ANI offers the network provider more detailed and exact billing and traffic information. CDD00003 allows a network provider to assign two-digit ANI information codes to a line class. ANI information digit codes provide information about the type of line originating the call, indicate special characteristics of a calling number, or identify certain service classes.

A number of new applications for the non-equal access environment require the flexibility of routing Special Line Traffic (SLT) with the appropriate ANI identification code. Adding billing module 306 with the ANI information code permits downstream processing to identify the originating terminal type.

Key Capabilities

CDD00003 offers the following key capabilities to the end office.

- Assigns, in an environment without equal access, an ANI information code to a line class and transmits this code as part of the ANI spill to the InterLATA carrier or Operator Service System.

  Although Bellcore has predefined certain ANI information digit codes, each network provider is responsible for determining which ANI codes will be used and for what purpose.

- Provides the capability to identify the ANI information code in the billing record.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the only other ordering code that is required for this Function to be operational is CDD00001 “Canadian Direct Distance Dialing Local Services.”

Availability and NTX Mapping

CDD00003 is currently available with NA002 in PCL CDN00002, and in NA003 with PCLs CDN00003 and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
CDD00001	Canadian Direct Distance Dialing Local Services	**CDD00003**	**Two-Digit Automatic Number Identification End Office LAMA**	NTXN81AA	Two-Digit Automatic Number Identification End Office LAMA

TRUNK GROUP MEMBER USAGE CDD00004

This Function enables the network provider to produce Bellcore format Automatic Message Accounting (AMA) billing records at the toll office that contain outgoing trunk information.

This software, available in the Canadian market only, adds billing record call code 950, Trunk Group Member Usage, in a toll office to give downstream processes the ability to recognize that the billing record contains trunk information. The network provider can specify which intertoll trunk groups are to produce billing records.

This software also introduces module code 104, Trunk Identification, to the list of available module codes. Module code 104 contains the trunk group number, trunk member number, and the trunk direction that carried the call. Module code 104 can be appended to an AMA record in LAMA or CAMA offices by adding the option to any trunk group.

Benefits

CDD00004 is of particular interest to CAMA (Centralized Automatic Message Accounting) toll offices where there is a requirement to record outgoing trunk information. This Function produces a call code 950 billing record at the toll office and captures this information in module 104.

Downstream processors are then able to examine module code 104 information and match its contents with the corresponding billing records created in the end office to produce interexchange carrier usage records.

Key Capabilities

This enhancement to office billing offers the following capabilities.

- Captures trunk group number, trunk member number, and trunk direction information and inserts the information into Bellcore-defined AMA records.
- Flags (with call code 950) records that contain the added information for retrieval by downstream processors.
- Permits the network provider to specify which trunk groups are to produce billing records.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the only other ordering code that is required for this Function to be operational is CDD00001 “Canadian Direct Distance Dialing Local Services.”

Availability and NTX Mapping

CDD00004 is currently available with NA002 in PCL CDN00002, and in NA003 with PCLs CDN00003 and LTT00003. The following table lists the previous NTX software that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	ACTID	NTX Package/ ACTID Name
CDD00001	Canadian Direct Distance Dialing Local Services	**CDD00004**	**Trunk Group Member Usage**	NTXP08AA	NC0248	Trunk Group Member Usage

UNITED STATES DIRECT DISTANCE DIALING SERVICES UDD00001

This Functional Group provides basic end office international calling capability including country code screening, international routing translations, and multifrequency (MF) two-stage outpulsing to a toll office or gateway for direct dial (prefix 011) and operator assisted (prefix 01) calls.

Also, this software's flexible ANI service transmits, in an Equal Access environment, the Automatic Number Identification (ANI) information digit code as part of the ANI spill to an InterLATA carrier or Operator Service System.

Benefits

This software offers basic international calling capability and flexible ANI service so the network provider can earn a share of the revenue generated by international calls.

Key Capabilities

- Enables basic end office capability for international calls.
- Provides the capability, in an Equal Access environment, to assign an ANI information code to a line class and transmit this code to the InterLATA carrier or Operator Service System. ANI information digit codes provide information about the type of line originating the call, indicate special characteristics of a calling number, or identify certain service classes.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the only other ordering code that is required for this Functional Group to be operational is EQA00001 "Equal Access Local."

Availability and NTX Mapping

UDD00001 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
UDD00001	**U.S. Direct Distance Dialing**			NTX072AA	U.S. DDD International DDD
				NTX735AA	U.S. DDD Flexible Automatic Number Identification

Number Translation Services

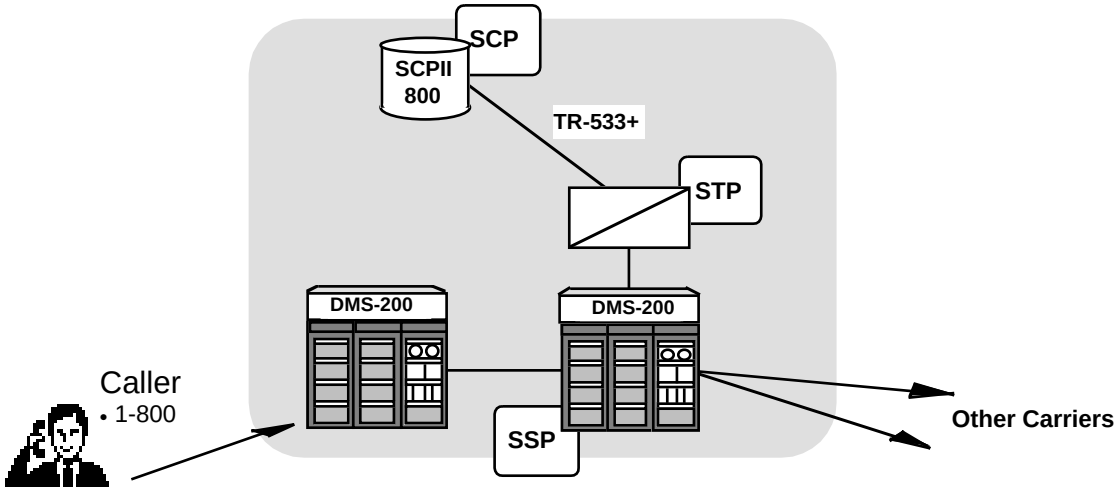
The term “number translation service” (NTS) applies to any application that provides routing to one or more physical numbers for calls made to logical numbers. Actual routing is determined by a routing profile developed for the called party. The routing profile is composed of the basic service (e.g., Freephone or 800; Mass Calling or 900; Personal Number or 500), supporting data, and a set of vertical features (such as carrier selection or origin-dependent routing).

The most ubiquitous number translation service, Enhanced 800, offers North American offices special billing, translation, and routing capabilities. An “800” service becomes enhanced (“E800” or “800Plus”) when it interworks with a CCS7 network for queries into a service control point (SCP) database. The digits following the “800” code are matched against a database entry indicating the real routing digits to be used for call setup. E800 calls may either terminate in alternate carrier networks or be routed to these alternate carriers for further translation.

In the figure below, illustrating a Canadian E800 service configuration, a DMS-200 serves as a service switching point (SSP) to interwork with a “SCPII” database.

In the United States, Northern Telecom’s Number Translation Services in an end office or access tandem is 100% compliant with Bellcore specification TR-TSY-000533, Issue 2. This software places a U.S. office in competitive advantage over a non-E800 office after “800 Portability” went into effect on July 1, 1994.

In Canada, CRTC-approved extensions to this specification (that is, TR-533+) permit a wider selection of features-such as Southbound Routing, SCP feature indicators, and Overflow Call Routing.



Routing Profiles in a SCP Database Contribute to Reliable, Profitable E800 Services

AT A GLANCE

This chapter's ordering code descriptions appear in the following sequence.

► CANADIAN ORDERING CODES

The ordering code descriptions, starting below and ending on page 247, are software offerings designed for the Canadian market. Functional Group NTS00002, and its functions, is for a DMS-100 end office. Functional Group NTS00004 (and its functions) is for a DMS-200 office. Functional Group NTS00006 (and its functions) is for DMS-200, DMS-200/TOPS, DMS-100/200, or DMS-100/200/TOPS offices.

E800 CANADIAN END OFFICE DISPLAY NTS00002

The NTS00002 Functional Group supports the four Functions described on the following pages-and provides features that display the calling party number (CID) and the 800 number dialed by the calling party (DNID) for use with Call Management Services.

Information for CID and DNID features appears on the destination set when an 800 call terminates in the Stentor territory in Canada. The information is sent to the set during the silence period between the first and second ring. If the subscriber answers the 800 call before the second ring, then the information is not displayed.

Subscription to the CID and DNID options must be done both at the SCP and at the terminating end office. A customer can subscribe to either or both features at the same time. The two options are fully compatible and can be assigned separately.

The network provider determines which of the four Functions in this group to order on the basis of terminating line type and class of service desired:

- *For Call Management Service (CMS) lines:* Basic functionality is included with NTS00002 and line option enhancements are available through NTS00007 and NTS00008. Line option enhancements are mandatory with NA003.
- *For Meridian Digital Centrex (MDC) lines:* initial capabilities are provided through NTS00003 (available with NA002) and enhanced through NTS00007 (available and mandatory with NA003).

The last Function in this group, NTS00009, pertains to calls terminating on customer premises equipment (CPE) through dedicated Bulk Calling Line ID (BCLID) data links.

Benefits

CID and DNID are revenue-generating Custom Local Area Signaling Services (CLASS) features that are presently tariffed in Canada.

Key Capabilities

This Functional Group provides end office display capabilities for Call Management Service sets, such as VISTA200, that support the TR-30 Bellcore standard.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the only other ordering code that is required for this Functional Group to be operational is MDC00001 “Meridian Digital Centrex Minimum.”

NTS00007 “Per-Directory Number Subscription Controls” and NTS00008 “Call Management Services Restructure”-both available and mandatory in NA003-can enhance the operation of this ordering code.

Availability and NTX Mapping

NTS00002 is currently available with NA002 in PCL CDN00002, and with NA003 in PCLs CDN00003, CTOP0003, and LTT00003. The following table lists the NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	ACTID	NTX Package / ACTID Name
NTS00002	**E800 Canadian End Office Display**			NTXS81AA	AR0536	800+ CID, DNID, Display/CMS

800+ CALLER ID AND DIALED NUMBER ID DISPLAY FOR MERIDIAN DIGITAL CENTREX NTS00003

This Function provides end office display capabilities for Meridian Digital Centrex or Automatic Call Distribution lines equipped with Meridian Business Sets (MBSs) such as NT4x20, M5209, M5212, M5312, and M5317T, which use the MBS switch-to-Customer Premises Equipment display protocol and have a 2x16, 2x24, or 2x40 display.

Benefits

CID and DNID are revenue-generating features that are presently tariffed in Canada.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001	Meridian Digital Centrex Minimum
MDC00003	Meridian Digital Centrex Standard
MDC00007	Meridian Business Set Minimum
NTS00002	E800 Canadian End Office Display

NTS00007 “Per-Directory Number Subscription Controls,” available and mandatory in NA003, will enhance the operation of this ordering code.

Availability and NTX Mapping

NTS00003 is currently available with NA002 in PCL CDN00002, and with NA003 in PCLs CDN00003, CTOP0003, and LTT00003. The following table lists the NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	ACTID	NTX Package / ACTID Name
NTS00002	E800 Canadian End Office Display	**NTS00003**	**800+ CID/ DNID Display for MDC**	NTXS82AA	AR0535	800+ CID, DN ID Display/MDC

PER-DIRECTORY NUMBER SUBSCRIPTION CONTROLS NTS00007

This Function replaces the customer group options 800 Calling Number Identification (800Plus CID) and 800 Dialed Number Delivery (800Plus DNID) with line option equivalents for:

- CMS lines (within the Stentor network), equipped with display capabilities, supporting the TR-30 Bellcore standard.
- Meridian Digital Centrex or Automatic Call Distribution lines (within the Stentor network), equipped with display capabilities and supporting the MBS switch-to-Customer Premises Equipment display protocol.

Conversion is transparent to the network provider and happens automatically during the dump and restore procedure of the One Night (delivery) Process (ONP).

Benefits

This Function enhances the administration of CID and DNID features for Call Management Services, Meridian Digital Centrex, or Automatic Call Distribution by permitting option assignments to be made through the service order (SERVORD) interface.

Key Capabilities

- Provides operations, administration, and maintenance (OAM) capabilities for the two new line options. These include:
  - Creating the two new line options, CID and DNID.
  - Providing dump and restore capabilities to change from customer group option subscription to per-DN subscription.
- Modifies the call processing code to check the per-DN subscription instead of the group options.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

NTS00002 E800 Canadian End Office Display

Also required for MDC/ACD Applications:

MDC00003 Meridian Digital Centrex Standard

MDC00007 Meridian Business Set Minimum

NTS00003 800+ CID/DNID Display for Meridian Digital Centrex

Also required for CMS Applications:

NTS00008 Call Management Services Restructure

Availability and NTX Mapping

NTS00007 is scheduled to be generally available with NA003 in PCLs CDN00003, CTOP0003, and LTT00003. The following table lists the activity ID that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	ACTID	ACTID Name
NTS00002	E800 Canadian End Office Display	**NTS00007**	**Per-Directory Number Subscription Controls**	AQ1064	800Plus End Office Display - Line Options

CALL MANAGEMENT SERVICES RESTRUCTURE NTS00008

This Function, in conjunction with NTS00007, replaces the customer group options 800 Calling Number Identification (800Plus CID) and 800 Dialed Number Delivery (800Plus DNID) with line option equivalents for CMS lines (within the Stentor network) equipped with display capabilities supporting the TR-30 Bellcore standard. Conversion is transparent to the network provider and happens automatically during the dump and restore procedure of the One Night (delivery) Process (ONP).

Benefits

This Function enhances the administration of CID and DNID for Call Management Services by permitting option assignments to be made through the service order (SERVORD) interface.

Key Capabilities

- Provides operations, administration, and maintenance (OAM) capabilities for the two new line options. These include:
  - Creating the two new line options, CID and DNID.
  - Providing dump and restore capabilities to change from customer group option subscription to per-DN subscription.
  - Interworking with the Service Order simplification feature for CMS.
- Modifies the call processing code to check the per-DN subscription instead of the group options.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001	Meridian Digital Centrex Minimum
MDC00003	Meridian Digital Centrex Standard
MDC00007	Meridian Business Set Minimum
NTS00002	E800 Canadian End Office Display
NTS00003	800+ CID/DNID Display for Meridian Digital Centrex
NTS00007	Per-Directory Number Subscription Controls

Availability and NTX Mapping

NTS00008 is scheduled to be generally available with NA003 in PCLs CDN00003, CTOP0003, and LTT00003.

The following table lists the activity ID that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	ACTID	ACTID Name
NTS00002	E800 Canadian End Office Display	**NTS00008**	**Call Management Services Restructure**	AQ1081	800Plus End Office Display - CMS Restructure

DIAL NUMBER DISPLAY / BULK CALLING LINE ID NTS00009

This Function enhances the Bulk Calling Line Identification (BCLID) feature of RES00028 to include the dialed 800 number as a part of the BCLID message whenever this feature is subscribed.

Benefits

NTS00009 provides additional revenue opportunities for the network provider by delivering to service subscribers the capability of differentiating 800 calls that terminate on common lines via a display of the dialed digits.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

RES00006 Service Enablers

RES00004 Interface Functionality

RES00028 Bulk Calling Line ID

NI000007 ISDN Base

NI000010 NI-1 Packet Services

NTS00002 E800 Canadian End Office Display

Availability and NTX Mapping

NTS00009 is currently available with NA002 in PCL CDN00002, and with NA003 in PCLs CDN00003, CTOP0003, and LTT00003. The following table lists the NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	ACTID	NTX Package / ACTID Name
NTS00002	E800 Canadian End Office Display	**NTS00009**	**Dial Number Display / Bulk Calling Line ID**	NTXR35AA	NC0420	Dial Number Display / BCLID

ENHANCED 800 SERVICES - CANADA NTS00006

This Functional Group provides service switching point (SSP) office functionality for number translation services for DMS-100 SSP switches in a CCS7 network.

Benefits

This Functional Group adds the power and flexibility of the CCS7 network to extend number translation services. For example, this software can enhance the network provider's revenue stream by helping to increase the call completion rate for E800 calls through overflow routing features (800-service revenues are in direct proportion to call completions).

Key Capabilities

SSP office capabilities include 800 Billing Enhancements, Calling Party ID Number Delivery, 800Plus, addition of carrier IDs into Automatic Message Accounting (AMA) records, and Overflow Call Routing (OCR) on BUSY.

Also, NTS00006 can enable 800 calls to overflow when an answer indication is not received at the DMS-100 SSP from a terminating directory number's (DN) end office (OCR No Answer).

With both OCR Busy and OCR No Answer, NTS00006 can process up to four terminating numbers provided by the SCP. The list of terminations may include domestic (Canadian) numbers, international numbers, standard announcements, or U.S.-assigned numbers.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the only other ordering code that is required for this Functional Group to be operational is TEL00008 "CCS7 Base."

Availability and NTX Mapping

NTS00006 is scheduled to be generally available with NA003 in PCLs CDN00003, CTOP0003, and LTT00003. The following table lists the NTX software that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	ACTID	NTX Package / ACTID Name
NTS00006	**Enhanced 800 Services - Canada**				AR0982	SSP-800 Carrier ID in AMA
					AR1083	SSP-800 Overflow Call Routing (OCR) No Answer

NTS00006 table, continued

Functional Group	Functional Group Name	Function	Function Name	NTX Code	ACTID	NTX Package / ACTID Name
NTS00006	**Enhanced 800 Services - Canada**			NTX555AB	AL0249 AL0668 AR0487 BV1858	800 PLUS
				NTXQ38AA	AR0138	800 CID Number Delivery
				NTXQ39AA	AG2326	800 Billing Enhancement
				NTXQ40AA	AG2186 AR0173	SSP-800 Overflow Call Routing (on busy only)

RELEASE LINK TRUNK WITH NO THIRD-PARTY INTERACTION NTS00011

This Function is intended for use with Call Prompter service that is designed to redirect calls to a third party. Also called Call Completion with Trunk Optimization (CCTO), this software will remove redundant Integrated Service Digital Network (ISDN) User Part (ISUP) trunks in the event of call transfer or redirection on the following call types (to optimize the use of network resources):

- ISUP to Simplified Message Desk Interface (SMDI)
- ISUP to Integrated Business Network (IBN) line

Benefits

This optional Function optimizes trunk utilization by freeing up seized trunks when calls are transferred.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

SS700001 CCS7 Trunk Signaling

TEL00008 CCS7 Base

NTS00006 Enhanced 800 Services - Canada

Availability and NTX Mapping

NTS00011 is scheduled to be available with NA003 with CDN00003, CTOP0003, and LTT00003. The following table lists the NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	ACTID
NTS00006	Enhanced 800 Services - Canada	**NTS00011**	**Release Link Trunk with No Third-Party Interaction**	NTXQ65AB	AG2329

ENHANCED 800 CANADIAN GATEWAY NTS00004

This Function provides ISUP interworking, for 800+E Northbound and Southbound calls, between the Charge Number parameter used by AT&T and the Calling Party Number parameter used by Bellcore TR-317. This enables Stentor Operating Companies to send 800+ calls into other carrier networks within North America using ISUP trunks.

Benefits

This feature permits the dialed 800 number (as opposed to the translated POTS routing number) to cross carrier network boundaries and result in a database query by the

terminating carrier. The advantage for originating network providers is that they no longer need to maintain another carrier's translations in their database.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

TEL00008 CCS7 Base

NTS00006 Enhanced 800 Services - Canada

Availability and NTX Mapping

NTS00004 is currently available with NA002 in PCL CDN00002, and with NA003 in PCLs CDN00003, CTOP0003, and LTT00003. The following table lists the NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	ACTID	NTX Package/ ACTID Name
NTS00004	**Enhanced 800 Canadian Gateway**			NTXQ41AA	AR0209	NTS NB/SB Enhancement

800PLUS SOUTHBOUND NTS00010

This optional Function is similar to NTS00006, but supports multifrequency (MF) trunks instead of ISUP trunking.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

TEL00008 CCS7 Base

NTS00006 Enhanced 800 Services - Canada

NTS00004 E800 Canadian Gateway

Availability and NTX Mapping

NTS00010 is currently available with NA002 in PCL CDN00002, and with NA003 in PCLs CDN00003, CTOP0003, and LTT00003. The following table lists the NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	ACTID
NTS00004	Enhanced 800 Canadian Gateway	**NTS00010**	**800Plus Southbound**	NTX169BA	AG1247

► UNITED STATES ORDERING CODES

The remaining ordering code descriptions in this chapter are software offerings designed for the United States market. There is one Functional Group (NTS00005 “E800 - United States” and an optional Function (NTS00012 “Extended Capability”).

E800 - UNITED STATES NTS00005

This Functional Group enables the evolution of “Basic 800” service to “Enhanced 800” service in United States networks. This software is required as an office migrates into the CCS7 network and supports direct queries with the service control point (SCP) database.

The E800 service in this offering has been tested and approved with Bellcore specification TR-TSY-000533. NTS00005 satisfies all the requirements of this specification and is approved for use in the US market.

Benefits

This Functional Group offers the following key advantages:

- *Increases Revenue.* An office can accommodate more 800 carriers, thus enhancing revenues from access charges.
- *Reduces Costs.* Without E800 capabilities, an office has to pay for passing 800 calls on to another office that can query the SCP database.
- *Improves Customer Satisfaction.* With 800 Portability, customers can make agreements with different 800 carriers to make the most of discounts or special offers. Such arrangements may include routing based on the time of day, day of week, and location at which the call originated.

Key Capabilities

NTS00005 on the DMS-100 SuperNode provides the following:

- Interworking between the SSP and SCP in a CCS7 network for 800 routing.
- 10-digit routing.
- Comfort tones.
- Four-digit Carrier Identification Codes.
- Support for E800-type services in the future with other number codes.

Dependencies and Interactions

The following lists show the ordering codes-other than the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003)-required for this Functional Group to be operational in two different switch types. Option #1 is for the end office; Option #2 is for the access tandem.

Option #1		Option #2	
TEL00008	CCS7 Base	TEL00008	CCS7 Base
EQA00001	Equal Access End Office	EQA00002	Equal Access Toll
EQA00006	CCS7 ISUP InterLATA Connection EAEO	EQA00014	CCS7 ISUP InterLATA Connection Access Tandem

Availability and NTX Mapping

This Functional Group is currently available in the U.S. market with NA002 in PCLs LEC00002 and LET00002, and with NA003 in PCLs LEC00003 and LET00003. The following table lists the NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package
NTS00005	**E800 - United States**			NTX554AA	CCS7 E800 Service Switching Point

EXTENDED CAPABILITY NTS00012

This optional Function expands access to E800 service in the U.S. market for the network provider that will be incorporating either or both of the following:

- Cellular trunks
- Call Forwarding involving 800 numbers

Benefits

By expanding accessibility, this software offers additional revenue-generating opportunities for the 800-service provider and, in access charges, to the local service provider.

Key Capabilities

- Allows calls originating from Feature Group B trunks and terminating on a line that has been call forwarded to an 800 number to be connected to 800 service over an Access to Carrier (ATC) trunk.
- Enables E800 calls originating from cellular trunks be connected, through standard translations, to 800 service over an ATC trunk. Billing is adjusted for this type of call so that no charge is attached to the originating cellular caller.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following lists the ordering codes required for this Function to be operational in two switch types. Option #1 is for the end office; Option #2 is for the access tandem.

Option #1		Option #2	
TEL00008	CCS7 Base	TEL00008	CCS7 Base
EQA00001	Equal Access End Office	EQA00002	Equal Access Toll
EQA00006	CCS7 ISUP InterLATA Connection EAEO	EQA00014	CCS7 ISUP InterLATA Connection Access Tandem
NTS00005	E800 - United States	NTS00005	E800 - United States

Availability and NTX Mapping

NTS00012 is currently available with NA002 in PCLs LEC00002 and LET00002, and with NA003 in PCLs LEC00003 and LET00003. The following table lists the previous NTX software that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	ACTID	NTX Code / ACTID Name
NTS00005	E800 - United States	**NTS00012**	**Extended Capability**	NTX554AB	AR0983	U.S. Feature Group B Call Forward to 800
					AR0984	E800 Cellular Trunks

Emergency Number Services

Because wire-center locations and municipal boundaries do not necessarily match, it is sometimes difficult or impossible-with Basic 911 service-for the answering Public Safety Answering Point (PSAP) attendant to dispatch the emergency service that serves the calling party's location. This limitation is overcome with Enhanced 911 (E911) service.

Enhanced 911 is a quick, efficient, and reliable solution for subscribers to reach appropriate emergency services. The benefits that make E911 different from Basic 911 service are:

- The ability to selectively route an E911 call so that it reaches the emergency service located closest to the caller.
- Delivery of caller related information, such as address and other geographic information.

With E911 the DMS system sends a call to the appropriate PSAP-the agency responsible for answering emergency calls for police, fire, ambulance, and other services. At the PSAP, a calltaker automatically and instantly views the caller's address as well as those agencies serving the caller. This information is provided by an external database, such as Northern Telecom's Life-911 Automatic Location Identification database (see next page).

Emergency calls are processed quickly because all required information is readily available as soon as the calltaker answers the call. With E911 service, emergency assistance is available immediately-even if the connection is broken or if the calling party is unable to provide a location.

UNIQUE IN THE MARKETPLACE

While conforming to TR-TSY-000350 and other Bellcore specifications, Northern Telecom is the first vendor to offer the following capabilities.

- A unique capability to route 911 calls across E911 tandems (see ENS00001). This ability includes initial routing of calls, selective transfer of calls, and fixed transfer of calls. (Routing across DMS tandems will preserve full feature transparency; call transfer across other tandems results in the loss of only some feature transparency.)
- Our Selective Routing Database (SRDB, see ENS00003) is contained within the switch, as opposed to being an adjunct processor; and requires less space for the same amount of data. The advantages include lower cost, higher reliability, and faster operation.
- We offer the Integrated ACD PSAP (see ENS00002). This offering provides the same functionality as customer premises equipment (CPE)-based solutions but at a lower cost (there's no CPE to purchase) and higher reliability (because it's all in the switch). This solution benefits from interworking with the powerful Meridian Automatic Call Distribution system.

Northern Telecom also offers an adjunct Automatic Location Information (ALI) database, called LIFE-911, to offer a total solution to public safety customers.

For more information about the many benefits of Emergency Number Services, refer to the *Enhanced 911 Product/Service Information* bulletin (number 50075.16).

EMERGENCY NUMBER SERVICE ENHANCED 911 ENS00005

This Functional Group provides basic software common to the operation of the next two Functions (ENS00001 and ENS00002).

Benefits

By itself, ENS00005 does not provide usable functionality. To be of benefit, the network provider must select ENS00001 (for customer premises operations), ENS00002 (for central office operations), or both, to implement E911 service.

The last Function in this Functional Group (ENS00003, the database system) is available for both ENS00001 and ENS00002.

Key Capabilities

This software offers foundational support for the implementation of E911 services, including:

- Virtual Facility Group support.
- Ringback to E911 callers capabilities.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), no other ordering code is required for this Function to be operational.

Availability and NTX Mapping

ENS00005 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
ENS00005	**ENS E911**			NTXN59AA	Ringback to E911 Callers
				NTXP58AA	Virtual Facility Group Support for E911

LINE APPEARANCE ON A DIGITAL TRUNK (LDT) PSAP ENS00001

This optional Function delivers 911 calls to a customer premises-based Public Service Answering Position (PSAP) through the Line Appearance on a Digital Trunk (LDT) node of the Subscriber Carrier Module-100 URBAN (SMU). Capabilities include Automatic Number Identification (ANI) delivery to a PSAP; default routing; alternate routing; and central office transfer (selective, fixed, and manual).

Benefits

This Function is an enhancement to Basic 911 (and an enhancement to the 1AESS-based E911 service). By providing more functionality, the service provider can realize more revenue, especially in areas where Enhanced 911 services are tariffed.

Key Capabilities

ENS00001 provides “E911 Tandem” capabilities, in compliance with TR-TSY-000350 and other Bellcore requirements, with the following differentiating capabilities.

- Tandem-to-tandem transfer, with greater alternate routing capabilities.
- 10-digit ANI support (unique in the industry).

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001 Meridian Digital Centrex Minimum

MDC00003 Meridian Digital Centrex Standard

ENS00005 Emergency Number Service Enhanced 911

Availability and NTX Mapping

ENS00001 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
ENS00005	ENS E911	**ENS00001**	**Line Appearance on a Digital Trunk (LDT) PSAP**	NTX447AA	E911 - Tandem

AUTOMATIC CALL DISTRIBUTION PSAP ENS00002

Northern Telecom is the first vendor to offer a switch-integrated Public Safety Answering Point.

This optional software provides the same E911 Tandem capability as the LDT PSAP Function (ENS00001, above) but routes calls to a DMS Meridian Automatic Call Distribution (ACD) group that is defined as a PSAP. The ACD system then selects the next available (longest-idle) PSAP agent and the call is delivered. Direct connections are supported to external Automatic Location Information (ALI) databases and call event loggers.

Benefits

Implementation costs are reduced and operating reliability increased by provisioning the full PSAP functionality within the DMS system rather than in customer premises equipment (CPE). The Meridian ACD system provides sophisticated call coverage, supervision, and tracking features. Extensive messaging exists between the E911 and ACD software, which would not be possible with CPE operations, offering operating robustness, flexibility, and speed.

Key Capabilities

The capabilities provided by this ordering code are largely identical to ENS00001; but instead of routing the call over a trunk to CPE equipment at the PSAP, the call routes to an ACD queue in the DMS switch. This configuration offers the following capabilities.

- Full Meridian Automatic Call Distribution (ACD) functionality
- Optional Call Center Management Information System (MIS) support.
- DMS-integrated operations, administration, and maintenance-with minimal CPE required.

For more information about the capabilities and benefits of Meridian ACD, refer to the “Meridian Automatic Call Distribution” chapter, starting on page 191 in this document.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the following are other ordering codes that are required for this Function to be operational.

MDC00001	Meridian Digital Centrex Minimum
MDC00003	Meridian Digital Centrex Standard
MDC00007	Meridian Business Set Minimum
ACD00001	Meridian Automatic Call Distribution Base
ENS00005	Emergency Number Service Enhanced 911

If Call Center MIS is desired, then ordering code ACD00005 “Automatic Call Distribution Management Information System” is also required. Optionally, ACD00006 “ACD Enhanced” can broaden the operation of ENS00002.

Availability and NTX Mapping

ENS00002 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
ENS00005	ENS E911	**ENS00002**	**ACD PSAP**	NTXF61AA	Integrated Automatic Call Distribution (ACD) Public Safety Answering Point (PSAP)
				NTXN17AA	Direct Access to Automatic Location Information (ALI) Database
				NTXN66AA	Direct Access to AT&T Automatic Location Information Control
				NTXP99AB	Remote Call Event Record

STANDARD SELECTIVE ROUTING DATABASE ENS00003

This optional Function provides switch-based E911 selective routing capabilities that can be based on the individual directory number, thousands group, NXX, or NPA (Numbering Plan Area).

By “optimizing” the association between the telephone number and emergency service numbers, large geographic areas can be efficiently served with a selective-routing database.

Benefits

This is an optional capability and is considered value-added-service providers may be able to increase their tariffs with this software. Northern Telecom’s Selective Routing Database (SRDB) is contained within the switch, instead of an adjunct processor, and requires less memory space for the same amount of data-offering network providers the advantages of lower cost, higher reliability, and faster operation.

ENS00003, continued

Key Capabilities

This ordering code will provide the ability to route a 911 call to the PSAP based on the subscriber's ANI. This capability will ensure each subscriber reaches the most appropriate Emergency Response Center based on geographic location. Other capabilities offered by ENS00003 include the following:

- Direct access to Automatic Location Information (ALI) database systems, to permit automatic updates.
- Memory management functions display memory consumption and offer other administrative capabilities.

Dependencies and Interactions

The following are two software dependencies, depending on the type of PSAP supported. Each list shows the ordering codes-other than the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003)-that are required for ENS00003 to be operational.

CPE-Based	
MDC00001	MDC Minimum
MDC00003	MDC Standard
ENS00001	LDT PSAP
ENS00005	ENS Enhanced 911

DMS System-Based	
MDC00001	MDC Minimum
MDC00003	MDC Standard
MDC00007	MBS Minimum
ACD00001	Meridian ACD Base
ENS00002	ACD PSAP
ENS00005	ENS Enhanced 911

Availability and NTX Mapping

ENS00003 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
ENS00005	ENS E911	**ENS00003**	**Standard Selective Routing Database**	NTX451AA	Selective Routing Database (SRDB)
				NTXN60AA	Dial-up into Automatic Location Information Database for SRDB Update
				NTXQ18AA	SRDB Memory Management

Dynamically Controlled Routing

Dynamically Controlled Routing (DCR) offers centralized, realtime monitoring and control of interswitch traffic. This network traffic control provides the following benefits.

- Offers a practical and economical alternative to increased facilities expenditures.
- Increases the network's ability to survive in most traffic conditions.

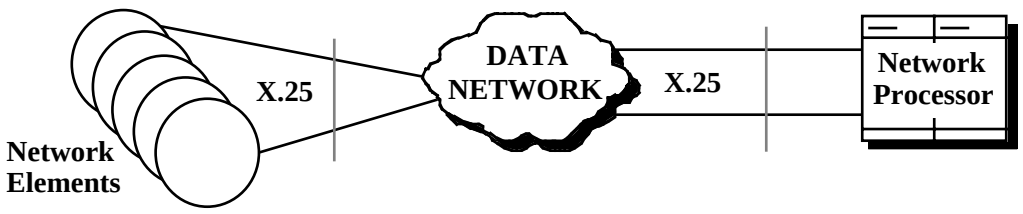
To achieve this real-time requirement, DCR operates at call-processing priority in the DMS Computing Module. Central control is provided by an external central processor, made up of Hewlett-Packard equipment, known as a Network Processor (NP).

DCR enhances the efficiency of the network by having the NP compute the most-likely-to-succeed tandem recommendations for routing destinations one or two links away from the origination. Additional new routing tables are introduced which can be updated dynamically by recommendations from the central Network Processor (NP) every 10 seconds. This is done by having the network elements (NEs) communicate their idle trunk, direct traffic overflow, and other measurements to the NP at a constant time interval. The NP then computes the routing recommendations and transmits them back to each NE. The NE routes individual calls as per the NP recommendations and applicable Fixed Routing rules.

For example, when a direct link is not available, a call may be allowed to attempt one two-link alternate route. A particular two-link route is dynamically chosen by the NP, to maximize overall grade of service.

To dramatically enhance the traditional Fixed Routing traffic methodology used in a standard network, this optional service automatically:

- Monitors the entire network in realtime.
- Detects traffic problems in the network.
- Applies expansive-type controls as required.
- Balances traffic across direct and secondary routes.
- Provides centralized reporting and administration.



A Centralized Network Processor Continuously Recommends Best Tandem Routing

OPTIMAL ROUTING

The routing decisions made by the NP optimize network traffic, limit the number of links used by a call, and eliminate the possibility of looping. If communication with the NP is lost, the switch automatically reverts to standard Fixed Routing back-up tables.

The recommendations generated by the DCR routing algorithm, in reaction to changing network conditions, might involve any of the following:

- *Tandem CLLI recommendations* used as addresses for calls overflowing from the direct route and for handicapped traffic.
- *Block recommendations* stop calls at the source that have a poor chance of completion. Stopping calls at the source prevents them from encumbering the network.
- *Continue recommendations* forward calls to the Fixed Routing exception route lists stored in the switch.

SYSTEM DESCRIPTION

The following Northern Telecom switching products support DCR.

- DMS-100
- DMS-100/200
- DMS-200
- DMS-250

No major hardware modification is necessary in the DMS system for DCR, because the only card required is a Multiple Protocol Controller (MPC) for an X.25 data communication port.

Each communicating NE individually connects to the NP through dedicated data communication facilities. If equipped with Multiple Network Access (MNA, see DCR00002), the NE can connect to more than one NP.

The heart of the DCR system is the central network processor: an external duplicated processor system using a UNIX-based software platform. The NP contains the DCR centralized routing algorithm and associated functionality necessary to monitor and control the routing algorithm functions. In addition, the in-service NP supports the following major functions:

- High-availability platform based on a duplicated hardware architecture.
- User positions for monitoring and controlling the DCR system using graphics and text screens.
- Robust NE interfaces.
- Event Management System capable of collecting and storing NP system generated Log and Alarms.
- Operational Measurement (OM) system capable of collecting and storing NP generated operational and performance statistics.
- Links to operations systems (OSs) for log/alarm and OM data transfer.

The NP is a modular system, allowing for incremental expansion in its hardware and software capabilities as a network grows.

DYNAMICALLY CONTROLLED ROUTING BASE DCR00001

Dynamically Controlled Routing (DCR) is an automatic, intelligent network management system that uses switch and traffic information to automatically re-route overflow traffic. DCR gives toll and local telecommunications networks the ability to make routing decisions based on the actual moment-to-moment status of a network.

Benefits

DCR continuously optimizes traffic flow, and provides the following benefits to a network provider:

- Reduces costs in equipment, operations, and administration.
- Increases revenue through increased call completions.
- Improves network survivability and grade of service.

The software will evolve with GR-495, OSI (CCITT/ITU SG-2), TNM, CMISE, CMIP, CCS7, TCAP, and other standards.

Key Capabilities

DCR00001 is the Computing Module software for a network-level system that:

- Automates Traffic, Routing, and Network Management capabilities.
- Provides an interface to manage services, performance, and security.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), no other ordering code is required for this Functional Group to be operational.

Availability and NTX Mapping

DCR00001 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX software that now comprise this ordering code.

Functional Group	Functional Group Name	NTX Code	ACTID	NTX Package / ACTID Name
DCR00001	**DCR Base**	NTXP55AB	-	DCR Base DMS-100 Class-5 End Office
		NTX022AC	-	DCR Base DMS-200 Toll Office
		-	AR0806	Handicap Removal and Dual Homing
		-	AR0807	Dynamic Network Modifications Messaging Robustness

MULTIPLE NETWORK ACCESS (MNA) DCR00002

MNA allows a switch to participate in up to six distinct DCR networks. This feature also enables a DMS switch to act as a DCR gateway for traffic flowing between separate physical networks.

Benefits

DCR00002 improves inter-traffic flow between two or more DCR networks, thus multiplying the benefits of reduced costs, increased revenue, and greater survivability offered by DCR00001.

Key Capabilities

This Function offers the following capabilities for a DMS switch:

- Permits a DMS switch to participate in two to six separate DCR networks.
- Enables a DMS switch to serve as a gateway between the DCR network and a physically separate network.
- Expands DCR features so that DCR can be used in Private Virtual Networks as well as in the public network.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the only other ordering code that is required for this Function to be operational is DCR00001 “Dynamically Controlled Routing Base.”

Availability and NTX Mapping

DCR00002 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the previous NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
DCR00001	DCR Base	**DCR00002**	**Multiple Network Access (MNA)**	NTXS67AA	Multiple Network Access

DUAL X.25 LINKS DCR00003

This Function supports two digital DCR links to enhance the availability of DCR services on a switch.

Benefits

DCR00003 is intended for network providers who require high-availability DCR switches.

Key Capabilities

This Function supports a backup communication facility for DCR messages between the DMS switch and a centralized Network Processor, thus enhancing DCR service availability.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the only other ordering code that is required for this Function to be operational is DCR00001 “Dynamically Controlled Routing Base.”

This ordering code enhances the operation of DCR00002 “Multiple Network Access” by adding high availability to network survivability capabilities.

Availability and NTX Mapping

DCR00003 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the activity ID that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	ACTID	ACTID Name
DCR00001	DCR Base	**DCR00003**	**Dual X.25 Links**	AR0805	Dual X.25 Links

Network Portability Service

Network Portability Service (NPS) is an effective personal mobility offering that attempts to deliver a call to a subscriber at different directory numbers (DNs), as listed in a database. If a call does not terminate successfully at any of the DNs, then the call completes at a voice mail, message service, or similar destination.

Currently available in the Canadian market only, this service is aimed at subscribers who tend to be on the move and can be at different DNs over a period of time. With NPS, calling parties know that their calls have a good chance of reaching the subscriber without having to know the subscriber's current location.

HOW NPS FINDS THE SUBSCRIBER

When a user subscribes to this service, the party receives a Personal Number. A call to that number triggers a query to a database that provides up to three routing DNs and a call completion DN (typically, voice mail). A DMS-100 SuperNode system, serving as a service switching point (SSP), attempts each of the DNs, in turn, monitoring for busy or no answer conditions; if one of these conditions exists, then the service places a call to the next DN. If the service progresses through the list without completing the call, then the calling party is transferred to the final DN, usually voice mail or similar call coverage.

The calling party can be sent audible ringing or an optional announcement to mask the various call progress tones. In addition, the calling party has the ability to force the call to the final DN instead of waiting through the various call attempts.

To do this, the NPS developers brought forward the power of the busy/no answer detection trigger, defined as part of the AIN 0.2 specifications, and incorporated it into a customized version of AIN 0.0 release (NPS00002). In the future, the service will migrate to AIN 0.1 as the opportunity arises, and will continue to keep pace with Intelligent Network developments.

A CLOSER LOOK AT THE DATABASE

One of the key features of NPS is its flexible routing capabilities. This service attempts to find the subscriber at a number of potential locations (such as office, home, or cellular phone). The locations attempted, the order they are tried, and the call completion information are all part of the subscriber's service profile residing in a service control point (SCP). This database information forms an ordered list of DNs that the SCP transmits to the SSP whenever the Personal Number is dialed.

The SSP proceeds through the ordered list, attempting to reach the subscriber at each location. If the call goes uncompleted, the SSP stops that call and attempts a telephone call to the next DN on the list. If the call is answered, NPS immediately transfers the calling party to that line. Otherwise, NPS tries the next DN on the list. The last DN on the list is intended to be a call completion destination, such as voice mail or similar service.

FEATURES THAT INTEREST NEW SUBSCRIBERS

Much of the service logic occurs at the service control point, where the following optional features can be provided.

- *Find Me*-is the name given to the standard service already described. NPS performs a sequential search for the subscriber by attempting to connect the incoming call to one of number of DNs. If all the calls go unanswered (busy or no answer conditions), then the call routes to the call completion DN.
- *Follow Me*-allows the subscriber, through interaction with the SCP, to program the routing for incoming calls to a single location. When this feature is enabled, an incoming call routes to the Follow-Me DN. If the call cannot be completed to the DN, then the call routes to the call completion DN.
- *Call Completion*-permits a subscriber to specify in a service profile a final DN that calls will route to when either Find Me or Follow Me fails to establish a connection. This DN could be a voice mail, message service, cellular DN, or any other destination of the subscriber's choosing.
- *Force to Call Completion*-enables the calling party to go directly to the call completion DN at any time during the Find Me call attempts.
- *Do Not Disturb*-allows the subscriber to have all calls route directly to the call completion DN. Typically, the subscriber uses this feature when the party will be unreachable for an extended period of time (because of holidays, vacations, emergency situations, and the like).

NUMBER PORTABILITY SERVICE BASE NPS00001

This Functional Group, together with NPS00002, provides Computing Module support for the NPS service, which attempts to reach a subscriber at up to three pre-determined locations when a unique Personal Number is dialed. The locations attempted, the order they are tried, and the final treatment are all determined by the subscriber's service profile.

This switch-based service is superior in speed, efficiency, and flexibility-especially for mass market deployment-to somewhat similar services available on adjunct PC-based platforms.

Benefits

This automated service offers incremental revenue opportunities for service providers in Canada. NPS has high appeal to mobile segments of the population needing a type of personal mobility service. Calling parties also appreciate the ease of contacting the subscriber, without having to know the party's current location.

This service can be creatively used for other applications, such as an interface to wireless Personal Communications Services, or to chain ACD groups.

Key Capabilities

NPS00001 on the DMS-100 SuperNode provides the following:

- Support of a virtual telephone number that triggers a SCP database query on behalf of the NPS application.
- Interworking of the service between elements in the CCS7 network, such as the SSP that places the calls to the DNs on the list retrieved from the SCP.
- Passing of subscriber control from an incoming line to the SCP, for updating the party's service profile.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the only other ordering code that is required for this Functional Group to be operational is NPS00002 "Advanced Intelligent Network 0.0 Release" (customized).

Although NPS00002 is a Function of NPS00001, it is required for this service.

Availability and NTX Mapping

NPS00001 is currently available with NA002 in PCL CDN00002, and with NA003 in PCLs CDN00003 and LTT00003. The following table lists the activity ID that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	ACTID	ACTID Name
NPS00001	**Network Portability Service Base**			AQ1145	Flex Call Routing

ADVANCED INTELLIGENT NETWORK 0.0 NPS00002

NPS00002 is actually a customized version of the AIN 0.0 release. The NPS developers brought forward the busy/no answer detection trigger, defined as part of the AIN 0.2 specifications, and incorporated it into this version of AIN 0.0.

In the future, the service will migrate to AIN 0.1. At that time NPS00002 will be discontinued-and a different ordering code will be required to provide the necessary interworking with the CCS7 network elements.

Benefits

By deploying the busy/no answer detection trigger from AIN 0.2, this Function enables network providers to begin immediately to derive revenues from advanced capabilities, rather than waiting for general availability of the AIN 0.2 release.

Key Capabilities

This software is specifically designed to provide the busy/no answer triggers required for NPS00001 operation. This software is not intended to be used as the foundation to support any other AIN 0.0 feature or service.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the only other ordering code that is required for this Function to be operational is NPS00001 "Network Portability Service."

Availability and NTX Mapping

NPS00002 is currently available with NA002 in PCL CDN00002, and with NA003 in PCLs CDN00003 and LTT00003. The following table lists the activity ID that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	ACTID	ACTID Name
NPS00001	Network Portability Service	**NPS00002**	**AIN 0.0**	AQ1146	AIN 0.0

World Line Card

Reducing operating costs is a critical concern for today's network providers who find themselves squeezed from every side by mounting competitive pressures. Northern Telecom's World Line Card (WLC) can decrease day-to-day operating costs to help diminish some of those pressures.

Advantages of the World Line Card

- *Enhanced reliability*
- *Improved transmission quality*
- *Reduced power consumption*
- *Automated over-voltage protection*
- *Software templates available for network customization*

The WLC brings greater flexibility to voice line card technology, such as having software automatically control key parameters to suit different transmission requirements. Leading edge design and materials, coupled with Northern Telecom's environmentally sensitive and efficient manufacturing practices, produce a line card that meets world class standards.

The WLC takes advantage of improvements in integrated circuit design to offer a high degree of intelligence. Using Application-Specific Integrated Circuit (ASIC) technology, individual chip components are integrated on a single sheet of silicon, making the WLC more compact-while increasing its functions. The result is a voice line card that is flexible, smarter, and more reliable.

The WLC is delivered in two versions: Type A (NT6X17BA) and Type B (NT6X18BA). The chart below shows Type A and B capabilities.

	Type A	*Type B*
POTS	●	●
CLASS	●	●
MDC Basic (2500 sets)	●	●
Local Message Service	●	●
Teen Service	●	●
Coin, Ground Start, & PBX		●

The WLC's performance characteristics, safety features, and transmission versatility can reduce central office expenditures, and continue to save money over time.

FOR MORE INFORMATION

Refer to the *World Line Card-The Next Step in Voice Line Card Technology Product/Service Information* bulletin, number 57002.16/01-94, for details on the benefits, applications, and specifications of the World Line Card.

BASIC WLC SOFTWARE STANDARD WITH BAS00003

As an added cost savings to the network provider, the software for basic World Line Card operations (software package NTXW00AA) is included as part of the mandatory BAS00003 "Base Generic" Functional Group (one of the ordering codes in the DMS SuperNode Platform). This means there is no special software expense involved in implementing basic WLC service in a North American office.

The following pages detail optional software that expand and enhance the capabilities of the WLC.

WORLD LINE CARD ENHANCED WLC00001

This ordering code enhances the WLC Base capabilities (provided by the DMS SuperNode Platform software) by providing safety enhancements and new service versatility through customized software templates.

Benefits

This software monitors and reports hazardous voltages on the subscriber line. Over-voltage reporting software allows service providers to monitor their networks for the occurrence of power crosses and respond in a timely fashion to restore subscriber service.

Key Capabilities

WLC00001 offers the following enhancements to the World Line Card:

- Software reporting of the presence of hazardous voltages upon subscriber loop and the triggering appropriate system alarms.
- Support of 900-ohm + 2.16 microfarad (μ F) circuits-for special connections at a central office for both Type A and Type B WLCs. Individual software templates can be created for unique network implementations.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), no other ordering code is required for this Functional Group to be operational.

Availability and NTX Mapping

WLC00001 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
WLC00001	**World Line Card Enhanced**			NTXW03AA	Over-Voltage Reporting
				NTXW20AA	North American 900 +2 Type A Template
				NTXW21AA	North American 900 +2 Type B Template

40 MILLIAMP CURRENT LIMIT WLC00004

With the standard WLC software provided by the DMS SuperNode Platform, the WLC automatically maintains a loop current under 75 milliamps, to limit power consumption. Optional WLC00004 software further limits this loop current down to a maximum of 40 milliamps.

Benefits

This Function reduces operating costs through reduced power consumption, using a 40 milliamp current-limit software template on short loops. Selectively limiting current flow reduces power consumption-offering operational cost savings, especially on typical short loop configurations. Lower current levels also minimize the possibility of overheating customer premises equipment.

Key Capabilities

WLC00004 supports a software template that monitors and maintains a loop current for Type A World Line Cards to maximum of 40 milliamps.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), the only other ordering code required for this Function to be operational is WLC00001 "World Line Card Enhanced."

Availability and NTX Mapping

WLC00004 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the activity ID that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	ACTID	ACTID Name
WLC00001	World Line Card Enhanced	**WLC00004**	**40 Milliamp Current Limit**	AE1298	40 Milliamp Current Limit Template

WORLD LINE CARD LINE ADMINISTRATION WLC00002

This Functional Group performs automatic off-hook testing of subscriber loops, including telephone equipment, and optimizes the transmission performance of World Line Cards to match each loop's unique characteristics. The feature scans the open loop and determines the appropriate balance network configuration: loaded, nonloaded, or 900 ohm +2.16 microfarads (for special connections at the central office).

Benefits

Periodic execution of the Line Administration feature ensures optimal transmission performance of the WLC as outside plant rearrangements take place and customer premises equipment change. Regularly maintaining the appropriate transmission performance for changing outside plant characteristics prevents customer complaints and speeds troubleshooting.

Key Capabilities

This Functional Group offers the following capabilities so a network provider can optimize network balance configurations.

- Performs automatic off-hook testing of subscriber loops on originating or terminating subscriber calls.
- Automatically updates network balance settings for WLCs.
- Automatically sets the loaded or nonloaded network balance settings for traditional line cards-or make a recommendation to deploy the WLC, which can accommodate 900 ohm special connections.
- Offers numerous scheduling options.

Dependencies and Interactions

Besides the DMS SuperNode Platform (BASE0001, TEL00001, and BAS00003), no other ordering code is required for this Functional Group to be operational.

Availability and NTX Mapping

WLC00002 is currently available with NA002 in PCLs CDN00002, LEC00002, and LET00002; and with NA003 in PCLs CDN00003, LEC00003, LET00003, and LTT00003. The following table lists the existing activity ID that now comprises this ordering code.

Functional Group	Functional Group Name	NTX Code	ACTID	NTX Package / ACTID Name
WLC00002	**World Line Card Line Administration**	NTXT11AA	AE1442	Line Administration Phase II (Off Hook Balance Test)

Directory and Operator Services

For 20 years, Northern Telecom has provided switch-based operator services, under the family name of Traffic Operator Position System (TOPS), to telephone operating companies all over the world. Today, Northern Telecom is the only vendor in the industry to offer complete, end-to-end operator services across the network, including the following:

- **Switch hardware and software**-supporting toll and assistance, directory assistance, and intercept applications, along with base switching capability for operator services.
- **Operator workstations**-TOPS MP, TOPS MPX, and TOPS MPX-IWS.
- **Directory assistance systems and databases**-supporting traditional and new listing services, including Digital Directory Assistance and Directory One.
- **Application processors for line number services**-including intercept and line profiling services.
- **External databases**-using an open, industry standard platform to provide support systems for operator reference, external rating, and statistical reporting.
- **Audio processing systems**-supporting directory assistance, toll, and new voice processing applications.

Open interfaces among network components provide exceptional flexibility and efficiency.

TOPS SOFTWARE IN THIS CHAPTER

Several types of software are used to deliver the many operator services capabilities. Separate software, delivered in different forms, supports operator functions in the switch, the workstation, voice processing peripherals, and database processors.

This document describes software for the Computing Module of the DMS switch-to support services, operator positions, and databases that subtend from the switch. This software is developed and released through Product Compute-Module Loads (PCLs) with the TOPS prefix, such as TOPS003. Most of the directory and operator services capabilities presented in this document are included in the TOPS003 PCL.

Note that many of switch-based capabilities described in this document require additional software on other processing platforms:

- **TOPS Position Controller** and/or **TOPS Message Switch** to support operator positions.
- **Link Peripheral Processor** to support Automated Directory Assistance Service.
- **Voice Service Node** or **Interactive Voice Subsystem** for audio processing.
- **Workstations** to support the operator interface for applications.
- **Network application processors** to support such applications as Directory One, LION, and Digital Directory Assistance.

This *DMS-100 Software Portfolio* describes software for the DMS TOPS switch only. For more information about software for peripheral processors, refer to the *Feature Planning Guide* (50004.11), *TOPS Evolution Product/Service Information* bulletin (50103.16), and contact your regional Northern Telecom representative for a list of other marketing and software provisioning documentation.

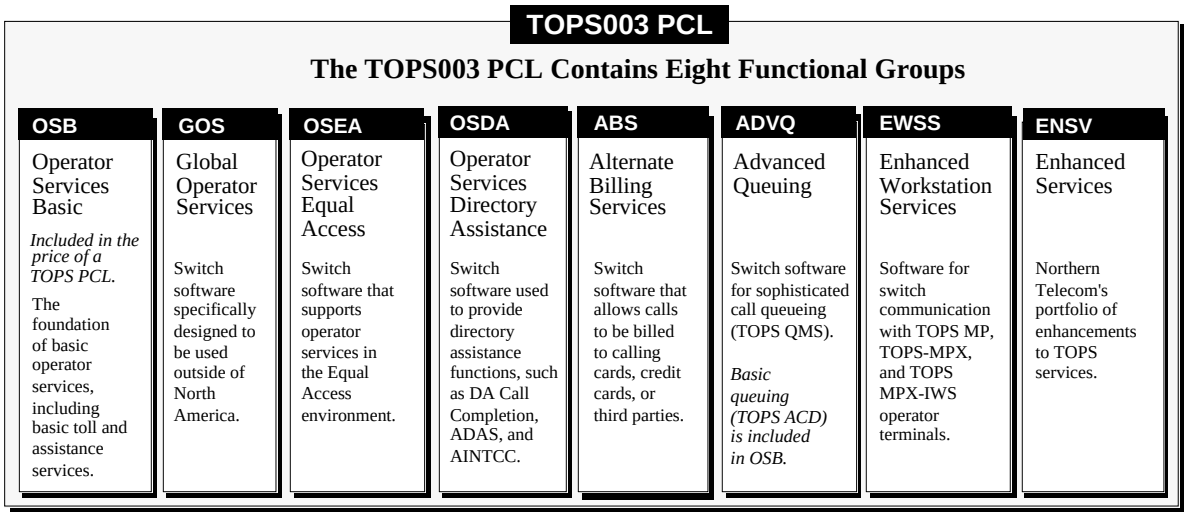
SWITCH SOFTWARE OVERVIEW

TOPS software for the DMS switch is provided in a TOPS load that includes all generally available TOPS software for DMS-100/200 and DMS-200 TOPS switches in North America.

The TOPS003 PCL includes eight Functional Groups. The first one-OSB00001 "Operator Services Basic"-is considered standard and is included in the price of the TOPS PCL. Every customer that receives the TOPS003 PCL can use all the software in OSB00001. The other seven Functional Groups-that are included in the load but not licensed or activated-are priced separately.

These groups have been organized so that dependencies between groups are kept to a minimum. Related capabilities are contained within the same group, and base capabilities are not dependent on optional software. For example, the software contained in the OSDA0001 Functional Group base does not require that any of its optional Functions be active. This practice minimizes dependencies and greatly simplifies the process of engineering software for a TOPS switch.

The new software structure, which greatly simplifies the organization and presentation of TOPS capabilities, also makes it easier than ever to order TOPS software. Rather than numerous packages with unrelated NTX and NTG order codes, the customer selects from logically named and numbered Functional Groups.



AT A GLANCE

The Functional Groups (followed by their Functions) appear in this chapter in the following sequence.

Ordering Code Name	Order Code	Page
Operator Services Basic	OSB00001	273
Global Operator Services	GOS00001	276
TOPS Equal Access	OSEA0001	277
Operator Services Directory Assistance	OSDA0001	280

Ordering Code Name	Order Code	Page
Alternate Billing Services	ABS00001	289
Advanced Queuing	ADVQ0001	296
Enhanced Workstation Services	EWSS0001	302
Enhanced Services	ENSV0001	310

OPERATOR SERVICES BASIC OSB00001

This Functional Group contains software that is fundamental to all operator services, or so widely used as to be considered ubiquitous. This includes all the functions in the old NTX030CC and BA packages, "TOPS Call Processing," and "TOPS ACD Features," plus TOPS-04 terminal interface software, and others. Many independent operating companies that use TOPS for basic toll and assistance services require little more software than the Operator Services Basic Functional Group.

Key Capabilities

There are no optional capabilities within this Functional Group. Customers who purchase the OSB00001 Functional Group gain the right to use any or all the following:

Provide the foundation for a wide portfolio of operator services on DMS-200 standalone switches and DMS-100/200 combination switches.

- **TOPS Automatic Call Distribution (ACD) Features**-Implements basic queuing of calls to operators.
- **TOPS Call Processing Features**-Implements basic TOPS call processing, including basic toll and assistance capability, the TOPS 04 interface, basic North American trunk signaling, and others.
- **TOPS Remote CAMA (Centralized Automated Message Accounting)**-Supports Remote Operator Number Identification (RONI), allows a call at a switch without operators to temporarily bridge on a TOPS operator to collect a calling number for calls, if necessary.
- **TOPS Inward Validation**-Allows a TOPS operator to validate a calling card number by outpulsing it using MF signaling to an operator who has access to a validation system.
- **Host Operator Centralization Data Link**-Enables operator centralization datalink handling in a TOPS host switch.
- **TOPS NOTIS Format**-Allows trouble reports entered by a TOPS operator to be printed on a NOTIS device instead of using system LOGS.
- **Remote Operator Centralization Data Link**-Enables operator centralization datalink handling in a TOPS remote switch.
- **TOPS Dial-up Autoquote**-Allows Autoquote information to be printed on teletype machines (TTYs) located at a hotel/motel using dial-up links instead of the dedicated facilities formerly required.
- **TOPS City Zone Rating**-Enhances the TOPS domestic rating system to allow calls to a large city to be rated based upon network provider-defined zones in the city.
- **TOPS Bellcore AMA Format** -Implements Automated Message Accounting (AMA) for TOPS as defined by Bellcore.
- **TOPS Service Billing**-Allows selected called numbers to be designated as "service numbers," which allows the network provider to implement real-time rating.
- **TOPS Average Work Time (AWT) Enhancements**-Reduces operator AWT by optimizing several keying functions on operator positions.
- **TOPS Operator Password**-Implements a password capability for TOPS operators.

OSB00001, continued

- **TOPS AMA Enhancements**-Implements enhancements initially targeted for the Canadian market, including recording of TOPS call origination type on AMA records.
- **TOPS Extended Bellcore AMA Format (EBAF)**-Enhances TOPS Bellcore AMA to support the Extended Bellcore AMA Format, with optional appended modules.
- **TOPS E911**-Allows a TOPS operator who receives an emergency call that should have been dialed 911 to forward the call with ANI to a 911 switch.
- **Directory Assistance/Toll Branding**-Allows a network provider to brand the beginning of a TOPS call based on incoming trunk group or the calling number or interexchange carrier, using DRAM technology.
- **Improved Statspac**-Provides individual operator statistics for operators in TOPS Automatic Call Distribution (as opposed to TOPS Queue Management System).
- **TOPS Permanent Hold**-Allows a TOPS operator to put a call on permanent hold even though the calling party may be off-hook.
- **Enhanced MFADS**-Provided enhancements to basic force administration data.
- **TOPS Interchangeable NPA Support-**Enables TOPS processing to accept the expanded range of NPAs.

Dependencies and Interactions

Functional Group EWSS0001 “Enhanced Workstation Services” is required to enable the switch to work with operator positions (other than TOPS04). Other TOPS Functional Groups described in this section enhance the basic call-processing and toll-and-assistance capabilities provided in OSB00001. For example, Functional Group ABS00001 supports alternate billing and other enhancements to basic toll services. Functional Group ADVQ0001 expands the number of operator call queues from 4 to 255. Functional Group OSDA0001 supports sophisticated directory assistance services.

Availability and NTX Mapping

OSB00001 is available in PCL TOPS003 for the U.S. and Canada. The following table lists the NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
OSB00001	**Operator Services Basic**			NTX030BA	TOPS ACD Features
				NTX030CC	TOPS Call Processing Features
				NTX035AA	TOPS Remote CAMA
				NTX036AA	TOPS Inward Validation
				NTX039AA	Host Operator Centralization (OC) Data Link Handling

OSB00001 table, continued

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
OSB00001	**Operator Services Basic**			N/A	Variable Rate Busy Line Verification/ Interrupt
				NTX096AA	TOPS NOTIS Format
				NTX134BA	Remote OC Data Link Handling
				NTX140AA	TOPS Dial-Up Autoquote
				NTX141AA	TOPS City Zone Rating
				NTX188AA	TOPS Bellcore Automatic Message Accounting (AMA)
				NTX645AA	TOPS Service Billing
				NTXA28AA	TOPS Average Work Time Enhancements
				NTXE00AA	TOPS Operator Password
				NTXE18AA	TOPS AMA Enhancements
				NTXE20AA	TOPS Extended Bellcore AMA Format (EBAF)
				NTXE34AA	TOPS E911
				NTXE71AA	Directory Assistance / Toll Branding
				NTXE73AA	Improved Statspac
				NTXE95AA	TOPS Permanent Hold
				NTXJ96AA	Enhanced MFADS
				NTXS18AA	TOPS Multi-NPA Support

GLOBAL OPERATOR SERVICES GOS00001

The Global Operator Services (GOS) Functional Group provides software for TOPS switches outside of North America.

Key Capabilities

Implement TOPS operator services outside of North America.

- **Global TOPS Basic**-Provides basic global capabilities for TOPS, such as interfacing TOPS with international translations, modified AMA for global use, and a modified R1 signaling capability for the international environment.
- **Global TOPS Message Switch (PCM-30)**-Enhances TOPS software to interwork with the TOPS Message Switch in a PCM-30 environment. This capability requires EWSS0003 "TOPS Directory Assistance TOPS Message Switch."
- **GOS Rating**-Implements the rating system used in the global environment.
- **GOS Booked Call Database**-Enables the database and operator terminal interface required for the Booked Call Database feature.
- **R2 to TOPS**-Implements a direct R2 to TOPS capability to eliminate the need for loop-around trunks.
- **Manual Toll Break-In (TBI)**-Implements a toll break-in capability for TOPS. The TOPS operator can break into a connection to confer with the called or calling party. This ability is often required with the Booked Call Database feature-the operator breaks in to inform subscribers that their booked call is ready to be placed.

Dependencies and Interactions

GOS00001 requires OSB00001 "Operator Services Basic." In order to support TOPS operator positions, this software requires the Enhanced Workstation Services (EWSS0001) Functional Group and the optional capability, EWSS0003 "TOPS DA TMS."

Availability and NTX Mapping

This optional Functional Group is available in PCL TOPS003. The following table lists the NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
GOS00001	**Global Operator Services**			NTXH38AA	Global TOPS Call Processing
				NTXK21AA	TOPS BT7 Interworking
				NTXR47AA	Global TOPS Message Switch (PCM-30)
				NTXR51AA	Global Operator Services Rating
				NTXR58AA	Booked Call Database

TOPS EQUAL ACCESS OSEA0001

In the Equal Access environment, subscribers have equal access to the long-distance carrier of their choice-and can make this choice on a call-by-call basis, if they wish. The requirement to provide this equal access placed some additional demands on operator services capabilities, addressed by Functional Group OSEA0001.

Key Capabilities

This Functional Group enables the TOPS system to:

Meet regulatory requirements for providing operator services in the Equal Access environment.

- Receive and process modified Feature Group C signaling with two-digit Automatic Number Identification (ANI) IDs.
- Route calls to the appropriate carrier using the carrier code and class of service screening.
- Connect to Access to carrier (ATC) trunks and propagate coin control signals from an end office to a carrier.
- Record carrier information in Automatic Message Accounting (AMA) records.
- Allow an operator to transfer a call to a carrier.

Dependencies and Interactions

OSB00001 “Operator Services Basic” is required for this software to be operational.

Availability and NTX Mapping

This optional Functional Group is available in PCL TOPS003. The following table lists the NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
OSEA0001	**TOPS Equal Access**			NTXT19AA	Equal Access Carrier Code Expansion
				NTX187AA	TOPS Equal Access
				NTXP78AA	Feature Group B Carrier Code Expansion

TOPS INTERLATA CARRIER SERVICE OSEA0002

This Function enables network providers to perform operator services on a contractual basis to interLATA carriers. This provides the operating company with an additional source of revenue while allowing the carrier to have operator services for their customers without incurring the full expense of an operator workforce.

Key Capabilities

Through internal data tables and interpretation of call signaling, TICS enables the TOPS switch to determine the interLATA carrier associated with the call, then to determine whether the operator center provides services for that interLATA carrier. The operator can complete 0, 0+, and 1+ interLATA calls originating from Equal Access or non-Equal Access end offices.

Provide operator services on behalf of an interexchange carrier for added revenue opportunity.

Dependencies and Interactions

This optional Function requires OSEA0001 “TOPS Equal Access” and OSB00001 “Operator Services Basic.”

Availability and NTX Mapping

OSEA0002 is available in PCL TOPS003. The following table lists the NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
OSEA0001	TOPS Equal Access	**OSEA0002**	**TOPS InterLATA Carrier**	NTX714AA	TOPS InterLATA Carrier

EXCHANGE ACCESS OPERATOR SERVICES SIGNALING OSEA0003

This Function provides the ability to combine operator services traffic with other traffic on the same trunk-between an Equal Access End Office (EAEO) and the TOPS switch. This is achieved by enabling the DMS TOPS switch to accept Feature Group D Equal Access Operator Services Signaling (EAOSS) from the end office.

Key Capabilities

By accepting and processing the Equal Access Operator Services Signaling protocol, operator services traffic can be combined with other traffic on a trunk group, offering trunk efficiencies not previously possible.

Implement EAOSS as defined by Bellcore, for maximum trunk efficiency.

Dependencies and Interactions

This optional Function requires OSEA0001 "TOPS Equal Access" and OSB00001 "Operator Services Basic."

Availability and NTX Mapping

OSEA0003 is available in PCL TOPS003. The following table lists the NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
OSEA0001	TOPS Equal Access	**OSEA0003**	**Exchange Access Operator Services Signaling**	NTX891AA	Exchange Access Operator Services Signaling

TOPS INCOMING FEATURE GROUP D SIGNALING OSEA0004

This Function enables the TOPS system to process standard Feature Group D (FGD) calls. Also, as an enhancement to TOPS InterLATA Carrier Service (TICS), this software enables a network provider to modify the carrier associated with the call based upon dialed digits. This is needed because some carriers do not desire or are not allowed to process certain calls. For examples, some carriers have indicated that they do not want to process 0- calls. Another carrier may not be allowed to process calls to the continental United States.

Enhance TOPS InterLATA Carrier Service (TICS) with the ability to modify the carrier associated with a call based upon dialed digits.

Key Capabilities

This software permits the TOPS switch to receive and process standard Feature Group D signaling from interexchange carriers or cellular switches.

Dependencies and Interactions

This optional Function requires OSEA0001 "TOPS Equal Access" and OSB00001 "Operator Services Basic."

Availability and NTX Mapping

OSEA0004 is available in PCL TOPS003. The following table lists the NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
OSEA0001	TOPS Equal Access	**OSEA0004**	**TOPS Incoming Feature Group D Signaling**	NTX891AA NTXE35AA	TOPS Incoming Feature Group D Signaling

OPERATOR SERVICES DIRECTORY ASSISTANCE OSDA0001

This optional Functional Group provides the switch software to support directory assistance services through the TOPS switch. Directory assistance (DA) service allows the caller to request assistance from an operator in looking up a directory number. Rather than dialing "O," the caller dials one of the following: 411, 1-555-1212, or 1-NPA-555-1212. The call appears to the operator in a screen that immediately identifies the call as a DA call. The operator gets the necessary information from the subscriber and initiates a DA database search to return all listings that match the search criteria. The operator selects the appropriate listing and releases the call to an audio response unit (ARU) that quotes the requested number to the subscriber.

For two decades, Northern Telecom has been developing switch and position software to enable operators to interact with DA systems provided by Computer Consoles Inc. (CCI), IBM, and Volt-Delta Resources, Inc. In 1991, Northern Telecom acquired CCI; the Rochester, N.Y., organization is now part of Northern Telecom's Directory and Operator Services Division. With the addition of CCI's proven directory assistance systems and related applications, Northern Telecom became the first and only vendor to offer a complete, end-to-end operator services system.

Today, Northern Telecom supplies 50% of the computerized directory assistance marketplace in North America and 100% in the United Kingdom, 40% of the intercept market in North America, and 95% of all automated alternate billing services used in North America.

Key Capabilities

OSDA0001 provides Computing Module support for the following base capabilities:

Provide an end-to-end network for directory assistance services.

- **Base TOPS DA Call Handling**-Gives a TOPS switch basic DA call handling capability, including ability to interact with a directory assistance system.
- **Standard Switch-to-DAS Protocol-**Implements the standard protocol for communicating between the switch and the directory assistance system (DAS).
- **IBM Switch-to-DAS Protocol-**Implements the protocol for communicating between the switch and IBM directory assistance system.
- **TOPS Support of Internal DRAM-**When the IBM DA is used, enables directory assistance and intercept announcements using Digital Recorded Announcement Machine (DRAM) technology.

This Functional Group also contains optional Functions such as the following high-profile applications:

- **Automated DA Call Completion (ADACC)**, which gives the caller the option to have the DA call completed automatically to the requested number for a small charge.
- **Automated Intercept Call Completion (AINTCC)**, which gives subscribers who move the option of having calls to their old numbers automatically completed to the new number.
- **Automated Directory Assistance Service (ADAS),** which automates the greeting and inquiry portions of the DA call, saving an average of two to four seconds of operator work time.

Dependencies and Interactions

Functional Group OSB00001 “Operator Services Basic” must be active in the switch to provide directory assistance services. In addition, the Functions contained in this group require Functional Group EWSS0001 “Enhanced Workstation Services” to support operator positions.

Availability and NTX Mapping

OSDA0001 is available in PCL TOPS003. The following table lists the NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
OSDA0001	**Directory Assistance**			NTXA62AA	TOPS DA Call Processing
				NTXA63AA	Std Sw-DAS/C Protocol
				NTXE05AA	IBM Software Protocol
				NTXN51AA	TOPS Supp Int DRAM

AUTOMATED DIRECTORY ASSISTANCE CALL COMPLETION OSDA0002

Northern Telecom's Automated Directory Assistance Call Completion (ADACC) offers callers automatic connection to the requested number during a DA call. With ADACC, after the requested listing is provided, callers can choose to let the switch complete the call immediately-without redialing. Previously, callers had to hang up and dial a new call if they wished to connect to the number they had just received from directory assistance.

Key Capabilities

For callers, ADACC offers a fast and simple way of reaching the person whose number they had requested. If the caller is making a one-time call, has difficulty dialing, doesn't have a pencil, or needs a fast connection, ADACC offers a beneficial service.

Give customers fast call connection, convenience, and choice-while generating new revenues.

By charging a modest fee for this service-50 or 85 cents, for instance-the network provider gains a new revenue source. Using a conservative example, in a metropolitan area, perhaps 100,000 calls per day may be offered completion. If even 10% of these callers accept the service at a charge of 50¢ per call, annual revenues from the ADACC offering would total more than $1.8 million per year. Alternate billing options for the ADACC service can increase these revenues even more.

ADACC Operation. When a caller dials directory assistance, the call routes to a DA operator, who queries the DA database and identifies the number. The operator then releases the call, and an audio response unit delivers the requested number to the caller. With the ADACC software loaded into the TOPS switch, the DA system and switch exchange messages to determine whether call completion can be offered for the call. If so, the call routes to an audio response unit that is preprogrammed to offer call completion. The caller is informed of the requested number and offered the option to have the call completed for a small additional charge. If the caller accepts, the TOPS switch dials the call to the requested number, saving the caller from initiating a new call.

Dependencies and Interactions

OSDA0002 requires OSB00001 "Operator Services Basic" and OSDA0001 "Directory Assistance." If this Function is to be offered with alternate billing, optional Functional Group ABS00001 "Alternate Billing Service" must be active in the switch.

Availability and NTX Mapping

This Function has been generally available since BCS31 and is available in PCL TOPS003. The following table lists the NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
OSDA0001	Directory Assistance	**OSDA0002**	**Automated Directory Assistance Call Completion**	NTXF10AA, NTXE36AB	Auto DACC w/AltBill

AUTOMATED INTERCEPT CALL COMPLETION OSDA0003

Intercept is a database-driven service that provides information about out-of-service telephone line numbers to callers. Because Regional Bell Operating Companies are required to provide this basic intercept service at no cost to callers or subscribers, basic intercept capability is provided in Functional Group OSB00001 "Operator Services Basic."

OSDA0003 enhances call interception, with revenue opportunities for the network provider. Unlike basic intercept treatment, callers are automatically connected to the new number rather than to an announcement of a number change that leaves them with the responsibility for initiating a second call.

Unlike directory assistance call completion, charges for AINTCC are paid for by the subscriber, not the caller. In most instances, service subscription carries a flat, monthly fee. AINTCC also differs from directory assistance call completion in that it is a passive service. No action is required by the caller, who simply stays on the line to have the call completed.

Provide a convenience for caller and subscriber, with revenue potential for specialized intercept treatment.

Key Capabilities

This software enables calls to a changed number to be sent to intercept treatment and then be completed directly to the called party at the new number. An announcement of the number change can be made or not, at the discretion of the customer.

Dependencies and Interactions

This optional Function requires OSB00001 "Operator Services Basic" and OSDA0001 "Directory Assistance."

The external interface for AINTCC is provided through the directory assistance system. AINTCC works with DA systems from Northern Telecom, IBM, and Volt-Delta Resources, Inc. The operator interface is supported by Functional Group EWSS0001 "Enhanced Workstation Services."

Availability and NTX Mapping

OSDA0003 is available in PCL TOPS003. The following table lists the NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
OSDA0001	Directory Assistance	**OSDA0003**	**Automated Intercept Call Completion**	NTXN49AA	Automated Intercept Call Completion

AUTOMATED DIRECTORY ASSISTANCE SERVICE OSDA0004

Automated Directory Assistance Service (ADAS) automates the greeting and inquiry portion of a DA call. Callers are greeted by the automated system and asked to state the name of the city and listing they are seeking. ADAS records the caller's responses, removes initial and closing pauses, and replays the edited recording to the operator, who hears only the information needed to complete the call, such as: "*Clayton, Susan Jenkins*."

If a response is too long, ADAS can prompt the caller to repeat only the essential information. ADAS records the caller's responses, removes initial and closing pauses, and replays the edited recording to the operator.

The result is significant savings in operator work time (OWT). Even for straightforward DA calls, OWT savings of two to four seconds can be expected, because ADAS:

- Performs the prompting for city and listing.
- Tends to produce more concise responses from subscribers.
- Trims the pauses that occur before and after the caller's response.
- Brings the operator into the interaction at a later point.

Key Capabilities

ADAS plays a distinctive tone to indicate an incoming ADAS call. At call arrival, the operator hears the listing locality and name-before the caller's voice path is opened. Another tone marks the end of the playback and opening of the voice path.

Automate the greeting and inquiry portions of the DA call, saving an average of 2 to 4 seconds of operator work time.

In many cases, the operator may not have to interact with the caller at all before releasing the call to the Audio Response Unit (ARU). Other calls may require some caller-operator interaction. For example, the caller's response might be incomplete or ambiguous, or the operator might need additional information to help identify a non-unique listing.

The remainder of the process is the same as a traditional DA call. The operator uses existing methods to perform the database search and interact with the caller, if necessary.

For the network provider, ADAS ensures that every ADAS call is answered with the same carefully considered wording and tone. Each call receives uniform treatment, following procedures that the operating company has established with system parameter settings and professionally recorded announcements. Many aspects of ADAS operation are easily set and changed by the network provider, such as greetings, prompts, maximum recording time, and number of errors before going to an operator.

ADAS was designed for DMS TOPS switches, whether configured for host, remote, or standalone operator services centers. ADAS works with TOPS MP, TOPS MPX, and other Open Position Protocol (OPP) operator positions. Because the functionality is contained in the switch, ADAS works with any commercially available DA system.

Dependencies and Interactions

OSDA0004 requires OSB00001 "Operator Services Basic," OSDA0001 "Directory Assistance," and OSDA0008 "Automated Directory Assistance Service Link Peripheral

Processor and Application Processing Unit Support." The operator interface for ADAS is provided in Functional Group EWSS0001 "Enhanced Workstation Services." In addition, software is required in the Link Peripheral Processor (LPP) for audio processing. Optional Functional Group ADAS0001 "ADAS" provides LPP software to support Voice Processing Units and the ADAS operations, administration, and maintenance workstation.

Availability and NTX Mapping

OSDA0004 is available in PCL TOPS003. The following table lists the NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
OSDA0001	Directory Assistance	**OSDA0004**	**Automated Directory Assistance Service**	NTXQ23AA	Automated Directory Assistance Service

AUTOMATED DIRECTORY ASSISTANCE SERVICE LINK PERIPHERAL PROCESSOR AND APPLICATION PROCESSING UNIT SUPPORT OSDA0008

This Function of OSDA0001 provides Computing Module support for the Link Peripheral Processor (LPP) resources used to interact with callers to gather directory assistance information.

Key Capabilities

This Function provides supporting LPP and Application Processing Unit (APU) software needed to implement ADAS. This software is separate from OSDA0004 because this ordering code can be used to support other kinds of applications in the future.

Dependencies and Interactions

This optional Function requires OSB00001 "Operator Services Basic," OSDA0001 "Directory Assistance," and OSDA0004 "Automated Directory Assistance System."

Interwork LPP resources needed to implement ADAS.

Availability and NTX Mapping

OSDA0008 is available in PCL TOPS003. The following table lists the NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
OSDA0001	Directory Assistance	**OSDA0008**	**ADAS Link Peripheral Processor and Application Processing Unit Support**	NTXS30AA	Link Peripheral Processor Support
				NTXS31AA	Application Processing Unit Support

CELLULAR/INTEREXCHANGE CARRIER/LOCAL EXCHANGE CARRIER AUTOMATED DIRECTORY ASSISTANCE CALL COMPLETION OSDA0005

This optional Function allows the directory assistance provider to offer call completion service to cellular callers-local customers and "roamers" alike-and to provide for the correct billing of these calls. This capability opens new markets for the popular Automated Directory Assistance call Completion (ADACC) service. Because a high acceptance rate is expected for cellular callers offered the option of automatic call completion, this feature offers the potential for significant new revenues.

Key Capabilities

The new call-completion features enable the switch to:

Provide Automated DA Call Completion (ADACC) to cellular callers, for significant new revenue potential.

- Complete calls for interexchange carrier subscribers and cellular “roamers.”
- Create carrier information modules, as defined by Bellcore, to be appended to the AMA record for the call.
- Define unique call-handling procedures for different carriers.
- Provide DA branding on a carrier basis-“Thank you for using ABC Telephone.”

New screening options enable the network provider to tightly define which call types are eligible for call completion. For example, the provider might choose to offer call completion for interexchange calls from private phones but not to interexchange calls from public phones.

With this Function, the intraLATA or cellular call arrives through Feature Group D signaling. The switch determines the carrier access code and carrier name by the incoming trunk group. After regular DA services have been provided by the operator, the call is released to the audio response system and the offer for call-completion is made. The call can either be completed in the local network or routed back to the carrier for completion (maintaining the connection through the TOPS switch). Two separate billing records are produced, which simplifies carrier billing to subscribers. One AMA record details the DA portion of the call, and a second AMA record details the call-completion portion of the call.

Dependencies and Interactions

This optional Function requires OSB00001 “Operator Services Basic,” OSDA0001 “Directory Assistance,” and OSDA0002 “Automated Directory Assistance Call Completion.” Also, OSEA0001 “TOPS Equal Access” is highly recommended.

Availability and NTX Mapping

OSDA0005 is scheduled to be generally available in PCL TOPS003. A new Function, this software has no previous NTX code.

DIRECTORY ASSISTANCE AUTOMATION OSDA0006

Automated Directory Assistance Service (ADAS) automates the greeting and inquiry portions of the typical DA call. This next generation of ADAS adds speech recognition on the Network Applications Vehicle (NAV) to recognize the caller's choice of language and locality-and to automatically perform certain actions based on those responses.

Key Capabilities

Provide Computing Module support of an enhanced version of ADAS-using speech recognition to further automate DA calls.

This Function provides Computing Module support of ADAS+ (ADAS Plus) functionality. OSDA0006 enhances the protocol between the DMS switch and Directory One software to enable ADAS+ capabilities. This new architecture places ADAS on the NAV platform with the following three new levels of automation:

- ***Automated Language Selection.*** ADAS queries the caller for the language in which the party would like to interact with the system. ADAS then identifies the language of the calling party based upon the response to the language prompt. The locality and listing prompts are then delivered in that language. Further, if the call needs to involve an operator, ADAS shows the caller's choice of language on an operator position that supports this display. As a result, calls can be passed to operators with the appropriate language fluency.
- ***Automated Locality Name Recognition***. ADAS automatically prompts the caller to say the name of the locality for which a listing is needed, then uses flexible vocabulary recognition to identify the locality. The caller's recorded response is analyzed and matched against a database that contains phonemic transcriptions of every locality serviced by the service provider.
- ***Automated Call Deflection.*** Requests for localities outside the center's service area can be automatically forwarded with no operator intervention. ADAS can maintain listings of the most frequently requested localities outside the operator's area. If the locality is within the area served by the operator service center, the call is handled normally. If not, the call is forwarded to a recorded announcement that informs the caller to dial a different number to receive listing information.

Future developments call for speech recognition of up to 2,400 frequently called numbers for each ADAS system and, later, automation of ambiguous directory assistance requests -such as "Mary Smith"-where several matches are likely to be found.

Dependencies and Interactions

Function OSDA0006 "DA Automation" enables the DMS switch to support ADAS+. The enhanced ADAS application is available on the Listing Services Architecture-developed and released separately from the PCL process. Refer to the *Feature Planning Guide* for details. Support for operator workstations is provided by Functional Group EWSS0001 "Enhanced Workstation Services."

Availability and NTX Mapping

OSDA0006 is scheduled to be generally available in PCL TOPS003. A new Function, this software has no previous NTX code.

ALTERNATE BILLING SERVICES ABS00001

This optional Functional Group provides Computing Module support for various Functions that automate alternative billing tasks. Many of the 0+ calls handled by toll and assist operators are collect calls, calls billed to other numbers, and calls billed to calling cards. Formerly, these calls always required operator involvement. Today, automated systems can perform much of this work, leaving the operator free to complete other revenue-generating tasks. The result is tremendous savings in operator time-translating into millions of dollars for a large operator workforce-while giving the caller fast and efficient service.

Key Capabilities

Save valuable operator time while giving the caller fast, efficient, automated service.

This Functional Group provides the switch software that allows calls to be billed to calling cards, credit cards, or third parties-with the following capabilities:

- **US and Canadian versions of Exchange Alternate Billing Service (EABS)**. EABS enables the switch to provide access to a Line Information Database (LIDB) by means of CCS7 signaling. The Line Information Database contains records that allow verification of the alternate billing request.
- **TOPS Expanded Calling Card Formatting and CCS7 Validation**, which allows TOPS to capture, record on Automatic Message Accounting (AMA), and verify CCITT-format calling cards.

AABS can be implemented on the DMS-200 TOPS, DMS-100/200 TOPS, DMS-200 TOPS Remote, and DMS-100/200 TOPS Remote switches. AABS is used with a voice processing peripheral, such as a Voice Service Node (VSN), Interactive Voice System (IVS), or Northern Telecom's new Network Applications Vehicle (NAV).

Dependencies and Interactions

This optional Functional Group requires OSB00001 "Operator Services Basic." This Feature Group provides the support structure for basic alternate billing services, such as calling card. The network provider then chooses from Functions within ABS00001 to implement additional alternate billing capabilities or enhancements. In addition, software is required in the voice processing peripheral to support AABS.

Availability and NTX Mapping

ABS00001 is available in PCL TOPS003. The following table lists the NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
ABS00001	**Alternate Billing Services**			NTX552AD	ABS Ech Acc Alt Billing Cdn
				NTX825AB	Ech Acc Alternate Billing Service
				NTXE68AA NTXE72AA	Ex Calling Card Form CCS7

AUTOMATED ALTERNATE BILLING SERVICE ABS00002

Automated Alternate Billing Service (AABS) enables calls to be billed to calling cards, credit cards, or third parties. For the network provider, AABS creates significant savings by reducing operator involvement-and therefore operator cost-for these types of calls.

AABS allows subscribers to place collect and third-number billing calls without operator intervention. This is particularly advantageous for callers who wish to use sophisticated new telephone sets for one-key "speed dialing" of a calling card number. And, as always, the caller can reach an operator, if necessary.

Key Capabilities

This Function includes three key components:

Reduce operator involvement-and therefore operating costs-for alternately billed calls.

- **Calling Card Validation.** Widely recognized by the calling public, this is the system that allows callers to dial "0" plus the number, wait for the bong, then enter a calling card number to pay for the call. This Function then uses CCS7 signaling to query a local information database to validate the credit card. Credit card numbers can include up to 23 digits.
- **Automating Collect Calls.** This Function supports speech recognition and recording technology to completely automate collect calls. The system prompts the caller to speak his or her name when placing a collect call. The system then records the name, plays the recording to the called party in a prompt. For example: "You have a collect call from '*Joe*.' Will you pay for the call?" The caller either accepts or declines the collect call-saying "yes" or "no"-and the system recognizes the response and processes the call accordingly.
- **Automating Calls Billed to Third Parties.** This Function uses the same process and speech recognition technology described above to accept billing requests and confirm billing acceptance by a third party.

The first regional operating company to offer AABS reported that only 4.4 percent of collect or third-number calls required operator assistance. As an unexpected benefit, the operating company also reported that AABS-because it provided instructions for using calling cards-increased calling card automation by 13.6 percent.

Dependencies and Interactions

ABS00002 requires OSB00001 "Operator Services Basic" and ABS00001 "Alternate Billing Services."

Availability and NTX Mapping

This Function is available in PCL TOPS003.

The following table lists the NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
ABS00001	Alternate Billing Services	**ABS00002**	**Automated Alternate Billing Service (AABS)**	NTXA17AA	Automated Alternate Billing Service (AABS)

OPERATOR HANDOFF TO AABS ABS00003

Calls that begin as 0- are transferred to the AABS system using the *Operator Handoff to AABS* capability, which uses software in the DMS-200 and in the voice processing peripheral, and, for TOPS MP applications, in the TOPS Position Controller. The DMS switch screens the call, and if it determines the call is eligible for AABS treatment, passes the call to the voice-processing peripheral.

Dependencies and Interactions

This optional Function requires OSB00001 "Operator Services Basic" and ABS00001 "Alternate Billing Services." This capability also requires companion software in the voice-processing peripheral, discussed in more detail in the *Feature Planning Guide:* either VSN00002 (VSN Load) for the Voice Services Node (VSN) or IR000003 (IR Load) for the Interactive Voice Subsystem (IVS).

Automatically transfer 0- calls to a voice-processing peripheral if they are eligible for AABS treatment.

Availability and NTX Mapping

ABS00003 is available in PCL TOPS003. The following table lists the NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
ABS00001	Alternate Billing Services	**ABS00003**	**Operator Handoff to AABS**	NTXA17AA	Operator Handoff to AABS

ACCOUNT CODE BILLING — ABS00004

With this optional Function, business and residential customers, especially those serving many accounts, can track long-distance telephone charges by account.

Key Capabilities

To use this capability, the caller dials 0 plus the area code and number, and then-when prompted by the Automated Calling Card System or Automated Alternate Billing System-the caller dials 15 and an account code containing 2 to 4 digits. This account code is sent to the switch and appended to the billing record for the call.

Offer a convenient service to customers, allowing them to track toll charges by account.

On the customer's bill, long-distance calls will then be grouped by account code for easier bookkeeping. Attorneys, for example, may use this feature to track toll charges relating to a specific case or client. Roommates sharing the same phone number can use this feature to quickly identify their own calls on the monthly bill.

Dependencies and Interactions

This optional Function requires OSB00001 "Operator Services Basic" and ABS00001 "Alternate Billing Services." This capability also requires companion software in the voice-processing peripheral, discussed in more detail in the *Feature Planning Guide*: either VSN00002 (VSN Load) for the Voice Services Node (VSN) or IR000003 (IR Load) for the Interactive Voice Subsystem (IVS).

Availability and NTX Mapping

ABS00004 is available in PCL TOPS003. The following table lists the NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
ABS00001	Alternate Billing Services	**ABS00004**	**Account Code Billing**	NTXJ73AA	Account Code Billing

FRENCH/ENGLISH AABS — ABS00005

Automated Alternate Billing Service (AABS) provides speech-recognition and recording technology to completely automate collect calls and calls billed to calling cards and third parties. Optional Function ABS00005 "French/English AABS" provides the prompts and speech-recognition capabilities to perform AABS capabilities in French or English in Canada.

Key Capabilities

The system recognizes the "yes" or "no"-"oui" or "non"-responses of a wide range of the calling public, regardless of accent or intonation. This Function allows the subscriber to choose a calling language for communicating with the audio processor-and a called language for the audio processor to communicate with the billed party, if billing acceptance is necessary.

Provide AABS prompts in the caller's language.

Dependencies and Interactions

This optional Function requires OSB00001 "Operator Services Basic" and ABS00001 "Alternate Billing Services." This capability also requires companion software in the voice-processing peripheral, discussed in more detail in the *Feature Planning Guide*: either VSN00002 (VSN Load) for the Voice Services Node (VSN) or IR000003 (IR Load) for the Interactive Voice Subsystem (IVS).

Availability and NTX Mapping

ABS00005 is available in PCL TOPS003. The following table lists the NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
ABS00001	Alternate Billing Services	**ABS00005**	**French/English AABS**	NTXP79AB	French/English AABS

AABS CALL SCREENING ABS00006

This Function provides additional call screening capabilities for AABS required in the Canadian market.

Key Capabilities

Meet Canadian requirements for AABS call screening.

The called number is checked to see if the call is a domestic or international call, to determine what type of call screening applies. The system supports a separate screening table for each scenario. Both tables have a Calling Card Screening field, which indicates whether or not calls to that country or region are to be checked for screening. If so, the system checks another screening table for called numbers (terminating codes) to see if the called number has associated billing restrictions. If so, the call is routed to an operator for alternate billing.

Dependencies and Interactions

This optional Function requires OSB00001 "Operator Services Basic" and ABS00001 "Alternate Billing Services." This capability also requires companion software in the voice-processing peripheral, discussed in more detail in the *Feature Planning Guide*: either VSN00002 (VSN Load) for the Voice Services Node (VSN) or IR000003 (IR Load) for the Interactive Voice Subsystem (IVS).

Availability and NTX Mapping

ABS00006 is available in PCL TOPS003. The following table lists the NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
ABS00001	Alternate Billing Services	**ABS00006**	**AABS Call Screening**	NTXS35AA	AABS Call Screening

TOPS DIRECTORY NUMBER CALL SCREENING ABS00007

Directory number screening has traditionally been performed using the Special Directory Number Identification (SPLDNID) table in the DMS TOPS switch. During call processing, the switch searches this table to see if the calling number has been set up for special treatment or restrictions-and processes the call accordingly. The SPLDNID table accommodates approximately 25,000 restricted or special numbers. Restrictions are typically assigned to such lines as university dormitory phones, customer-owned coin operator telephones (COCOTs), and prison phone lines, among others.

ABS00007 expands this capability by using three tables that enable screening for up to 8 million directory numbers. The first table assigns an index number to each directory number to be screened. The second table maps this index to an index in the third table, which contains information for restricted and special directory numbers. The three-table structure enables additional levels of call screening, which are required as new services are implemented using the TOPS Queue Management System.

Key Capabilities

This Function is implemented in two phases. Phase I introduces the Directory Number Screening (DNSCRN) database. Phase II is planned to implement a host of screening capabilities that will allow network providers to offer customized services, a competitive advantage. The new table works with the SPLDNID table; SPLDNID data can still be used for major categories of screened lines, as the TOPS office deems appropriate.

Define special treatment or calling restrictions for up to 8 million directory numbers.

Dependencies and Interactions

This optional Function requires OSB00001 “Operator Services Basic” and ABS00001 “Alternate Billing Services.” This capability also requires companion software in the voice-processing peripheral, discussed in more detail in the *Feature Planning Guide*: either VSN00002 (VSN Load) for the Voice Services Node (VSN) or IR000003 (IR Load) for the Interactive Voice Subsystem (IVS).

Availability and NTX Mapping

ABS00007 is available in PCL TOPS003. The following table lists the NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
ABS00001	Alternate Billing Services	**ABS00007**	**TOPS Directory Number Call Screening**	NTXS19AA	TOPS Directory Number Call Screening

ADVANCED QUEUING ADVQ0001

The Functions offered in ADVQ0001 offer sophisticated queuing capabilities well beyond the basic queuing operations provided by OSB00001 "Operator Services Basic."

Key Capabilities

The TOPS system uses queues to manage calls requiring operator assistance. The Operator Services Base (OSB00001) Functional Group provides a basic queuing strategy known as TOPS ACD (Automatic Call Distribution). With this basic queuing function, incoming calls are placed in one of four queues and distributed to operator positions on a first-in-first-out basis.

Since TOPS positions can handle up to two calls at a time, the system searches for the most idle operator positions first (that is, those with no loops connected), then for partially idle positions (those having only one loop connected). If an idle or partially idle position is not available, the switch places the call in a Calls Waiting queue. When an operator position becomes available, the switch searches the Calls Waiting queue and connects the first call in queue to the position. Recalls-calls going back to operators after prior operator handling or automation-are connected first. Calls waiting in queue for the longest period of time are connected next.

The switch software in the Functions of ADVQ0001 offers call-distribution capabilities far beyond the basic four queues and first-in-first-out method. With TOPS Queue Management System (QMS), the switch can support up to 255 unique call queues-and up to 255 unique operator profiles that define the service capabilities of individual operators and teams.

Set up efficient queuing strategies with up to 255 unique queue types and up to 255 agent profiles.

Calls can be assigned to queues based on information contained in trunk signaling, trunk group identification, dialed digits, and/or data matched to QMS screening tables in the DMS switch. When an agent becomes available, TOPS QMS checks the agent's operator profile and pulls an appropriate call from the call queues. Operators can be assigned primary and secondary responsibilities, so they can help more than one queue when demand warrants.

The priority of a queued call is not necessarily tied to the length of time it has been in the queue; calls can be artificially "aged" in the queue to receive higher priority treatment, or assigned a fixed priority regardless of time waiting in queue.

Dependencies and Interactions

This optional Functional Group requires OSB00001 "Operator Services Basic."

Availability and NTX Mapping

There is no software associated with ordering code ADVQ0001. Refer to each of its Functions for PCL availability and NTX mapping.

TOPS CLOSE DOWN ADVQ0002

To save the network provider operating expenses, this optional Function allows operator functions at smaller host and remote offices to be closed down during off-peak hours.

Key Capabilities

With "Operator Centralization"-a capability provided in Functional Group OSB00001 "Operator Services Base"-operators at one central location can process incoming and outgoing calls on behalf of several remote toll centers. Traffic from the remote toll center is handled in the same manner as traffic from the host switch, and the same grade of service is provided to both host and remote traffic, 24 hours a day. The remote toll center retains all existing trunking, translations, routing, and ticketing information.

Close down light-traffic operator service centers during off hours to save overhead expense.

An Operator Centralization host office can support up to 15 remote offices; each remote office can offer up to 150 positions' worth of traffic to the host. High-speed data links pass call data from the remote location to the host DMS TOPS switch and the TOPS position, and back to the remote switch. Voice links are also provided, so the operator can communicate with the remote caller. Operator Centralization can be set up to be activated automatically at specified times or activated on command.

Optional Function ADVQ0002 "TOPS Close Down" enables network providers to rearrange the relationships among host and remote offices in the TOPS network.

During light traffic periods, typically between midnight and 6 a.m., fewer operators are required. During these times, some operator centers would be very lightly staffed, yet have to remain open to provide operator services at all hours of the day and night. With this Function, host and stand-alone switches can be converted to remotes, which then send their operator traffic to another host. ADVQ0002 allows operator functions at smaller host and remote offices to be closed down during off-peak hours, reducing overhead expense.

Dependencies and Interactions

This optional Function requires OSB00001 "Operator Services Basic" and ADVQ0001 "Advanced Queuing."

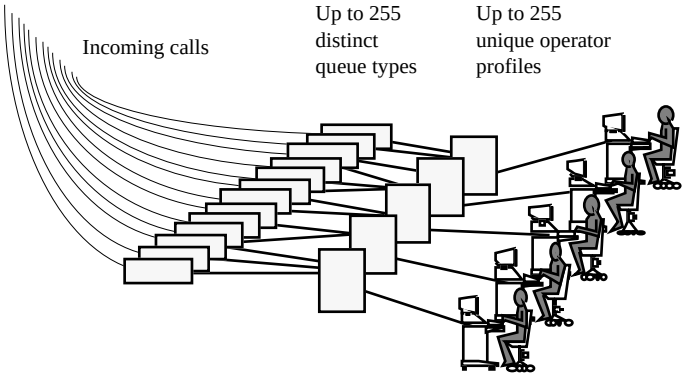
Availability and NTX Mapping

ADVQ0002 is available in PCL TOPS003. The following table lists the NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
ADVQ0001	Advanced Queuing	**ADVQ0002**	**TOPS Close Down**	NTXA60AA	TOPS Close Down

HOST QUEUE MANAGEMENT SYSTEM ADVQ0003

With TOPS Queue Management System (QMS), the TOPS switch can support up to 255 unique queues of calls to operator positions-and up to 255 unique operator profiles that define the service capabilities of individual operators and teams.



QMS call distribution is an improvement over the basic TOPS queuing environment, in which customer calls to operators are placed in one of four queues and answered by the first available attendant. But TOPS QMS is not just another tool for distributing calls automatically. It is an *integrated service enabler* - giving network providers the means to implement their own revenue-generating, enhanced operator services. Network providers can respond quickly to new market demands and implement highly specialized services for their unique customer bases.

Manage the ways calls are distributed to operators for maximum efficiency, specialized customer service, and revenue-generating attendant-backed services.

Benefits

New queuing capabilities used in TOPS QMS can reduce deflections and decrease customer wait time. The ability to segregate calls by a wide range of criteria creates opportunities for designing more efficient queuing strategies - and creates opportunities for operator specialization. Moreover, with 255 available queue types, network providers can offer and track a wide range of revenue-generating attendant services such as weather reports, wake-up calls, and foreign language translation.

Key Capabilities

For network providers interested in offering information, assistance, and listing services, TOPS QMS makes it simple to route and manage calls for those services or systems separately from calls requiring traditional operator services. By tapping into databases, operators will be able to offer callers such information as zip codes, sports updates, stock quotes, operator-assisted Yellow Pages, local directions, hotel and restaurant listings, wake-up service, and weather conditions around the globe. Operators can also be designated as attendant backup for automated services.

New services can be prototyped by designating a particular group of agents or operators to provide them, and then routing traffic directly to these positions based on any combination

of screening criteria. The possibilities are limited only by network provider imagination and regulatory constraints. For example, the network provider may want to trial an application that has been custom-developed on the TOPS MPX-IWS workstation. Using queuing criteria, a small group of operators could be set up to handle the service, providing traditional service as a secondary responsibility. More operators could then be added as the service gained popularity.

Through datafill and options set by the user, TOPS QMS allows these new services to be recorded on the Extended Bellcore AMA Format (EBAF) billing system.

Calls can be assigned to queues based on information contained in trunk signaling, trunk group identification, dialed digits, and/or data matched to QMS screening tables in the DMS switch. When an agent becomes available, TOPS QMS checks the agent's operator profile and pulls an appropriate call from the call queues. Operators can be assigned primary and secondary responsibilities, so they can help more than one queue when demand warrants.

This Functional Group also provides an optional **External MIS Interface**, an open interface to pass operational information to an external force management system provided by a third-party vendor. TOPS QMS can provide virtually all known event data in raw format at intervals set by the user, from 1 to 59 seconds. The external management information system (MIS) can then use this raw data to generate force management statistics requested by the network provider, such as:

- Average work time by queue, agent, call type, or service.
- Average answer time by queue, service, or call type.
- Service initiations by position.
- Call volume (seizures or time) by service, queue, agent, team, or call type.
- Disposition of calls released from an operator.
- Percent occupancy by agent or team.
- Average occupied positions by team.

This feature enhances TOPS QMS by giving the network provider the tools to observe operations efficiently, to determine the acceptance level for new services being deployed, and to identify opportunities based on call traffic and type.

Dependencies and Interactions

This optional Function requires OSB00001 "Operator Services Basic" and ADVQ0001 "Advanced Queuing."

Availability and NTX Mapping

ADVQ0003 is available in PCL TOPS003. The following table lists the NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
ADVQ0001	Advanced Queuing	**ADVQ0003**	**Host Queue Management System (QMS)**	NTXP41AA NTXR48AA NTXR50AA	Host Queue Management System (QMS)

REMOTE QUEUE MANAGEMENT SYSTEM ADVQ0004

This optional Functional Group provides the companion software for implementing TOPS Queue Management System at a remote switch.

Dependencies and Interactions

This optional Function requires OSB00001 "Operator Services Basic," ADVQ0001 "Advanced Queuing," and ADVQ0003 "Host Queue Management System" on the host switch.

Extend TOPS QMS capabilities to remote switches that send their operator traffic to another switch.

Availability and NTX Mapping

ADVQ0004 is available in PCL TOPS003. The following table lists the NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
ADVQ0001	Advanced Queuing	**ADVQ0004**	**Remote Queue Management System**	NTXP42AA	TOPS Remote Queue Management System

HOST/REMOTE NETWORKING BY QUEUE TYPE ADVQ0005

TOPS Queue Management System (QMS), provided in optional Function ADVQ0003, allows call handling procedures to be uniquely defined for up to 255 queues. Optional Function ADVQ0005 "Host/Remote Networking by Queue Type" extends this queuing capability throughout host and remote switches in a network, anywhere where TOPS QMS is installed on the switch.

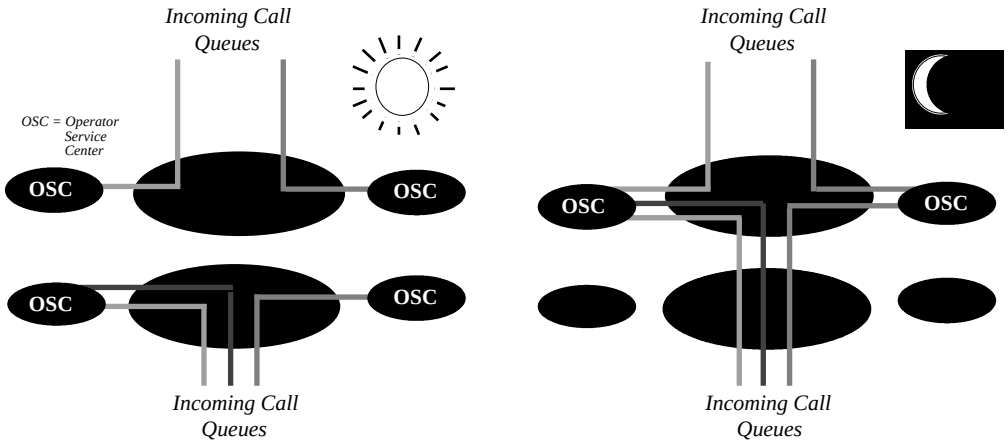
Key Capabilities

With ADVQ0005, TOPS calls can be networked to different host switches based on the call's queue assignment.

For example, toll and assistance traffic could be directed to Host A at night, while directory assistance traffic is forwarded to Host B. Operator-assisted calls can be routed to a host service center when remote operator service centers are shut down, when overflow conditions occur, or whenever a primary host is unavailable. Attendant-backed services with limited demand can be offered across the entire network from one operator service center.

Distribute operator calls among different host switches depending on the call's queue type.

In fact, Host/Remote Networking by Queue Type enables a switch to simultaneously operate as a standalone, host, and remote switch-or any combination of these configurations-as defined by software and datafill on the switches.



Host/Remote Networking By Queue Type
Unprecedented Flexibility in Managing Operator Traffic

Dependencies and Interactions

This optional Function requires OSB00001 “Operator Services Basic” and ADVQ0001 “Advanced Queuing.”

Availability and NTX Mapping

ADVQ0005 is available in PCL TOPS003. The following table lists the NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
ADVQ0001	Advanced Queuing	**ADVQ0005**	**Host/Remote Networking by Queue Type**	NTXN54AA	Host/Remote Networking by Queue Type

ENHANCED WORKSTATION SERVICES EWSS0001

Northern Telecom's operator workstation portfolio consists of three distinct offerings:

- **TOPS MP** position
  -offers time-proven performance for traditional operator services.
- **TOPS MPX** workstation
  -uses Northern Telecom's AOSS protocol to interface with directory assistance systems.
- **TOPS MPX-IWS**
  -the first Intelligent Operator Workstation, offers customer programmability for traditional and non-traditional services.

Functional Group EWSS0001 "Enhanced Workstation Services" provides the switch software to support workstation communication with host and remote switches. The TOPS PCL also includes software for the TOPS Message Switch to support TOPS MPX and TOPS MPX-IWS workstations.

Key Capabilities

Provide switch communication with operator workstations.

New development based on the proven TOPS MPX platform has produced an intelligent workstation that performs traditional operator services alongside new services defined by the customer.

The TOPS MPX-IWS workstation supports traditional services-such as toll and assistance, directory assistance, and intercept-while also supporting other attendant-backed services, such as general assistance listing and information services.

Open interfaces with the switch, external databases, and local area network allow customers to create workstation applications that interact with other elements of the operator services environment. New attendant-backed services can be created independently of the switch development process. The result is faster introduction of diverse, sophisticated operator services developed to suit the customer's exact requirements.

Dependencies and Interactions

For workstation operation, additional software is required on other platforms, as follows:

- **For TOPS MP positions**, additional software is required in the TOPS Position Controller.
- **For TOPS MPX and TOPS MPX-IWS workstations**, additional software is required in the workstations themselves.

For more information on these non-Computing Module software offerings, refer to the *Feature Planning Guide* (50004.11), *TOPS Evolution Product/Service Information* bulletin (50103.16), or contact your regional Northern Telecom representative.

Availability and NTX Mapping

EWSS0001 is available in PCL TOPS003. The following table lists the NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
EWSS0001	**Enhanced Workstation Services**			NTX724AA	TOPS-MP Interface
				NTX871AA	Remote TOPS MP OC Datalink
				NTX873AA	Host MP OC Datalink
				NTXE70AA	TOPS 2 Term DA/Int

AUTOMATIC OPEN INFORMATION ACCESS SESSION START EWSS0002

The Open Information Access (OIA) protocol permits connection to OIA-compliant databases. This open protocol allows service providers to create applications that interact with external databases. For instance, a custom application could be created that:

1. Sends a query to a database to find stock quotes or Yellow Pages listings.
2. Receives and processes the response from the external, OIA-compliant database.
3. Displays the result on the operator's screen in a predefined position and format.

The OIA interface can be used today to provide on-line access to operator reference databases to access such information as dialing instructions, rating information, and emergency numbers. The operator makes two or three keystrokes to access the external database.

Key Capabilities

This optional Function allows the automatic initiation of an OIA session based on call information. The switch sends a message to the TOPS Position Controller or TOPS MPX-IWS, during initial position seizure, requesting the start of an external database session for the operator. This results in faster database access, with the same search and retrieval capabilities that are available with manually initiated sessions.

Provide faster customer service where access to an OIA-compliant database is required.

For example, using TOPS Queue Management System, a queue could be defined as the StockInfo line; calls in that queue could automatically initiate a session with an OIA-compliant database of stock information.

Dependencies and Interactions

This optional Function requires OSB00001 "Operator Services Basic" and EWSS0001 "Enhanced Workstation Services." If TOPS MPX-IWS is used, then EWSS0003 "TOPS Directory Assistance TOPS Message Switch" is also required.

Availability and NTX Mapping

EWSS0002 is available in PCL TOPS003. The following table lists the NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
EWSS0001	Enhanced Workstation Services	**EWSS0002**	**Automatic Open Information Access Session Start**	NTXN84AA	Automatic Open Information Access Session Start

TOPS DIRECTORY ASSISTANCE
TOPS MESSAGE SWITCH EWSS0003

This Function, required for TOPS MPX and TOPS MPX-IWS workstations, connects TOPS operator terminals to the switch using the TOPS Message Switch (TMS). A key advantage is the ability of the TMS to signal at speeds up to 56 kbps using X.25 links, compared to the 300- or 1200-baud ASCII signaling rate previously available.

Key Capabilities

Function EWSS0003 "TOPS DA TMS" allows TOPS operator terminals to be supported by the TOPS Message Switch. The TMS provides high-speed data links to connect operator positions with the switch, voice services nodes, computer-based training, operator centralization remote sites, and external databases. One TMS can support up to 96 operator positions. These positions can be used for toll and assistance, directory assistance, operator reference, or custom services.

Provide faster and more efficient communication between the switch and operator positions.

The benefits of the TMS include:

- Facility savings for database access and position messaging.
- Multiple database access through TMS data ports.
- Maintenance improvements for datalink management and position management through the DMS Maintenance and Administration Position (MAP).

Dependencies and Interactions

This Function requires OSB00001 "Operator Services Basic" and EWSS0001 "Enhanced Workstation Services."

Availability and NTX Mapping

EWSS0003 is available in PCL TOPS003. The following table lists the NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
EWSS0001	Enhanced Workstation Services	**EWSS0003**	**TOPS Directory Assistance TOPS Message Switch**	NTXA83AA NTXJ67AA	TOPS Directory Assistance Subtending TOPS Message Switch

TOPS OPEN POSITION PROTOCOL EWSS0004

The TOPS MPX-IWS base platform supports an interactive, open protocol between operator positions and the TOPS switch-the Open Position Protocol (OPP).

Benefits

The powerful combination of TOPS MPX and OPP enables network providers to develop and deploy new operator services independent of Northern Telecom development cycles. These third-party or in-house applications can be integrated with the proven efficiency of the TOPS switch.

Key Capabilities

The Open Position Protocol interface, originally defined by Northern Telecom, has been substantially used by Bellcore as the foundation for the Intelligent Workstation System (IWSS) position-to-switch protocol.

This robust interface allows the interaction between the workstation and the switch to be programmed; the position can request information from the switch and interpret responses from the switch. OPP supports all current TOPS switch features, as well as combined operator functions of toll, directory assistance, intercept, and ORDB services. It includes a defined set of packet messages that facilitate:

- Call presentation
- Operator action requests
- external database access
- New services deployment

Dependencies and Interactions

This optional Function requires OSB00001 “Operator Services Basic,” EWSS0001 “Enhanced Workstation Services,” and EWSS0003 “TOPS Directory Assistance TOPS Message Switch.”

Availability and NTX Mapping

EWSS0004 is available in PCL TOPS003. The following table lists the NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
EWSS0001	Enhanced Workstation Services	**EWSS0004**	**TOPS Open Position Protocol**	NTXP49AA	TOPS Open Position Protocol

TOPS INCREASED MULTIPLEXING EWSS0005

This optional Function reduces costs by decreasing the number of Virtual Position Controllers (VPCs; also known as Type 2, or gateway positions) that are required to support a cluster of operator positions on a Local Area Network (LAN) for TOPS MPX or other Open Position Protocol (OPP)-compliant positions. The requirements both for DS-1 links and for associated position link termination hardware and software are decreased.

Key Capabilities

Without EWSS0005, two VPCs, each equipped with a datalink to the TOPS Message Switch (TMS), were recommended in every cluster of four operator positions. When this optional Function is used, two VPCs can support between 16 and 20 operator positions per cluster. All clusters from a single TMS must be the same size-either 4, 16, or 20 positions per cluster.

Reduce the equipment requirements for workstation connectivity to the workstation LAN.

Dependencies and Interactions

This optional Function requires OSB00001 "Operator Services Basic," EWSS0001 "Enhanced Workstation Services," EWSS0004 "TOPS Open Position Protocol," and EWSS0003 "TOPS Directory Assistance TOPS Message Switch."

Note that this Function requires engineering changes to the LAN-based operator workstation configuration, including (but not limited to) dedicated gateways and/or processor upgrades. Re-engineering of messaging throughput and performance impact is also required.

Availability and NTX Mapping

EWSS0005 is available in PCL TOPS003. The following table lists the NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
EWSS0001	Enhanced Workstation Services	**EWSS0005**	**TOPS Increased Multiplexing**	NTXR52AA	TOPS Increased Multiplexing

TOPS MESSAGE SWITCH NETWORKING EWSS0006

This optional Function allows direct communication among active TOPS Message Switches (TMSs) in a central office. The result is significant facilities savings by consolidating DS-1 provisioning to external databases.

Reduce requirements for communication links to databases through the TOPS Message Switch.

Key Capabilities

This Function enables the networking of TMSs within a central office by:

- Providing DS-0 and DS-1 sharing. DS-1 sharing reduces the number of external database links required for a host TOPS office.
- Eliminating the need for two DS-1s for each TMS for inter-D Channel Handler (DCH) communications.

Dependencies and Interactions

This optional Function requires OSB00001 "Operator Services Basic" EWSS0001 "Enhanced Workstation Services," and EWSS0003 "TOPS Directory Assistance TOPS Message Switch."

Availability and NTX Mapping

EWSS0006 is available in PCL TOPS003. The following table lists the NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
EWSS0001	Enhanced Workstation Services	**EWSS0006**	**TOPS Message Switch Networking**	NTXN55AA	TOPS Message Switch Networking

ENHANCED TOPS MESSAGE SWITCH EWSS0007

This optional Function improves the message processing of the TOPS Message Switch (TMS) by using Extended Peripheral Module Plus (XPM+) technology, available on the TMS and the PCM-30 TMS (which supports the TMS outside of North America).

Key Capabilities

This software provides the required Computing Module and XPM software changes to support the new Unified Processor (UP), Enhanced ISDN Signaling Processor (EISP), and the Enhanced D-Channel Handler (EDCH).

Enhance performance (through increased memory and realtime capacity), reduce power consumption and shelf population, and support new maintenance and patching tools.

Dependencies and Interactions

This optional Function requires OSB00001 "Operator Services Basic," EWSS0001 "Enhanced Workstation Services," and EWSS0003 "TOPS Directory Assistance TOPS Message Switch." It also introduces the following replacements for the Series II processor control packs and memory packs:

Existing Component	Existing Hardware	New Component	New Hardware
Main Processor (MP) Signaling Processor (SP) 2 MP Memory (2MB) or 1 MP Memory (4MB) 1 SP Memory	NT6X45 NT6X45 NT6X47AB (2 MB) or NT6X47AC (1MB) NT6X46	Unified Processor (8 MB DRAM)	NTMX77AA
ISDN Signaling Processor (16MHz, 1MB)	NTBX01AA	Enhanced ISDN Signaling Processor (20MHz, 4MB)	NTBX01AB
D-Channel Handler (16MHz, 1MB)	NTBX02AA	Enhanced D-Channel Handler (20MHz, 4MB)	NTBX02BA

Customers with TOPS Message Switch (TMS) must upgrade to the Enhanced TOPS Message Switch before installing TOPS004, or higher, loads.

Availability and NTX Mapping

EWSS0007 is available in PCL TOPS003. The following table lists the NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
EWSS0001	Enhanced Workstation Services	**EWSS0007**	**Enhanced TOPS Message Switch**	NTXS20AA	TOPS Message Switch Processor Upgrade

ENHANCED SERVICES — ENSV0001

The Functions of ENSV0001 offer special capabilities that enhance the operation of Functional Group OSB00001 "Operator Services Base" and other Functional Groups. For example:

- ENSV0002 "Automated Coin Toll Service (ACTS)" automates the processing of coin deposits to pay phones.
- ENSV0005 "External Audio Response - Host and Remote" supports an interface to an external Personal Audio Response System, which operators use for playing frequently repeated phrases.
- ENSV0006 "Two-Digit ANI-TOPS Office" allows numbers to be identified and billing restrictions applied from two-digit number automatic number identification (ANI).

Choose from a portfolio of enhancements to basic operator service capabilities.

All these Functions are optional.

Dependencies and Interactions

This optional Functional Group requires OSB00001 "Operator Services Basic."

Availability and NTX Mapping

There is no software associated with ordering code ENSV0001. Refer to each of its Functions for PCL availability and NTX mapping.

AUTOMATED COIN TOLL SERVICE — ENSV0002

At one time, all calls placed from coin phones required operator assistance. The caller picked up the receiver and was automatically connected with an operator-or was connected after depositing a nickel or dime (later, a quarter). The caller dialed the number, and the operator informed the caller how many coins to deposit. The coin phone generated distinct tones after deposit of a nickel, dime, or quarter. The operator listened to these tones, calculated the total deposit, and either connected the call or prompted the caller to enter additional coins.

Northern Telecom automates this function with the Automatic Coin Toll Service (ACTS), allowing dialing of 1+ coin calls from a coin telephone station without operator intervention. As a result, operator involvement in station-paid coin calls is required only in special circumstances, and operator workload for coin calls is greatly reduced. ACTS also provides notification for non-coin calls and quotation on most time and charges for non-coin calls.

Automate the processing of toll calls from coin pay phones, reducing operator involvement in these labor-intensive calls.

Key Capabilities

This optional Function resides in the DMS-100/200 TOPS switch, working with a digital recorded announcement machine (DRAM). The Function works with any coin phone that generates dual-frequency coin deposit tones recognized by the switch.

When a caller dials a 1+ number (7 or 10 digits) from an ACTS-compatible coin phone, the charge for the call is computed by the switch. ACTS then connects a coin-deposit circuit to the call and prompts the user through a recorded announcement to deposit the computed amount, such as, “Please deposit $1.50 for the next three minutes.”

At this point, the caller either begins depositing coins, or reaches an operator by flashing the switch hook or waiting for a time-out. As the caller deposits coins, the coin-deposit circuit counts each coin, based on the tones generated by the coin station. The caller hears an announcement, such as “thank you”-from the DMS Digital Recorded Announcement Machine (DRAM)-when the correct amount has been deposited. Over-deposits are also acknowledged, should they occur.

Dependencies and Interactions

This optional Function requires OSB00001 “Operator Services Basic” and ENSV0001 “Enhanced Services.”

Availability and NTX Mapping

ENSV0002 is available in PCL TOPS003. The following table lists the NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
ENSV0001	Enhanced Services	**ENSV0002**	**Automatic Coin Toll Service**	NTX208AB	Automatic Coin Toll Service

TOPS ALTERNATE ANNOUNCEMENT ENSV0003

This optional Function enables the network provider to customize announcements for Automated Coin Toll Service (ACTS) or calls billed automatically to calling cards through Exchange Alternate Billing Service (EABS).

Dependencies and Interactions

This optional Function requires OSB00001 "Operator Services Basic" and ENSV0001 "Enhanced Services."

Create custom announcements for ACTS and EABS, for superior customer service.

To create custom announcements for callers using coin phones, ENSV0002 "Automated Coin Toll Service" and ENSV0001 "Enhanced Services" must be active in the switch.

To create custom announcements for automated alternate billing to calling cards, ABS00002 "Automated Alternate Billing Service" and ABS00001 "Alternate Billing Services" must be active in the switch.

This Function works with a DMS Digital Recorded Announcement Machine (DRAM), or other audio processing platform, and may require software for that platform.

Availability and NTX Mapping

ENSV0003 is available in PCL TOPS003. The following table lists the NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
ENSV0001	Enhanced Services	**ENSV0003**	**TOPS Alternate Announcement**	NTX208AB	TOPS Alternate Announcement

SCREENED SERVICE ROUTING ENSV0004

This optional Function-developed for the Canadian market-gives operators enhanced translation capabilities for emergency numbers.

Key Capabilities

This software conveniently helps to associate an originating telephone number with emergency service numbers closest to the subscriber's location.

Provide faster and more effective service to callers who dial "0" in an emergency.

Dependencies and Interactions

This optional Function requires OSB00001 "Operator Services Basic" and ENSV0001 "Enhanced Services."

Availability and NTX Mapping

ENSV0004 is available for the Canadian market in PCL TOPS003. The following lists the NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
ENSV0001	Enhanced Services	**ENSV0004**	**Screened Service Routing**	NTXE04AA	Screened Service Routing

EXTERNAL AUDIO RESPONSE - HOST AND REMOTE ENSV0005

Optional Function ENSV0005 provides an open interface between the switch and an external personal audio response system. A personal audio response system (PARS) provides recordings of the opening phrases for specific call types. Operators may record frequently spoken phrases in their own voices, then play the recording to save their voices.

Key Capabilities

Through ENSV0005, Northern Telecom offers an open, published interface that enables vendors to produce audio systems that interact with the switch. The specification defines the data communication protocol, including message formats, identifiers, field descriptions, message encoding, and sample messages-but not internal development of the PARS itself.

Give operators a tool to deliver frequently spoken phrases for them, thereby saving their voices.

Dependencies and Interactions

This optional Function requires OSB00001 “Operator Services Basic” and ENSV0001 “Enhanced Services.”

Availability and NTX Mapping

ENSV0005 is available in PCL TOPS003. The following table lists the NTX packages that now comprise this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
ENSV0001	Enhanced Services	**ENSV0005**	**External Audio Response - Host and Remote**	NTXJ37AB NTXN04AA	External Audio Response - Host and Remote

TWO-DIGIT AUTOMATIC NUMBER IDENTIFICATION -TOPS OFFICE ENSV0006

This optional Function allows numbers to be identified and billing restrictions applied from two-digit automatic number identification (ANI). This software enhances the processing of calls that signal with special two-digit ANI IDs. The end office must be equipped to signal with these ANI IDs and, through datafill, to associate each ANI ID with a special terminal type, such as a smart pay phone or a typical restricted Class of Service phone. Calls that signal with these non-standard ANI ID digits, or Special Line Traffic (SLT), can be combined with currently existing traffic on TOPS trunks.

Key Capabilities

Enhance the processing of calls from special terminal types, such as smart pay phones and restricted phones, by recognizing two-digit ANI codes.

This Function allows a user-defined TOPS operator display to be generated for calls from these special lines that require operator processing. The two-digit ANI ID (or SLT ANI code) signaled with the call triggers the display of call type information on the operator's screen. The display indicates to the operator that the call originated from a specific terminal type, and the operator can then respond efficiently to the incoming call.

Because this is accomplished without searching the large SPLDNID table, real-time performance is improved and data table storage and maintenance are simplified.

The SLT ANI code may be signaled with any of the following signaling types: TOPS COMFGD, EAOSS, or Interim OSS signaling. These signaling types signal with a two-digit ANI ID, and normally operate in an Equal Access environment. In addition, this Function allows Interim OSS signaling to operate in a non-Equal Access environment. Therefore, TOPS Equal Access is not required.

The use of SLT ANI digits enhances the processing of calls from intelligent payphones. It allows calls from these phones to be combined with other operator traffic. This Function enables 1+/011+ calls from smart payphones that signal with an SLT ANI code to now be treated as non-operator calls from normal station phones; there are no billing restrictions and no operator intervention for these calls. However, the SLT ANI code identifying the originating terminal type may still appear in the AMA record to provide an AMA verification record for this call.

This Function supports the inclusion of the SLT ANI code for a special line call in the Phase 2 Expanded Bellcore AMA Format (EBAF) AMA record produced for the call. The additional Module code 306 will be appended to the AMA record. This enables downstream processing systems and personnel to easily identify the originating terminal type.

Dependencies and Interactions

This optional Function requires OSB00001 "Operator Services Basic" and ENSV0001 "Enhanced Services."

Availability and NTX Mapping

ENSV0006 is available in PCL TOPS003. The following table lists the NTX package that now comprises this ordering code.

Functional Group	Functional Group Name	Function	Function Name	NTX Code	NTX Package Name
ENSV0001	Enhanced Services	**ENSV0006**	**Two-Digit Automatic Number Identification-TOPS Office**	NTXN52AA	Two-Digit Automatic Number Identification-TOPS Office

PRE-PAID COIN OVERTIME ENSV0007

With this Function, network providers can collect overtime charges on pay stations before those charges are incurred. Previously, ACTS interrupted the call at the end of the overtime period and requested payment. At the end of the call, the TOPS switch would ring the caller back and request payment for the final period. As a result, callers had the opportunity to walk away from their calls without paying for the overtime period.

Key Capabilities

ENSV0007 enables collecting overtime charges on payphones before the charges are incurred. Callers who do not deposit the required coins are either routed to an operator or disconnected, as defined by the network provider in switch datafill.

Collect overtime charges on pay phones-before they are incurred-to prevent "walk-aways."

Dependencies and Interactions

This optional Function requires OSB00001 “Operator Services Basic,” ENSV0001 “Enhanced Services,” and ENSV0002 “Automated Coin Toll Service.”

Availability and NTX Mapping

ENSV0007 is scheduled to be generally available in PCL TOPS003. A new Function, this software has no previous NTX code.

Reference

This chapter offers three different tables-to help you find the information you need in the *DMS-100 Software Portfolio*-followed by a list of common abbreviations and acronyms that are used in more than one place in this document.

CONTENTS LISTED IN ORDER OF APPEARANCE

The table between pages 317 and 325 lists the contents of this document in the order that they appear within each chapter. All ordering codes that are highlighted in **boldface** type are Functional Groups. Following each Functional Group is its Functions, if any, shown indented and in plain type.

Page	Order Code	Name	Available
Required Ordering Codes			
17	**BASE0001**	Base Layer	NA002
13	BASE0002	DMS SuperNode Series 20 Processor	NA002
13	BASE0003	DMS SuperNode Series 30 Processor	NA002
14	BASE0004	DMS SuperNode Series 40 Processor	NA002
14	BASE0005	DMS SuperNode Series 50 Processor	NA002
15	BASE0006	DMS SuperNode Series 60 Processor	NA002
15	BASE0007	DMS SuperNode SE Series 20 Processor	NA002
16	BASE0008	DMS SuperNode SE Series 60 Processor	NA002
17	**TEL00001**	Telecom Layer	NA002
17	**BAS00003**	Base Generic	NA002

Page	Order Code	Name	Available
DMS-100 Base Service			
26	**BAS00004**	Generic OAM (Operations, Administration, and Maintenance)	NA002
27	BAS00024	Off-Network Access Services	NA002
28	**BAS00002**	Automatic Number Identification	NA002
29	**BAS00006**	Line Maintenance	NA003
30	BAS00041	Enhanced Permanent Signal	NA003
31	**BAS00007**	Logs - Line Log Reduction	NA002
32	**BAS00001**	Automatic Message Accounting with Cook Electric Equipment	NA002
33	BAS00028	High-Capacity Distributed Processing Peripheral	NA002
34	**AMA00002**	Automatic Message Accounting LAMA Modules	NA002
35	**AMA00004**	Automatic Message Accounting CAMA Modules	NA002
36	**LOC00001**	Local Services	NA002
(pg 17)	**BAS00003**	BAS Generic	NA002
37	BAS00020	Flexible Bellcore Automatic Message Accounting	NA002
38	BAS00021	Maintenance and Administration Position (MAP) TELNET Access	NA002
39	BAS00022	SuperNode Data Manager Table Access	NA003
Remote Access			
42	**BAS00012**	Remotes Generic	NA002
44	**BAS00009**	Remote Switching Center-S Extended Distance Capability	NA002
46	**BAS00016**	SCM/SMS/SMU	NA002
48	BAS00027	SMS-R Special Services	NA002
49	**SMA00001**	Generic TR-303 Interface	NA003
Advanced Intelligent Network			
(pg 17)	**TEL00001**	Telecom Layer	NA002
53	TEL00008	CCS7 Base	NA002
55	TEL00002	CCS7 Channelized Access	NA002
56	TEL00003	Gateway Screening	NA002
57	TEL00006	CCS7 Integrated Link Protocol Tester	NA002
58	TEL00007	CCS7 Link Fault Locator	NA002
58	**SS700001**	SS7 Trunk Signaling	NA002

Page	Order Code	Name	Available
Meridian Automatic Call Distribution			
194	**ACD00001**	Meridian Automatic Call Distribution Base	NA002
195	ACD00005	ACD Management Information System	NA002
196	ACD00006	ACD Enhanced	NA002
198	**ACD00002**	CompuCALL Base	NA002
200	ACD00007	CompuCALL for Automatic Call Distribution	NA002
202	ACD00008	Centrex Coordinated Voice and Data	NA002
203	**ACD00004**	CompuCALL Base	NA002
204	ACD00009	CompuCALL for Automatic Call Distribution	NA002
204	ACD00010	Centrex Coordinated Voice and Data	NA002
DMS-100 Datapath Service			
206	**DTP00001**	Datapath	NA002
208	DTP00002	CLASS for Datapath	NA002
210	DTP00003	DataCall Tester	NA002
211	DTP00004	Datapath Provisioning	NA002
Equal Access			
214	**EQA00001**	Equal Access Local	NA002
215	EQA00003	Cellular Interconnect - End Office	NA002
216	EQA00004	Cellular Interconnect - Access Tandem	NA002
217	EQA00006	CCS7 ISDN User Part InterLATA Connection for EAEO	NA002
218	EQA00007	Equal Access for Alternate Switching Point	NA002
219	EQA00008	POTS IntraLATA Primary InterLATA Carrier EAEO	NA002
220	EQA00009	Integrated Business Network IntraLATA Primary InterLATA Carrier Equal Access End Office	NA002
222	EQA00010	Enhanced WATS Operation (POTS)	NA002
223	EQA00011	Equal Access Operator Services System	NA002
224	**EQA00002**	Equal Access Toll	NA002
225	EQA00005	Equal Access for Intermediate Tandem	NA002
226	EQA00012	CCS7 ISDN User Part InterLATA Connection for Access Tandem	NA002
228	**LEA00001**	LATA Equal Access System Toll	NA002
229	LEA00003	CCS7 Interworking with LEAS Office	NA002
230	**LEA00002**	LATA Equal Access System Local	NA002

Page	Order Code	Name	Available
World Line Card			
268	**WLC00001**	World Line Card Enhanced	NA002
269	WLC00004	40 Milliamp Current Limit	NA002
270	**WLC00002**	World Line Card Line Administration	NA002
Directory and Operator Services			
273	**OSB00001**	Operator Services Basic	TOPS003
276	**GOS00001**	Global Operator Services	TOPS003
277	**OSEA0001**	TOPS Equal Access	TOPS003
278	OSEA0002	TOPS InterLATA Carrier Service	TOPS003
278	OSEA0003	Exchange Access Operator Services Signaling	TOPS003
279	OSEA0004	TOPS Incoming Feature Group D Signaling	TOPS003
280	**OSDA0001**	Operator Service Directory Assistance	TOPS003
282	OSDA0002	Automated Directory Assistance Call Completion	TOPS003
283	OSDA0003	Automated Intercept Call Completion	TOPS003
284	OSDA0004	Automated Directory Assistance Service	TOPS003
286	OSDA0008	Automated Directory Assistance Service Link Peripheral Processor and Application Processing Unit Support	TOPS003
287	OSDA0005	Cellular/Interexchange Carrier/Local Exchange Carrier Automated Directory Assistance Call Completion	TOPS003
288	OSDA0006	Directory Assistance Automation	TOPS003
289	**ABS00001**	Alternate Billing Services	TOPS003
290	ABS00002	Automated Alternate Billing Service	TOPS003
291	ABS00003	Operator Handoff to AABS	TOPS003
292	ABS00004	Account Code Billing	TOPS003
293	ABS00005	French/English AABS	TOPS003
294	ABS00006	AABS Call Screening	TOPS003
295	ABS00007	TOPS Directory Number Call Screening	TOPS003
296	**ADVQ0001**	Advanced Queuing	TOPS003
297	ADVQ0002	TOPS Close Down	TOPS003
298	ADVQ0003	Host Queue Management System	TOPS003
300	ADVQ0004	Remote Queue Management System	TOPS003
300	ADVQ0005	Host/Remote Networking by Queue Type	TOPS003

CONTENTS SORTED BY ORDERING CODE NUMBER

The following table sorts the ordering codes by number. If a particular ordering code is a Function, its Functional Group's ordering code appears in the third column. If a particular ordering code is a Functional Group, then the *Functional Group* column is empty.

Order Code	Ordering Code Name	Functional Group	Page
AMA00002	Automatic Message Accounting LAMA Modules		34
AMA00004	Automatic Message Accounting CAMA Modules		35
BAS00001	Automatic Message Accounting with Cook Electric Equipment		32
BAS00002	Automatic Number Identification		28
BAS00003	Base Generic		17
BAS00004	Generic OAM (Operations, Administration, and Maintenance)		26
BAS00006	Line Maintenance		29
BAS00007	Logs - Line Log Reduction		31
BAS00009	Remote Switching Center-S Extended Distance Capability		44
BAS00012	Remotes Generic		42
BAS00016	SCM/SMS/SMU		46
BAS00020	Flexible Bellcore Automatic Message Accounting	BAS00003	37
BAS00021	Maintenance and Administration Position (MAP) TELNET Access	BAS00003	38
BAS00022	SuperNode Data Manager Table Access	BAS00003	39
BAS00024	Off-Network Access Services	BAS00004	27
BAS00027	SMS-R Special Services	BAS00016	48
BAS00028	High-Capacity Distributed Processing Peripheral	BAS00001	33
BAS00041	Enhanced Permanent Signal	BAS00006	30
BASE0001	Base Layer		17
BASE0002	DMS SuperNode Series 20 Processor	BASE0001	13
BASE0003	DMS SuperNode Series 30 Processor	BASE0001	13
BASE0004	DMS SuperNode Series 40 Processor	BASE0001	14
BASE0005	DMS SuperNode Series 50 Processor	BASE0001	14
BASE0006	DMS SuperNode Series 60 Processor	BASE0001	15
BASE0007	DMS SuperNode SE Series 20 Processor	BASE0001	15
BASE0008	DMS SuperNode SE Series 60 Processor	BASE0001	16
CDD00001	Canadian Direct Distance Dialing Local Services		232
CDD00003	Two-Digit Automatic Number Identification End Office Local Automatic Message Accounting	CDD00001	232
CDD00004	Trunk Group Member Usage	CDD00001	234
CMS00001	Call management Services (CMS) CLASS		183

Order Code	Ordering Code Name	Functional Group	Page
EQA00012	CCS7 ISDN User Part InterLATA Connection for Access Tandem	EQA00002	226
EWSS0001	Enhanced Workstation Services		302
EWSS0002	Automatic Open Information Access Session Start	EWSS0001	304
EWSS0003	TOPS Directory Assistance TOPS Message Switch	EWSS0001	305
EWSS0004	TOPS Open Position Protocol	EWSS0001	306
EWSS0005	TOPS Increased Multiplexing	EWSS0001	307
EWSS0006	TOPS Message Switch Networking	EWSS0001	308
EWSS0007	Enhanced TOPS Message Switch	EWSS0001	309
GOS00001	Global Operator Services		276
LEA00001	LATA Equal Access System Toll		228
LEA00002	LATA Equal Access System Local		230
LEA00003	CCS7 Interworking with LEAS Office	LEA00001	229
LOC00001	Local Services		36
MDC00001	MDC Minimum		100
MDC00002	Meridian Special Attendant Console		102
MDC00003	MDC Standard		103
MDC00004	CLASS on MDC		106
MDC00005	Multilocation Business Group Minimum		112
MDC00006	Multilocation Business Group Standard		114
MDC00007	Meridian Business Set Minimum		116
MDC00008	Meridian Business Set Standard		118
MDC00009	MDC Pro		120
MDC00010	CLASS on MDC/Multiline Variety Package II	MDC00004	108
MDC00011	MDC Private Virtual Networking		126
MDC00012	Tailored MDC 1		130
MDC00013	Tailored MDC 2		132
MDC00014	Tailored MDC 3		135
MDC00015	Tailored MDC 4		137
MDC00016	Tailored MDC Network Access Registers		140
MDC00018	Message Detail Recording via AMA Stream	MDC00009	124
MDC00019	Meridian Business Set Installer Tools	MDC00013	134

Order Code	Ordering Code Name	Functional Group	Page
NTS00011	Release Link Trunk With No Third Party Interaction	NTS00006	246
NTS00012	Extended Capability	NTS00005	250
OSB00001	Operator Services Basic		273
OSDA0001	Operator Service Directory Assistance		280
OSDA0002	Automated Directory Assistance Call Completion	OSDA0001	282
OSDA0003	Automated Intercept Call Completion	OSDA0001	283
OSDA0004	Automated Directory Assistance Service	OSDA0001	284
OSDA0005	Cellular/Interexchange Carrier/Local Exchange Carrier Automated Directory Assistance Call Completion	OSDA0001	287
OSDA0006	Directory Assistance Automation	OSDA0001	288
OSDA0008	Automated Directory Assistance Service Link Peripheral Processor and Application Processing Unit Support	OSDA0001	286
OSEA0001	TOPS Equal Access		277
OSEA0002	TOPS InterLATA Carrier Service	OSEA0001	278
OSEA0003	Exchange Access Operator Services Signaling	OSEA0001	278
OSEA0004	TOPS Incoming Feature Group D Signaling	OSEA0001	279
RES00001	Access Management		146
RES00002	Advanced Custom Calling		150
RES00003	Display Functionality and Privacy		161
RES00004	Interface Functionality		169
RES00005	Non-Display Services		173
RES00006	Service Enablers		145
RES00007	Signaling, Routing, and Operations, Administration, & Maintenance		182
RES00008	Long-Distance Indicator	RES00002	152
RES00010	Telemetry Application	RES00001	147
RES00011	Universal Access to CLASS	RES00001	148
RES00013	Extension Bridged Services	RES00002	153
RES00014	Call Wake-Up Service	RES00002	154
RES00015	Subscriber-Activated Call Blocking	RES00002	155
RES00016	Expansion Services	RES00002	156
RES00017	Teen Service	RES00002	157

Order Code	Ordering Code Name	Functional Group	Page
STPE0002	Destination Common Channel Interface System 6 (DCIS6) Function	STPE0001	68
STPE0003	XLIST Management Function	STPE0001	69
STPE0004	511 Routesets Function	STPE0001	70
STPS0001	Signaling, Engineering, and Administration System (SEAS) Functional Group		71
TEL00001	Telecom Layer		17
TEL00002	CCS7 Channelized Access	TEL00001	55
TEL00003	Gateway Screening	TEL00001	56
TEL00006	CCS7 Integrated Link Protocol Tester	TEL00001	57
TEL00007	CCS7 Link Fault Locator	TEL00001	58
TEL00008	CCS7 Base	TEL00001	53
UDD00001	United States Direct Distance Dialing Services		236
WLC00001	World Line Card Enhanced		268
WLC00002	World Line Card Line Administration		270
WLC00004	40 Milliamp Current Limit	WLC00001	269

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The following table sorts the ordering codes by number. If a particular ordering code is a Function, its Functional Group's ordering code appears in the third column. If a particular ordering code is a Functional Group, then the third column is empty.

Ordering Code Name	Order Code	Functional Group	Page
40 Milliamp Current Limit	WLC00004	WLC00001	269
511 Routesets Function	STPE0004	STPE0001	70
800+ Caller ID and Dialed Number ID Display for Meridian Digital Centrex	NTS00003	NTS00002	240
800Plus Southbound	NTS00010	NTS00004	247
AABS Call Screening	ABS00006	ABS00001	294
Access Management	RES00001		146
Account Code Billing	ABS00004	ABS00001	292
ACD Enhanced	ACD00006	ACD00001	196
ACD Management Information System	ACD00005	ACD00001	195
ACD Networking	ACD00004		203
Advanced Custom Calling	RES00002		150
Advanced Intelligent Network 0.0	NPS00002	NPS00001	266
Advanced Queuing	ADVQ0001		296
AIN Essentials Rel. 1	AIN00002		60
Alternate Billing Services	ABS00001		289
Anonymous Caller Rejection	RES00021	RES00003	162
Auto-Recall Blocking to Private Numbers	RES00036	RES00005	181
Automated Alternate Billing Service	ABS00002	ABS00001	290
Automated Coin Toll Service	ENSV0002	ENSV0001	310
Automated Directory Assistance Call Completion	OSDA0002	OSDA0001	282
Automated Directory Assistance Service	OSDA0004	OSDA0001	284
Automated Directory Assistance Service Link Peripheral Processor and Application Processing Unit Support	OSDA0008	OSDA0001	286
Automated Intercept Call Completion	OSDA0003	OSDA0001	283
Automatic Call Distribution PSAP	ENS00002	ENS00005	254

Ordering Code Name	Order Code	Functional Group	Page
Dynamically Controlled Routing Base	DCR00001		259
E800 Canadian End Office Display	NTS00002		238
E800 Canadian Gateway	NTS00004		246
E800 - United States	NTS00005		248
Emergency Number Service Enhanced 911	ENS00005		252
Enhanced 800 Services - Canada	NTS00006		244
Enhanced Permanent Signal	BAS00041	BAS00006	30
Enhanced Services	ENSV0001		310
Enhanced TOPS Message Switch	EWSS0007	EWSS0001	309
Enhanced WATS	MDC00034	MDC00009	125
Enhanced WATS Operation (POTS)	EQA00010	EQA00001	222
Enhanced Workstation Services	EWSS0001		302
Equal Access for Alternate Switching Point	EQA00007	EQA00001	218
Equal Access for Intermediate Tandem	EQA00005	EQA00002	225
Equal Access Local	EQA00001		214
Equal Access Operator Services System	EQA00011	EQA00001	223
Equal Access Toll	EQA00002		224
Exchange Access Operator Services Signaling	OSEA0003	OSEA0001	278
Expansion Services	RES00016	RES00002	156
Extended Capability	NTS00012	NTS00005	250
Extension Bridged Services	RES00013	RES00002	153
External Audio Response - Host and Remote	ENSV0005	ENSV0001	313
Flexible Bellcore Automatic Message Accounting	BAS00020	BAS00003	37
French/English AABS	ABS00005	ABS00001	293
Gateway Screening	TEL00003	TEL00001	56
Generic OAM (Operations, Administration, and Maintenance)	BAS00004		26
Generic TR-303 Interface	SMA00001		49
Global Operator Services	GOS00001		276
High-Capacity Distributed Processing Peripheral	BAS00028	BAS00001	33
Host Queue Management System	ADVQ0003	ADVQ0001	298

Ordering Code Name	Order Code	Functional Group	Page
Host/Remote Networking by Queue Type	ADVQ0005	ADVQ0001	300
Integrated Business Network IntraLATA Primary InterLATA Carrier Equal Access End Office	EQA00009	EQA00001	220
Interface Functionality	RES00004		169
Intertoll ISDN User Part and CCS7	NI000023	NI000004	90
ISDN Base	NI000007		76
ISDN Primary Rate Interface Base	NI000022		84
LATA Equal Access System Local	LEA00002		230
LATA Equal Access System Toll	LEA00001		228
Line Appearance on a Digital Trunk (LDT) PSAP	ENS00001	ENS00005	253
Line Maintenance	BAS00006		29
Local Services	LOC00001		36
Logs - Line Log Reduction	BAS00007		31
Long-Distance Alert	RES00038	RES00002	151
Long-Distance Indicator	RES00008	RES00002	152
Maintenance and Administration Position (MAP) TELNET Access	BAS00021	BAS00003	38
MDC Minimum	MDC00001		100
MDC Private Virtual Networking	MDC00011		126
MDC Pro	MDC00009		120
MDC Standard	MDC00003		103
Meridian Automatic Call Distribution Base	ACD00001		194
Meridian Business Set Installer Tools	MDC00019	MDC00013	134
Meridian Business Set Minimum	MDC00007		116
Meridian Business Set Standard	MDC00008		118
Meridian Special Attendant Console	MDC00002		102
Message Detail Recording via AMA Stream	MDC00018	MDC00009	124
Multilocation Business Group Minimum	MDC00005		112
Multilocation Business Group Standard	MDC00006		114
Multiple Network Access (MNA)	DCR00002	DCR00001	260
Name/Directory Number Blocking	MDC00033		141
Network ACD on CCS7	ACD00009	ACD00004	204

Ordering Code Name	Order Code	Functional Group	Page
Network ACD on PRI	ACD00010	ACD00004	204
NI-1 Basic Rate Interface	NI000008		78
NI-1 Packet Services	NI000010		81
NI-1 Primary Rate Interface	NI000011		84
NI-1 Primary Rate Interface Interworking with 4E/5ESS	NI000012		86
NI-1 Primary Rate Interface Networking	NI000013		87
NI-1 Tandem	NI000014		93
Non-Display Services	RES00005		173
Number Portability Service Base	NPS00001		265
Off-Network Access Services	BAS00024	BAS00004	27
Operator Handoff to AABS	ABS00003	ABS00001	291
Operator Service Directory Assistance	OSDA0001		280
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ACRONYMS

This document defines abbreviations and acronyms as they are introduced. Generally, these abbreviations appear only with one or two ordering codes, so their appearance is limited. However, there are a few acronyms that are found throughout this document. The following pages list those abbreviations and acronyms that appear in more than one place in the *DMS-100 Software Portfolio*.

A

AABS	Automated Alternate Billing Service
ACD	Automatic Call Distribution
ACTID	Activity ID
ADACC	Automatic Directory Assistance Call Completion
ADAS	Automated Directory Assistance Service
ADSI	Analog Display Services Interface
AIN	Advanced Intelligent Network
AINTCC	Automated Intercept Call Completion
AMA	Automatic Message Accounting
ANI	Automatic Number Identification
ATC	Access to Carrier

B

BCLID	Bulk Calling Line ID
BCS	Batch Change Supplement
Bellcore	Bell Communications Research
BNR	Bell-Northern Research
bps	Bits per second
BRI	Basic Rate Interface

C

CAMA	Centralized Automatic Message Accounting
CCITT/ITU	(former:) International Telephone and Telegraph Consultative Committee (renamed:) International Telecommunications Union
ccs	Call Century (100) Seconds
CCS7	Common Channel Signaling No. 7
CIC	Carrier Identification Code
CID	Caller ID
CLASS	Custom Local Area Signaling Services
CLID	Calling Line Identification Display
CMS	Call Management Services
CPE	Customer Premises Equipment

D

DA	Directory Assistance
DCR	Dynamically Controlled Routing
DDD	Direct Distance Dialing
DISA	Direct Inward System Access
DMS	Digital Multiplex System
DN	Directory Number
DNID	Directory Number ID
DPN	Data Packet Network
DTMF	Dual Tone Multi-Frequency
DWS	Dialable Wideband Service

E

E800	Enhanced 800
E911	Enhanced 911
EAEO	Equal Access End Office
EBAF	Extended Bellcore Automatic Message Accounting Format
ENS	Emergency Number Services
EO	End Office

F

FGB	Feature Group B
FGD	Feature Group D

G

GTT	Global Title Translation

I

IEC	Interexchange Carrier
IN	Intelligent Network
INWATS	Inward Wide Area Telephone Service
IP	Intelligent Peripheral
ISDN	Integrated Services Digital Network
ISUP	ISDN User Part

K

kbps	Kilobits per second

L

LAMA	Local Automatic Message Accounting
LAPB	Link Access Procedures, Balanced
LAPD	Link Access Procedures D-Channel Packet
LATA	Local Access and Transport Area
LDT	Line appearance on a Digital Trunk
LEN	Line Equipment Number
LIU	Line Interface Unit
LIU7	Line Interface Unit for CCS7
LPP	Link Peripheral Processor
LSSGR	LATA Switching System Generic Requirements

M

MADN	Multiple Appearance Directory Number
MAP	Maintenance and Administration Position
MB, Mbyte	Megabyte
MBG	Multilocation Business Group
Mbps	Megabits Per Second
MBS	Meridian Business Set
MDC	Meridian Digital Centrex
MF	Multi-Frequency
MIS	Management Information System
MPC	Multi-Protocol Controller
MTP	Message Transfer Part
MWI	Message Waiting Indication

N

NA	North American DMS-100 development stream
NCEO	Non-Conforming End Office
NCOS	Network Class of Service
NE	Network Element
NGDLC	Next Generation Digital Loop Carrier
NI-1	National ISDN-1
NPA	Numbering Plan Area
NPS	Network Portability Service
NTS	Number Translation Services
NTX	The first three characters used for ordering most switch-based software packages in the previous Batch Change Supplement stream

O

OAM	Operations, Administration, and Maintenance
OM	Operational Measurement
OS	Operations System
OUTWATS	Outward Wide Area Telephone Service

P

PBX	Private Branch Exchange
PCL	Product Computing-Module Load
PCS	Personal Communication Services
PH	DMS Packet Handler
PIC	Primary InterLATA Carrier
PIN	Personal Identification Number

POTS	Plain Old Telephone Service
PRI	Primary Rate Interface
PSI	Product/Service Information bulletin
PVN	Private Virtual Network

Q

QMS	Queue Management System

R

RES	Residential Enhanced Service
RSC	Remote Switching Center
RSC-S	Remote Switching Center-S

S

SAID	Speech-Activated Intelligent Dialing
SCCP	Signaling Connection Control Part
SCE	Service Creation Environment
SCM	Subscriber Carrier Module
SCP	Service Control Point
SDL	Signaling Data Link
SDM	DMS SuperNode Data Manager
SERVORD	Service Order
SMDI	Simplified Message Desk Interface
SMDR	Station Message Detail Recording
SMS	Subscriber Carrier Module-100S; *or* Service Management System
SMS-R	Subscriber Carrier Module-100S Remote
SMU	Subscriber Carrier Module-100 URBAN
SS7	Signaling System No. 7 (Same as CCS7)
SSP	Service Switching Point
STP	Signal Transfer Point
SWACT	Switch in Activity

T

TCAP	Transaction Capabilities Application Part
TCP/IP	Transmission Control Protocol/Internet Protocol
TMS	TOPS Message Switch
TOPS	Traffic Operator Position System
TR	Technical Reference

V

VAD	Voice Activated Dialing
VFG	Virtual Facility Group

W

WLC	World Line Card

X

XPM	Extended Peripheral Module
XPM+	Extended Peripheral Module PLUS

Information subject to change since Northern Telecom reserves the right to make changes, without notice, in equipment design or components as engineering or manufacturing methods may warrant. Product capabilities and availability dates described in this document pertain solely to Northern Telecom's marketing activities in the United States and Canada. Availability in other markets may vary.

The DMS-100 Software Portfolio is an advance planning document that summarizes the applications and benefits of orderable software- and is not intended to be used as a provisioning guide. For more information, contact your Northern Telecom representative. For additional copies, call 1-800-Northern (1-800-667-8437).

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Published by Northern Telecom
Marketing Publications, Department 4262
Research Triangle Park, NC 27709

Northern Telecom
Department L560
Mississauga, Ontario

50170.11/12-94 Issue 1
Printed in the USA