DMS-300 International Gateway
Feature Planning Guide 1998

A Planning Perspective for Creating Tomorrow' s Global Network

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FPG Overview

PLAN TODAY FOR TOMORROW'S GLOBAL NETWORKS

This *DMS-300 Feature Planning Guide (FPG)* is part of the commitment by Nortel (Northern Telecom) to provide as much advance-planning information as possible to enable our customers to make informed and confident investment decisions.

The *DMS-300 FPG* is a planning tool for network planners, marketers and others in service-provider companies who require detailed descriptions of our software development plans—and how these new solutions can help generate new revenue, cut costs and streamline operations.

PLEASE NOTE

The *FPG* is an advance-planning document and is not intended to be used as a provisioning guide.

Availability dates are subject to change based on market need and engineering requirements.

Network planning and provisioning should always be conducted in close cooperation with Nortel account representatives, and with reference to appropriate Nortel technical publications.

Availability dates in this publication refer to Nortel's projected release dates and may not necessarily correspond to the exact availability dates for individual network providers.

The *FPG* highlights new software offerings. It does not detail the large number of features that can be ordered today. For more information on features that are already generally available, contact your Nortel representative.

SOFTWARE TERMS USED IN THIS DOCUMENT

The following table defines the software release terms used throughout this planning guide. These terms appear in order from the most general to the most specific.

Term	Description	Examples
Product Release	All the software delivered by Nortel development groups to serve a wide variety of switch types. Since many PCLs (see next) are "carved" out of a product release, it is convenient to use the product release as a shorthand method of identifying the general availability of features.	GWY03 GWY04
PCL (Product Computing-Module Load)	A single universal software load containing all the software modules available at a given period of time for a type of DMS SuperNode switch in a particular market.	GTWY0003 GCAR0003 GPLS0003 GEUR0003
Ordering Codes	Software modules containing one or more features. Network providers license optional software using these eight-character numbers.	GATE0044 BASE0009 GATE0020
Feature	The smallest division of software associated with a discrete capability. Some features are standard (no licensing decisions need to be made) and some features must be licensed separately with an ordering code (see previous).	ITU ISUP92 Enhancements NRC Item 1.13

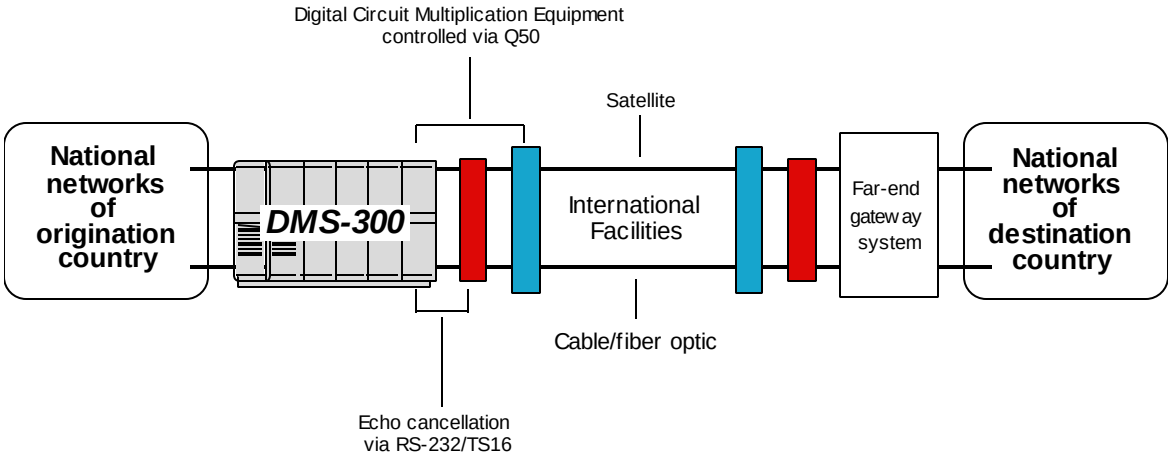
For detailed information on the design of DMS-300 system software, refer to the "Software Summary" chapter that starts on page 15.

DMS-300
International Gateway Services

Designed as an international gateway switch, the DMS-300 system processes worldwide telephony traffic between national and international networks. This large-capacity digital switching system is capable of supporting up to 65,000 trunks with reliability that is second to none.

The DMS-300 system offers unique gateway translations to support the international dial plans as specified in ITU (International Telecommunication Union, previously CCITT) specifications.

In addition to interfacing national and international telephone networks, the DMS-300 system can transit international traffic. The DMS-300 system can also be combined with Signaling Transfer Point (STP) functionality into an integrated node (INode) to interface and transit Common Channel Signaling No. 7 (CCS7) message traffic. In addition, the DMS-300 system offers a single switching platform for both DMS-250 long-distance services as well as DMS-300 gateway services.



Gateway Functionality

The DMS-300 International Gateway switch provides the following feature-rich functionality:

- Call processing via advanced screening, routing options, digit evaluation, and open numbering plan translations
- Signaling and signaling interworking between numerous types of national and international signaling networks and protocols—R1, R2, C5, ITU ISUP/TUP variants, and ANSI7 variants
- Interfacing digital trunks and external devices
  - Peripheral modules for DS-1 and PCM-30 access
  - Per-call control of external echo cancellers and Digital Circuit Multiplication Equipment (DCME)
- Providing advanced Operations, Administration, Maintenance, and Provisioning (OAM&P) capabilities, including:
  - Detailed call records for accounting purposes
  - Comprehensive network management controls
  - Automated service analysis
  - Automatic file transfer (AFT)
  - Advanced testing capabilities, including Automatic Transmission Measuring and signaling Test Equipment (ATME) No. 2
- Enabling call services such as International Virtual Private Networking (IVPN) and Global Private Virtual Networking (GPVN)

The DMS-300 system provides the qualities international carriers require to meet the challenges of today's changing business environment.

The DMS-300 Difference!

- The **platform** to build the sustainable competitive advantage essential for profitable growth.
- The **capability** to increase revenue streams through value-added services.
- The **power** to control costs through precise and timely management tools.
- The **ability** to position your company as a total telecommunications provider to your customers.

SIGNALING

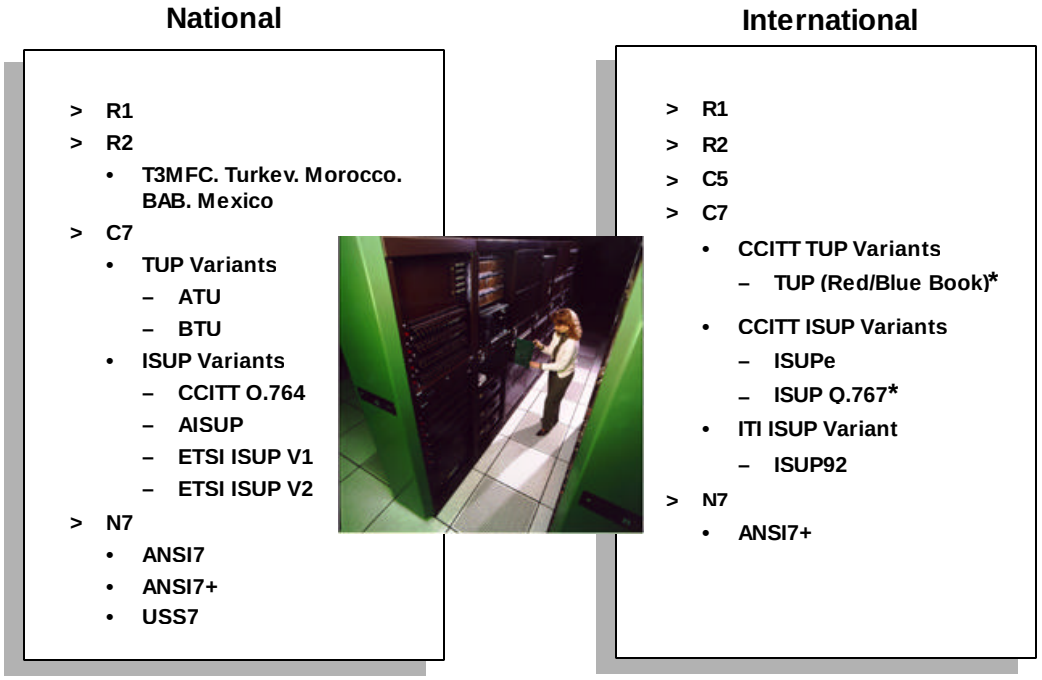
The DMS-300 switch uses two types of signaling systems: international and national. International signaling systems are defined by the Consultative Committee on International Telecommunications Union (ITU) and are used between gateway switches such as the DMS-300 system.

The DMS-300 switch supports a large number of national signaling systems to interface into the home network.

The national signaling systems may be:

- ITU (International Telecommunication Union)
- CCITT (International Consultative Committee on Telephony and Telegraphy)
- ANSI (American National Standards Institute)
- ETSI (European Telecommunications Standards Institute)

—or may be variants of these signaling systems.



Signaling on the DMS-300

* TUP Blue and Q.767 may be utilized as a TIE-ROUTE protocol

The DMS-300 system supports both Channel Associated Signaling (CAS) and Common Channel Signaling (CCS) systems, detailed on the following pages.

CAS SIGNALING

Channel Associated Signaling (CAS) breaks down into line and register signals.

- Line signals are employed to indicate circuit/trunk states; for example, a seizure signal. The line signals can be either in-band (within the speech circuit) or may be represented by a specific bit pattern in timeslot 16. The mode is dependent upon the signaling system.
- Register signals represent information such as dialed digits, call type, calling party indications, and others.

The DMS-300 system employs the following CAS signaling systems:

- ITU R1
- ITU R2
- ITU C5

ITU R1

The R1 signaling system is specified for use on the national side of a DMS-300 switch, but is implemented on some switches on the international side. R1 is a CAS signaling system specified by the ITU for terminal working (terminating within the same world zone). The DMS-300 switch also uses R1 signaling for test lines.

ITU R2

The R2 signaling system is specified for use on both the international and national sides of a gateway switch. It is a standardized CAS signaling system suitable for terminal working and transit working (signaling between world zones). National variants of R2 include the following:

- R2 BAB
- Morocco R2—Morocco
- MSL-1—Australia
- Turkey R2—Turkey
- T3MFC—Australia
- R2—Mexico

ITU C5

The C5 signaling system is used only on the international side. C5 signaling is used for international circuit switching for transit working and for terminal working.

CCS SIGNALING

Common Channel Signaling (CCS) employs a dedicated data link (signaling data channel) separating the voice circuits (that may also be used for data calls) from the call setup. This signaling data channel can simultaneously set up multiple calls (voice circuits are not used for call setup).

CCS7

The DMS-300 system supports Common Channel Signaling No. 7 (CCS7) signaling.

C7

C7 signaling specifies terminal and transit working on both the international and the national sides of the DMS-300 switch. Internationally, countries may use ITU recommendations, modify versions of ITU standards, or produce their own signaling systems.

- TIE-ROUTE Protocols, TUP blue and ITU ISUP Q.767 can be utilized as tie-route protocols, enabling an extra message/parameter to be sent for accounting purposes.

TUP

The ITU Telephony User Part (TUP) defines the call control messages that are used for international telephony signaling.

- British Telephony User Part (BTUP) and Australian Telephony User Part (ATUP) are national versions of TUP.

ISUP

Signaling using the ISDN User Part (ISUP) can support bearer services and supplementary services for voice and non-voice ISDN applications. National variants of ISUP include:

- AISUP—Australian
- CCITT ISUP Q.764
- ETSI ISUP V1
- ETSI ISUP V2
- ANSI7
- ANSI7+

International variants of ISUP include:

- CCITT ISUP Q.767
- ITU ISUP92
- ANSI7+

ANSI7

ANSI7 is the North American implementation of the ISUP that is used for signaling on the national side of the DMS-300 switch. This implementation is defined by ANSI in T1X1.

ANSI7+

Nortel' s customized implementation of ANSI (ANSI7+) provides business telephony services across world zones. ANSI7+ extends the ANSI7 protocol to include Calling Line ID, Multilocation Business Groups, Call Forwarding, Network Name Display, and Network Ring Again for global private virtual network services. ANSI7+ is used for both national and international signaling protocols.

SIGNALING SYSTEM INTERWORKING ON THE DMS-300 SYSTEM

The matrix below identifies the interworkings between different signaling systems that are supported on the DMS-300 system as of the GWY03 product release.

DMS-300 Signaling Interworking Matrix

	R1	R2	T3MFC	N5a	N5d	TUPr	TUPb	BTUP	TUP+	TUPe	ATUP	ISUP Q.767	ISUP Q.764	ISUPe	ANSI7	ANSI7+	USS7	AISUP
R1	•	•		•	•	•	•	•	•	•		•	•		•	•	•	
R2	•	•		•	•	•	•	•	•	•		•	•	•				•
T3MFC				•	•	•					•		•					
N5a	•	•	•	•	•	•					•	•	•	•	•	•	•	•
N5d	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
TUPr	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
TUPb	•	•			•	•	•	•	•	•	•	•	•	•	•	•	•	•
BTUP	•	•			•	•	•	N/A	•	•		•	•	•				
TUP+	•	•			•	•	•	•	•	•		•	•	•				
TUPe					•	•	•	•	•	N/A		•	•	N/A	•			
ATUP		•	•	•	•	•					•	•	•	•				
ISUP Q.767	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
ISUP Q.764	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•
ISUPe		•			•		•	•	•	N/A		•		N/A				
ANSI7	•			•	•	•	•			•		•	•					
ANSI7+	•			•	•	•	•					•				•	•	
USS7	•			•	•	•	•					•				•		
AISUP				•	•	•						•	•					•

• = Interworkings supported on the DMS-300 system.

INTERFACES

PERIPHERAL INTERFACES

The DMS-300 switch supports analog test trunks with the trunk ISM (Integrated Service Module) replacing the T8A. The T8A continues to be supported on existing switch installations for national or international networks.

Digital Trunk Controllers (DTCs) connect the DMS-300 system to trunks. There are two types of DTCs:

- DTCs for the T1 interface
- PCM-30 DTCs (PDTCs) for the E1 interface

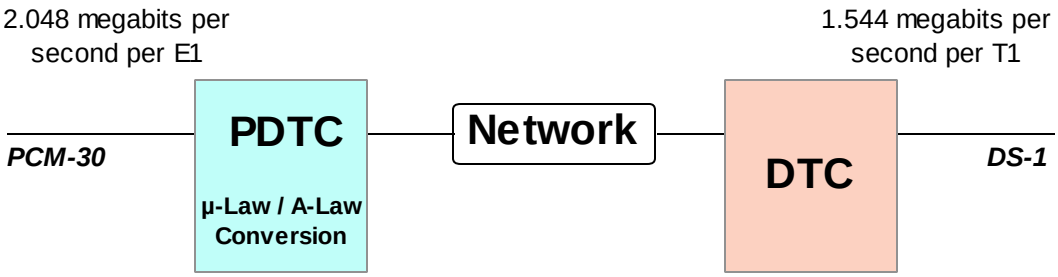
Both types can co-exist on the same switch

DTC (Digital Trunk Controller)

- Operates at 1.544 megabits per second (Mbps) per T1
- Hosts a maximum of 20 DS-1 interface cards (24 channels per DS-1)
- Supports R1 and ANSI7 digital trunks

PDTC (PCM-30 Digital Trunk Controller)

- Operates at 2.048 Mbps per E1
- Hosts a maximum of 16 PCM-30 interface cards (30 channels per E1)
- Supports R1, R2, C5, C7 and ANSI7 digital trunks
- Performs µ-law to A-law conversions
- Provides time slot 16 DCME and external echo canceller control on a per-call basis



Peripheral Interfaces

EXTERNAL DEVICE INTERFACES

Digital Circuit Multiplication Equipment Control (DCME)

DCME reduces the bandwidth required to transmit digital-encoded speech by concentrating a number of digital trunks onto a lesser number of transmission channels between DCMEs. It does this by making use of breaks of silence in both directions of a voice call, and by using speech coding methods. The DCME features on the DMS-300 system indicate bearer service capability on a per-call basis and provide dynamic load control between the DCME and the DMS-300 system via the PDTC. DCME supports call processing for R2 and C5 outgoing trunks and the following C7 user parts: BTUP, ITU TUP, ITU ISUP92 and ITU Q.767 ISUP. DCME control conforms to ITU Q.50 Annex A standards.

Echo Canceller Control

Echo cancellers subtract or cancel an estimation of echo. When the echo canceller is active, the tone-disabling feature suspends echo canceling if a modem carrier tone is detected. The DMS-300 switch controls external cancellers via the RS-232C or timeslot 16 interface. Echo canceller control is supported for digital R2, C5, BTUP, ITU TUP Red, TUP Blue, ITU Q.764, ITU Q.767, ITU ISUP92, ETSI ISUPV2, and ANSI7+ calls on E1 spans.

OPERATIONS, ADMINISTRATION, MAINTENANCE AND PROVISIONING (OAM&P)

The DMS-300 system software provides advanced OAM&P functions for administrators. In GWY03, the following OAM&P entities are supported on the DMS-300 system.

Network Management (NWM)

NWM controls measure, monitor, and manipulate traffic flow. These controls have the following advantages:

- Prevent traffic overload conditions
- Use all available network circuits
- Give priority to the types of traffic with the highest probability of completion
- Give priority to a specific number of calls when all available circuits are in use

Service Analysis

With Service Analysis, calls are monitored on a random basis, to collect data that can be analyzed and evaluated. This analysis allows the appraisal of overall quality of service. Both manual and automatic service analysis features are available. This permits selected calls to be service analyzed based on, for example, trunk type, trunk group, Common Language Location Identifier (CLLI), particular circuit, or Call Detail Record (CDR).

Maintenance Testing

On the DMS-300 system, maintenance testing (available on T100, T101, T103, INT102 [milliwatt], INT104, ARTER, TB18, and ATME-2) detects faults, supplies diagnostic information, and supports various manual and automatic testing to enhance reliability.

Bit Error Rate Testing (BERT)

BERT evaluates the performance of the digital connections with respect to high-speed or low-speed data transmission.

Digital Test Access

Digital Test Access (DTA) implements the ability to test digital trunks on PCM-30 links, using digital jack-ended trunks. This feature capability ensures bit transparency by inhibiting network attenuators.

ISDN Test Calls

ISDN test calls modify parameters such as bearer capability, supplementary services, and teleservices. The setup parameters can include test number, outgoing route or circuit, and ISDN service requested. This capability enables the user to initiate an ISDN call with datafillable parameters.

Operational Measurements (OMs)

The OM system collects information relating to all functions of the DMS-300 system. Equipment usage, network occupancy, quantity of calls handled, and many other useful measurements are generated.

Call Accounting

The DMS-300 system provides full call itemization including origin, destination, route and circuit used, and service carried. The DMS-300 will also:

- Detail and itemize information down to the individual call record
- Document point of origin and point of termination through traffic analysis
- Provide real-time records transfer, as well as flexible file transfer formats
- Allows inter-administration accounting using the Enhanced Multi-Protocol Controller (EMPC) hardware, X.25 links transport logs, OMs, accounting records, and files

The DMS-300 system also supports Automatic File Transfer (AFT) to transfer accounting records from the Device Independent Recording Package (DIRP) software subsystem to downstream processors.

TRANSLATION AND ROUTING FUNCTIONS

TRANSLATIONS

The DMS-300 system performs the following translation functions:

- ***Translation analysis***, which performs the following tasks:
  - Analyzes incoming signaling and address digits to determine a call destination
  - Screens calls on the basis of their destination address, originating circuit group, and type of call

- ***Digit manipulation***, which performs the following tasks:
  - Inserts or deletes digits at any point in the digit stream of the dialed number
  - Inserts the originator's true country code on incoming trunks
  - Inserts the facility code, based on the type of call and satellite information
  - Inserts a language digit or discrimination digit (DISD) as required by the signaling system

- ***Screening analysis***, which performs the following tasks:
  - Screens calls based upon requested services, such as closed user group or bearer capability. The screening result can allow the call to complete minus the screened services or can block it based upon datafillable characteristics
  - Specifies if special routing is required for a call

CALL ROUTING FUNCTIONS

The DMS-300 system performs the following routing functions:

Route selection chooses a route to an outgoing trunk group from the route list that results from the analysis and conversion routines. The route that a call takes depends on the contents of the route list containing the direct and alternate routes to a destination exchange. Calls are routed based on:

- The route list chosen by translations
- Time of day
- Traffic load restrictions
- Network congestion
- Bearer services
- Satellite indications
- Percentage allocation

Alternate routes are used when there is congestion or poor transmission quality on the direct route, when network management controls are in effect, or if no direct routes are available. If a call cannot be routed, either directly or through an alternate path, the route selection function sends the call to treatment. In addition to traditional treatments, such as tones or announcements, the DMS-300 system provides the flexibility to determine a treatment action (should a release message be sent or a local treatment applied) based on incoming information such as originating protocol and bearer capability.

The DMS-300 switch also permits treatments to be applied at previous points in the network for common channel signaling systems. This enables local resources in the network to be used when providing treatment, freeing expensive overseas connections for re-use. This also helps ensure the delivery of meaningful in-country tones or announcements.

Intersignaling System Digit Format Conversion. Routes to national and international exchanges may be organized into trunk groups on the basis of the following:

- A connecting exchange location
- The transmission mode (for example, cable or satellite)
- The signaling type (for example,R1, C5, or C7)
- The trunk direction (for example, incoming outgoing, or two-way)

In general, the national signaling system differs from the international signaling system in use for a call. The call routing function caters these differences and maps the call information between the signaling systems to help ensure that this information is not lost.

Digit Manipulation processes and manipulates the dialed digits to determine an appropriate destination and dialed address. Digit manipulation performs the following tasks:

- Prefixes or deletes digits
- Converts operator codes
- Modifies the calling party category of a call, if required
- Adds, deletes, or modifies the language digit or discrimination digit (DISD)
- Selects call path depending on traffic conditions, call type, signaling requirements and cost. For example, during high-traffic periods, calls may be routed via alternate routes to help ensure high call completion and maximize switch performance

GLOBAL PRIVATE VIRTUAL NETWORKING SERVICES

Nortel's DMS-300 system is the platform for global private virtual networks (GPVNs) that link people and machines across continents. GPVN is part of the overall network offering of Nortel that includes the Meridian 1 PBX, DMS-100/200 central office switching equipment, SONET transmission, and Norstar key systems. GPVN offers software-defined services that emulate many PBX features and functions over a wide area, including international sites.

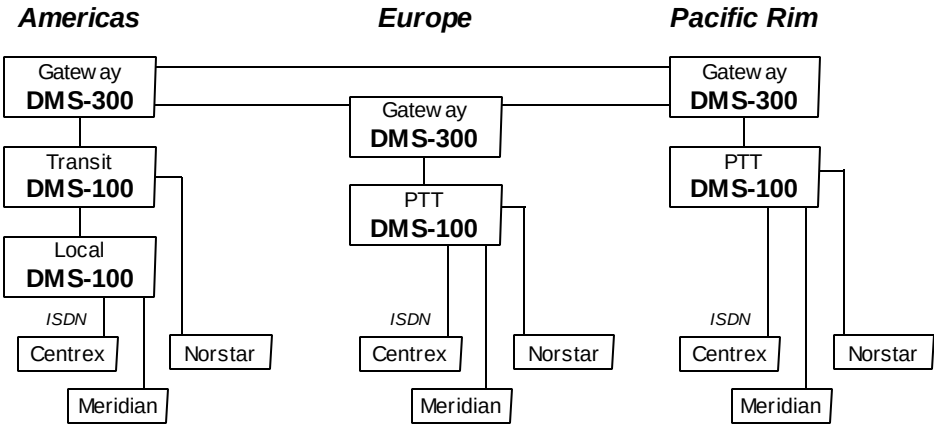
GPVN provides users a level of privacy that is normally available only through network ownership, while enabling customers to establish multi-site global networks.

BENEFITS

New Cost Savings—Full use of the public switched telephone network enables network service providers to pass on savings to the user through a lower per-minute charge for calls. Sharing transport facilities also results in a reduced cost to customers.

Efficient Cost Management—GPVN facilitates global cost management via a three-layered call identification code system with network access limited to authorized users. For billing purposes, a customer group identifier code isolates all company calls and an account code isolates all department calls. GPVN can provide global 24-hour network management for customers and regular management reports on network usage and traffic levels.

Simplified Dialing Plans—GPVN can interface (and act as an extension to) most private networks, mirroring its dialing plans and functions for voice, data, and video. Dialing plans are simplified for users through uniform six or seven digit dialing sequences worldwide.



Significant Cost Savings through Global Private Virtual Networking

***Advanced Feature Offerings*—**By integrating GPVN with an existing private network, users can effectively upgrade their private networks to offer advanced GPVN features. GPVN meets the needs of users by offering international features transparently.

FEATURES

Calling Line Identification (CLI)—Displays the number of the caller on the destination terminal. This party can then screen calls and acknowledge the name of the caller. Call screening also reduces the incidence of malicious and anonymous calls.

Network Ring Again—If a user calls a busy line, this feature automatically notifies the caller when the line is free again and re-makes the call. With GPVN, Network Ring Again is available network-wide between any on-network locations around the world. It saves time spent having to re-make calls and minimizes the frustration of telephone tag.

Call Forward—If a user is absent from the office, calls can be forwarded to another number so that the call can be answered. Until the introduction of GPVN, this feature had not been available on country-to-country calls. Applications for this feature include global 24-hour help lines, sales inquiry desks, and messaging services.

Network Name Display—When a subscriber receives a call, the caller's name automatically displays on the receiving terminal. As with GPVN's Calling Line Identification feature, Network Name Display allows the recipient of the call to screen it before answering.

Multilocation Business Groups (MBG)—Refers to the GPVN interconnection between two customers who may have a business relationship requiring heavy communications between areas or departments within their companies. With this service, the features of GPVN can be shared between two separate GPVN customers. The calls—voice, data, or video—can initiate on one customer's GPVN and be carried onto a second without any loss of capability, capacity, or features.

Software Summary

NEW SOFTWARE DELIVERY

GWY03 is built under a simplified product structure known as Product Computing-Module Load (PCL). PCL was first used for software releases for the DMS-300 International Gateway in GWY02. Built on new, layered software architecture, PCLs offer a number of important benefits to network providers.

Layered Design Delivers New Capabilities Faster

PCL software loads accelerate feature introduction by structuring software components into independent units with standardized interfaces. These "layers" make interactions more predictable, making software loads easier to test. New functions can be introduced more rapidly because the testing intervals have been dramatically shortened, and unexpected interactions are minimized.

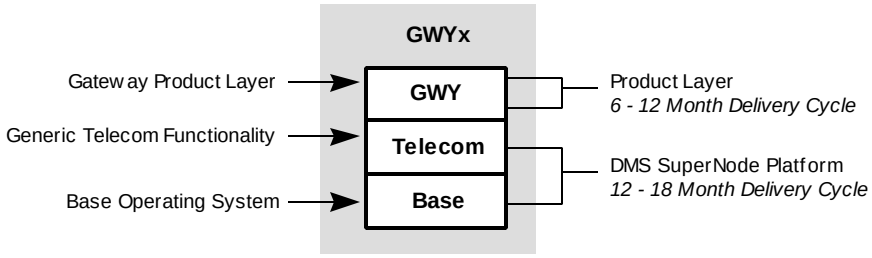
With layering, Nortel is able to shorten feature development time to 6 to 18 months from the previous 18 to 36 month intervals. Custom features—and customer-specific services for market trials—can be developed in as few as 6-12 months.

Reduced Complexity Helps Improve Quality

The new architecture reduces software complexity, making feature interactions more manageable. This simplification contributes to enhanced software performance.

Simplified Engineering/Ordering Reduces Costs and Speeds Time to Market

A major difference with PCLs is the elimination of software packages (NTX codes). In the new paradigm, there are reduced requirements for discrete, orderable software elements. A long list of NTX packages are simplified into a few software options. As a result, engineering and ordering are greatly simplified.



Layered Software Releases Help Accelerate Feature Delivery

PCLs Available

A PCL is the actual software load that resides on a DMS-300 system. Different PCLs, optimized for key market segments, are all created from a common product release. The following are the PCLs available from the GWY03 product release.

PCLs Created from GWY03

Note: GAUS000x, GJPN000x, and GSSR000x PCLs have been consolidated into the following:

Order Code	Description
GTWY0003	Standalone DMS-300
GPLS0003	DMS-300 with integrated SP and STP (INode)
GCAR0003	DMS-300/250 (GWY03 and UCS07)
GEUR0003	DMS-300 with INode (UK-specific at present)

The following are the PCLs planned to be available from the GWY04 product release:

PCLs Created from GWY04

Order Code	Description
GTWY0004	Standalone DMS-300
GCAR0004	DMS-300/250 (GWY04 and UCS08)

Since all PCLs available at a given time period are created from the same product release, this document will often use the product release to conveniently reference all the PCLs as a group.

CONTENTS OF A PCL

PCLs contain *all* available software for a particular switch type and market. Standardized loads offer the benefits of very rapid feature activation, streamlined maintenance/administration, and flexible marketing options.

Custom loads are still available through PCLs in that each network provider establishes a unique, custom mix of active and inactive features for each switch by obtaining right-to-use for certain optional software components and leaving other optional software components inactive. Whenever network providers want to activate features, they only need to contact Nortel for licensing and activation information. Since the software is loaded on the switch already, the time-consuming practice of reloading software is eliminated.

Standard Features

Each PCL contains many *standard* features that are automatically available for the network provider to use (or not use) and do *not* have to be licensed separately.

Optional Features

Network providers can choose from many options within a PCL to tailor the service set to particular network requirements. The software options in a PCL are all identified by an eight-character *ordering code*.

GWY03—Standard Features

This chapter discusses the software features that are *standard*. That is, these software components are available for the network provider to use with no requirement for licensing.

STANDARD BASE FEATURES

The fundamental software layers of a PCL release, with Base and Telecom capabilities, is called the *DMS SuperNode Platform*. The majority of these capabilities are standard (they do not have to be licensed separately).

This is part of the simplification made possible by the new software structure.

The following software capabilities are part of the DMS SuperNode Platform standard software offered with the GWY03 release.

Feature	Description
General Capabilities:	
CDR Search	Allows the network provider to search the Call Detail Recording records generated by the switch for specific information such as: originating CLLI, terminating CLLI, dialed number, outpulsed number and any fields utilized within the switch CDR format. Allows the service provider to search CDR files to find matches for specific criteria helping with fault finding and statistical style information.
Enhanced Computing Module Maintenance	Introduces the Intelligent Mismatch Handler (IMH) for enhanced maintenance and diagnostic functions that simplify DMS-Core memory maintenance activities.
Enhanced SLM Maintenance	Modifies System Load Module (SLM) software so file restoration time is cut in half on Peripheral Modules.

Feature	Description
Enhanced Robustness	Upgrades the Computing Module MAP and sanity timer to maximize in-service time.
Enhanced ENET	Reduces ENET-related service issues through new enhancements.
CCITT TUP Red Enhancements	Caters to real-world scenarios which protocol recommendations do not always cover. Provides a solution to the incompatibility of the IAM/IAI number of address signal fields between Red and Blue book implementation of Q.723 with the introduction of 15-digit IDDD numbers. Modifies the incoming interface by allowing 16-address signal field in the IAM/IAI message. Only the incoming interface is modified by this feature.
TMTMAP Enhancements	Enhances the treatment of calls through table TMTMAP. Provides datafill cause and location only for ISUP calls that will be treated by sending an ISUP release message. Enhances capability for service provider to datafill cause and location for ISUP calls which are to be treated locally. Enables the cause and location fields in the ISUP ACM or CPG messages to be set as per ITU recommendation Q.850 allowing for correct identification of call failure reasons.
No-Restart SWACT	Reduces the switch downtime for software upgrades, thus reducing customer and service impact. This feature is supported only for GWY03 loads and beyond.
Enhanced Call Processing Platform	Helps prevent errors originating in application software from affecting switch operation. Also, additional diagnostic data enables Nortel technicians to quickly identify a variety of software errors.
Enhanced Input/ Output Controller	Enhances operating software for the Input/Output Controller' s disk drive unit to reduce system restarts caused by corrupted input/output queries.
Enhanced XPM Interface	Introduces a new data handler to promote error-free data delivery from an Extended Peripheral Module (XPM) to the Computing Module. Also, this software reloads the active side of an XPM after a parity failure, to avoid potential future XPM outages.
Enhanced Clock System	Extends the new clock (NT9X53AD) card to include Message Switch Stratum 2 and Local Message Switch applications. This feature also broadens the testing of out-of-service clock cards.

Feature	Description
Post Release Software Manager	A utility resident in the DMS software that manages software corrective content updates (patches) for a released load. Replaces the current utility, PATCHER, permanently in GWY03-based software releases. Extensive on-switch help facility. Tree-structure implementation guides user through all functions. Each level provides a list of subcommands for more detailed help. The status of each PRSU in every destination is maintained and may be queried with the REPORT and SELECT commands. Processes may be scheduled to run automatically via tables AUTOOPTS and AUTOPRSU. PRSM documentation is available as follows: • PRSM NTP (297-8991-540) • Basic Quick Reference Guide (297-8991-541) • Advanced Quick Reference Guide (297-8991-542)
For the Link Peripheral Processor (LPP):	
Enhanced Frame Bus (FBUS) OAM	Maximizes Link Peripheral Processor (LPP) in-service time by enhancing FBUS operations, administration, and maintenance (OAM) features, including new operational measurements, logs, and alarms.
Enhanced Routine Exercise (REX) Logs	Helps prevent potential outages by enhancing the REX test logs on the Local Message Switch and Network Interface Unit.
Enhanced LPP	Helps prevent LPP message loss by detecting rate adapter hardware failures more quickly.
New Clock Card Support	Supports the NT9X53AD clock to enhance fault detection and isolation—using existing Link Interface Module (LIM) maintenance software.

Feature	Description
For Software Delivery:	
Software Delivery Enhancements	Shortens the One Night Process (ONP) and reduces the number of complex memory-provisioning office parameters.
Peripheral Module Delivery Enhancements	Adds to the Product Upgrade Manager (PUMA) a new utility (called PANTHER) that automatically loads peripheral module software. PANTHER reduces the upgrade interval, out-of-sync time, and the possibility of procedural errors.

STANDARD EXTENDED PERIPHERAL MODULE (XPM) FEATURES

Nortel is committed to deliver a series of features to enhance the robustness of system XPMs. These features are targeted at improving critical field performance parameters, including field incident rates. In GWY03, the following scheduled XPM features further enhance robustness:

Feature	Description	ActID
XPM Operating System Enhancements	Makes operations support system interfaces more standard to enable third-party software.	AF6023
XPM Memory Manager	Completes XPM memory manager evolution by implementing a single memory manager for XPM.	AF6089
XPM Base Decoupling	Separates the XPM base from application functionality. This allows applications to change without affecting the XPM platform, and facilitates the evolution of messaging.	AF6139
XPM Dynamic Datasync Improvements	Provides the infrastructure for a new data transfer mechanism, with a faster, more reliable method for transmission of data from the active side to the inactive side of the switch.	AF6039

GWY03—Optional Features

This chapter discusses the software features that are *optional* and must be licensed separately.

OPTIONAL BASE SOFTWARE

Although most of the capabilities in the DMS SuperNode Platform are standard, there are a few orderable options.

One group of these is a choice of processor for the Computing Module. The following table lists the processing options in GWY03.

Options on DMS SuperNode SE

Processor	Order Code GWY03
Series 60	BASE0008
Series 70	BASE0010
Series 70EM	BASE0010

Options on DMS SuperNode

Processor	Order Code GWY03
Series 50	BASE0005
Series 60	BASE0006
Series 70	BASE0009
Series 70EM	BASE0009

In GWY03, Nortel introduces the Series 70EM processor. The 70EM has extended on-board memory versus BRISC-70, yet continues to support high processing capability. This is Nortel's latest-generation RISC architecture processor, implementing BRISC Series 70 processing power with 512 Mbytes of DRAM memory. The 70EM processor enables high-capacity users to continue to grow their switches as DMS-300 capacity is increased and signaling systems and features require more processing power.

CCS7 FEATURES

Feature Name	Description	Ordering Code
CCS7 Switching Point Routeset Increment	This routeset expansion feature involves both a hardware and software solution. Routeset expansion beyond 255 requires the use of external routers—Link Interface Units (LIUs)—in the Link Peripheral Processor. The LIUs are assigned in software to handle the routing of Message Transfer Part (MTP) messages within the switch.	TEL00004

Also available in GWY03, in alphabetical order:

Feature Name	Ordering Code
CCS7 Base Enhancements	TEL00008
CCS7 Channelized Access	TEL00002
CCS7 Link Fault Locator	TEL00007
CCS7 Link Protocol Tester	TEL00006
CCS7 Network Integrity Items	TEL00009
Gateway Screening	TEL00003
Multipoint MTP Code	TEL00005

OPTIONAL APPLICATION SOFTWARE

The following features, specific to the DMS-300 system, are available for licensing in GWY03.

Feature	Description	ActID	Order Code
ITU ISUP92 Enhancements	Enhances the implementation of the ITU ISUP92 protocol and extends the list of supported interworkings. Allows service providers to interconnect utilizing the latest international protocol and begin network development of the latest services. Consists of: ITU ISUP92 PCP and MCP compliancy updates; enhancements to the ISUP92 DMS-300 support; extra interworkings for ITU ISUP92 (TUP Red, TUP Blue, BTUP, USS7 ISUP, CCITT R2 and R2-BAB).	AR2020	GATE0055
ETSI ISUP V2	Implements ETSI ISUP V2 with PCP and MCP compliance. Signaling systems to be supported for this feature include R2, N5 (digital), TUP blue, ITU ISUP92, CCITT Q.767, ANSI7+. Implements the European national connectivity for passing network services to the international ISUP Version 2 network (utilizing ITU ISUP92).	AD9818	GATE0059
Digital Test Access for NIU	Allows a digital connection to be made between a trunk or signaling link and a digital termination box (DTA box). Protocol analyzer or other such test tool may then be connected. Enhances Digital Test Access (DTA) functions to allow the monitoring of CCS7 transmission links when the office uses the Network Interface Unit (NIU). DTA box may be located in a centralized remote maintenance facility, enabling remote access of signaling links for new lineups and faulting capabilities.	BY57317	TEL00002

Feature	Description	ActID	Order Code
Automatic File Transfer over EIU	Implements the Automatic File Transfer (AFT) protocol over the Ethernet Interface Unit (EIU) for the DMS-300/250 combination product. Allows customers to download billing records and operational measurements data through the EIU to downstream processors. Allows the service provider the capability of high-speed download of CDRs and OM data to an accounting system utilizing standardized network LAN capabilities. Will coexist with the existing functions of FTP/Telnet over EIU. Available for all DMS-300 PCLs.	AD9737	GATE0039
Engineering and Administrative Data Acquisition System (EADAS)— Phase 1	An OSS (Operational Support System) used for automatic collection of Operational Measurement (OM) data. Provides service provider network managers with traffic measurements and control capabilities. EADAS Phase 1 only implemented for the OM groups common to DMS-100 and DMS-300.	AG7025	GATE0062

Feature	Description	ActID	Order Code
Supplementary Service Controls	Enhances the SERVice PROFiling function for Calling Line Identity (CLI) service. Selectively screens ISDN-originated CLIs separately from POTS-originated CLIs, for ISUP and BTUP trunks. Allows the selective launch of international CLI services for ISDN and non-ISDN POTS services. Signaling systems supported in this feature include: • ANSI7 • ANSI7+ • USS7 • ISUP • ITU ISUP92 • ETSI ISUP V2 • CCITT Q.767 • BTUP	AD9771	GATE0024
Enhanced Digital Test Unit	Replaces three existing digital test units: Trunk Test Trunk (TTT), Trunk Test Unit (TTU), Digital Test Unit (DTU). Flexible EDTU architecture allows simplified addition of new applications. Physical improvements include: • Single-slot card • Reduced number of circuit packs • Lower power consumption • Increased number of testing channels (four channels per pack) • Accuracy improvements: – Tone generation – Noise measurement – Singing and echo return loss – C message noise test – Notch test and TTU on-hook manual test – Ringing waveform test and tone detection • Self-diagnostic improvements		

Feature	Description	ActID	Order Code
Enhanced Forward Operator Transfer (FOT)	Implements two main functions: Sets Forward Operator Transfer (FOT) message transit capability, and establishes a three-way conference with the national operator, international operator, and a national subscriber (for a nationally terminating call the FOT message will initiate a third leg to the call, which will terminate upon an operator position). Supports the FOT message for the following protocols: • ANSI7+ • ANSI7 • ITU Q.764/767 • ITU ISUP92 • USS7 ISUP • ETSI ISUP V2 • TUP Red • TUP Blue • C5 (digital) R1 ***Note:*** the FOT feature requires three-port conference circuit hardware.	AD9745	GATE0066
Bearer Capability (BC) Overwrite	Caters to subtle yet important differences between the North American telecommunications network and the international network. Implements two functions for calls terminating to ITU Q.767 or ITU ISUP92: • Enables calls with a BC of speech to be overwritten with a BC of 3.1 KHz • Allows 56 kbps non-ISDN calls to be mapped into ITU Q.767 and ITU ISUP92 protocols Signaling systems supported by this feature: • ANSI7 • ANSI7+ • USS7 ISUP ***Note:*** the 56-kbps non-ISDN function is contrary to ITU recommendations.	AD9921	GATE0064

Feature	Description	ActID	Order Code
Destination OM Enhancements	Enhances the Destination OM feature to allow the transit peg count to be incremented for calls within the same world zone. Allows the switch to increment peg counts for terminal and transit calls based on destination route. Increments transit peg count for calls within the same world zone. Allows the service provider to measure all transit traffic through the exchange.	AX0004	GATE0038
Calling Line Identification for BTUP	Collects interworks records of the Calling Line Identification (CLI) in the CDR for POTS incoming on a BTUP trunk. Stores a default value of #FFFF in the CDR if a partial or no CLI is collected. Interfaces with the Supplementary Service Controls feature to allow or disallow CLI interworking as required. Enables international CLI service to be launched when BTUP is employed as the national protocol. Calls will request CLI as follows: • Full CLIs will be stored in the CDR record • No or partial CLIs will store a default value of #FFFF Interfaces with the Supplementary Service Controls feature to allow or disallow CLI interworking as required. Enables the international CLI service to be launched when BTUP is employed as the national protocol. Note: CDR formats not employing a calling line number field will be unaffected; e.g., CDR1A.	AD9829	GATE0065
Enhanced Application-Specific Unit	Adds new operational measurements, background audits, and Ethernet Interface Unit functions for enhanced operations from Application-Specific Units in the Link Peripheral Processor.		

After GWY03

The dynamics of the international communication market and the demand for feature-rich applications has driven Nortel' s commitment to offer new software releases for the DMS-300 system on an annual basis. We continue to offer our customer base several revenue-generating and maintenance-enhancing features with each GWY release. This chapter discusses changes that are planned for DMS-300 International Gateway Services software after GWY03.

STANDARD FEATURES PLANNED FOR GWY04

Feature	Description	ActID
Millennium Readiness	All functions will be fully supported for dates pre- and post-year 2000. To minimize any impact to customers' downstream processing equipment, wherever possible, logs, commands, etc. that utilize two-digit dates will continue to use two-digit dates, and those utilizing four-digit dates will continue to use four-digit dates. Any exceptions to this rule will be advertised.	AX0710
CDR15	Introduces a new CDR format CDR15 based on CDR14 and including a second-man accounting function.	AX0906
CDR Decoupling	Removes ties between CDR formats and CDR support records. Allows service providers to custom-build CDR streams based upon standard CDR packages.	AX0906
24-Digit Handling	Extends the digit handling capabilities of the DMS-300 to 24 digits for all tables and tools throughout the switch and all applicable protocols.	AX0939

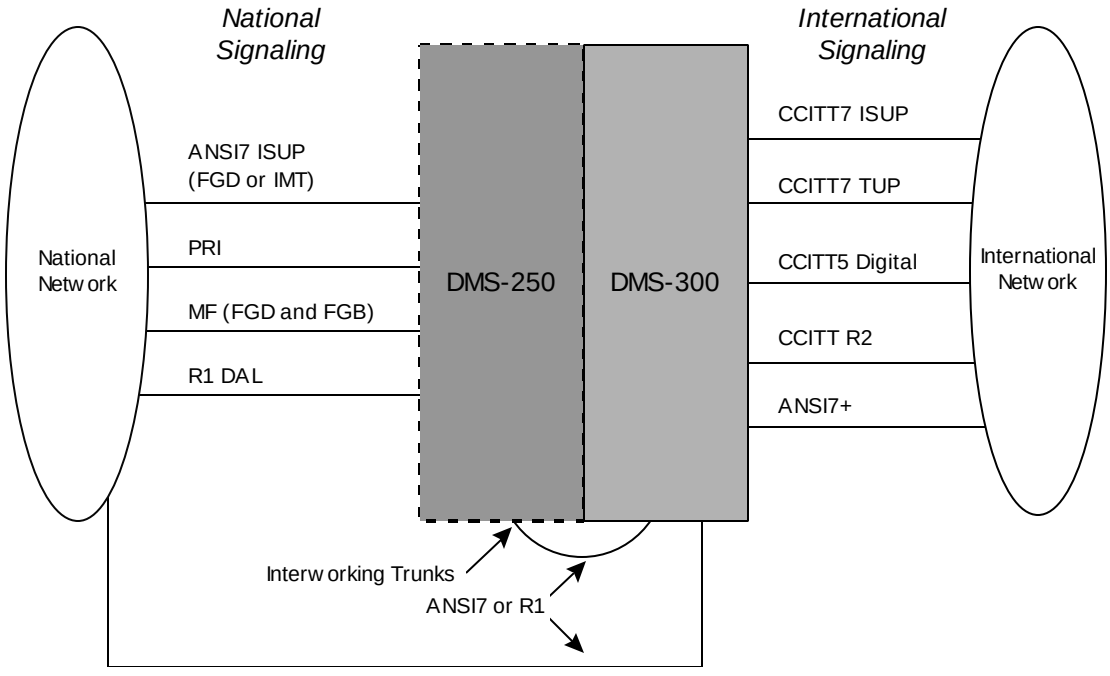
Feature	Description	ActID
Datastore Management	Monitor datastore usage for tuples, digilators, listabs and another datastore usage pools that are needed to support INPRTRNS, OVNTRNSL, ISCTAB, ROUTEMAP, TRIMAP and GWDIGMAN tables. The datastore tools created by this feature are DBLOCKS, LISTAB and TABSTORE. This feature also enhances the OVNTRNSL table control code to provide data compression.	AD8555
ISN Auto-imaging	Automated imaging of all ISN nodes. Reduces maintenance time and ISN recovery. Also prevents outages due to usage of out-of-date loads and unpatched loads.	AR2215
DCACCTL and POECSCRN Enhancements	Increases the range of values in table DCACCTL to accommodate the entire range of language digits and other digits (i.e., test calls, payphones, etc.). Extends key value of POECSCRN to include full-language digit range.	AX0936
Optional Features Planned for GWY04		
Intelligent Networking	Implements Intelligent Networking capabilities on DMS-300. Standards will be ITU-based with Capability Set 1 (CS-1R). To minimize any switch real-time effects, the triggers will be translations based. Potential features include: • International FreePhone and 800 services • VPN applications • Re-routing capabilities upon congestion indications • Pre-routing abilities to apply announcements Signaling systems to be supported include: • ETSI ISUP V2 • ANSI7 • ANSI7+ • USS7 ISUP • ITU Q.764/7 • ITU ISUP92	AX0944

Feature	Description	ActID
Integrated NODE (INode)	Allows the DMS-300 to be combined with Signaling Transfer Point (STP) functionality. Allows rapid movement from non-INode functionality to INode functionality without the need for a software upgrade and full verification process. Available in all PCLs (except for the DMS -300/250 combination product).	AR2008
ITU ISUP92 Enhancements	Enhancements to the DMS-300 implementation of ITU ISUP92 mainly related to the capability to modify parameters with the applicable national country code. Addition of SERVice PROF92 services such as call forwarding functionality.	AX0935
Serving Country Expansion	Will allow the DMS-300 to act as a focal point for calls originated from point-of-presence (POP) switches located outside of the home country. Will include call translations and CLI prefixing.	AX0933
GSM Roaming	Will allow the DMS-300 to translate and route SCCP GSM roaming messages based on Global Title Translations. This feature will prefix the national country code to the calling party address. Accounting capabilities for GSM roaming messages are also available as an option.	AE0984 and AX0933
ANSI ISUP Hop Counter	Implements Network Reliability Council Recommendation 1.8, *ANSI ISUP Hop Counter*, to prevent infinite traffic looping.	AX1119
ISDN 3.1 KHz and Speech Reversion	Converts BTUP ISDN (3.1 KHz and speech) calls to POTS and converts Q.767 to BTUP ISDN (3.1 KHz and speech) to POTS.	AX1118

DMS-300/250
Long-Distance Services

The DMS-300 system can provide long-distance services and gateway services on the same hardware platform with a single software load. This single load shares common DMS Maintenance and Administration Position (MAP) interface and tables. This combination of services provides the following advantages:

- Expanding services provides additional revenue opportunity
- Sharing equipment reduces cost of providing services
- Reducing OAM&P requirements improves operating efficiencies.



Conceptual Diagram of the DMS-300/250 System

NEW DMS-300/250 ENHANCEMENTS

Channelized Access is available on the DMS-300/250. The advantage of channelized access is that the signaling channel can be imbedded with the voice channels without the requirement of separating the two using external equipment. Therefore, external channel banks providing A-law and µ-law compatibility with DS-0 connections, as well as timing signaling generators, are no longer needed. A hardware module called the Network Interface Unit (NIU) provides the interface between the LIU7s and the switching network.

CDR Search allows the service provider to search the Call Detail Recording records generated by the switch for specific information such as: originating CLLI, terminating CLLI, dialed number, outpulsed number and any fields utilized within the switch CDR format. Allows the service provider the capability to search CDR files to find matches for specific criteria helping with fault finding and statistical style information.

AFT over EIU—implements the Automatic File Transfer (AFT) protocol over the Ethernet Interface Unit (EIU) for the DMS-300/250 combination product. Allows customers to download billing records and OM data through the Ethernet Interface Unit (EIU) to downstream processors. Enables the service provider to perform high-speed download of CDRs and OM data to an accounting system utilizing standardized network LAN capabilities. Will coexist with the existing functions of FTP/Telnet over EIU. Available for all DMS-300 PCLs.

LONG-DISTANCE SERVICES OVERVIEW

DMS-300/250 long-distance services are made possible by a high-capacity DMS SuperNode application designed for interexchange carrier (IXC) networks. In the competitive long-distance market, the DMS-300/250 platform is a service-rich system that makes extensive use of advanced signaling systems such as CCS7 and ISDN PRI, as well as Intelligent Network (IN) capabilities.

The DMS-300/250 switch can be configured to provide a wide range of revenue-generating long-distance services, including information databases, enterprise networking, data and video services, and multiple dialing plans such as International Direct Distance Dialing (IDDD).

Information Database Services

Information databases allow network providers to hold subscriber calling and called party information in a few locations rather than requiring every switching office to assist interexchange call processing and IN applications.

- *700 Number Services*—number translations that allow carriers to offer customer service numbers for information and assistance with network-offered features, such as an announcement that verifies the customer's presubscription to equal access.
- *800 Number Services*—number translations that allow businesses to receive, and pay a bulk rate for, high levels of incoming calling traffic across local calling area boundaries.
- *900 Number Services*—number translations that allow business clients to conduct public opinion polls across a wide calling area or provide special information services when subscribers dial an assigned 900 number exchange.
- *Account Codes*—provides collection and optional validation of 2 to 12 digits in length to allow call charging to user projects, departments, or special accounts while protecting against fraud on the network.
- *Authorization Codes*—5- to 7-digit numbers used to identify a subscriber, bill a call, prevent unauthorized network access, determine the originator's class of service, and/or control access to special features in a virtual private network (VPN).
- *Calling Cards*—allow subscribers to place calls through the DMS-300/250 system from any location and have the billing charged to a 14-digit calling card.

Call Validation and Trunk Routing

DMS-300/250 software can validate user access to long-distance services in ways other than those listed above, and then route calls by interpreting the parameters received.

Call Routing—provides call validation, routing, and feature selection based on:

- Calling number (Automatic Number Identification [ANI])
- User class-of-service index associated with a calling number, authorization code, or calling card
- Information identification digits received from calls over Feature Group D (FGD) trunks
- Time of day, day of week, and day of year

Equal Access Trunks—allows equal access routing to long-distance carriers over FGD trunks using either multifrequency or CCS7 signaling.

CCS7 Release Link Trunks—provides initial CCS7-based trunk connections so that enhanced service providers (such as banks) can collect the information needed to complete a service call, release the CCS7 trunk connection, and bridge the call over standard trunks.

Data and Video Services

Interexchange data and video switching is growing at an increasing pace as businesses expand operations and require sophisticated communications technologies to keep them competitive.

- *Switched 56-kbps Service*—supports long-distance data exchange and videoconferencing services for nationwide multipoint data and/or video connections.
- *ISDN Primary Rate Interface (PRI)*—provides highly reliable and flexible trunking facilities for traffic aggregation to Wide Area Telephone Service (WATS), Dialable Wideband Service, and other services; enterprise-based hybrid network switching; and compatible interfaces with interexchange networks that use CCS7 signaling.
- *Dialable Wideband Service (DWS)*—supports on-demand, easily tracked connections of variable bandwidth—such as that required in videoconferencing—over public facilities, potentially reaching any subscriber in the international numbering plan.

Enterprise Network Services

The DMS-300/250 platform provides various services that maximize the private use of public facilities by businesses that need cost-effective and efficient telecommunications outside the local calling area.

- *Dedicated Access Lines (DALs)*—enable a business to lease non-switched DS-1 trunk facilities directly to the interexchange carrier and use them for private wide area network (WAN) data communications.
- *Meridian Switched Network (MSN)*—permits a Meridian Digital Centrex business customer to use DMS switching systems in a private network and communicate with other locations using direct dialing for intra-business calls.
- *Virtual Access to Private Networks (VAPN)*—allows the carrier to offer direct dialing between two separate private networks, effectively bypassing the public network for these types of calls to avoid additional access charges.

Multiple Dialing Plans

DMS-300/250 software is designed for maximum flexibility so that it can recognize, process, and route different signaling protocols and multiple dialing plans.

- *Full 10-Digit Routing*—provides 10-digit routing to the station level.
- *7-Digit On-Network Routing*—facilitates VPN services by allowing private-to-private, private-to-public, and public-to-private network 7-digit dialing.
- *User Partitioning*—allows multiple private users to share trunk facilities.
- *Private and Public Speed Dialing*—allows abbreviated dialing for long-distance calls.

- *Hotline Number Dialing*—an emergency number service that allows the user to connect to a dedicated number without dialing it.
- *Automatic Number Identification via DTMF Trunks*—facilitates calling line identification to call centers not yet using ISDN PRI trunks.
- *International Direct Distance Dialing (IDDD)*—allows direct dialing by the subscriber to international numbers.

For additional information on DMS-250 UCS features, refer to the *Carrier Networks Feature Planning Guide:1997,* 74003.11/08-97

Combo Release

The DMS-300/250 product consists of a combined Gateway software release and a Universal Carrier Services (UCS) software release. The DMS-300/250 software release [PCL name: GWCARR0*x*] is tied to the GWY development cycle, which may result in fewer DMS-300/250 releases per year as compared to the standalone DMS-250 long-distance system.

DMS-250 Release	DMS-300 Release
IEC02	GWY01
UCS05	GWY02
UCS07	GWY03
UCS08	GWY04

UCS07 FOR DMS-300/250 SYSTEM AT A GLANCE

The following summarizes the key UCS07 features available for the DMS-300/250 system.

Feature	Description
Carrier Selection Parameter (CSP) in CDR	This feature will create a new field in the UCS07 base CDR and FlexCDR templates that will capture the information stored in the Carrier Selection Information (CSI) field of the Carrier Selection Parameter (CSP) in the ISUP Initial Address Message (IAM). Consequently, the interexchange carrier will be able to identify and trend subscribers' access methods to their network; for example, the subscriber is presubscribed but did not enter a Carrier Identification Code (CIC), the subscriber is not presubscribed but did enter a CIC, etc.
Multiple ANI Profile Support—Phase 1	This feature redesigns the Automatic Number Identification (ANI) Database to improve memory usage and provide the framework for the future support of multiple profiles per ANI. The ANIs are stored separately in a validation table and the profiles are stored in a universal profile table, allowing for reusability.
NetworkBuilder Carrier Routing	This feature provides three functional enhancements to NetworkBuilder framework: trigger criteria enhancements, recognition and use of Carrier parameters in the Analyze_Route message from the SCP, and enabling trigger subscription via Address.
NetworkBuilder GVNS #2	This feature implements Global Virtual Network Service configuration #2, thereby supporting private network functions to users at geographically dispersed international locations while minimizing the need for dedicated network resources.
NetworkBuilder NETINFO/Multi-switch Business Group Support	This feature introduces the NETINFO parameter to support and enhance MGB intelligent networking capabilities for those MBG compliant switches/PBXs in the network.
NetworkBuilder Routing Enhancements	This feature enhances NetworkBuilder routing control, adds new actions to the trigger tables, adds support for CALLCTRL extension parameter and introduces a new global title.
NetworkBuilder Termination Overflow Enhancements	This feature enhances the Network_Busy Trigger product by allowing specific AIN Network Busy calls to overflow to the next user/route found in the Analyze_Route response message rather than the next route in the current Switch-based route list.

Feature	Description
Event Detection Points (EDP) Phase I	This feature provides support for five EDPs for NetworkBuilder: Network_Busy, O_Called_Party Busy, O_No_Answer, O_Term_Seized, and O_Answer. With EDP support, the SCP response may include a list of EDPs to arm for call bundling.
STR Connection	This feature enables communications with an intelligent peripheral (IP) from NetworkBuilder using the Send_To_Resource message.
NetworkBuilder Inter-IMT Support	This feature provides participation of Inter IMTs with the NetworkBuilder Carrier AIN triggers, except Offhook Immediate and PRI B-Channel, including conversational messaging and digit collection.
NetworkBuilder Global IMT Support	This feature provides participation of Global IMTs with the NetworkBuilder Carrier AIN triggers, except Offhook Immediate and PRI B-Channel, including conversational messaging and digit collection.
Local Number Portability	Local Number Portability (LNP) allows a subscriber to retain their directory number when they change service providers. As a result of LNP the NPA-NXX portion of a directory number that is currently used to identify the office where a DN resides is no longer adequate for this purpose. Local exchange carriers and interexchange carriers must employ other means of determining the destination office of ported calls and routing the call through the network to that destination. This optional feature provides the capability for the UCS DMS-250 to support LNP. DMS-250 LNP capability is based on the Location Routing Number (LRN) routing algorithm, which is defined in the ANSI T1S1 standards.
Quick Call	This optional feature allows carriers to offer their card services subscribers the ability to dial a four-digit PIN in lieu of the entire 14 digit travel card number (TCN) for calls destined to the DN which is the same as their TCN bill-to number. A 14-digit TCN number is comprised of a 10-digit billing number (which is usually the home telephone number of the calling card subscriber) and a 4-digit PIN. The Quick Call feature is typically used to allow subscribers who are traveling to use their calling cards to dial their home numbers and only be required to enter their four-digit PINs. This capability is compatible with both in-switch and TCAP-based Travel Card Services.

Feature	Description
Multiple Network Access (MNA)	DCR network elements (NEs) can be given the capability to interface to more than one network processor (NP). An intelligent NE equipped with MNA is capable of supporting up to six DCR networks. Routing within each DCR network is controlled by a single NP. The MNA NE communicates congestion and recommendation information to the appropriate NP. A network naming protocol is used to identify which network and NE is participating in and which NP and MNA NE communicates with. The MNA capability enables a gateway NE to participate in the routing of DCR intra-network and inter-network traffic.
Dual NE/NP Communication Link	The NE (network element) supports a dual network processor (NP) communication link configuration, thus providing increased DCR survivability. This functionality will be based on an active link and a standby link. The electrical interface will support V.35 over 19.2- and 56-kbps data link speeds.

UCS08 FOR DMS-300/250 SYSTEM AT A GLANCE

The following summarizes the key UCS08 features available for the DMS-300/250 system.

Feature	Description
Multiple ANI Database Support Phase 2	The Multiple ANI Database feature in UCS07 redesigned the Automatic Number Identification (ANI) database to improve memory usage and provide the framework for the future support of multiple profiles per ANI. This feature supplements UCS07 development by providing a search tool and a conversion tool to minimize customer operational and administrative activities.
UCS CAIN STS Extension Parameter Enhancement	This feature enables the SCP to define an STS for each standard-routing parameter (CalledPartyID and OverflowRoutingNo) as well as each direct-termination parameter (PrimaryTrunkGroup, AlternateTrunkGroup, SecondAlternateTrunkGroup), providing more flexible and enhanced routing solutions as well as an additional means of troubleshooting network problems.
O_Feature_Requested Trigger Enhancements	Based upon a customer request, this feature would allow additional flexibility for user interactions using the O_Feature_Requested Trigger. Rather than having the list of collectibles hard-coded in a particular order based on datafill in table OFTRREQ, the order of collectibles changes based upon the actual digits input by the user. The primary reason for this request is to migrate existing card services with ambiguous dial plans to NetworkBuilder.
Offhook Delay Trigger	This feature supports the Offhook_Delay trigger at the Collect_Info PIC and Info_Collected TDP in the Bellcore originating BCM based upon recommendations in Bellcore GR-1298-CORE. No additional response messages from the SCP are supported in response to this trigger.
Termination_Attempt Trigger	This feature is responsible for implementing the Termination_Attempt trigger in the Bellcore terminating basic call model based upon recommendations in Bellcore GR-1298_CORE. The supported response messages from an SCP are AuthorizeTermination, disconnect, and SendToResource.
Specific Feature Code Trigger	This feature supports the Specific_Feature_Code trigger at the Analyze_Information PIC and Info_Analyzed TDP in the Bellcore originating BCM based upon recommendations in Bellcore GR-1298-CORE. No additional response messages from the SCP will be supported in response to this trigger.

Feature	Description
NetworkBuilder Mid-Call Trigger	This feature supports O_Mid_Call trigger and event detection points with the trigger criteria "reorigination" from points in call Send_Call, O_Alerting, O_Active, and O_Suspended in the Bellcore originating BCM. Response messages AnalyzeRoute, CollectInformation, Disconnect, and ConnectToResource from an SCP are supported. The primary focus of the feature is to provide enhanced reorigination services.
NetworkBuilder EDPs —Phase 2	This feature completes the work in previous releases to add event detection points to the NetworkBuilder framework. This feature will add support for the O_Midcall, O_Disconnect, and O_Abandon EDPs and associated outgoing TCAP messages. SCP response message ConnectToResource and Disconnect will be supported from the O-Abandon EDP and SendToResource, AnalyzeRoute, and Disconnect will be supported from the O-Disconnect EDP. This feature also adds support for EDPs for the FlexDial agent.
GR-1129 Based IP Interaction	GR-1129 style IP interactions will be implemented in accordance with UCS07 preparatory feature AD9479, NetworkBuilder STR Connection.
NetworkBuilder Virtual IP (VIP)	This feature implements the ability to mimic certain IP behavior within the UCS DMS-250 SSP. When using GR-1129 style interactions with an IP, the SCP normally sends a Send_To_Resource message with a DestinationAddress parameter for routing to the IP, as well as a FLEXParameterBlock which supplies the template for the IP to use for interacting with the user. In this case, failure to receive the DestinationAddress with the FLEXParameterBlock would normally constitute an error condition. However, with this feature, NetworkBuilder will recognize that a FLEXParameterBlock in a Send_To_Resource message that did not include a DestinationAddress parameter indicates that the Virtual IP capability is being invoked. In this case, the FLEXParameterBlock parameter supplies the template for the SSP to use for interaction with the user. Effectively, this gives the SCP the ability to invoke O_Feature_Requested-like digit collection/interactions after a call triggers and a query is sent to the SCP.

Feature	Description
LNP Enhancements	This feature is responsible for enhancing LNP to interact with EDPs. Currently, when a Next_Event_List arming EDPs is sent in a response message from an SCP, a TCAP conversation between the SSP and SCP is maintained and all NetworkBuilder TDPs are disabled. At this point it is currently impossible to encounter the LNP-specific Office_Code trigger in order to perform LNP for the call. The second limitation occurs when the LNP-specific Office_Code query is sent after a non-LNP-specific trigger. Given the current NetworkBuilder design, all of the routing information received in the first Analyze_Route message would be lost when the second Analyze_Route is received. Finally, MCCS interactions with LNP will be investigated. Currently, NetworkBuilder does not interact with MCCS calls. This feature will investigate the feasibility of allowing addresses collected during MCCS calls to perform LNP.
NetworkBuilder LNP Interaction with CCS7 RLT	This feature is responsible for implementing local number portability (LNP) functionality on release link trunks (RLT) when the trunk is being used for a second call leg. The requirements for the feature can be found in UFSD0024, NetworkBuilder LNP interactions with RLT.
Universal International Free-Phone Numbering (UIFN) Service	This feature will allow the DMS-250 system to translate the UIFN into a routable number using in-switch translations. UIFN numbers are toll-free numbers that can be used throughout the world, regardless of the country or carrier. The UIFN consists of the three-digit world zone one international dialing prefix (i.e. 044) + 800 as a country code + eight-digit Global Subscriber Number (GSN).
Enhanced Network Management Interface	This feature provides an enhanced network management interface based on Bellcore' s proprietary SR-3942 specification. This interface can transmit traffic measurement OMs for up to 1024 trunk groups to be processed by network management processing systems. It also supports audit and control messages to the DMS-250 switch.
CCS7 RLT Protocol Enhancement	In this feature, CCS7 Release Link Trunk (RLT) Capability is enhanced as follows: The ESP/TOPS can send a call context block to the DMS-250 switch. The information in the call context block is passed "blindly" back to the ESP/TOPS when requested. The ESP/TOPS can store information in the context block such as: BILLNUM, PINDIGS, ACCTCD, BILLID, language preference, and other user-specific information so that this knowledge is retained when the call is sent back to the ESP/TOPS.

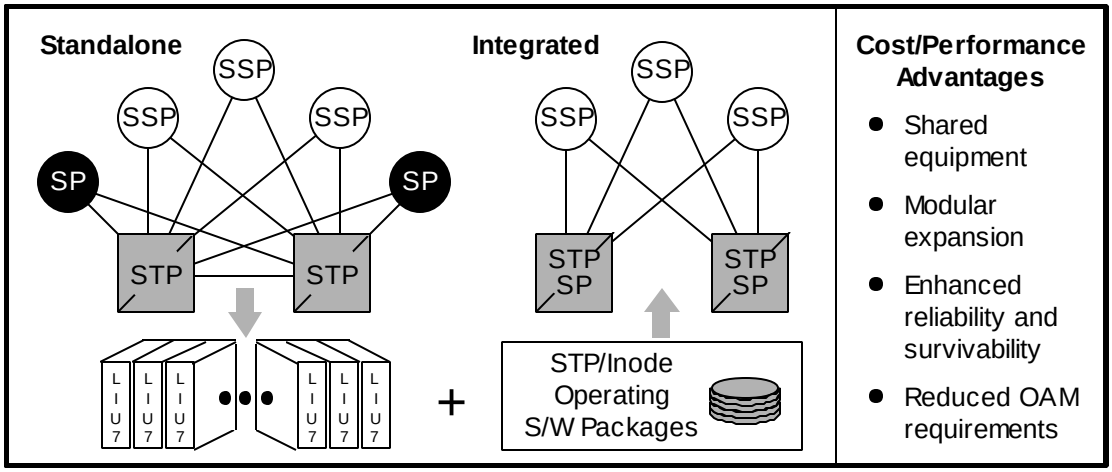
Feature	Description
CIC Routing and Outpulsing Enhancements	This feature enhances the existing CIC Routing capability of the DMS-250 to allow different carriers to have unique translations and routing based on the CIC and the method used by the end user to access the network (i.e. the use of the Carrier Selection Indicator [CSI]). The feature also introduces the capability for CIC-based routing and translations to override the routing and translations specified on an AIN basis.
DMS-250/500 Early Answer Supervision for Universal Access Numbers	This feature provides an early answer indicator to the originator for Universal Access (UA) call before sending tone and receiving address digits. Specifically, this feature sends an Answer Message (ANM) immediately after Address Complete Message (ACM), in order for intermediate switches to cut-through voice path and enable the collection of DTMF digits from the subscriber.
Multiple Profile ANIs by CIC	This feature provides the ability to assign ANI profiles based on the ANI and CIC combination. Facilities-based DMS-250 carriers can offer other carriers and resellers unique routing and other services at the individual (ANI) level. Applications include: Subscriber has not paid their bill and carrier wants to disallow for their CIC only; carrier has specific routing; international access is disallowed by ANI-CIC combination; etc.

DMS-300 Integrated Node (INode)

By supporting multiple applications on a single hardware and software platform, the DMS-300 SuperNode system enables network providers to reduce capital costs and expand service deployment. A DMS Signal Transfer Point (DMS-STP) can share major hardware, software, and spares with a DMS-300 Signaling Point (SP). DMS SuperNode applications are software configurable and built on standard, open interfaces. In an integrated configuration, an SP or STP can expand separately by modules (by adding Link Interface Units for CCS7 [LIU7s]) and can evolve independently without affecting the reliability or performance of the other system.

The DMS SuperNode architecture enables the processing of Message Transfer Part (MTP)/Signaling Connection Control Part (SCCP) messages in a DMS-STP and the processing of CCS7 User Part messages in a DMS-300 SP to share major hardware and software subsystems, including the DMS-Core, DMS-Bus, and Link Peripheral Processor (LPP).

A DMS Integrated STP/SP node (DMS-300 INode) can be implemented by simply installing the required number of CCS7 LIU7s in a LPP cabinet and adding STP and INode operating software. The integration strategy gives network providers the advantages of standalone STPs or SPs at a lower cost than that of standalone units.



DMS-300 INode Cost and Performance Advantages

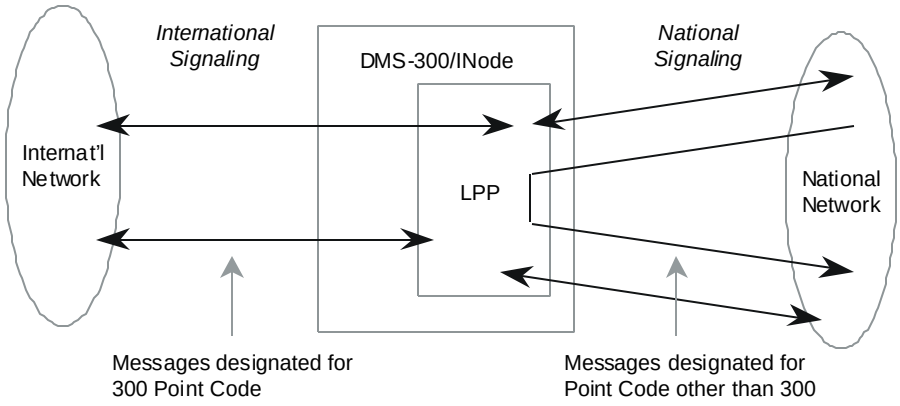
Some Software Optionality Control Options are managed through the Software Optional Control (SOC) utility, and others are managed using the honor system. Options using SOC are controlled or simply tracked by the utility. For each option licensed by the customer, Nortel delivers a password file that enables the service provider to report its right-to-use and to activate the capacity for SOC-controlled options.

KEY APPLICATIONS FOR DMS-300 INODE

In today's competitive environment, the DMS-300 INode offers numerous possibilities for network providers to optimize their CCS7 deployment plans. Two of these possibilities are described here.

- **Direct Access to the CCS7 Network**. The cost-effective deployment of STPs using the DMS-300 INode gives network providers direct access to the CCS7 network.

  Typically, a small network provider relies on the STP capabilities of a larger network provider to access the CCS7 network.
- **Channelized Access** is available on the DMS-300 INode. The advantage of channelized access is that the signaling channel can be imbedded with the voice channels without the requirement of separating the two using external equipment. Therefore, external channel banks providing A-law and µ-law compatibility with DS-0 connections, as well as timing signaling generators, are no longer needed. A hardware module called the Network Interface Unit (NIU) provides the interface between the LIU7s and the switching network.



Direct Access to CCS7 Network

Reference

GWY03 INODE PCLS

With GWY03, the DMS-300 INode PCLs are: GPLS0003 and GEUR0003.

This chapter contains a number of different indexes to help you find information about specific features in this document.

STANDARD FEATURES IN GWY03

The following lists the standard features for GWY03 discussed in this document, arranged alphabetically by feature name.

OPTIONAL FEATURES IN GWY03

The following lists the features for GWY03 discussed in this document that are not standard and must be licensed separately.

LISTED BY FEATURE NAME

Feature Name	*Ordering Code*	*Starting Page*
Automatic File Transfer over EIU	GATE0039	26
Bearer Capability Overwrite	GATE0064	28
Calling Line Identification for BTUP	GATE0065	29
CCS7 Base Enhancements	TEL00008	24
CCS7 Channelized Access	TEL00002	24
CCS7 Link Fault Locator	TEL00007	24
CCS7 Link Protocol Tester	TEL00006	24
CCS7 Network Integrity Items	TEL00009	24
CCS7 Switching Point Routeset Increment	TEL00004	24
Destination OM Enhancements	GATE0038	29
Digital Test Access for NIU	TEL00002	25
Engineering and Administrative Data Acquisition System—Phase 1	GATE0062	26
Enhanced Application-Specific Unit		29
Enhanced Digital Test Unit		27
Enhanced Forward Operator Transfer	GATE0066	28
ETSI ISUP V2	GATE0059	25
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Series 50 Processor DMS SuperNode	BASE0005	23
Series 60 Processor DMS SuperNode	BASE0006	23
Series 70 Processor DMS SuperNode	BASE0009	23
Series 70EM Processor DMS SuperNode	BASE0009	23
Series 60 Processor DMS SuperNode SE	BASE0008	23
Series 70 Processor DMS SuperNode SE	BASE0010	23
Series 70EM Proc. DMS SuperNode SE	BASE0010	23
Supplementary Service Controls	GATE0042	27

LONG-DISTANCE FEATURES IN GWY03

The following lists the features discussed in this document that are unique to the DMS-300/250 system in the GWY03 product release.

AFTER GWY03

The following features, discussed in this document, will be scheduled for future releases.

► STANDARD FEATURES

► DMS-300 SYSTEM-SPECIFIC FEATURES

LONG-DISTANCE FEATURES AFTER GWY03

The following lists the features discussed in this document that are unique to the DMS-300/250 system for the GWY04 product release.

ACRONYMS AND ABBREVIATIONS

The following pages list acronyms and abbreviations that appear throughout this document.

A

ActID	Development Activity Identifier
AFT	Automatic File Transfer
AISUP	Australia ISUP
ANI	Automatic Number Identification
ANM	Answer Message
ANSI	American National Standards Institute
ANSI7	American National Standards Institute /CCS7 Nortel Technology Proprietary Protocol
APU	Applications Processor Unit
ASU	Application-Specific Unit
ATME	Automatic Transmission Measuring and Signaling Test Equipment
ATUP	N7 Australian Telephone User Part

B

BAB	B - A - B Signaling
BBISUP	Blue Book ISDN User Part
BBTUP	Blue Book Telephone User Part
BC	Bearer Capability
BERT	Bit Error Rate Testing
BTUP	N7 British Telephone User Part

C

CAS	Channel Associated Signaling
CCITT	International Consultative Committee on Telephony and Telegraphy, same as ITU
CCS	Common Channel Signaling
CCS7	Common Channel Signaling System No. 7 (same as SS7)
CDR	Call Detail Record
CEPT	European Conference of Postal and Telecommunications administrations
CIC	Carrier Identification Code
CLI	Calling Line Identification
CLLI	Common Language Location Identifier
COS	Class of Service
CPU	Central Processing Unit
CSI	Carrier Selection Information
CSP	Carrier Selection Parameter

D

DAL	Dedicated Access Line
DCME	Digital Circuit Multiplication Equipment
DCR	Dynamically Controlled Routing
DIRP	Device Independent Recording Package
DISD	Discrimination Digit
DMS	Digital Multiplex System
DN	Directory Number
DS-1	Digital Signal level 1
DTA	Digital Test Access
DTC	Digital Trunk Controller
DTM	Digital Trunk Module
DTMF	Dual Tone Multi-Frequency
DWS	Dialable Wideband Services
DTU	Digital Test Unit

E

E1	2.048 Mb/s, 30 PCM channels transmission standard
EADAS	Engineering and Administrative Data Acquisition System
EDP	Event Detection Points
EDRAM	Enhanced Digital Recorded Announcement Machine

EDTU	Enhanced Digital Test Unit
EIU	Ethernet Interface Unit
EMPC	Enhanced Multi-Protocol Controller
ENET	Enhanced Network
EOPS	Enhanced Operator Position Service

ETSI	European Telecommunications Standards Institute

F

FBUS	Frame Transport Bus
FG-A	Feature Group A
FG-B	Feature Group B
FG-D	Feature Group D
FOT	Forward Operator Transfer

G

GPVN	Global Private Virtual Networking
GSN	Global Subscriber Number
GVNS	Global Virtual Networking Service
GWIDMAN	Gateway Digit Manipulation Table
GWY	Gateway

I

IAM	Initial Address Message
IDDD	International Direct Distance Dialing
IMH	Intelligent Mismatch Handler
IMT	Inter-Machine Trunk
IN	Intelligent Network
INode	Integrated Signal Transfer Point/Switching Point Node
INPRTRNS	International Pretranslator Table
INT102	Milliwatt Test Line
INT104	Transmission Test Line
ISCTAB	International Service Call Table
ISDN	Integrated Services Digital Network
ISM	Integrated Service Module
ISUP	Integrated Services Digital Network User Part
ISUP92	Integrated Services Digital Network User Part 1992 Standards
ITU	International Telecommunications Union (formerly named CCITT)
IU	Interface Unit
IVPN	International Virtual Private Networking
IXC	Interexchange Carrier

K

kbps	kilobits per second
KHz	Kilohertz

L

LAN	Local Area Network
LIM	Link Interface Module
LIS	Link Interface Shelf
LIU	Link Interface Unit
LIU7	CCS7 Link Interface Unit
LNP	Local Number Portability
LPP	Link Peripheral Processor

M

MAP	Maintenance and Administration Position
MBG	Multilocation Business Group
MCCS	Mechanized Calling Card Service
MCP	Message Compatibility Parameter
MNA	Multiple Network Access
MSN	Meridian Switched Network
MTM	Maintenance Trunk Module
MTP	Message Transfer Part

N

NE	Network Element
NIU	Network Interface Unit
NP	Network Processor
NRC	Network Reliability Council
NWM	Network Management

O

OAM	Operations, Administration, and Maintenance

OAM&P	Operations, Administration, Maintenance, and Provisioning
OM	Operational Measurement
ONP	One Night Process
OSR	Operator Service Record
OSS	Operational Support System

OVR	Overseas Route
OVNTRNSL	Overseas Translation Table

P

PCL	Product CM Load
PCM	Pulse Code Modulation
PCM-30	Pulse Code Modulated 30
PDTC	PCM-30 Digital Trunk Controller
POP	Point of Presence
POTS	Plain Old Telephone Service
PRI	Primary Rate Interface
PRSM	Post Release Software Manager
PTS	Per Trunk Signaling
PUMA	Product Upgrade Manager

R

REL	Release Message
REX	Routine Exercise
RISC	Reduced Instruction Set Computing
RLT	Release Link Trunk

S

SCCP	Signaling Connection Control Part
SCP	Service Control Point
SERVPROF	Service Profile
SLM	System Load Module
SONET	Synchronous Optical Network
SP	Signaling Point
SS7	Signaling System No. 7 (same as CCS7)
STP	Signaling Transfer Point
STR	Sent To Resource
SWACT	Switch in Activity

T

T1	1.544 megabits per second 24-channel transmission system
T101	Communication Test Line
T103	Supervisory and Signaling Test Line
T8A	Trunk Module Eight-Wire with Access
TAN	Test Access Network
TCAP	Transaction Capabilities Application Part
TCN	Travel Card Number
TCP/IP	Transport Control Protocol/Internet Protocol
TDP	Trigger Detection Point
TR	Technical Requirement
TUP	Telephony User Part

U

UA	Universal Access
UCS	Universal Carrier Services
UIFN	Universal International Free-Phone Numbering

V

VAPN	Virtual Access to Private Networks
VPN	Virtual Private Networking

W

WAN	Wide Area Network
WATS	Wide Area Telephone Service

X

X.25	ITU Data Transfer protocol
XFER	Transfer
XPM	Extended Peripheral Module