297-8083-010

DMS-100 Family

DMS SuperNode STP/SSP Integrated Node

Product Guide

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northern telecom

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June 1996

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Contents

About this document

When to use this document

This document provides an overview of the Digital Multiplex System (DMS) Signaling Transfer Point (STP)/Service Switching Point (SSP) Integrated Node (INode). This guide is intended for personnel involved in planning, engineering, administering, or maintaining the DMS STP/SSP INode. Throughout this document, the DMS STP/SSP INode product name is abbreviated and referred to as DMS-INode.

How to check the version and issue of this document

The version and issue of the document are indicated by numbers, for example, 01.01.

The first two digits indicate the version. The version number increases each time the document is updated to support a new software release. For example, the first release of a document is 01.01. In the *next* software release cycle, the first release of the same document is 02.01.

The second two digits indicate the issue. The issue number increases each time the document is revised but rereleased in the *same* software release cycle. For example, the second release of a document in the same software release cycle is 01.02.

To determine which version of this document applies to the software in your office and how documentation for your product is organized, check the release information in *DMS-100 Product Documentation Directory*, 297-8991-001.

References in this document

The following documents are referred to in this document:

- *DMS SuperNode STP/SSP Integrated Node Recovery Procedures*, 297-8083-545
- *DMS SuperNode Signaling Transfer Point Service Guide*, 297-8121-020
- *DMS SuperNode STP/SSP Integrated Node Translations Guide*, 297-8083-350

- *Product Documentation Directory,* 297-8991-001

What precautionary messages mean

The types of precautionary messages used in Nortel documents include attention boxes and danger, warning, and caution messages.

An attention box identifies information that is necessary for the proper performance of a procedure or task or the correct interpretation of information or data. Danger, warning, and caution messages indicate possible risks.

Examples of the precautionary messages follow.

ATTENTION Information needed to perform a task

ATTENTION

If the unused DS-3 ports are not deprovisioned before a DS–1/VT Mapper is installed, the DS-1 traffic will not be carried through the DS-1/VT Mapper, even though the DS-1/VT Mapper is properly provisioned.

DANGER Possibility of personal injury

DANGER

Risk of electrocution

Do not open the front panel of the inverter unless fuses F1, F2, and F3 have been removed. The inverter contains high-voltage lines. Until the fuses are removed, the high-voltage lines are active, and you risk being electrocuted.

WARNING Possibility of equipment damage

WARNING

Damage to the backplane connector pins

Align the card before seating it, to avoid bending the backplane connector pins. Use light thumb pressure to align the card with the connectors. Next, use the levers on the card to seat the card into the connectors.

CAUTION Possibility of service interruption or degradation

CAUTION
Possible loss of service
Before continuing, confirm that you are removing the card from the inactive unit of the peripheral module. Subscriber service will be lost if you remove a card from the active unit.

How commands, parameters, and responses are represented

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

Input prompt (>)

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

>BSY

Commands and fixed parameters

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

>BSY CTRL

Variables

Variables are shown in lowercase letters:

>BSY CTRL ctrl_no

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

Responses

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

```
FP 3 Busy CTRL 0: Command request has been submitted.
FP 3 Busy CTRL 0: Command passed.
```

The following excerpt from a procedure shows the command syntax used in this document:

1 Manually busy the CTRL on the inactive plane by typing

>BSY CTRL ctrl_no
and pressing the Enter key.

where

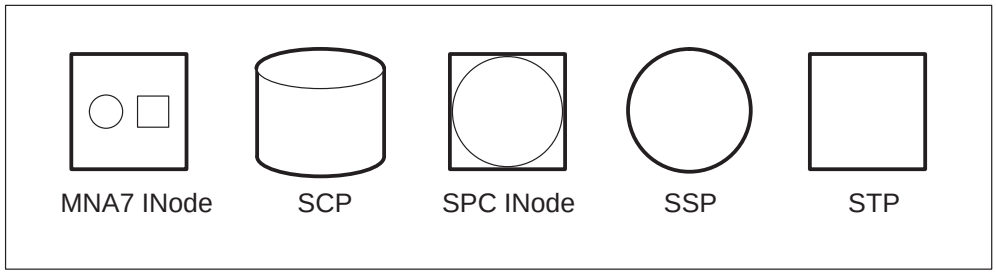
ctrl_no is the number of the CTRL (0 or 1)

Example of a MAP response:

```
FP 3 Busy CTRL 0: Command request has been submitted.
FP 3 Busy CTRL 0: Command passed.
```

How nodes are represented

Illustrations in this document contain node symbols identified in the following legend.



Understanding the DMS-INode

This chapter provides an introduction to the Digital Multiplex System (DMS) Signaling Transfer Point (STP)/Service Switching Point (SSP) Integrated Node (DMS-INode) and explains the layered structure of Common Channel Signaling 7 (CCS7) protocol on which the DMS-INode is based. CCS7 protocol is discussed in subsequent sections of this chapter.

Throughout this document, the DMS STP/SSP INode product name is abbreviated and referred to as DMS-INode.

Components of a telephone call describes the two components of a telephone call: the signaling component and the voice and data component.

DMS-INode and elements of a CCS7 network describes the DMS-INode with respect to the elements in a CCS7 network.

CCS7 protocol and open systems interconnection models describes the various layers of protocol text that are part of CCS7 protocol and compares the CCS7 protocol model to the open systems interconnection (OSI) model.

Components of a telephone call

A telephone call has two components: a signaling component, and a voice and data component.

The signaling component of a telephone call contains the supervisory and address signals that switching offices use to control the setting up, monitoring, and taking down of the call.

The voice and data component contains the information being transferred between the initiator and the recipient of the call.

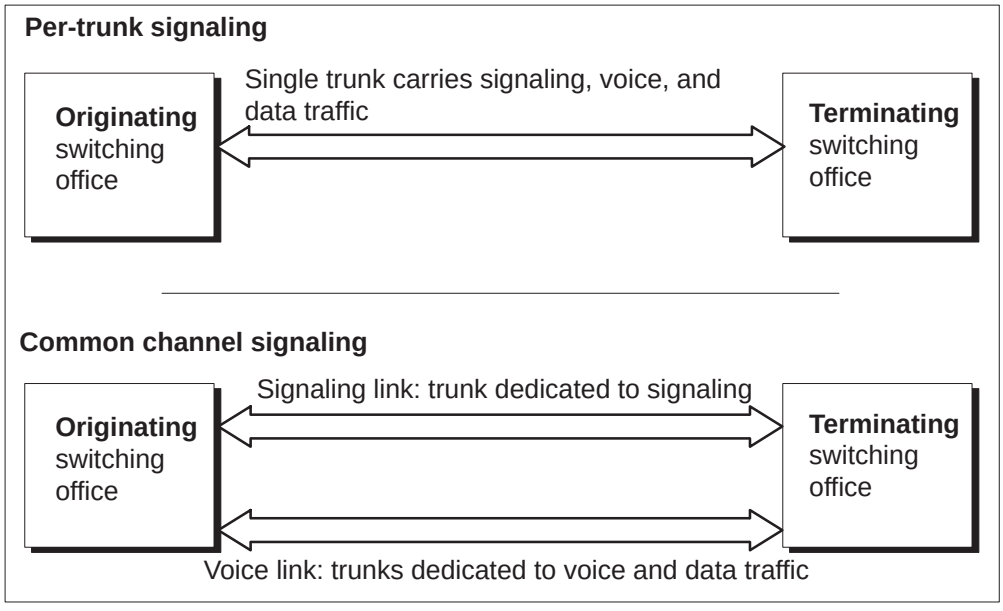
Per-trunk signaling

In a conventional call, the signaling component is transmitted on the same trunk that is used for the voice and data signal. This type of signaling is referred to as per-trunk signaling (PTS).

The top half of Figure 1-1 illustrates a PTS call between an originating switching office and a terminating switching office. Both the signaling traffic and the voice and data traffic are transmitted over a single trunk that is dedicated to the call.

The bottom half of Figure 1-1 illustrates a CCS call between an originating switching office and a terminating switching office. Two trunks transmit signaling traffic and voice and data traffic; the signaling link transmits signaling traffic and the voice link transmits voice and data traffic.

Figure 1-1
Comparison of per-trunk signaling to common channel signaling



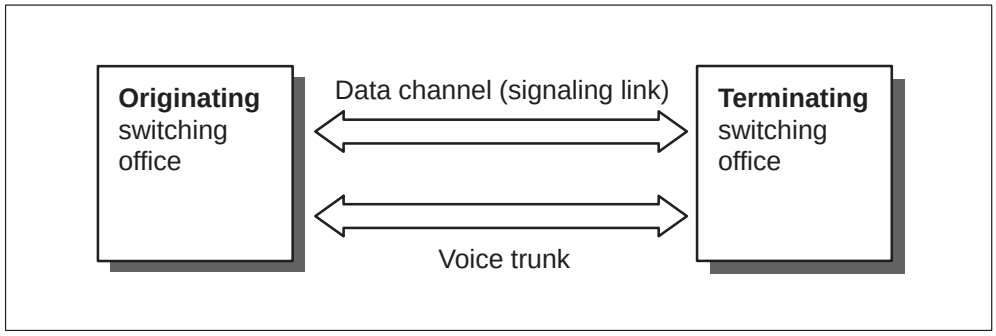
Common channel signaling

Common channel signaling (CCS) separates the signaling component from the voice and data component of a call and puts these two components on different facilities, as illustrated in Figure 1-2. The facility that is used for signaling is called a signaling link (SL) or a signaling data link (SDL). The facility that is used for voice and data traffic is called a voice trunk.

The amount of signaling information required for one call is small compared to that required for the voice and data component of the call. However, the physical facilities available for both SLs and voice trunks are usually the same. The signaling information for many voice calls can be transmitted over one SL. The SL can also carry signaling that is not directly associated with a call without any loss of call processing capabilities.

CCS is a method of trunk signaling in which call control messages can be exchanged between two switching offices over a separate communications channel (see Figure 1-2). This separate data channel can contain the signaling for hundreds of digital trunk circuits. All types of CCS provide the same basic functionality. However, the CCS system known as CCS7 is faster, more reliable, more flexible, and more efficient than any of its predecessors.

Figure 1-2
CCS7 trunk and control signal links



CCS7 allows faster call setup, which reduces trunk holding times and node provisioning. It enhances the manner in which signals are exchanged between network elements, and therefore permits the transmission of more than just basic call control information. For example, because CCS7 can transmit information such as the identity of the calling party, the user can determine which calls to accept by invoking selective call acceptance. Also, CCS7 allows operating companies to expand the range of available database services.

Operating companies can offer number services or alternate billing services such as:

- automatic calling card service (ACCS) and custom charge calling
- advanced intelligent networks (AIN)
- custom local area signaling services (CLASS)
- calling card validation (CCV)
- networking for ISDN and area wide centrex applications
- 800 number services
- future intelligent network services

DMS-INode and elements of a CCS7 network

DMS-INode communications are achieved using the CCS7 network. The CCS7 network consists of a number of switching and processing devices that are interconnected by SLs. Each of these interconnected devices is referred to as a node.

The CCS7 network shown in Figures 1-3 and 1-4 consists of the following types of nodes and SLs:

- SSP
- STP
- DMS-INode
- service control point (SCP)
- SLs

The size and complexity of a signaling network depends on the volume of traffic and the degree of redundancy required.

Figure 1-3 illustrates the single point code (SPC) DMS-INode and and other types of nodes in a CCS7 network configuration. Figure 1-4 illustrates the multiple CCS7 network adresses (MNA7) DMS-INode and and other types of nodes in a CCS7 network configuration.

Figure 1-3
SPC DMS-INode within a typical CCS7 network

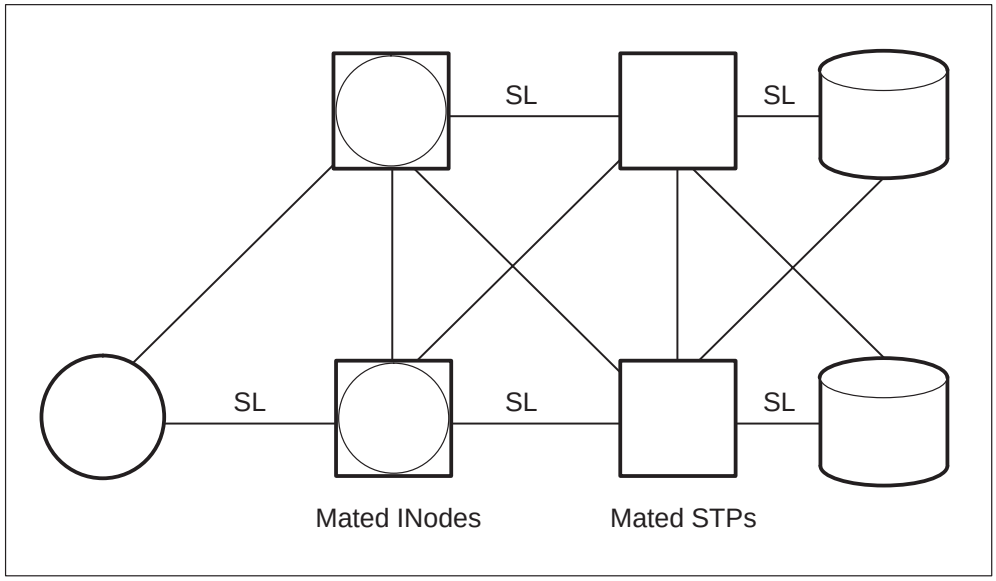
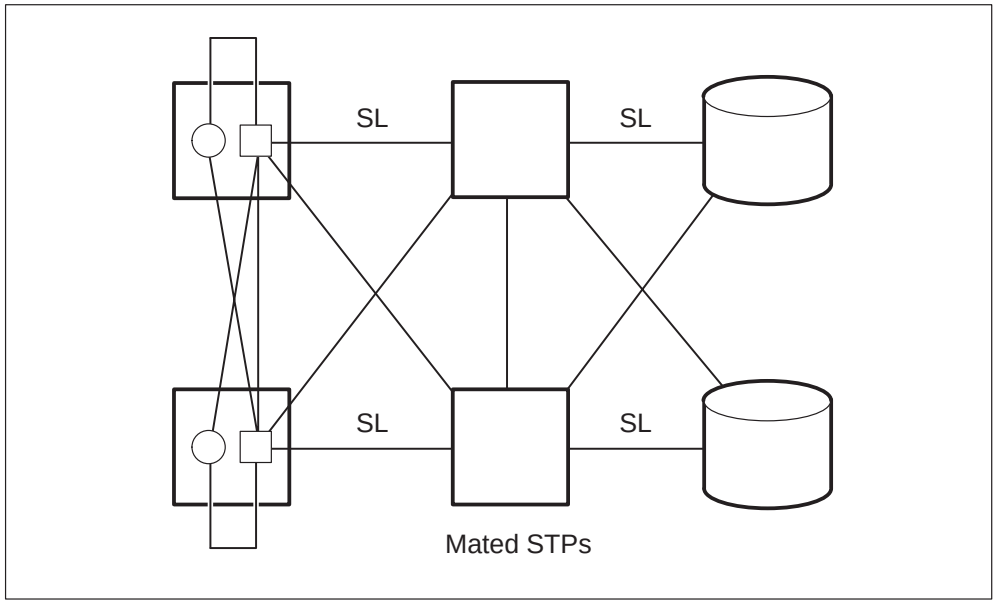


Figure 1-4
MNA7 DMS-INode within a typical CCS7 network



Service switching point

An SSP is equipped with software for communicating to other CCS7 nodes. ISDN user part (ISUP) signaling transmits long distance calls between SSPs. Transaction capabilities application part (TCAP) signaling transmits information between SSPs and SCPs.

Signaling transfer point

An STP is a packet switching node that routes messages between CCS7 nodes. Many nodes are linked to a single STP and, in turn, all STPs are interconnected. This arrangement of nodes is less expensive than connecting all the nodes.

STPs transfer messages between incoming and outgoing SLs, but, with the exception of network management information, do not originate or terminate messages. An STP functions like a tandem office.

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

STP/SSP Integrated node

A DMS-INode combines the functionality of the STP and SSP in one physical node. This combining of functions allows the use of a single site and reduces the number of frames and cabinets. By integrating CCS7 elements into a single node, operating companies can accrue cost savings that result from shared equipment, reduced transmission facilities, and integrated operations, administration, and maintenance.

From a CCS7 network perspective, an SPC DMS-INode signaling link behaves like an STP. With a multiple CCS7 network addresses (MNA7) INode, links can be datafilled for either SSP or STP functionality with one point code used for the SSP and another used for the STP.

Service control point

An SCP provides the database storage and processing required to implement enhanced centralized services. The SCP accepts a query for information, retrieves the requested information from the appropriate database, and sends a response message to the originator of the request. SCP functionality can be enhanced without affecting any other node in the CCS7 network.

Signaling link

An SL consists of signaling terminal equipment and a transmission facility. SLs are used for the exchange of information between nodes in a CCS7 network. The number and types of links depends on node capacity, network configuration, and network traffic levels.

The different types of SLs shown in Figures 1–5 and 1–6 are:

- A-links, which connect SPs, SSPs, and SCPs to STPs. A-links are assigned in pairs, one link to each STP in a mated pair.
- B-links, which connect mated STP pairs in an SL quad. This quad structure provides complete STP redundancy.
- C-links, which connect two STP nodes to create an STP pair.
- D-links, which connect secondary STP pairs to primary STP pairs to form a D-link quad.
- E-links, which connect SPs, SSPs, and SCPs to remote STP pairs.
- F-links, which connect SPs, SSPs, and SCPs to each other.

Figure 1-5
SPC CCS7 signaling links

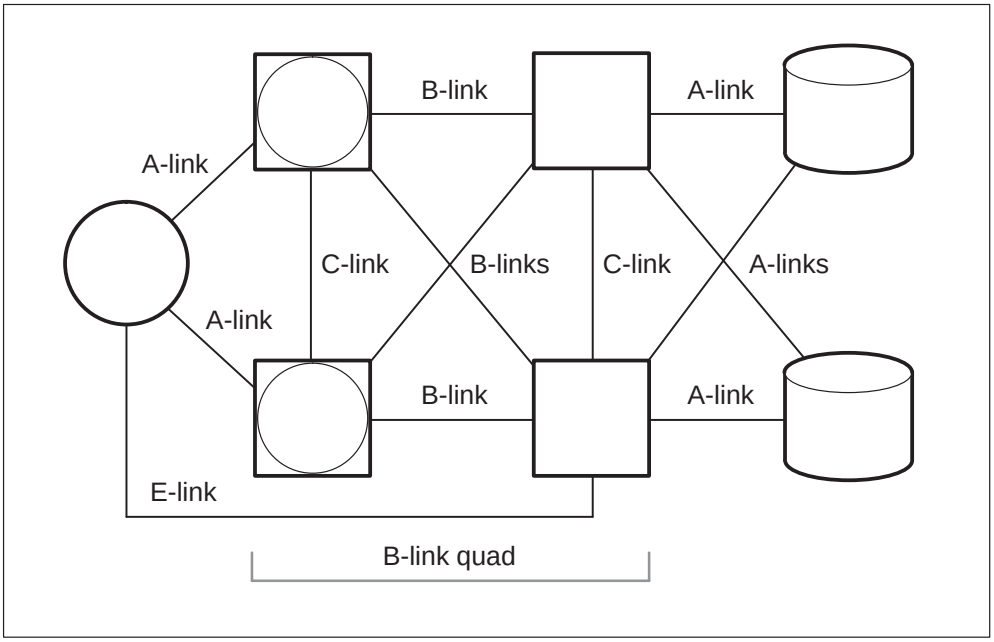
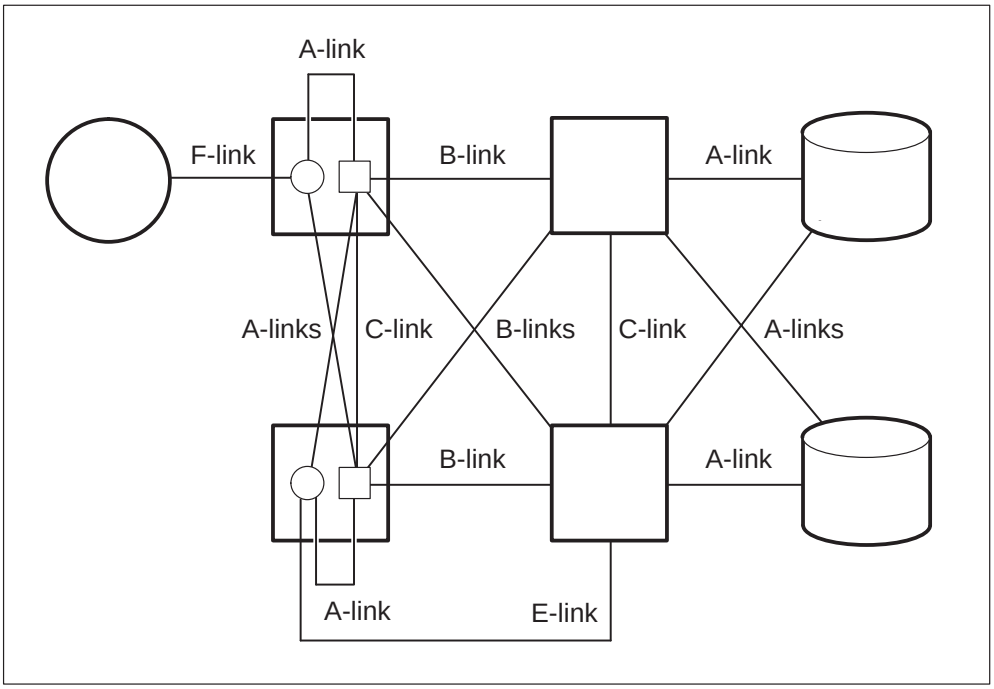


Figure 1-6
MNA7 CCS7 signaling links



CCS7 protocol and open systems interconnection models

The functional software of the CCS7 system is partitioned into four layers. These layers correspond to the levels of activity required to support the interconnection and exchange of information among the many users of a communications system. Because of the modular nature of these layers, CCS7 provides sufficient flexibility to serve a diversity of applications.

The OSI model is a representation of a generic communication system. It is partitioned into seven functional layers.

The CCS7 model is structured to be compatible with the data transfer part (layers 1, 2, and 3) and the user part (layer 7) of the OSI model in order to interface with other computer networks.

Figure 1-7 illustrates the relationship between the seven-layer OSI model and the four-layer CCS7 model.

Figure 1-7
OSI and CCS7 model comparison

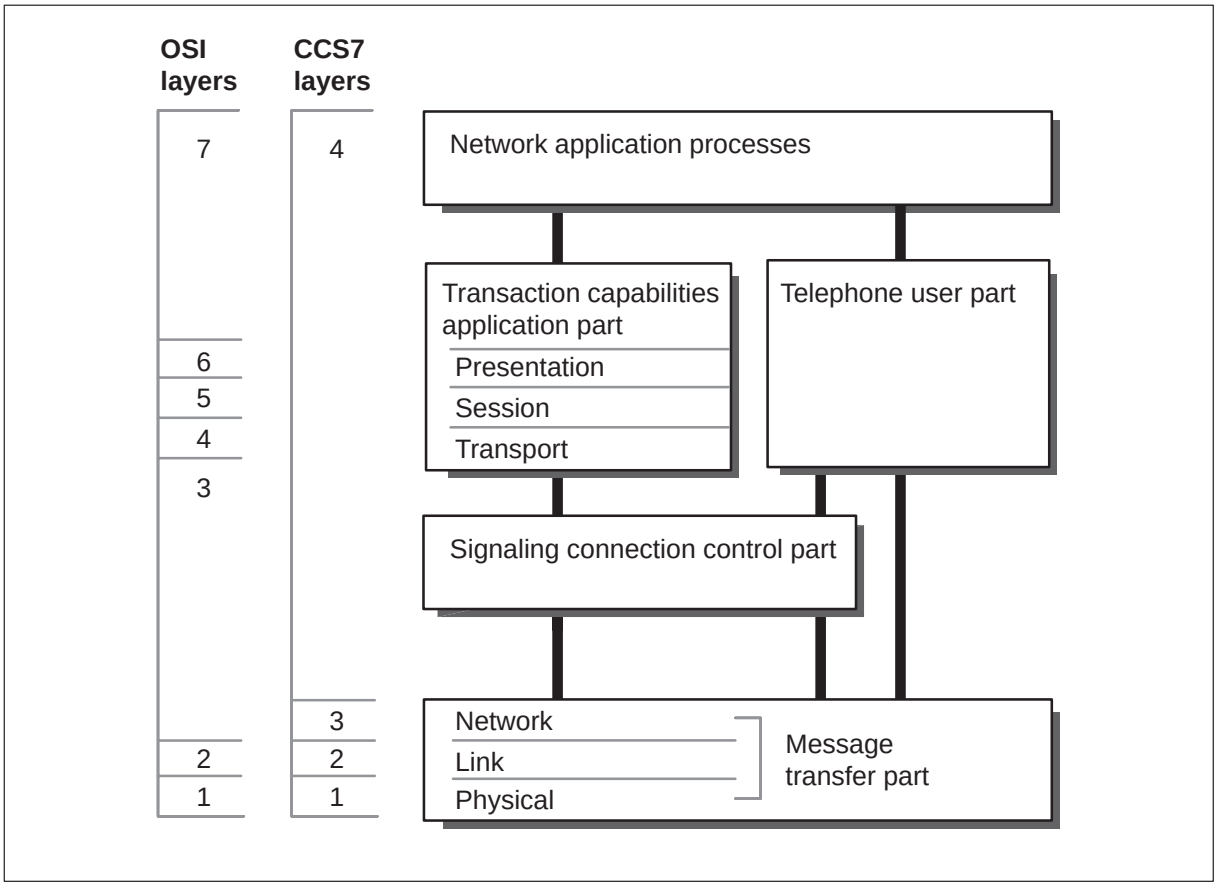


Table 1-1 provides a description and comparison of OSI and CCS7 models.

Table 1-1
Comparison of OSI and CCS7 models

Layer	OSI model layer description	CCS7 model layer description
1	Physical layer transmits a bit stream over a connection between users.	Message transfer part serves as a transport system for signals between nodes. Equivalent to OSI layer 1.
2	Data link layer detects transmission errors and contains error recovery procedures.	Message transfer part. Equivalent to OSI layer 2.
3	Network layer provides the routing procedures for data transfer	Message transfer part. CCS7 layer 3 and part of layer 4 are equivalent to OSI layer 3.
4	Transport layer provides the procedures for data transfer between end users.	Signaling connection control part (SCCP) provides MTP with additional function for both connectionless and connection-oriented application. Transaction capabilities application part (TCAP) provides a set of procedures for transaction-based applications. ISDN user part (ISUP) sets up, monitors and takes down CCS7 calls on ISUP trunks. Network application processes are CCS7-based services involving inter process transactions. Part of CCS7 layer 4 forms OSI layers 4 to 7, and can be used depending on the application being processed.
5	Session layer is the user's interface to the network for establishing and managing a connection.	
6	Presentation layer contains the procedures for transforming the data into a suitable form for the application	
7	Application layer is the application process used by the computer.	

CCS7 message transfer part

The message transfer part (MTP) serves as a transport system to transfer signaling messages between nodes in the network.

The MTP has the following layers:

- SDL layer

The SDL layer handles the raw transmission of bits over a bidirectional path that consists of two data channels operating in opposite directions but at the same data rate. The SDL layer also defines the physical, electrical, and procedural characteristics of the signaling data link. MTP layer 1 is a hardware function under software control.

- SL function layer

The SL function layer handles both incoming and outgoing signaling messages. Major functions at this layer include: signal unit alignment and delimitation, error detection and correction, SL alignment, and SL error monitoring and flow control.

- Signaling network function layer

The signaling network function layer transfers messages between end offices in a signaling network. Messages are routed to their destination using full or partial destination point codes (DPC). Software used in this layer distributes traffic across the available links and prevents message congestion.

CCS7 signaling connection control part

The signaling connection control part (SCCP) resides above the MTP and provides the MTP with additional functions to accommodate both connectionless and connection-oriented services. The SCCP performs the following functions:

- provides application addressing and management through global title translation (GTT)
- keeps track of the status of applications
- lets the user know when an application is unavailable

Note: Most of the specifications used by the MTP and SCCP are defined according to operating company requirements. The operating company defines these specifications through datafill.

CCS7 transaction capabilities application part

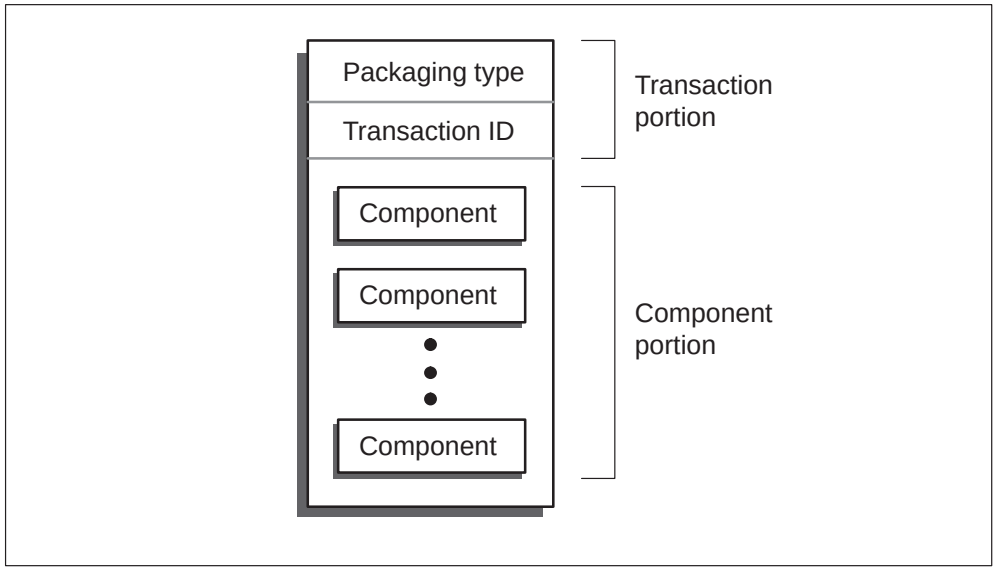
TCAP provides a set of generic procedures for transaction-based applications and controls the transfer of information that is not circuit related between two or more nodes in a signaling network. TCAP is used to provide services to support database transaction-type applications such as 800 Service, ACCS, BNS, or call management services (CMS).

A TCAP message has a transaction portion and a component portion. Figure 1-8 illustrates the parts of a TCAP message.

The transaction portion contains the package type and the transaction ID. Package types such as Query with Permission or Response are used for directory number (DN) validation.

The component portion consists of a sequence of one or more TCAP components. A component can invoke an operation on a remote node, return the results of an operation, or report TCAP protocol or application errors.

Figure 1-8
TCAP message parts



CCS7 ISDN user part

ISDN user part (ISUP) is the signaling used for setting up, monitoring, and taking down CCS7 calls on ISUP trunks. ISUP enables enhanced trunk call processing capabilities that result in:

- faster call setup
- shorter holding times for unsuccessful call attempts
- the ability to carry both voice and data signals simultaneously

CCS7 network application processes

Network application processes are CCS7-based services that involve interprocess transactions, call control, or database applications such as area wide centrex, 800 Service, and private virtual networking.

DMS-INode network communications

This chapter describes some basic elements and concepts of communications in a Common Channel Signaling 7 (CCS7) network.

Modes of operation describes the relationship between the signaling component and the voice and data component of a CCS7 call.

Communication among nodes across the network describes the role of links, linksets, routes, and routesets in a CCS7 network.

CCS7 message handling in a CCS7 network describes the basic format of a signaling message and how a message is discriminated, distributed, and routed.

Signaling message paths through a DMS-INode describes how a message travels through the DMS-INode.

Modes of operation

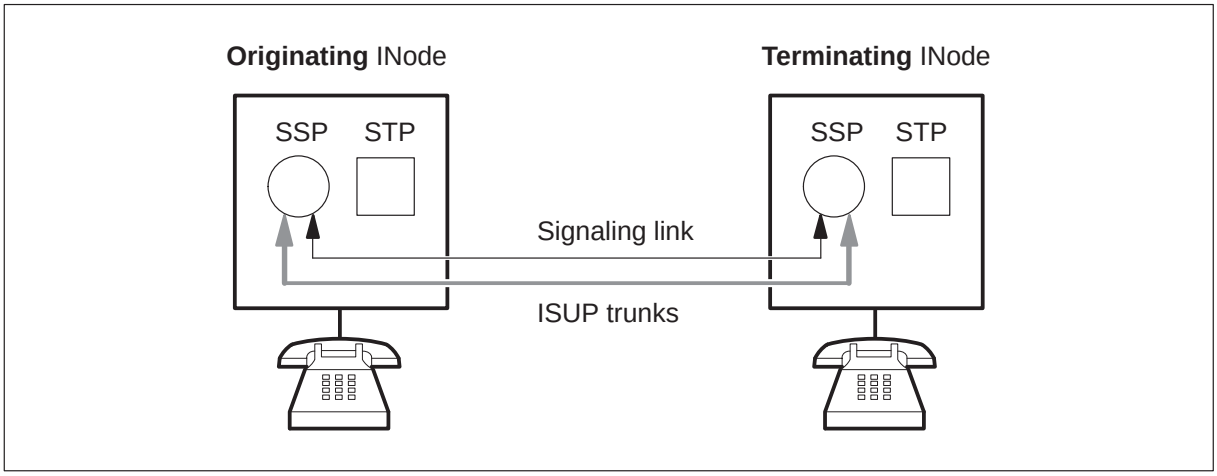
The term common channel signaling mode refers to the relationship between the signaling component and the voice and data component of a call. CCS7 uses two signaling modes: associated signaling and quasi-associated signaling.

Associated signaling

In associated signaling, the signaling links (SL) follow the same route as the ISDN user part (ISUP) trunk for a call. ISUP trunks are interoffice circuits that carry the voice and data traffic between originating and terminating signaling points (SP) or service switching points (SSP).

Associated signaling does not require a signaling transfer point (STP) and can be used to initiate low-volume applications. Figure 2-1 illustrates a low-cost, simple configuration of two connecting DMS-INodes.

Figure 2-1
Associated signaling in a simple configuration



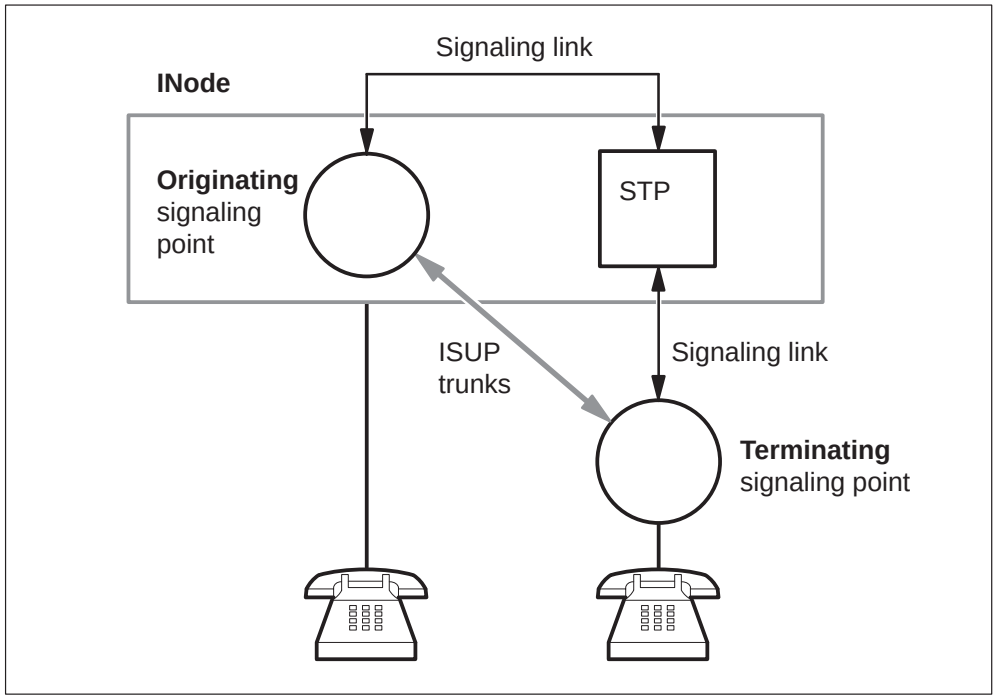
Note: The DMS-INode is performing an SSP function in this configuration.

Quasi-associated signaling

In quasi-associated signaling, the signaling information is routed along links that do not follow the same route as the ISUP trunk for a call. Instead, signaling is carried through the signaling network along indirect routes on two or more SLs.

Figure 2-2 illustrates an example of quasi-associated signaling in which the signaling is routed from the originating SP, through a DMS-INode, to the terminating SP. Voice and data traffic is placed on an ISUP trunk that directly connects the originating and terminating SPs.

Figure 2-2
Quasi-associated signaling mode

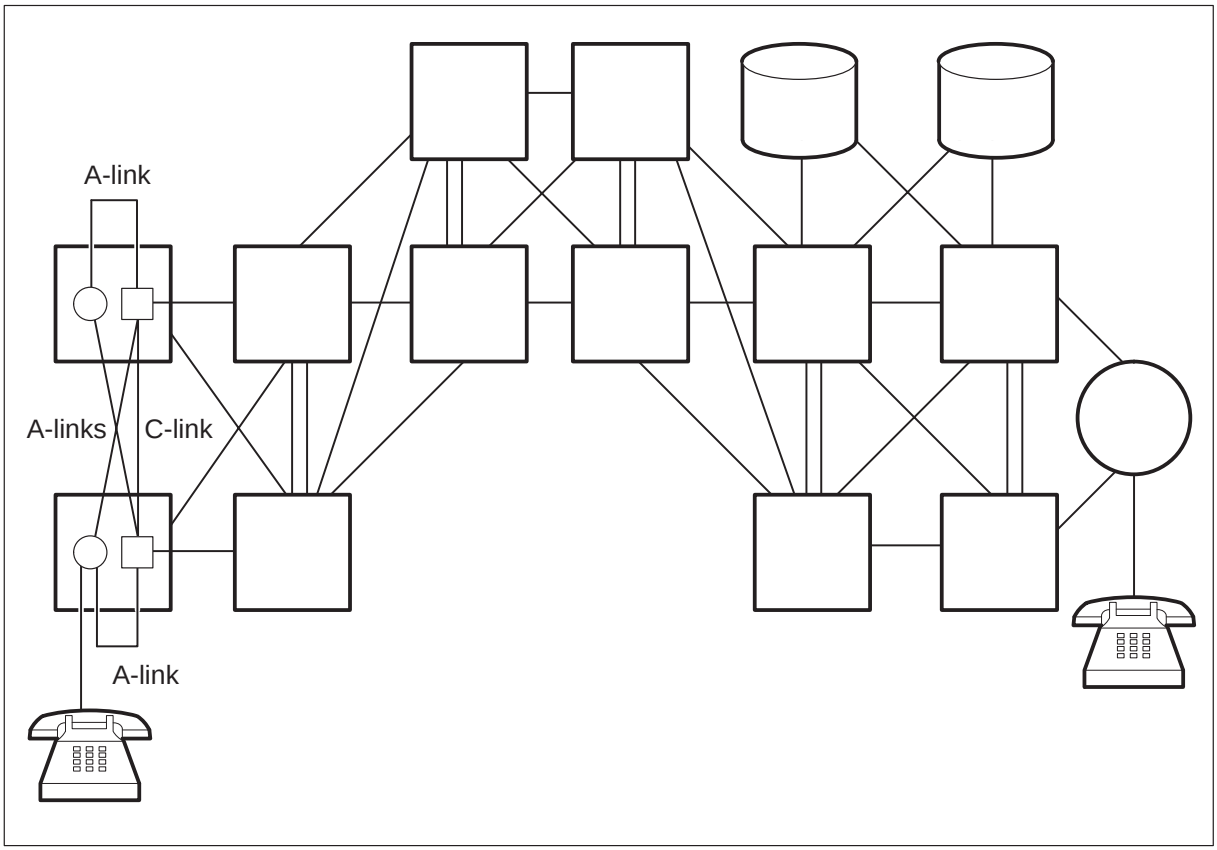


Note: The DMS-INode is performing an STP function in this configuration.

The DMS-INode relies on quasi-associated signaling to provide volume applications, and can be configured to meet the needs of operating companies with varying degrees of sophistication.

Figure 2-3 illustrates a complex network of STPs, SCPs, SP/SSPs, and DMS-INode. The figure shows one possible location for a DMS-INode within the network.

Figure 2-3
Quasi-associated signaling in a complex configuration



Communication among nodes across the network

Nodes in a CCS7 network communicate with each other through direct and alternate communication paths.

Direct communication paths

Direct communication between two adjacent nodes in a CCS7 network occurs through an SL. Direct communication paths are called links or linksets.

A link is a communication channel between two adjacent nodes in a signaling network. A linkset is a set of links that is used as a group to carry signaling traffic between two nodes in a signaling network. The maximum number of links on a combined linkset is 16.

Alternate communication paths

Direct communication between CCS7 nodes becomes impractical as the distances between nodes in the network increase. Consequently, alternate communication paths are established that provide various routes between nodes throughout the network. Alternate communication paths are called routes or routesets.

A route is a signaling path connecting an originating node to a destination node. A routeset is a logical grouping of routes from a node that have the same destination.

Figure 2-4 illustrates two examples of CCS7 network communications.

Example A in Figure 2-4 shows a route that consists of three linksets. The route originates from the SSP and terminates at the SCP.

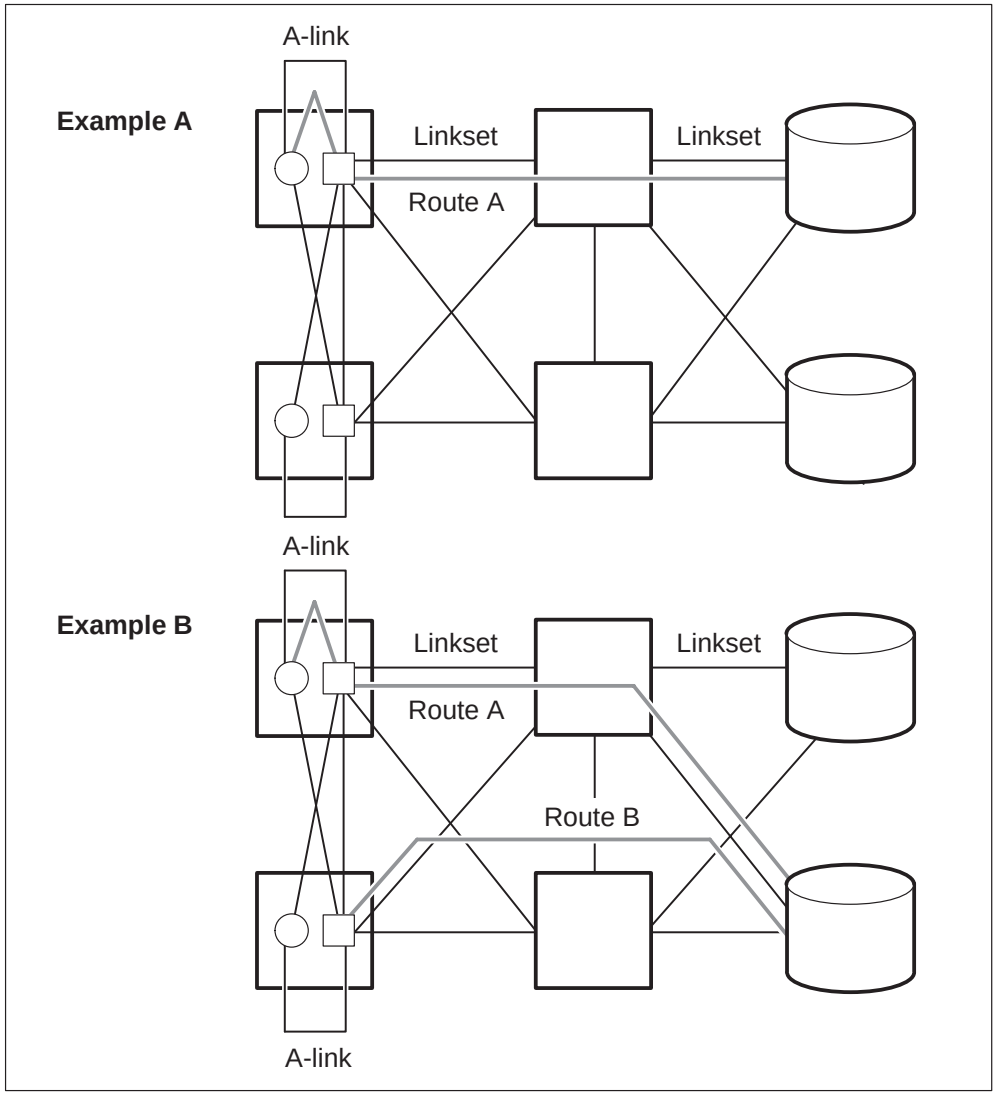
Example B in Figure 2-4 shows two routes. Both routes originate from the same node and terminate at the same destination node in the network. Together, route A and route B form a routeset that originates from the same SSP and terminates at the same SCP.

The maximum number of routes in a routeset is one of the following combinations:

- one associated and five quasi-associated routes or
- six quasi-associated routes

The minimum configuration for a node is one routeset that has one route. In this configuration, the route consists of one linkset that contains one link.

Figure 2-4
CCS7 network communications



CCS7 message handling in a CCS7 network

CCS7 is a packet-switched network based on the transmission and reception of information packets called message signal units (MSU). Each node can format and transmit MSUs to other nodes in the network.

CCS7 signaling message format

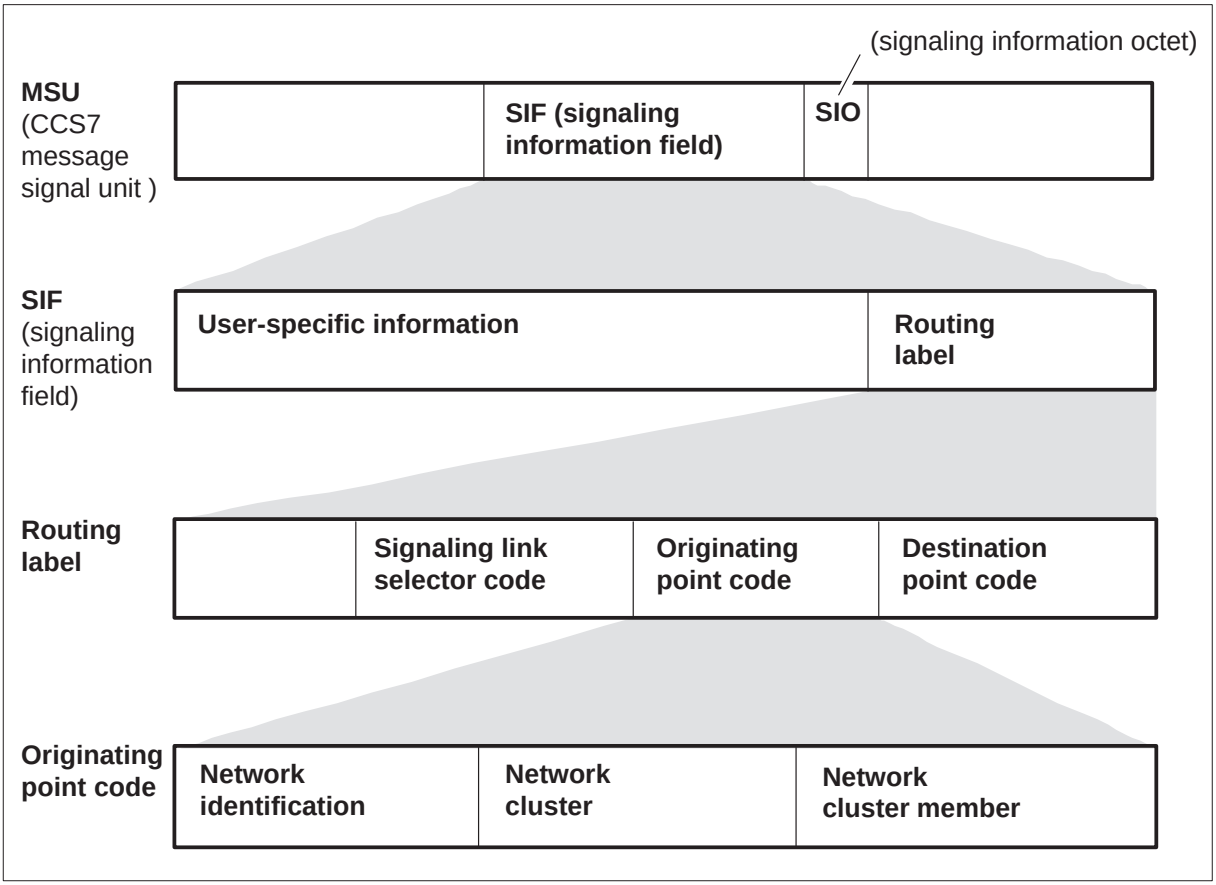
Each MSU contains a signaling information field (SIF). In the standard SIF, the portion that is used for routing is called the routing label. This is illustrated in Figure 2-5.

The routing label contains the following information:

- an originating point code (OPC), which indicates the originator node for an MSU
- a destination point code (DPC), which indicates the final destination node of the MSU
- an SL selector code that the message routing function uses to distribute loading evenly

The standard routing label assumes that each SP in a signaling network is allocated a code according to a labeling code plan. MSUs that are labeled according to international and national code plans are identified by the DPC that is included in each message.

Figure 2-5
CCS7 message routing label



Message discrimination

Message discrimination is the process that determines whether an MSU has been delivered to its intended destination point. This decision is based on an analysis of the DPC that is in the routing label of the MSU. If the SP to which the MSU is delivered is the destination point, the MSU is delivered to the message distribution function of the SP. If this SP is not the intended destination point, the MSU is delivered to the routing function of the SP for further transfer on an SL.

Message distribution

Message distribution is the process of analyzing the source indicator in the MSU when the MSU arrives at the destination point. The service information octet (SIO) determines which user part the MSU is to be delivered to, either the ISUP or the signaling connection control part (SCCP).

Message routing

Message routing selects an appropriate SL for each MSU. The route an MSU takes is determined through an analysis of information that is contained in the routing label of the MSU and routing data that is provided at the SP.

Message routing is determined by a destination code and an additional load sharing element that allows the signaling traffic to a particular destination to be distributed over two or more SLs. This traffic distribution can be limited to different links within a linkset or it can be applied to links in different linksets.

The route that is taken by an MSU with a particular routing label is predetermined and is normally fixed at a given time. If failures occur in the signaling network, MSUs that would have taken the route that has failed are rerouted in a predetermined manner, under control of the signaling traffic management function at Level 3 of the message transfer part (MTP).

Although there are advantages to using standard routes for MSUs that belong to different user parts, the service indicator that is included in each message provides the potential for using different routing plans for different user parts.

Signaling message paths through a DMS-INode

A DMS-INode transmits the following CCS7 traffic types:

- intra-link peripheral processor (LPP) (messages destined for a link on the same LPP)
- inter-LPP (messages destined for a link on a different LPP)
- bidirectional path between a computing module (CM) and a CCS7 link interface unit 7 (LIU7)
- bidirectional path between LIU7 and a digital trunk controller (DTC)

STP traffic uses intra-LPP and inter-LPP traffic types, and the bidirectional path between the CM and LIU7. SSP traffic uses the bidirectional path between the CM and LIU7 and the bidirectional path between the LIU7 and the DTC. Figure 2-6 illustrates intra-LPP and inter-LPP traffic. Maintenance messages travel between the CM and the LIU7.

In an SPC DMS-INode, all LIU7s are capable of handling STP and SSP traffic. With the MNA7 DMS-INode, an LIU7 is designated in the C7LINK table as either an SSP link or STP link so that SSP LIU7s handle SSP traffic and STP LIU7s handle STP traffic.

Intra-LPP and inter-LPP CCS7 traffic enters the DMS-INode on an SL terminated by a DS-0A or V.35 paddle board. The V.35 paddle board, is part of an LIU7. After the message is removed from the link, the message is passed to the signaling terminal (ST) card, which is also part of an LIU7. MTP functions such as error detection and correction are performed. The message is then passed to the integrated processor and frame transport bus (F-bus) interface (IPF) card. The SCCP routing functions are performed, including global title translation (GTT). The SCCP routing functions determine the destination code of the message. For tandem traffic, the destination code indicates the outgoing SL. The message is then queued for transport along the F-bus to the local message switch (LMS).

When intra-LPP traffic reaches the LMS unit, the traffic is transmitted across the LMS and is queued for transport to the appropriate SL through the F-bus, IPF, and ST.

When inter-LPP traffic reaches the LMS, the traffic is transmitted over DS30 links to the DMS-bus. When the message reaches the DMS-bus, it is queued for transport to the appropriate LPP. The message travels to the LMS and is queued for transport to the appropriate SL through the F-bus, IPF, and ST.

CCS7 traffic between the CM and the LIU7s includes such information as network management messages.

1 CM-to-LIU7 traffic crosses the CM inter-communications (CMIC) links to the DMS-bus.

2 CM-to-LIU7 traffic travels across the DMS-bus to the LMS in the appropriate LPP.

3 The traffic crosses the LMS to the F-bus and is then transported to the LIU7.

4 The traffic is then transported into the CCS7 network on an SL.

The LIU7-to-CM traffic follows the reverse route.

Figure 2-7 shows a typical configuration of the hardware used for the SSP component of the DMS-INode. ISUP call processing messages travel between the digital trunk control #7 (DTC7) and the LIU7.

Figure 2-6
STP CCS7 message flow in a DMS-INode

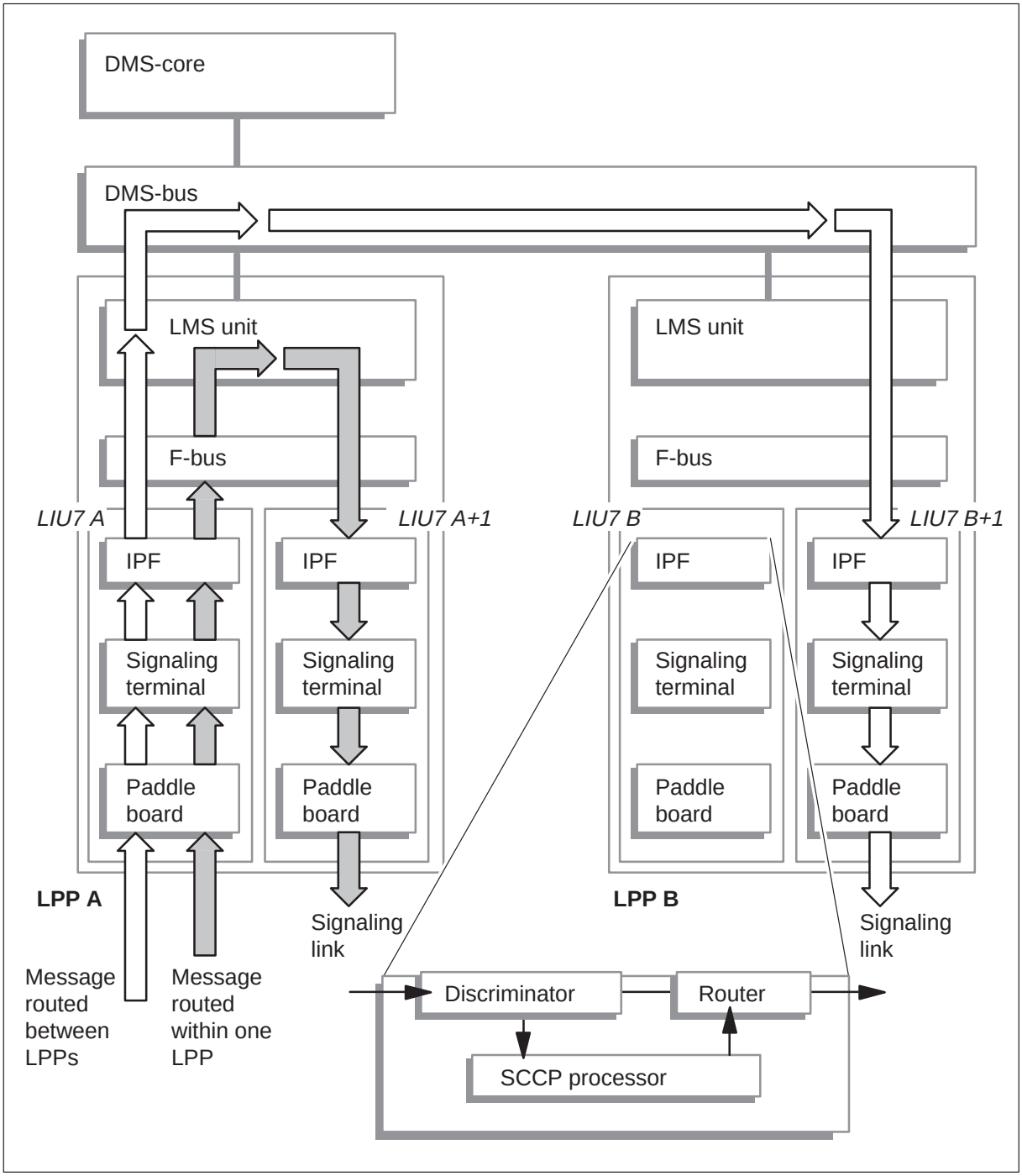
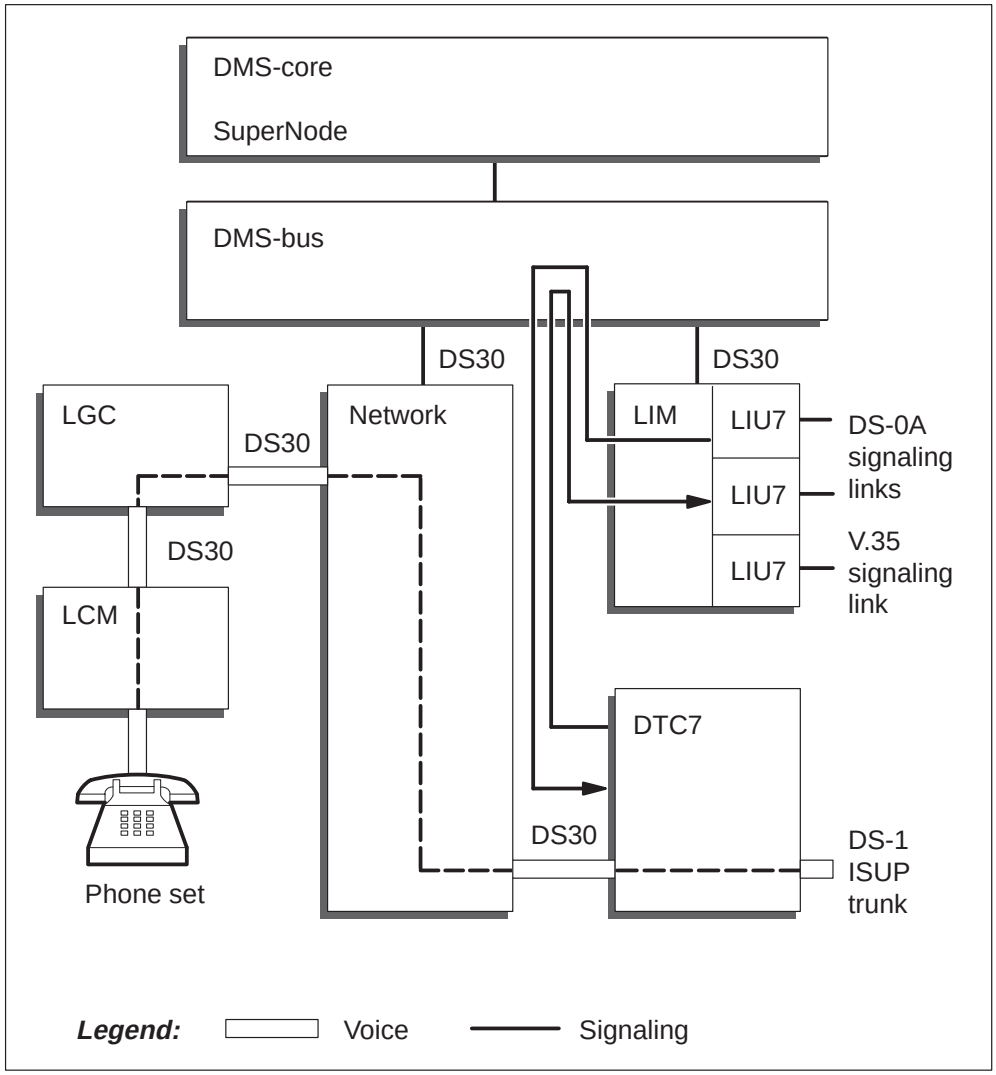


Figure 2-7
SSP CCS7 message flow in a DMS-INode



DMS-INode applications

An integrated node presents an opportunity to deploy digital switching services in innovative ways. This chapter describes some special features and how they are implemented.

Number services describes the various 800 number services that are available.

Alternate billing services explains different methods of billing a call.

Residential enhanced services explains some of the complex features that are available to the residential customer.

Business services describes the features available to the business subscriber.

Advanced intelligent network briefly describes the advanced intelligent network (AIN) feature.

Number services

Number services are used primarily for managing incoming calls. They are invoked by a set of special numbers that the network recognizes and uses to determine the appropriate treatment for a particular call. The 800 Service is described below.

800 Service

The 800 Service allows businesses to offer their customers a method of contacting them conveniently and at no cost to the customer. It is an interexchange service in which the called party, rather than the calling party, subscribes to the service and pays for tolls.

The 800 code that prefaces a toll-free call indicates that the call requires special treatment. The seven digits following 800 determine how the call should be routed. Once a number services call has been identified, the local office forwards it to a service switching point (SSP) office. The SSP queries a database, which is located on a service control point (SCP), before converting the dialed digits to a conventional number.

When database service is requested, call processing is suspended and a query message is formulated to determine the final destination of the call. When such a database query is required, a message is encoded using the transaction capabilities application part (TCAP) layer of CCS7. TCAP is the interface between the switching application and the CCS7 signaling components. After TCAP encoding, the message is sent to the signaling connection control part (SCCP) layer. The addresses of the called party and calling party are entered in the message header.

The message is then sent to the message transfer part (MTP) layer. The MTP fills in the address of the signaling link (SL) where the message is to be sent (that is, the link that connects to the appropriate SCP). The SCP returns a TCAP-encoded message that specifies the conventional number referred to by the original 800 number. The response is received by the MTP layer and is passed to the SCCP layer, where it is decoded using TCAP. The decoded number is passed on to the ISUP layer, which sends a signal out to the local trunk handling facilities, requesting them to secure an appropriate outgoing voice trunk.

The decoded number is also passed on to the MTP layer to be relayed through a local signaling transfer point (STP) to other SSP offices, so that voice trunk facilities at each of these offices can be obtained. This simultaneous call setup at the originating office and at all intermediate offices significantly reduces call setup and take-down time.

The 800 Service can also be enhanced to provide the following additional capabilities:

- single-number service
- out-of-zone calling
- variable call routing

Single-number service (SNS) allows an 800 number to be routed to more than one terminating line. Businesses can advertise the same number throughout their market area while maintaining operations in different locations. For example, national airlines or hotel chains, need to circulate only one number, but calls are routed to selected regional centers depending on where the call originated.

Out-of-zone (OOZ) allows subscribers of basic 800 Service or SNS to specify lists of numbering plan areas (NPA) that are outside the subscribed area but can be accepted. Each list corresponds to a terminating line or line group associated with the 800 number. All calls from a given OOZ NPA are directed to a single terminating line or line group.

Variable call routing (VCR) allows SNS subscribers to have 800 Service calls rerouted to a different line according to the time of day or day of the week.

Alternate billing services

Alternate billing services (ABS) uses the CCS7 protocol to access data from a line information database (LIDB). These calls are initiated when the subscriber dials 0 or 0 plus the called number, which causes the call to be routed to an operator service system (OSS).

ABS include billed number screening (BNS) services. BNS services include collect service, which allows the called party to agree to pay for a completed call, and third-number billing, which allows the calling party to charge calls to a number other than the calling or called number. Each query sent to the LIDB contains a billing number, calling number, and called number. The response from the database determines whether the collect or third-number billing is accepted.

Residential enhanced services

Residential enhanced services (RES) provides services such as custom calling features (CCF) and custom local area signaling service (CLASS) features to residential customers. For network class of service (NCOS), available numbers are expanded from 256 to 512 per switch.

Custom calling features

Custom calling features (CCF) include:

- call forwarding

- three-way call
- speed calling
- call waiting

Call forwarding allows a subscriber to specify a directory number (DN) to which incoming calls are rerouted. When this feature is activated, a brief ring sounds at the customer's telephone to indicate that forwarding is in effect, but all calls are automatically rerouted.

Three-way calling allows a subscriber to add a third party to a connection without operator assistance. When the third party answers, a private two-way conversation can be held before bridging the connection for a three-way call. This feature can be used for both incoming and outgoing calls.

Speed calling allows a subscriber to call any one of a group of frequently called numbers by dialing a one-digit or two-digit abbreviated code rather than the entire number.

Call waiting allows a subscriber on an existing connection to be informed by a tone that another call is waiting on the same line. The tone is not heard by the second party on the original connection. The called line can put the original call on hold and transfer to the second call. The user can transfer back and forth between the two calls.

CLASS features

CLASS is a set of features that increases the subscriber's privacy, security, and convenience by offering more control over incoming and outgoing calls.

Note: Call management services (CMS) is used interchangeably with CLASS. They refer to the same features however, CMS is used in the Canadian market.

CLASS features are grouped into the following categories:

- call screening features
- calling party identification features
- miscellaneous features

Call screening features

Distinctive Ringing/Call Waiting (DRCW) identifies certain terminating calls by a distinctive alerting pattern: a distinctive ring or a distinctive call waiting tone if the line is busy. The call originator receives a standard ringing tone.

A distinctive ring is given when a call is received from a DN that is on the DRCW list. If the incoming call DNs cannot be identified or do not appear

on the DRCW screening list, standard alerting treatment is provided for these calls. The DRCW list can be altered by the subscriber or the operating company.

Selective Call Acceptance (SCA) allows a subscriber to accept incoming calls based on a limited set of previously identified DNs. Incoming calls from DNs not on the SCA list are routed to an announcement. The SCA list can be altered by the subscriber or the operating company.

Selective Call Forwarding (SCF) allows subscribers to forward calls to another location from a previously defined list of DNs. Calls from DNs that are not on the SCF list are allowed to complete normally. The SCF list can be altered by the subscriber or the operating company.

Selective Call Rejection (SCRJ) allows subscribers to selectively reject calls arriving from a set of previously identified DNs. Incoming calls from DNs that are not on the SCA list are routed to an announcement that states that the called party does not wish to receive the call. The SCRJ list can be altered by the subscriber or the operating company.

Calling party identification features

Anonymous Caller Rejection (ACRJ) allows a subscriber to reject incoming calls from callers who have intentionally blocked the caller identification information.

When ACRJ is activated, an incoming call is examined to determine if the calling party has blocked the display of the DN or name information. If any of the caller identification information that the called party subscribes to is available, the call is not considered anonymous, and is delivered.

Bulk Calling Line Identification (BCLID) provides information about calls to members of a BCLID group by allowing data to be collected in one central location for all calls received by members of the group. The BCLID group can contain single-party lines, uniform call distribution groups, or hunt groups.

Records collected for each call can contain the following information:

- date
- time
- called DN
- calling DN
- called line status
- calling line type
- call forward indicator

- third DN in a call forward chain (provided only if the forwarding DN and terminating DN are in the same BCLID group)

CLASS Message Waiting Indicator (CMWI) notifies subscribers with display sets (or adjuncts) when messages have been left for them. Both the time and date of messages are displayed. An incoming message is accompanied by a reminder ring unless the line is busy. A stutter dial tone is available as an option.

Calling Name Delivery (CNAMD) allows subscribers with display sets to display the name of the calling party. Calling information for an incoming call to a CNAMD subscriber consists of the current date and time, the long distance status of the call, and the name of the calling party.

Calling Number Blocking (CNB) allows a subscriber to block the display of their DN on the set of the called party. The subscriber enters a CNB access code to block the display of their number. The blocking can be invoked or cancelled for each call.

Calling Number Display (CND) displays the calling number of incoming calls. The number appears between the first and second ring and is displayed for the duration of the call.

Calling Number Display Blocking (CNDB) allows subscribers, for each call, to override the default DN display. For example, if a subscriber normally has the DN on all originating calls suppressed, the subscriber can enter the CNDB code to allow the DN to be displayed. If the DN on all originating calls is normally not suppressed, then entering the CNDB code suppresses the DN display for the call.

Calling Name And Number Delivery Blocking (CNNB) allows subscribers to block the display of their DN and name information on the subscriber set of the called party. The user blocks the display by entering a CNNB access code. The block affects only the current call.

Dialable Number Delivery (DDN) delivers and displays only the digits that are required for the called party to return the call.

Long Distance Indicator (LDI) provides the long distance status information of an incoming call to a subscriber. The LDI is delivered with the time and date, and any other required calling information, to the called set. The LDI is displayed as an L.

Spontaneous Call Waiting Identification (SCWID) delivers an alerting tone and calling party information to a subscriber on an established call. To notify a line that a second call is waiting, an audible SCWID Call Waiting (CWT) tone is generated and sent to the subscriber. The subscriber's customer premises equipment (CPE) returns an acknowledgement signal,

and the calling party information is transmitted to the CPE for display. If no response to the SCWID information is made by the subscriber within 10 s, a second SCWID CWT is generated.

Miscellaneous features

Customer-originated Trace (COT) allows a user to trace the origin of the last incoming call. COT is activated by dialing a special access code immediately after a harassing call has been completed. A log report is generated, which includes the calling party's DN, DN suppression status, and the date and time of the call. An announcement indicates a successful or unsuccessful call trace.

Automatic Call Back (ACB) allows the called party to make the system dial the last number called from a line, regardless of whether the call was answered.

Automatic Recall (AR) allows a subscriber to dial the number of the last incoming call regardless of whether the call was answered.

Once ACB or AR is activated, the status of the destination line is checked. If the line is idle, then call setup is attempted. If the line is busy, the call is queued, the lines are checked periodically, and call completion is attempted when both stations are idle. As part of the completion attempt, the calling station is given a special ring. When the calling party answers, the call is setup and the called station is given a regular ring.

For ACB or AR, the called station can be served by the same switch (intranode) or a different one (internode). Internode ACB and AR require CCS7 protocol to communicate between the originating and terminating nodes.

CLASS signaling features

CLASS services use all levels of the CCS7 functional architecture (ISUP, TCAP, SCCP, and MTP). CCS7 transmits call-related information between switches on a path operating independently of the corresponding voice circuit. CCS7 signaling capability allows these features to be applied so that they appear to operate identically whether the call is serviced from the same switch or a different switch.

Business services

CCS7 allows business subscribers to implement advanced network services using public, private, leased, shared, and owned equipment. If all nodes operate using a CCS7 protocol, all of the services (listed below) are easier to accomplish.

Business services include:

- Meridian digital centrex (MDC)
- CLASS on MDC
- Meridian customer-defined networking
- private virtual networking (PVN)
- virtual access to private networking
- multi-location business groups

CCS7 implementation supports both private and public voice and signaling networks.

The applications include:

- area-wide MDC services
- virtual trunk networking
- tandem networking over long distances
- hybrid networking that uses private branch exchange (PBX) central office access

The following network-based call management services (CMS) are available for business users who were previously limited to lines served by single node locations:

- network ring-again
- network number display
- network name display
- network call redirection display
- network attendant service
- network message waiting service
- CLASS on MDC
- network automatic call completion
- network call completion route organization

Advanced intelligent network

The advanced intelligent network (AIN) is a set of software feature packages located in the DMS SuperNode switch computing module (CM). Operating companies use AIN to design and deploy their own features and to make

these features available across private and public networks. AIN uses centralized databases provided by the operating company. These databases are located at SCPs.

The databases determine how AIN calls proceed for further call processing. Queries and responses between the DMS SuperNode switch equipped with AIN features and the SCP use CCS7 protocol.

DMS-INode software and hardware

The DMS-INode has specific Common Channel Signaling 7 (CCS7) provisioning limits because the SSP and STP functions are integrated into a single physical node.

This chapter identifies the provisioning limits for the DMS-INode. All other datafill values that are provisionable remain the same as they are for a stand-alone DMS signaling transfer point (STP) and DMS service switching point (SSP) nodes (refer to the *Translations Guide*).

The software and hardware are discussed in the following sections.

Basic DMS-INode configuration discusses the software limits for the maximum number of links, linksets, routesets, global title translations (GTT), and ISDN user part (ISUP) trunks that can be provisioned through software datafill on the DMS-INode.

DMS-INode gateway screening table datafill limits discusses the datafill limits for the gateway screening for tables in the DMS-INode.

Basic supported hardware configurations discusses the hardware configurations for the DMS-INode.

System recovery provides reference for DMS-INode system recovery.

New features in LSTB006 provides an overview of new features introduced in LSTB006.

Basic DMS-INode configuration

Table 4-1 indicates the basic configuration supported on the DMS-INode and identifies the data schema tables that require data fill to support the configuration. The basic configuration includes the number of links, linksets, routesets, and routes that can be supported on the DMS-INode.

Table 4-1
Software limits

Item	Maximum configuration	Comments
Links	72 with non-BRISC [1] 108 with BRISC [2]	1 per LIU7 Table: C7LINK
Linksets	72 with non-BRISC 108 with BRISC	Maximum 16 links per linkset or combined linkset Table: C7RTESET
Routesets	255 with SPC DMS-INode 511 with MNA7 DMS-INode	Table: C7RTESET
Routes	6 routes per routeset	
GTT	10,000	Table: C7GTT
ISUP Trunks	20,000	Table: C7TRKMEM
Note [1]: 72 for Series 20, 30, 40 - non BRISC processor		
Note [2]: 108 for Series 50, 60, 70 - BRISC processor		

For more information on these data schema tables, refer to the *Translations Guide*.

DMS-INode gateway screening table datafill limits

Table 4-2 indicates the gateway screening datafill limits for data schema tables in the DMS-INode.

Table 4-2
Table datafill restrictions for DMS-INode

Table	Maximum tuples allowed
C7GTWLKS	72 (with non-BRISC) 108 (with BRISC)
C7AFTPC	2000
C7ALWDPC	2000
C7ALWGTT	2000
C7ALWOPC	2000
C7ALWSIO	2000
C7BLKDPC	2000
C7BLKOPC	2000
C7BLKSIO	2000
C7CGPA	400
C7CDPA	400
C7DSTFLD	2000
Note Maximum of 2000 tuples represents the combined total for all tables listed except C7GTWLKS	

For more information on these data schema tables, refer to the *Translations Guide*.

Basic supported hardware configurations

There are no unique DMS-INode hardware requirements. Hardware information contained in STP and SSP documentation describes the supported configurations for the DMS-INode.

System recovery

For information on DMS-INode system recovery, refer to the *Recovery Procedures*.

New features in LSTB006

The following major functionalities are introduced in LSTB006:

- Signaling, Engineering, and Administration System (SEAS)
- multiple CCS7 network addresses (MNA7)
- CCS7 channelized access
- multiple applications on a single LPP
- enhanced cluster routing
- routeset expansion
- CCS7 link fault locator
- expanded 800 Service
- prevention of trunk looping by ISUP
- interswitch call trace
- AIN essentials 0.1, release 4.0
- EADAS, SERVORD, and AMA enhancements
- CENTREX and RES enhancements
- equal access enhancements
- local/toll dial plan translation enhancements
- support for 100K (TR303 EOC)

The Signaling, Engineering, and Administration System (SEAS) is an optional software package that allows the DMS-INode (with MNA7) to interface with SEAS facilities in the network for downstream system monitoring. SEAS functionality on the DMS-INode is equivalent to that of the DMS-STP switch. For more information on SEAS, refer to the *STP Service Guide*.

Multiple CCS7 network addresses (MNA7) allows the DMS-INode to function within the CCS7 network as multiple nodes. Separate network addresses can be assigned so that one CCS7 point code (PC) can be designated for the service switching point (SSP) and one point code for the signaling transfer point (STP).

Alternate CCS7 access to the Link Peripheral Processors (LPPs) of DMS-100 SSPs allows the signaling channel to be embedded with the voice channels. This avoids having to separate signaling and voice using channel banks or timing signaling generators. Up to 90 channelized access links on the SSP portion are supported. Alternate CCS7 access is not supported by SEAS.

Multiple applications on a single LPP (supported with MNA7) allows network providers to provision a mix of applications (such as CCS7, DMS Packet Handler, and DATASPAN frame relay service) in the same LPP cabinet or link interface shelf used for the SSP portion of the DMS-INode.

Enhanced cluster routing (ECR) is an optional software package that enhances message transfer part (MTP) cluster routing. ECR also supports XLIST management and routing of signaling between adjacent CCS7 networks.

DMS-INode capability is expanded from 255 routsets to 511 to support signaling to more nodes and CCS7 networks.

CCS7 link fault locator provides software to enhance network reliability through the DMS maintenance and administration position (MAP). It allows for manual generation of loopback control codes onto suspected fault points in the DS-0A network.

The 800 Service functionality can be expanded to provide additional numbers through 888, 877, 866, 855, 844, 833, and 822 toll-free number codes. Billing and routing capabilities of current 800 Service are extended through standard translations.

Trunk looping is prevented by the ISDN user part (ISUP) portion of the CCS7 protocol which includes a counter in the Initial Address Message (IAM). The counter prevents call processing slowdown caused by incorrect entries in switch translations tables.

Directory number (DN) identification of calls originating from other central offices (including non-DMS offices) is extended. Log messages identify the calling party's group and trunk member in addition to the DN, DN suppression status, and the date and time of the call.

Support for Advanced Intelligent Network (AIN) is provided through network enhancements as follows:

- expanded support of line agents that include Basic Rate Interface (BRI) and support of the Data and PData line class codes (LCCs)
- office-wide support of trunk agents including Outgoing CAMA/SuperCAMA (OC/SC), Operator Incoming (OI), Outgoing TOPS (OP), PBX analog and digital, cellular, and Virtual Access to Private Network (VAPN)
- Post Virtual Facility Group (PVFG) interworking with public office dial plan trigger
- interworking of AIN 1.0 with AIN 0.0

The engineering and administrative data system (EADAS) interface is used for data collection and network management to enhance call completion ratios. This interface requires either the Multi-Protocol Controller (MPC) or Enhanced Multi-Protocol Controller (EMPC) to allow for communication between the DMS-100 and the EADAS data collection center (EADAS/DC). Analysis of transmitted data can be used for network and DMS-100 adjustments.

Operating companies can offer new centrex services such as:

- alternate call forwarding
- ultra call forwarding
- extension bridging

Operating companies can offer residential services such as:

- alternate call forwarding
- extension bridging
- teen service SDN fixes
- CLID to SMDI privacy enhancement
- CMR operational measurements

Primary interexchange carrier operations are enhanced by optional software for intraLATA coin toll traffic. Key enhancements provide for improved local exchange handling of 1+ intraLATA toll traffic, routing of local and operator calls, and flexibility in handling subscriber casual dialing. As well, the full carrier toll denied (FCTD) option is provided to prevent subscribers from carrier hopping.

To meet the growing demand for Network Class of Service (NCOS) numbers, the maximum number of NCOS numbers is increased from 256 to 512 per switch. As well, the maximum number of entries in table LINATTR (defines blocking and calling arrangements for each rate zone) is increased and the maximum number of line treatment groups is increased from 256 to 512.

Performance of existing Embedded Operations Channel (EOC) applications is enhanced for systems with a 16 megabyte processor. Host and peripheral communications, processing bandwidth, and real-time performance is improved. New functions are introduced such as enhanced alarm monitoring, line state monitoring, database audits, and real-time performance.

Finding DMS-INode information

This chapter provides reference information to locate documents associated with the DMS-INode.

Documentation Key lists related NTPs in numerical order.

Documentation Key

This chapter lists the Northern Telecom publications associated with DMS-INode.

- 297-0201-015 *Service Priority Classification Description*
- 297-0301-300 *Cutover Conversion Services Customer Method of Procedure*
- 297-0301-301 *Cutover Conversion Services Customer Grooming Method of Procedure*
- 297-1001-010 *Electrostatic Discharge Protection Guide*
- 297-1001-019 *Distributed Processing Peripheral Product Guide*
- 297-1001-064 *Subscriber Carrier Module 100 - Rural General Description*
- 297-1001-103 *Peripheral Modules*
- 297-1001-106 *Maintenance System DMS 100/200*
- 297-1001-107 *Maintenance and Administration Tools Description*
- 297-1001-109 *Cabinetized Miscellaneous Equipment Cabinet Planning and Engineering Guide*
- 297-1001-118 *Magnetic Tape Reference Manual*
- 297-1001-119 *Automatic Message Accounting - Northern Telecom Format Reference Guide*
- 297-1001-121 *Automatic Trunk Testing Description*
- 297-1001-122 *Alarm System Description*
- 297-1001-127 *Journal File Description*
- 297-1001-129 *Input/Output System Reference Manual*
- 297-1001-130 *Synchronous Clock System Description*
- 297-1001-131 *Ringing General Description*
- 297-1001-132 *Blue Box Fraud Detection Feature Description*
- 297-1001-152 *Trunk Selection and Compatibility Guide*
- 297-1001-155 *Peripheral and Trunk Group/Line Assignments Reference Manual*
- 297-1001-170 *Capacity Engineering Manual*
- 297-1001-300 *Basic Administration Procedures*
- 297-1001-302 *SuperNode Conversion Procedures*
- 297-1001-305 *Memory Administration Guide*

- 297-1001-318 *Service Problem Analysis Administration Guide*
- 297-1001-330 *Switch Performance Monitoring System Application Guide*
- 297-1001-331 *Distributed Processing Peripheral Administration Guide*
- 297-1001-332 *Distributed Processing Peripheral Product Guide*
- 297-1001-345 *Device Independent Recording Package Administration Guide*
- 297-1001-350 *Power and Grounding Routine Maintenance Manual*
- 297-1001-360 *Basic Translations Tools*
- 297-1001-453 *Network Management System Reference Manual*
- 297-1001-520 *Maintenance System Man-Machine Interface Description*
- 297-1001-522 *Automatic Board-to-Board Testing Reference Manual*
- 297-1001-524 *Remote Data Polling System Description*
- 297-1001-525 *Data Packet Controller Reference Manual*
- 297-1001-526 *Disk Maintenance Subsystem Reference Manual*
- 297-1001-527 *Digital Recorded Announcement Machine Maintenance Reference Manual*
- 297-1001-530 *Conference Circuit Guide*
- 297-1001-531 *Common Channel Signaling 7 Maintenance Reference Manual*
- 297-1001-533 *Bit Error Rate Performance Testing*
- 297-1001-535 *Maintenance Managers Morning Report*
- 297-1001-536 *Distributed Processing Peripheral Card Replacement Guide*
- 297-1001-537 *Distributed Processing Peripheral Recovery and Routine Maintenance Procedures*
- 297-1001-543 *Distributed Processing Peripheral Alarm and Performance Monitoring Guide*
- 297-1001-570 *Bellcore Format Automatic Message Accounting (AMA) Maintenance Guide*
- 297-1001-590 *Input/Output Devices Maintenance Guide*
- 297-1001-591 *Networks Maintenance Guide*
- 297-1001-592 *Peripheral Modules Maintenance Guide*
- 297-1001-593 *External Devices Maintenance Guide*
- 297-1001-595 *Trunks Maintenance Guide*

- 297-1001-801 *Feature Description Manual Reference Manual*
- 297-1001-820 *Nonmenu Commands Reference Manual*
- 297-1001-821 *Menu Commands Reference Manual*
- 297-1001-822 *Commands Reference Manual*
- 297-1001-825 *Glossary of Terms and Abbreviations Reference Manual*
- 297-1421-503 *Subscriber Services Maintenance Guide*
- 297-2011-100 *Business Set Feature Description and Operation*
- 297-2011-180 *Business Set Line Engineering*
- 297-2011-200 *Business Set General Description, Installation and Maintenance*
- 297-2011-201 *Integrated Business Network Services Meridian M5009 Basic (9 Button) Business Set Description, Installation and Maintenance*
- 297-2011-202 *Integrated Business Network Services Meridian M5112 Handsfree (12 Button) Business Set Description, Installation, Operation and Maintenance*
- 297-2011-205 *Integrated Business Network Services Meridian M536 36 Button Add-on Description, Installation, Operation and Maintenance*
- 297-2011-206 *Integrated Business Network Services Meridian M518 18 Button Add-on Description, Installation, Operation and Maintenance*
- 297-2011-211 *Meridian M5209 Basic 9 Button Business Set with Alpha-Numeric Display Description, Installation, Operation and Maintenance*
- 297-2011-212 *Meridian M5312 Handsfree (12 Button) Business Set with Alpha-Numeric Display Description, Installation, Operation and Maintenance*
- 297-2031-100 *Attendand Console Operations, Administration, and Maintenance*
- 297-2041-500 *Automatic Call Distribution Maintenance Guide*
- 297-2041-900 *M5212 Automatic Call Distribution Set General Description, Installation, and Maintenance*
- 297-2051-104 *Meridian Digital Centrex Simplified Message Desk Interface Set-up and Operation*
- 297-2061-312 *Customer Data Change (CDC) Operating Company Guide*
- 297-2061-900 *Customer Data Change End User Guide*
- 297-2071-119 *Meridian Digitial Centrex Station Message Detail Recording Reference Manual*

- 297-2101-101 *Line Module Description*
- 297-2101-102 *Remote Line Module Description*
- 297-2101-500 *Equal Access Maintenance Manual*
- 297-2121-103 *Asynchronous Access General Description*
- 297-2121-182 *Line Engineering Guidelines for Two-Wire Loops*
- 297-2121-203 *Asynchronous Access Instructions*
- 297-2121-223 *Datapath Modem-Pools Installation and Maintenance Guide*
- 297-2121-224 *Datapath Modem-Pools Installation and Maintenance*
- 297-2121-225 *Datapath 3270 Network Switched Access Installation and Maintenance*
- 297-2121-226 *Data Unit Installation and Maintenance*
- 297-2121-227 *DIALAN Service Installation and Maintenance*
- 297-2121-228 *Datapath 3270 Network Switched Access with 3194 Distributed Function Terminals Support Installation and Maintenance*
- 297-2121-303 *Asynchronous Access Operation and Performance Testing*
- 297-2211-311 *Automatied Directory Assistance Services Operations Administration and Maintenance Position Users Guide*
- 297-2401-105 *ISDN Fiber Remote Switching Center General Description*
- 297-2401-501 *Integrated Services Digital Network Basic Rate Interface Maintenance Guide*
- 297-2451-107 *Meridian Digital Network Termination 1 (NT1) Description*
- 297-2451-182 *ISDN U-Loop and S/T Bus Engineering*
- 297-2451-211 *M5317TX and CustomNet ISDN Telephone Installation Guide*
- 297-2451-951 *T2317 Set User Guide*
- 297-2671-210 *Conversion to RT-100 Stand-Alone Guide*
- 297-5001-548 *SuperNode and DMS SuperNode SE Computing Module Maintenance Guide*
- 297-5001-549 *SuperNode and DMS SuperNode SE Message Switch Maintenance Guide*
- 297-5161-510 *Advanced Intelligent Network Release 0.1 Complete Maintenance Guide*

- 297-8083-010 *DMS SuperNode STP/SSP Integrated Node Product Guide*
- 297-8083-350 *DMS SuperNode STP/SSP Integrated Node Translations Guide*
- 297-8083-543 *DMS SuperNode STP/SSP Integrated Node Alarm and Performance Monitoring Procedures*
- 297-8083-544 *DMS SuperNode STP/SSP Integrated Node Trouble Locating and Clearing Procedures*
- 297-8083-545 *DMS SuperNode STP/SSP Integrated Node Recovery Procedures*
- 297-8083-546 *DMS SuperNode STP/SSP Integrated Node Routine Maintenance Procedures*
- 297-8083-547 *DMS SuperNode STP/SSP Integrated Node Card Replacement Procedures*
- 297-8083-599 *DMS SuperNode STP/SSP Integrated Node Peripheral Module Software Release Document*
- 297-8083-801 *DMS SuperNode STP/SSP Integrated Node Feature Description Manual*
- 297-8083-808 *DMS SuperNode STP/SSP Integrated Node Service Order and Query System Procedures*
- 297-8083-814 *DMS SuperNode STP/SSP Integrated Node Operational Measurements Reference Manual*
- 297-8083-840 *DMS SuperNode STP/SSP Integrated Node Log Report Reference Manual*
- 297-8083-855 *DMS SuperNode STP/SSP Integrated Node Office Parameters Reference Manual*
- 297-8121-020 *DMS SuperNode Signaling Transfer Point Service Guide*
- 297-8221-550 *Remote Switching Center Maintenance Manual*
- 297-8223-550 *Remote Switching Center Multi-Access Maintenance Manual*
- 297-8231-550 *Subscriber Carrier Module - 100S Maintenance Manual*
- 297-8241-550 *Subscriber Carrier Module - 100 Urban Maintenance Manual*
- 297-8251-550 *Subscriber Carrier Module - 100 Access Maintenance Manual*
- 297-8253-550 *Subscriber Carrier Module - 100 Access (MVI-20) Maintenance Manual*

- 297-8263-550 *Expanded Subscriber Carrier Module - 100 Access Maintenance Manual*
- 297-8301-550 *Subscriber Carrier Module - 100S Remote Maintenance Manual*
- 297-8991-001 *DMS-10 and DMS-100 Product Documentation Directory*
- 297-8991-002 *DMS-10 and DMS-100 Cancellation Cross-Reference Directory*
- 297-8991-020 *Software Delivery Software Delivery Process Description*
- 297-8991-021 *Software Delivery Software Delivery Planning and Provisioning*
- 297-8991-303 *One Night Process Software Delivery Procedures*
- 297-8991-540 *Post-Release Software Manager (PRSM) Operating Procedures*
- 297-8991-598 *Enhanced Digital Recorded Announcement Machine Peripheral Module Software Release Document*
- 297-8991-805 *Hardware Description Manual Reference Manual*
- 297-8991-901 *Sofware Optionality Control User Manual*
- 297-9001-200 *Meridian Digital Centrex (MDC) Control of Multiple Call Forwarding Feature Guide*
- 57003.16 *Expanded Carrier Identification Code Planner for Feature Group D*
- 662-7001-100 *Network Testing System Digital Test Head General Description*
- 662-7001-200 *Network Testing System Digital Test Head Installation and Maintenance*
- 662-7001-300 *Network Testing System Digital Test Head Operations Guide*
- HLM-8083-CL *DMS SuperNode STP/SSP Integrated Node Customer Letter*
- NIS-A211-1 *Digital Switching System BCS36 ISDN Primary Rate User - Network Interface Specification*
- NIS-A220-1 *Digital Switching System INS Net 1500 Primary Rate Interface Specification*
- NIS-D307-1 *ISDN PCTA SESSION LAYER (NETBIOS) Interface Description*
- NIS-D333-1 *Digital Video Learning Network V2 Interface Specification*

- NIS-Q209-2 *DMS-100/SL-100 ACD-MIS Interface Specification*
- NIS-Q218-1 *DMS/Meridian SCAI ACD Management Information System Application Protocol & Message Definition Interface Specification*
- NIS-Q225-1 *SAID (NTXR25AA) Speech Activated Intelligent Dialing Inteface Specification*
- NIS-S106-1 *Electronic Business Service Network Access Interface Specification*
- NIS-S107-1 *CLASS SM and CLASS PLUS Services Interface Specification*
- NIS-S208-6 *Integrated Services Digital Network Basic Rate Interface Interface Specification*
- PLN-1001-001 *Technical Specification*
- PLN-1001-003 *Feature Description Manual*
- PLN-5001-001 *DMS SuperNode Technical Specification*
- REAL::TIME *Real::Time User's Guide*

List of terms

800 Service

An intertoll office service in which the called party subscribes to the service and pays for toll calls. Also known as inward wide area telephone service (INWATS). *See also* Enhanced 800 Service (E800 Service).

A-link

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

ASU

See application-specific unit (ASU).

calling card validation (CCV)

A Common Channel Signaling 7 (CCS7) service that allows TOPS operators to validate card numbers in the network service database system. TOPS operators perform this task by entering the special billing class charge and the calling card number.

Calling Name Delivery (CNAMD)

A feature that displays the name of the calling party on the called party's set if that set has a suitable display window.

Calling Name Delivery Blocking (CNAB)

A CLASS feature that allows subscribers to control, for each outgoing call, whether their name is displayed on the set of the called party.

capability code

An address that allows a Common Channel Signaling 7 (CCS7) node to identify itself by more than one point code. For example, each node of a signaling transfer point pair is identified by the same capability code and by individual capability codes. *See also* point code.

CCS

See common channel signaling (CCS).

CCS7

See Common Channel Signaling 7 (CCS7).

CCS7 link interface unit (LIU7)

A peripheral module (PM) that processes messages entering and leaving a link peripheral processor (LPP) through an individual signaling data link. Each LIU7 consists of a set of cards and a paddle board provisioned in one of the link interface shelves of the LPP. *See also* link interface unit (LIU), link peripheral processor (LPP).

CCV

See calling card validation (CCV).

CI

See command interpreter (CI).

C-link

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

CM

See communications module (CM), or computing module (CM), or connection memory (CM).

CNAB

See Calling Name Delivery Blocking (CNAB).

CNAMD

See Calling Name Delivery (CNAMD).

combined linkset

Two linksets datafilled in table C7RTESET with the same cost. Traffic sent out on a combined linkset is evenly distributed across all links of both linksets.

command interpreter (CI)

A component in the Support Operating System (SOS) that functions as the main interface between machine and user. Its principal roles include the following:

- reading lines entered by a terminal user
- breaking each line into recognizable units
- analyzing the units
- recognizing command-item numbers on the input lines
- activating these commands

common channel signaling (CCS)

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

Common Channel Signaling 7 (CCS7)

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

computing module (CM)

The processor and memory of the dual-plane combined core (DPCC) used by DMS SuperNode. Each CM consists of a pair of CPUs with associated memory that operate in a synchronous matched mode on two separate planes. Only one plane is active; it maintains overall control of the system while the other plane is on standby.

connectionless signaling

A type of signaling in which no fixed end-to-end connection is associated with the call. The route followed by the information and signaling between the originating and terminating subscriber is not fixed and can change from one message to the next. For example, signaling used to access a database for 800-number translations and maintenance signaling messages between signaling points are considered connectionless signaling. Also known as transaction services.

connection-oriented signaling

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

CPU

See call pickup (CPU) or central processing unit (CPU).

destination point code (DPC)

A Common Channel Signaling 7 (CCS7) term defining the termination of a signaling message. *See also* originating point code (OPC).

digital trunk controller (DTC)

A peripheral module (PM) that connects DS30 links from the network with digital trunk circuits. *See also* Austrian digital trunk controller (ADTC), international digital trunk controller (IDTC).

directory number (DN)

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

D-link

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

DMS-bus

The messaging control component of the DMS SuperNode processor. The DMS-bus components are a pair of message switches (MS).

DMS-core

The call management and system control portion of the DMS SuperNode processor. The DMS-core portion consists of a computing module (CM) and a system load module (SLM).

DMS-link

The networking software of the DMS SuperNode processor. The DMS-link software consists of open and standard protocols that allow the DMS SuperNode to function in a multivendor environment.

DMS SP/SSP

See signaling point/service switching point (SP/SSP).

DMS-STP

See DMS SuperNode Signaling Transfer Point (DMS-STP).

DMS-STP/SSP INode

See DMS SuperNode signaling transfer point/service switching point integrated node (DMS-STP/SSP INode).

DMS SuperNode

A central control complex (CCC) for the DMS-100 switch. The two major components of DMS SuperNode are the computing module (CM) and the message switch (MS). Both are compatible with the network module (NM), the input/output controller (IOC), and XMS-based peripheral modules (XPM).

DMS SuperNode SE (SNSE)

A smaller version of DMS SuperNode designed to service smaller offices (maximum 20,000 lines). It is based on existing SuperNode technology and can be used in all existing applications of SuperNode, including common

channel signaling 7 (CCS7) and international. SNSE supports all SuperNode software features at a reduced call processing capacity.

DMS SuperNode Signaling Transfer Point (DMS-STP)

A high-throughput data packet switch providing connectivity between the nodes of a Common Channel Signaling 7 (CCS7) network.

DMS SuperNode signaling transfer point/service switching point integrated node (DMS-STP/SSP INode)

A CCS7 integrated node that combines the functionality of a signaling transfer point (STP) and a service switching point (SSP). The integrated node consists of the DMS-core, DMS-bus, I/O controller (IOC), office alarm system (OAS), JNET or ENET, link peripheral processors (LPP), and peripheral modules (PM) such as digital trunk controllers (DTC), line group controllers (LGC), and maintenance trunk modules (MTM).

DN

See directory number (DN).

DNPC

See dual network packaged core (DNPC).

DPC

See data packet collector (DPC) or destination point code (DPC).

DS-0

A protocol for data transmission that represents one channel in a 24-channel DS-1 trunk.

DS-0A

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

DS-1

The 8-bit 24-channel 1.544-Mbit/s digital signaling format used in the DMS-100 Family switches. The DS-1 signal is the North American standard for digital trunks. It is a closely specified bipolar pulse stream. DS-1 is the standard signal used to interconnect Northern Telecom digital systems. DS-1 carries 24 information channels of 64 kbit/s each (DS-0s).

DS30

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

DS30A

A 32-channel transmission link between the line concentrating module (LCM) and controllers in the DMS-100 Family switches. DS30A is similar to DS30, though intended for use over shorter distances.

DTC

See digital trunk controller (DTC).

Dual shelf network (DSN)

Also referred to as the junctored network (JNET).

E800

See enhanced 800 Service (E800 Service).

E800 Service

See enhanced 800 Service (E800 Service).

ECR

See enhanced cluster routing (ECR).

Enhanced 800 Service (E800 Service)

A Common Channel Signaling 7 (CCS7) feature that allows interexchange carriers equal access to the Basic 800 Service. E800 Service presents network intelligence at an access tandem office or an end office (EO) using an online database query system. Also known as E800. *See also* Basic 800 Service, 800 Plus Service (800+), 800 Service.

Enhanced cluster routing (ECR)

Optional software to enhance message transfer part (MTP) cluster routing. Also supports XLIST management and routing of signaling between adjacent CCS7 networks.

global title (GT)

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

global title translation (GTT)

The process that translates an application-specific address (such as a dialed 800 number) into the Common Channel Signaling 7 (CCS7) network address, usually that of the appropriate service control point (SCP).

GT

See global title (GT).

GTT

See global title translation (GTT).

IBN

See Integrated Business Network (IBN). Preferred term is Meridian Digital Centrex.

INode

See integrated node (INode). *See also* DMS SuperNode signaling transfer point/service switching point integrated node (DMS-STP/SSP INode).

Integrated Business Network (IBN)

See Meridian Digital Centrex (MDC).

Integrated node (INode)

A combination of a DMS SuperNode signaling transfer point (DMS-STP) and a DMS signaling point/service switching point (DMS SP/SSP). It has all the functions of both, and requires fewer frames and cabinets.

integrated services digital network (ISDN)

A set of standards proposed by the CCITT to establish compatibility between the telephone network and various data terminals and devices. ISDN is a fully digital network, in general evolving from a telephone integrated digital network. It provides end-to-end connectivity to support a wide range of services, including circuit-switched voice, circuit-switched data, and packet-switched data over the same local facility.

ISDN

See integrated services digital network (ISDN).

ISDN user part (ISUP)

A Common Channel Signaling 7 (CCS7) message-based signaling protocol that acts as a transport carrier for ISDN services. The ISUP provides the functionality in a CCS7 network for voice and data services.

ISUP

See ISDN user part (ISUP).

link

- In a DMS switch, a connection between any two nodes.
- A four-wire group of conductors providing transmit and receive paths for the serial speech or message data between components of DMS-100 Family switches. Speech links connect peripheral modules (PM) to the network modules (NM). Message links connect NM controllers or I/O controllers (IOC) to the central message controller (CMC).
- A logical switched virtual circuit (SVC). Up to 256 logical SVCs are carried on a physical X.25 communication cable.

link interface unit for CCS7 (LIU7)

See CCS7 link interface unit (LIU7).

link peripheral processor (LPP)

The DMS SuperNode equipment frame or cabinet that contains two types of peripheral modules (PM): a link interface module (LIM) and one or more application-specific units (ASU). *See also* application-specific unit (ASU), CCS7 link interface unit (LIU7), and link interface module (LIM).

linkset

- A group of links related to one application instance.
- A collection of links connecting two adjacent signaling points in CCITT no. 6 signaling (N6), common channel interoffice signaling no. 6 (CCIS6), and Common Channel Signaling 7 (CCS7).

LIU7

See CCS7 link interface unit (LIU7).

LMS

See local message switch (LMS).

local message switch (LMS)

A shelf in the link peripheral processor (LPP) frame or cabinet. The LMS exchanges messages between application-specific units (ASU) in the LPP and provides access to the DMS-bus. Also known as link interface module (LIM).

LPP

See link peripheral processor (LPP).

maintenance and administration position

See MAP.

maintenance trunk module (MTM)

In a trunk module equipment (TME) frame, a peripheral module (PM) that is equipped with test and service circuit cards and contains special buses to

accommodate test cards for maintenance. The MTM provides an interface between the DMS-100 Family digital network and the test and service circuits.

MAP

- Maintenance and administration position. A group of components that provides a user interface between operating company personnel and the DMS-100 Family switches. The interface consists of a video display unit (VDU) and keyboard, a voice communications module, test facilities, and special furniture.
- mobile application part

MAPCI

MAP command interpreter

MDC

See Meridian Digital Centrex (MDC) or message and device controller (MDC).

Meridian Digital Centrex (MDC)

A special DMS business services package that uses the data-handling capabilities of DMS-100 Family offices to provide a centralized telephone exchange service. Formerly known as Integrated Business Network (IBN).

message signal unit (MSU)

A type of signal unit that contains signaling information. The MSUs are buffered until positive acknowledgement is received.

message switch (MS)

A high-capacity communications facility that functions as the messaging hub of the dual-plane combined core (DPCC) of a DMS SuperNode processor. The MS controls messaging between the DMS-bus components by concentrating and distributing messages and by allowing other DMS-STP components to communicate directly with each other.

message transfer part (MTP)

A CCITT no. 7 signaling (N7) protocol that provides a connectionless transport system for carrying common channel interoffice signaling no. 6 (CCIS6) and Common Channel Signaling 7 (CCS7) signaling messages between user locations or applications functions. Also known as message transport part.

message transport part

See message transfer part (MTP).

MNA7

See multiple CCS7 network addresses (MNA7).

MS

See message switch (MS), message system (MS).

MSU

See message signal unit (MSU).

MTP

See message transfer part.

multiple CCS7 network addresses (MNA7)

A feature for DMS-INode that allows for separate network addresses by function so that one CCS7 point code can be assigned for the SSP and one point code for the STP.

node

The terminating point of a link. The meaning of the term depends on its context. For example, a circuit can be a node in the context of another circuit within a module, the module itself can be a node in the context of another component of the network, and so forth. Some common applications are as follows:

- in network topology, a terminal of any branch of a network or a terminal common to two or more branches of a network
- in a switched communications network, the switching points, including patching and control facilities
- in a data network, the location of a data station that interconnects data transmission lines
- a unit of intelligence within a system; in a DMS switch, it includes the CPU, network module (NM), and peripheral modules (PM)

OM

See operational measurements (OM).

OPC

See originating point code (OPC).

open systems interconnection (OSI) reference model

Open systems interconnection (OSI) reference model for CCITT applications provides a defined structure for modeling the interconnection and exchange of information between users in a communication system.

operational measurements (OM)

The hardware and software resources of the DMS-100 Family switches that control the collection and display of measurements taken on an operating system. The OM subsystem organizes the measurement data and manages its transfer to displays and records. The OM data is used for maintenance, traffic, accounting, and provisioning decisions.

originating point code (OPC)

A Common Channel Signaling 7 (CCS7) term defining the address of a signaling point (SP) that generated the message. *See also* destination point code (DPC).

OSI

See open systems interconnection (OSI) reference model.

peg count

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

per-trunk signaling (PTS)

A conventional telephony method of signaling that multiplexes the control signal of a call with voice or data over the same trunk.

point code

The address of a signaling point. *See also* capability code.

PTS

See per-trunk signaling (PTS).

quasi-associated mode

A limited form of the nonassociated mode of CCITT no. 6 signaling (N6) and CCITT no. 7 signaling (N7) signaling in which signals are transferred between two exchanges over two or more signaling links in tandem, but only over certain predetermined paths and through predetermined signaling transfer points (STP). *See also* dissociated mode, nonassociated mode.

query

A message containing call information that is sent to a centralized database for call processing instructions.

In a DMS SuperNode switch, a user interface terminal that is used to reboot the system and monitor its status. The RTIF can be either a remote terminal that is connected through a modem or a local terminal. Also known as remote terminal interface.

route

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

routeset

A logical group of Common Channel Signaling 7 (CCS7) signaling paths with the same destination point.

routeset management (RSM)

A service that transfers messages over the signaling network and helps to maintain the network by checking for link problems through the use of an integrity source.

route table

A table of all possible routes to each node in the DMS-100 Family switch. The route table is maintained by the I/O system. Whenever a node or link is put into or taken out of service, the maintenance subsystem responsible for the node or link informs the I/O system. The I/O system then makes appropriate adjustments to the route table.

routing

A telephony function that selects and connects a path from the originating terminal to a destination based on an analysis of the digits received and the screening of a line as required.

SCCP

See signaling connection control part (SCCP).

SCP

See service control point (SCP).

SEAS

See Signaling, Engineering, and Administration System (SEAS).

service control point (SCP)

A node in a Common Channel Signaling 7 (CCS7) signaling network that supports application databases. The function of an SCP is to accept a query for information, retrieve the requested information from one of its application databases, and send a response message to the originator of the request.

service switching point (SSP)

A Common Channel Signaling 7 (CCS7) signaling node that interacts with the service control point (SCP) to implement special service code features.

signaling connection control part (SCCP)

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

signaling engineering and administration system (SEAS)

The operations support system (OSS) that allows economical planning, provisioning, engineering, and administration of multiple CCS7 network nodes from a single, centralized administrative center provided by the network providers.

signaling link (SL)

The term used to describe the first two levels of the Common Channel Signaling 7 (CCS7) protocol: the physical level (level 1) and the link level (level 2). Level 2 functions, combined with a level 1 signaling data link, constitute an SL used for the reliable transfer of signaling messages between two signaling points (SP).

signaling point (SP)

A node in a Common Channel Signaling 7 (CCS7) network that originates, terminates, or transfers signaling messages from one signaling link (SL) to another.

signaling point/service switching point (SP/SSP)

A signaling point or a service switching point.

An SP is a switching office that supports CCS7 voice trunk capability (integrated services digital network (ISDN) user part (ISUP) messaging). An SP provides an interface between subscriber lines and the CCS7 network.

An SSP is an SP with additional functionality to supports transaction capabilities application part (TCAP) messaging, which allows the SSP to access information from CCS7 databases.

signaling system 7 (SS7)

A version of signaling system #7 that was developed for North American use. *See also* CCITT no. 7 signaling (N7).

signaling system #7 (SS#7)

An international version of signaling system 7 (SS7) based on the CCITT specification of SS7.

signaling terminal (ST)

The hardware that performs error checking, coding, and decoding of signaling messages. In common channel interoffice signaling no. 6 (CCIS6) and CCITT no. 6 signaling (N6), it consists of a signaling terminal controller, a modem, and a modem interface card. In Common Channel Signaling 7 (CCS7), the signaling terminal is a single card.

signaling transfer point (STP)

A node in a Common Channel Signaling 7 (CCS7) network that routes messages between nodes. Signaling transfer points transfer messages between incoming and outgoing signaling links but, with the exception of network management (NWM) information, do not originate or terminate messages. Signaling transfer points are deployed in pairs. If one STP fails, the mate takes over, ensuring that service continues without interruption.

SL

signaling link

SP

See service position (SP), signaling point (SP), or signaling processor (SP).

SS7

See signaling system 7 (SS7).

SS#7

See signaling system #7 (SS#7).

SSP

See service switching point (SSP).

SSN

See subsystem number (SSN).

ST

See signaling terminal (ST).

STP

See signaling transfer point (STP).

subsystem

An application in a node that uses the routing functions of the signaling connection control part (SCCP). Subsystems are addressable entities.

subsystem number (SSN)

The identification of a subsystem located at a Common Channel Signaling 7 (CCS7) point code that can supply data.

TCAP

See transaction capabilities application part (TCAP).

telephone user part (TUP)

A CCITT no. 7 signaling (N7) protocol that provides signaling between a Common Channel Signaling 7 (CCS7) switching office and a designated customer setup.

transaction capabilities application part (TCAP)

A service that provides a common protocol for remote operations across the Common Channel Signaling 7 (CCS7) network. The protocol consists of message formatting, content rules, and exchange procedures. TCAP provides the ability for the service switching point (SSP) to communicate with a service control point (SCP). TCAP is used by the ISDN layer facility message to transport service information for transaction signaling, not associated with an active call, over primary rate interface (PRI) links.

transaction services

See connectionless signaling.

transmission link (TL)

In a Common Channel Signaling 7 (CCS7) network, a T1 digital carrier terminating on a digital trunk controller (DTC). In the DMS switch, the TL is a single voice carrier on a DS30 link over connections through the network and into the message switch and buffer 7 (MSB7).

DMS-100 Family

DMS SuperNode STP/SSP Integrated Node

Product Guide

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