Introduction to the New North American DMS-100 Product Structure

Northern Telecom is simplifying its software product structure for easier provisioning and faster service deployment.

DMS Switching Evolution is Northern Telecom's far-ranging program to secure the place of DMS business and residential services on the Information Superhighway. With a new software platform and a host of new service enablers and access technologies, DMS Switching Evolution will extend DMS services across multiple networks-including wireless and cable-and tap the power of Advanced Intelligent Networking (AIN) for a new breed of revenue services.

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

In this document…

An overview of Product Computing-Module Loads (PCLs):

- ***What are they?***
- ***Why are they better?***
- ***When will they be released?***

An introduction to simplified switch options and their new Ordering Codes

Obtaining Right-to-Use for switch options:

- ***Commercial Options***
- ***Software Optionality Control (SOC)***

How NTX software packages will map into the new structure

Software Restructuring

Software for the DMS SuperNode family is being restructured and optimized to improve the time to market for new services and enable a new generation of advanced services:

- **Layered Software.** Software layering-partitioning the switch software into relatively independent components with well-defined interfaces to other components-will allow Northern Telecom to develop and deliver new services faster.
- **New Call-Processing Platform.** In 1995, Northern Telecom will introduce a new call-processing platform-Generic Services Framework (GSF)-for most future advanced services, including AIN 0.2 and National ISDN-2 and beyond. The new platform will allow an accelerated development cycle of as short as three to six months.

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An important aspect of DMS Switching Evolution is the simplification of our product structure and commercial systems. Improvements now well underway will make Northern Telecom an easier company with which to do business, while bringing new services to market more quickly.

Simplified Switch Options

Today, Northern Telecom's DMS SuperNode software is divided into hundreds of NTX packages. When provisioning a switch, the customer must choose from among these packages and deal with software dependencies. In the new software structure, many hundreds of NTX packages are reduced to fewer software options for easier provisioning.

PCL-The New Software Delivery Vehicle

Today, many customers order custom loads-a unique configuration of NTX packages to meet their individual needs. While this allows flexibility in service selection, it has many disadvantages. If the customer chooses to deploy a service resident in an NTX package not present in the switch, the customer must completely re-load the BCS to obtain the new package. Also, custom software loads result in thousands of different software configurations in the field, greatly complicating verification and support.

After BCS36, Northern Telecom will begin delivering Product Computing-Module Loads (PCLs) instead of BCS releases or Universal Software Loads (USLs). Each PCL contains all the generally available software for a particular switch application in a particular market. There's no need to re-load software to deploy a generally-available feature, because all features are already present in the switch.

Previously, Northern Telecom tested BCS releases in their entirely, and then delivered subsets of the BCS as custom load builds. With PCLs, the customer receives software in the exact configuration in which it is developed. he customer chooses which services are to be deployed either by simply reporting their use to Northern Telecom and paying a Right-to-Use (RTU) fee, or in the future by activating a Software Optionality Control (SOC) option that allows access to features through a software "password" delivered by Northern Telecom.

For More Information…

This document is intended only as an introduction to the new product structure and its terminology. The next FPG-*Feature Planning Guide 2Q94*, planned for release in May 1994-will contain more information. It will be a transitional issue that will make it easy for customers to map the old software structure to the new, including an introduction to the new product structure, a detailed rollout of PCLs and features, and a mapping of NTX codes to the new Order Codes in an accompanying *NTX-to-PCL Mapping* PSI.

In previous editions, the FPG reflected the NTX structure of DMS SuperNode software. Upcoming features were grouped first into subject areas-such as Subscriber Services-then by NTX code within that subject area.

FPG 2Q94 will feature a new organization. There will be a separate section for each of the major services, such as MDC, TOPS, and ISDN. In these sections, planned features will be listed under the appropriate packages, such as MDC Small Business or MDC Tailored Centrex. Thus it can be seen at a glance where planned features will reside in the new software. Marketing Publications also plans to release further publications detailing the transition to the new product structure and addressing DMS SuperNode capacity.

Table of Contents

1.0 Product Computing-Module Loads (PCLs)

After BCS36, Northern Telecom will begin delivering Product Computing-Module Loads (PCLs) rather than custom-built BCS loads or USLs. PCLs will contain all available software for a particular switch type and market. The customer customizes the capability of a PCL by paying Right-to-Use fees and/or activating Software Optionality Control (SOC) for options within the PCL.

Features for all North American DMS-100 PCLs-standalone and combined applications-are developed in the North American DMS-100 (NA) development stream. The NA development stream is updated approximately twice a year, and each new product release is given a sequential number (e.g., NA001, NA002, NA003, etc.) The availability of a new NA version allows new PCLs to be assembled from the NA stream.

A PCL is a software load consisting of features selected from an NA product release, intended for a particular DMS SuperNode application in a particular market. Every PCL with the same name is the same in terms of software content-fully tested and verified in the exact configuration released to the customer.

Northern Telecom advertises availability for DMS-100 features-and Traffic Operator Position (TOPS) TOPS or DMS-STP (signaling transfer point) features in a DMS-100 combination-by giving the NA product release in which the feature is available. For example, a feature may become available in "NA005." That means that PCLs built from NA005 and later will contain the feature. Note that the PCL is the orderable software load-the NA product release is not orderable, but represents the vintage of software from which the PCL is built.

1.1 BENEFITS OF PCLS

Implementation of PCLs will have many benefits for the customer. The customer receives all generally available computing-module software for a particular switch type, and any of those services can be quickly activated by paying Right-to-Use fees and/or activating a SOC option.

By delivering PCLs rather than custom loads, Northern Telecom will be delivering a higher-quality product. This is because developers will design and test exactly the software configuration that is delivered to the customer.

PCLs can also eliminate the time and expense of upgrading to the same BCS just to obtain features that were not originally provisioned. Assuming that custom load build increases the incidence of BCS loading by 40% and that the average upgrade cost in dollars is $X, PCLs can represent considerable network savings.

Table A. Example-Savings from PCL vs. BCS

Upgrades/Yr	Additional Software Insertions	Total Savings
50	20	20(X) dollars
100	40	40(X) dollars
150	60	60(X) dollars

1.2 "A" LOADS AND "B" LOADS

Beginning in 1995, DMS-100 customers in North American markets will be able to choose between two types of PCLs-"A" loads with Generic Services Framework (GSF) services, and and "B" loads without GSF services. The first "A" and "B" loads will be released with NA004.

"A" loads employ the new GSF call-processing platform for most future advanced services, including:

- AIN 0.2 and later,
- National ISDN-2 and beyond,
- and most future development.

It will be possible for "A" load features to be developed on an accelerated development cycle as short as three months. "A" loads will be released with every new NA product release-approximately twice a year.

"B" loads benefit from the new layered software structure, but continue to use the current call-processing platform. "B" loads will be released about once a year-less often than "A" loads. "B" loads will not support GSF advanced services like NI-2 and -3, and AIN 0.2 and later, but will continue to meet the needs of customers without advanced-services requirements, delivering a more limited feature set as well as required regulatory features.

1.3 PCL NAMES AND ORDERING CODES

Each PCL is given a PCL name and corresponding Ordering Code that describes:

- The PCL's product type and market application
- Whether the load is a "A" load with advanced services on an enhanced call-processing platform (Generic Services Framework)-NA004 and later only
- The NA product release from which the PCL has been built

The PCL name consists of:

1) **PCL Definition.** Three letters of the alphabet that designate the specific DMS-100 PCL. Some examples of PCL definitions are:
   - **LEC** for United States local exchange carriers
   - **CDN** for Canadian local carriers
   - **LET** for US local exchange carriers' DMS-100/TOPS combos
   - **LTT** for Canadian local carriers' DMS-100/TOPS combos

2) **Load Designation.** PCL names up through NA003 will not have this character. Starting with NA004, each DMS-100 PCL will have either a "B"-meaning "B" load-or an "A"-meaning "A" load.

3) **NA Release.** The PCL name ends with three numerals that line up with the NA product release from which the PCL is built. This allows customers to easily map NA availability to availability in individual PCLs. Note that not every PCL may have a release associated with a particular NA release, some PCLs may "skip" numbers. For example, a "B" load for the US LEC market will be built from NA004 called LECB004. The next such "B" load will not be built until NA006-and it will be called LECB006. No "B" load will be built from NA005-therefore there is no "LECB005."

Table B. Examples of PCL Name Format

PCL Name	PCL Definition	Load Designation	NA Release
LEC002	LEC	None	002
LECB004	LEC	B	004
LECA004	LEC	A	004
CDN002	CDN	None	002
CDNB004	CDN	B	004
CDNA006	CDN	A	006

1.4 AVAILABLE PCL DEFINITIONS

The following PCL definitions are currently planned for general availability in North American markets. Other PCL defintions are currently under study. The "Ord. Code" column lists the eight-digit Ordering Code used to order the PCL.

Table C. Currently Planned PCL Definitions

NA001-NA003

PCL Name	Ord. Code	Market	Switch	A/B Load
LEC	LEC00xxx	US	DMS-100/200	N/A
CDN	CDN00xxx	Canada	DMS-100/200	N/A
LET	LET00xxx	US	DMS-100/200/TOPS combination (All features in LEC plus all features in TOPS product)	N/A
LTT	LTT00xxx	Canada	DMS100/200/TOPS combination (All features in CDN plus all features in TOPS product)	N/A

NA004 and Later

PCL Name	Ord. Code	Market	Switch	A/B Load
LECB	LEC0Bxxx	US	DMS-100/200	B
LECA	LEC0Axxx	US	DMS-100/200	A
CDNB	CDN0Bxxx	Canada	DMS-100/200	B
CDNA	CDN0Axxx	Canada	DMS-100/200	B
LTTB	LTT0Bxxx	Canada	DMS100/200/TOPS combination (All features in CDNB plus all features in TOPS product)	B
LETB	LET0Bxxx	US	DMS100/200/TOPS combination (All features in LECB plus all features in TOPS product)	B
LETA	LET0Axxx	US	DMS100/200/TOPS combination (All features in LECA plus all features in TOPS product)	A
LESA	LES0Axxx	US	DMS-100/200 STP combination (All features in LECA plus all features in STP product)	A

Other PCLs (Not Built from NA Product Releases)

PCL Name	Ord. Code	Market	Switch
TOPS	TOPS0xxx	Global	TOPS
STP	STP00xxx	Global	DMS-STP

1.5 PLANNED PCL RELEASE SCHEDULE

The following chart gives the planned general availability for the LEC PCLs (standalone DMS-100 for United States customers). Refer to the upcoming *Feature Planning Guide* for a complete rollout schedule for each PCL.

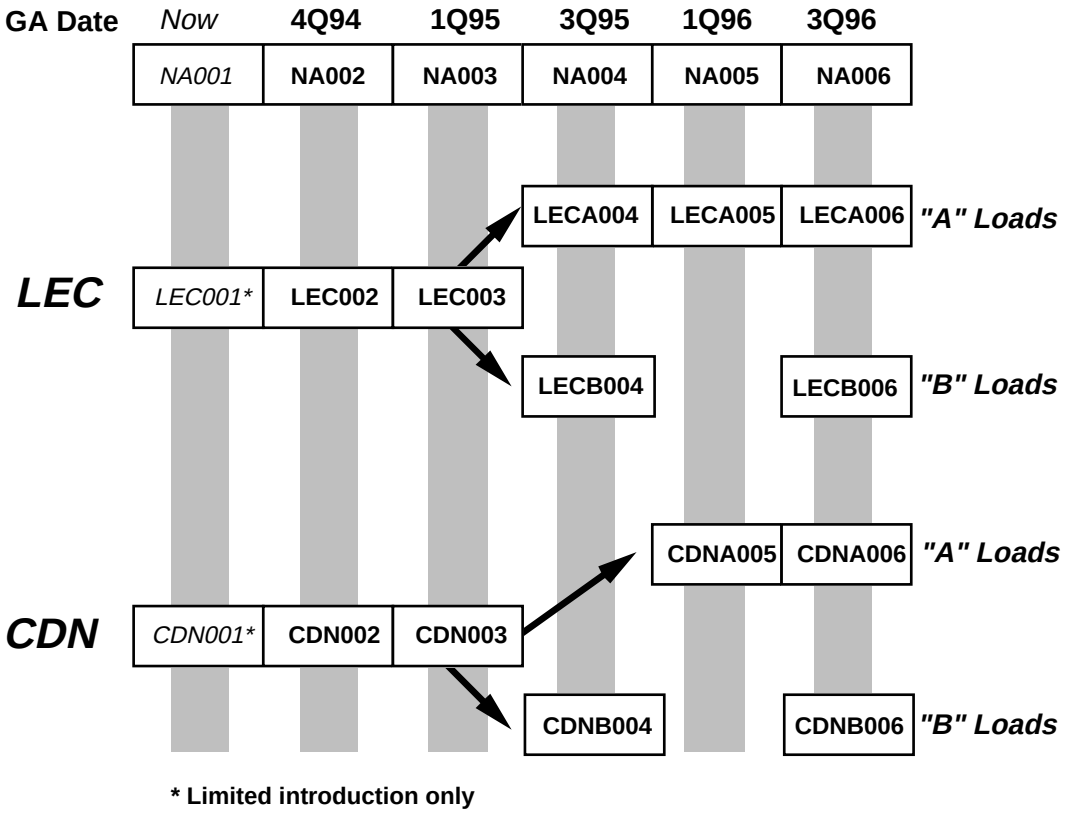

Figure 1. PCL Releases and NA Releases

1.6 PCLS AND SOFTWARE LAYERS

Part of software restructuring is the *layering* of DMS SuperNode software. Layers are relatively independent software modules with well-defined links to other modules, allowing the software to take advantage of object-oriented programming and other efficiencies for faster service development.

The customer does not need to consider software layers when ordering DMS-100 software. Each new PCL automatically includes the latest available features in each software layer-Base, Telecom, Product, and Market-as well as XPM software. Technically, though, a PCL is a combination of three major software components, each of which is developed on an independent schedule:

- **Communications Services Platform (CSP).** The CSP forms a software base common to all DMS SuperNode applications. The Base and Telecom Layers make up the CSP. A PCL does not contain XPM software, but XPM software is delivered with the PCL.
- **DMS-100 Common.** DMS-100 Common is the Product Layer, containing all the features shared by all DMS-100 applications.
- **North American DMS-100 (NA-100).** This is the Custom or Market Layer, containing the features that adapt the DMS-100 to serve North American markets. Other switch applications may use this layer as a Custom layer, for customer-specific features.

These terms may occur occasionally in technical descriptions, but they are not relevant to provisioning and ordering a switch. They simply represent partitioned modules in the switch that are developed separately by distinct BNR development groups.

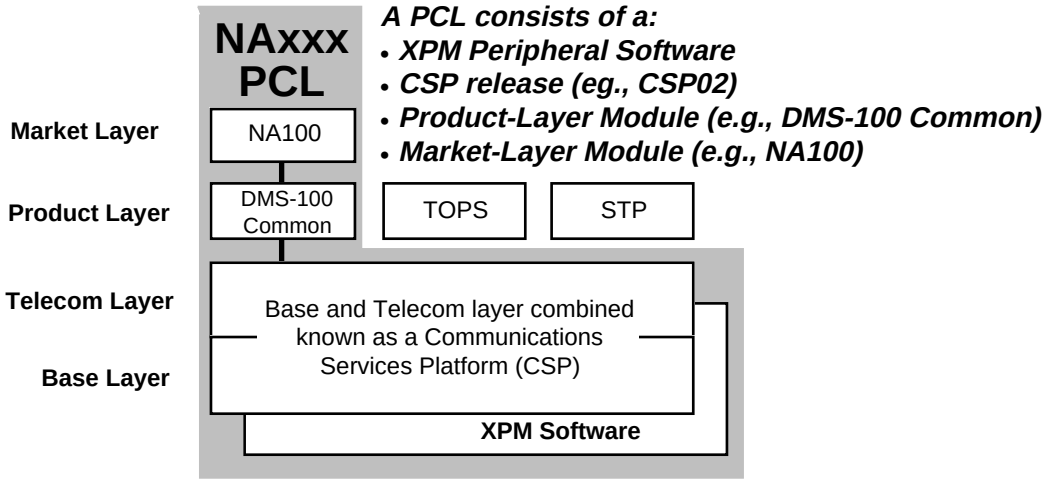

Figure 2. Layers in a Product Computing-Module Load (PCL)

2.0 Optional Features in a PCL

Each PCL contains many standard features as part of the PCL licensing fee. However, the customer can choose from many options within the PCL to tailor the service set and meet the operational requirements of the switch.

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

2.1 RIGHT TO USE FOR SWITCH OPTIONS

There are two ways to obtain the right to use the capabilities within an Ordering Code:

2.1.1 Commercial Option RTU

Initially, the Right-to-Use (RTU) for Ordering Codes will be granted as a Commercial Option. That is, the customer reports that it plans to use a capability and is billed accordingly. This can occur at provisioning time or any other time. Northern Telecom reserves to right to audit a customer's switches to verify the usage of Commercial Options.

2.1.2 Software Optionality Control (SOC) Options

Beginning with the TOPS003 release-and shortly thereafter for NA releases-Software Optionality Contol (SOC) options will begin to replace Commercial Options. SOC options will control access to the features represented by Ordering Codes depending on whether the correct "password" has been entered. SOC Options will prevent unintentional use of features, and assure that all options are engineered before activation.

Later, SOC options will be used to measure feature usage and circuit assignments as well.

SOC options can be ordered at any time, at provisioning or afterwards. If the customer decides to activate a SOC option after delivery, Northern Telecom will promptly supply a password on a switch-by-switch basis that will allow the feature to be activated.

2.2 ORDERING CODES FOR SWITCH OPTIONS

Each software option is designated by an Ordering Code. Typically, a new Ordering Code will contain the functionalities of several previous NTX packages. The number of options in a typical DMS-100/200 has been reduced from over 1500 NTX codes to under 200 PCL options, simplifying provisioning and ordering.

2.2.2 Example of a Software Product Structure

In the example below, the customer can license ACD BASE, COMPUCALL BASE, and/or ACD NETWORKING and receive a large group of features. The Ordering Code for each option is below the option name.

These groups can be further enhanced by ordering one or more additional options. For example, after ordering ACD BASE, the customer may choose to order ACD MIS and/or ACD ENHANCED to obtain an enhanced level of service. Note that there may be other software dependencies other than those implied by a chart like the one below.

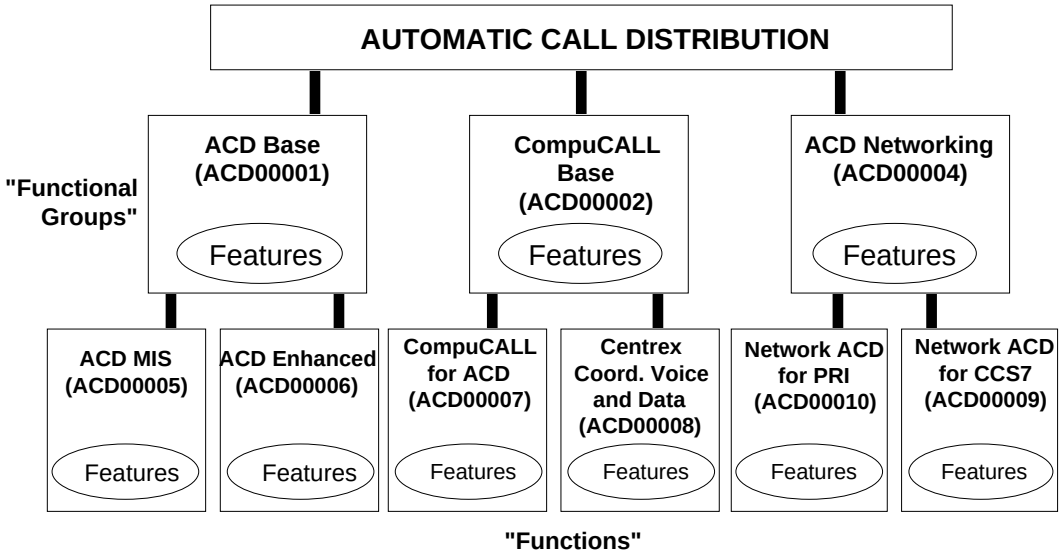

Figure 3. ACD Product Structure

In technical publications and ordering tools, first-level options in a PCL-such as ACD BASE. COMPUCALL BASE, and ACD NETWORKING-are known as **FUNCTIONAL GROUPS**. Options below Functional Groups are known as **FUNCTIONS**.

2.2.2 Ordering Code Format

After BCS36, the customer will license software by Ordering Codes rather than NTX package codes. The format is very similar to PCL Ordering Codes, consisting of the following elements:

1) **Service Identification.** Four characters identify the type of service to which the option belongs. Empty characters are filled with a "0" (zero). For example:

   - **ACD0** for Automatic Call Distribution (ACD) options
   - **MDC0** for Meridian Digital Centrex (MDC) options
   - **NI00** for National ISDN options

2) **Load Designation.** The fifth character is a "0" (zero) if the option is available in both "A" and "B" loads. If the option can only be licensed in an "A" load, the fifth character is an "A."

3) **ID Number.** The final three numerals have no special significance-they merely serve to uniquely identify the switch option.

Table D. Examples of Switch-Option Ordering Codes

Service	Service ID	Load Designation	ID Number	Load Type
Automatic Call Distribution (ACD)	**ACD0**	**0**	**003**	"A" and "B"
National ISDN	**NI00**	**A**	**042**	"A" only
National ISDN	**NI00**	**0**	**011**	"A" and "B"
Advanced Intelligent Network (AIN)	**AIN0**	**A**	**012**	"A" only

NOTE: *These Ordering Codes are given as examples only-they are not necessarily actual Ordering Codes*

2.3 HOW NTX CODES MAP INTO THE NEW STRUCTURE

Generally, the new Ordering Codes contain the capabilities previously divided among many related NTX packages. The charts below provide a sample of how the Automatic Call Distribution (ACD) product has been restructured. The shaded heading of each chart shows the Ordering Code and Name of each major ACD option (or Functional Group). Under that are listed the NTX packages that are included in the Ordering Code. If the Functional Group alone is ordered, the customer receives the capabilities previously contained in these NTX codes.

After ordering a Functional Group, the customer can often enhance the service by ordering one or more additional options. These Functions are in boldface, indented under the Functional Group that contains them. NTX packages included in the Function are then cross-referenced.

An *NTX-to-PCL Mapping* PSI will be delivered with the next *Feature Planning Guide* that maps every DMS SuperNode NTX package to the new PCL structure, and vice versa.

ACD00001 ACD Base

ACD00001 includes:

NTX407AB ACD CP Control
NTX415AA ACD Basic
NTX416AJ ACD Enhanced
NTX727AD ACD Load Management
NTXE09AB ACD on 2500 Sets

ACD00005 ACD Management Information System (MIS)
After ordering ACD00001, the customer can choose ACD0005, containing:
NTX991AF ACD Management Reports Two-Way Data Stream
NTXA52AB ACD Remote Load Management

ACD00006 ACD Enhanced
After ordering ACD00001, the customer can choose ACD0006, containing:
NTXP53AA ACD Access Feature Grouping
NTX419AA ACD PIN Configuration and Control
NTX420AA ACD Nodal Service Observing

ACD00004 ACD Networking

ACD00004 includes:

NTXE22AA ACD Supergroup

ACD00009 Network ACD on CCS7
After ordering ACD00004, the customer can choose ACD00009, containing:
NTXN46AA Network ACD on CCS7

ACD00010 Network ACD on PRI
After ordering ACD00004, the customer can choose ACD00010, containing:
NTXN47AA Network ACD on PRI

ACD00002 CompuCALL Base

ACD00002 includes:

NTXJ59AC CompuCall Base

ACD00007 ACD CompuCALL

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

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

ACD00008 Centrex Coordinated Voice and Data

After ordering ACD00004, the customer can choose ACD00008, containing:

NTXR89AA Centrex Coordinated Voice and Data

Acronyms and Definitions

"A" Loads PCLs that will contain advanced services on an enhanced call-processing platform (Generic Services Framework). The first "A" load will be generally available in 4Q 1995.

"B" Loads PCLs that use the current call-processing platform and do not include advanced services on the Generic Services Framework (GSF).

BCS Batch Change Supplement (now replaced by PCLs).

CDN A PCL definition for DMS-100/200s in Canada.

Commercial Option A method of licensing RTU for an Ordering Code by reporting intent to use the features in a Code to Northern Telecom.

Communications Services Platform (CSP) The CSP forms a common software base for all DMS SuperNode applications. The Base and Telecom Layers make up the CSP. Not a commercial term.

CSP Communications Services Platform.

Function The second level of optionality in a PCL.

Functional Group The first level of optionality in a PCL.

LEC A PCL definition for DMS-100/200s in the United States.

LES A PCL definition for DMS-100/200/STP in the United States.

LET A PCL definition for DMS-100/200/TOPS in the United States.

LTT A PCL definition for DMS-100/200/TOPS in Canada.

NA Denotes the North American DMS-100 product release.

NA-100 North American DMS-100. The development stream for all DMS-100/200 features in North America.

North American DMS-100 The development stream for all DMS-100 features in North America.

NTX	The Product Engineering Code (PEC) prefix previously used to refer to orderable software packages in the DMS SuperNode. Now replaced by eight-digit Ordering Codes.
Ordering Code	The eight-digit code used to order PCLs and their options.
PCL	Product Computing-Module Load.
Product Computing-Module Load (PCL)	A PCL consists of features selected from the NA development stream software product intended for a particular DMS SuperNode application in a particular market. Every PCL with the same name is the same in terms of software content.
Right to Use (RTU)	The ability to use a feature in the DMS SuperNode because license fees have been paid (based upon its use being reported to Northern Telecom or a SOC option having been activated).
RTU	Right to Use
SOC	Software Optionality Control
Software Optionality Control (SOC)	A tool in the DMS SuperNode that will allow or deny access to capabilities depending on whether a "password" has been entered. Also will be used to monitor usage of a feature.

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