NORTEL NETWORKS

2002

DMS-100 Family

QUICK REFERENCE GUIDE

TAM-1001-018

Standard 09.01

August 2002

YOUR GUIDE FOR:

- **Commonly used DMS CI: level commands**
- **Commands for TABLE EDITOR, SFDEV, DMSSCHED SPMS, TABAUDIT, DMSMON, TRAVER, DISPCALL, SHOWAUD, LOGUTIL, DLOG, CLASS, DISKUT, DSKUT, PRSM, OMs, SOC, AFT, RASL, AUTOMATIC IMAGE DUMP, and SDM UNIX commands**
- **Quick references for AIN, CCS7, LNP, ISDN, CLASS, ACD-MIS, CC MIS, SMDI, CompuCALL, Remotes, DMS-250, STP Broadband, SDM, SPM, and Centrex IP**
- **Tier II support tools for XPMIST, DEBUG, ISDN Q931, SPM PRI Q931, ACDDEBUG, TERMTRACE, C7TU, CALLTRAK, XPMTRAK, CMINFO, and REMLOGIN**
- **Quick references for NTPs, IMs, and other documents**
- **Product Engineering Codes (PECs) for circuit packs**
- **Hardware shelf diagrams with circuit pack locations**
- **Circuit pack descriptions section**
- **SuperNode, XPM, and other diagrams**
- **XPM/DTC port and link mapping diagrams**
- **TOPS hardware including IP-XPM Gateway**
- **TOPS MPX/IWS & Attendant Console keyboard layouts**
- **DPP/BMC hardware and DPP commands**
- **SuperNode, SPM, XA-Core, and other hardware**
- **RTIF commands and procedures**
- **DIP switch settings for 6X21, 6X50, and 6X85 DS1 cards**

Please read before using

The *2002 DMS-100F Quick Reference Guide* provides a quick reference for commonly used commands, utilities, tools, hardware, and other job-supporting information. The intent of this document is not to replace Nortel Networks Technical Publications (NTPs) and other supporting documents. Its purpose is to consolidate as much usable job-related information as possible into a small pocket-size document for quick reference and on-the-job use.

The *2002 DMS-100F Quick Reference Guide* is intended for both Tier I and Tier II support users. Tier II support tools are segregated in an area near the back of the guide. Since the misuse of these tools could impair service, they should only be used by technicians that have been trained in their use.

When there is a question about the technical accuracy of this document and its contents, the NTPs and other supporting documents have the final authority. Where possible, the information in this guide makes references to NTPs and other supporting documents. Those documents should be referenced for **warnings**, **cautions**, and other **advisory** information that may not exist in this guide due to the limitation of space.

Hardware displayed in this document provides examples for reference to circuit pack slot locations. For most of the examples, the vintages (releases) of various packs are not shown due to space limitations. Hardware examples may not be exactly as your office is provisioned due to optional pack assignments and the quantity of circuits equipped. For a list of packs and their vintage application, reference the PEC Code list and the circuit pack description area of this guide. Other supporting information can be found in the DMS-100F Baseline Report and NTP 297-8991-805.

Some of the hardware listed within this guide has been manufacture discontinued (MD'd). It has been left in the guide to support MD'd hardware that is inservice, and in most cases, still supported.

For customers to order copies of this document within North America, call toll free 1-877-662-5669 (Option 2, then Option 1). Nortel employees can order copies through Internal Distribution or through the Documentation Ordering Tracking System (DOTS) (see IDS Home Page at http://zrtps08m.us.nortel.com/).

Any customer comments, suggestions, or corrections should be made through your Nortel Networks Regional Support Center.

2002

DMS-100 FAMILY

QUICK REFERENCE GUIDE

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WHAT'S NEW OR CHANGED FOR THIS ISSUE

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- Removed PATCHER information.
- At Nortel's request, removed UE9000 and AccessNode Products.

Revision History

Issue	Date	Cover Color
01.01	**December 1993**	**White**
02.01	**May 1995**	**Blue**
03.01	**March 1996**	**Green**
04.01	**January 1997**	**Brown**
05.01	**January 1998**	**Black**
06.01	**January 1999**	**Light Gray**
07.01	**January 2000**	**Red**
08.01	**February 2001**	**Spanish Maroon**
09.01	**August 2002**	**Dark Green**

Table of Contents

Abbreviations and Acronyms

(*NTP 297-1001-825, Glossary of Terms & Abbreviations Ref Manual*)

ACD	Automatic Call Distribution
AIN	Advanced Intelligent Network
AMA	Automatic Messaging Accounting
ASCII	American Standard Code for Information Exchange
CALLTRAK	Call Tracing
CC MIS	Call Center - Management Information System
CLASS	Custom Local Area Signaling Services
CCS7	Common Channel Signalling No. 7
C7TU	CCS7 Test Utility
CM	Computing Module
DCM	Digital Carrier Module
DISPCALL	Display Call
DLM	Digital Line Module
DPP	Distributed Processing Peripheral
DSNE	Double Shelf Network
DTC/DTCI	Digital Trunk Controller/Digital Trunk Controller ISDN
DMS	Digital Multiplex System
DISKUT	Disk Utility (SLMs)
DRAM	Digital Recorded Announcement Machine
DSKUT	Disk Utility (DDUs)
DTM	Digital Trunk Module (EDRAM peripheral module)
EBS	Electronic Business Set
EDRAM	Enhanced Digital Recorded Announcement Machine
ENET & JNET	Enhanced Network and Junctored Network
GPP	Global Peripheral Platform (International)
CPM	Common Peripheral Module
IOC & IOM	Input Output Controller and Input Output Module
ISDN	Integrated Services Digital Network
ISM	Integrated Services Module
ISN	Intelligent Service Node
IPE	Intelligent Peripheral Equipment
ISUP	ISDN User Part
LCM & LCMI	Line Concentrating Module / LCM ISDN
LGC & LGCI	Line Group Controller / Line Group Controller ISDN
LIU7	Link Interface Unit (SS7)
LM & RLM	Line Module and Remote Line Module
LMS	Local Message Switch
LNP	Local Number Portability
LRN	Location Routing Number
LTC & LTCI	Line Trunk Controller and Line Trunk Controller ISDN
MAP	Maintenance and Administration Position
MD	Manufacture Discontinued
MS	Message Switch
MSM	Message Services Module (DMS Voicemail)
MTM	Maintenance Trunk Module
NTP	Nortel Networks Technical Publication
OPM	Outside Plant Module
PCL	Product Computing-module Load
PEC	Product Engineering Code
PRSM	Post Release Software Manager (Replaced PATCHER)
QRG	Quick Reference Guide
RCC	Remote Cluster Controller
RCC2	Remote Cluster Controller 2 (Remote Switching Center)
RLM/RLCM	Remote Line Module/Remote LCM
RMM	Remote Maintenance Module
RSC/RSCI	Remote Switching Center/RSC ISDN
SCP	Service Control Point
SLM	System Load Module
SMDI	Simplified Message Desk Interface
SMA	Subscriber Carrier Module-100A Access
SMR	Subscriber Carrier Module-100R Remote
SMR-RCT	SMR-Remote Concentrating Terminal
SMS	Subscriber Carrier Module-100S (SLC-96)
SMU	Subscriber Carrier Module-100 Urban
SNSE	DMS SuperNode Small Exchange
SPM	Spectrum Peripheral Module
SP/SSP	Signalling Point/Service Switching Point
STM	Service Trunk Module
STP/SSP	Signalling Transfer Point/Service Switching Point
STP	Signalling Transfer Point
TAM	Technical Assistance Manual
TOPS	Traffic Operator Position System
TOPS IWS	TOPS Intelligent Work Station
TOPS MPX	TOPS MPX (Provides Dir. Assist. and Intercept Services)
TOPS-TPC	TOPS-Terminal Position Controller
TMS	TOPS Message Switch
TRAVER	Translation Verification
XPMIST	XPM Intercept System Test

Nortel Networks Technical Publications

(*NTP 297-8991-001, DMS-100 Product Documentation Directory*)

Note: See NTP 297-8991-001 for a list of Nortel Networks Technical Publications (NTPs). Also, see NTP 297-8991-002, *Cancellation Cross Reference Directory* for a cross-reference list of canceled and replacement documents.

DMS-100F Documentation Numbering

DMS-100F NTPs are identified by a ten-digit number (XXX-YYYY-ZZZ) that is divided into three blocks. The document division number, XXX, denotes the system. For the purpose of this QRG, only the 297 division number is used:

• 297 = Digital Multiplex System (DMS)

The document layer number, YYYY, denotes the Product Computing-module Load (PCL) or product name. Within the documentation structure, the document layer number is dependent upon the PCL number for the specific software load. Following is a list of DMS-100F layer numbers and their products even though some are manufacture discontinued (MD):

PCL Layer #	PCL Name or Product Name
0201	NA Service Priority Classifications Descriptions
1001	DMS-100 Family
1003	NAV Family Audiogram Delivery System
1011	DNC-50, DNC-100, DNC-500 Dynamic Net Cont Systems
1021	Network Operations Systems Station Detail Server DNC-50
1091	NAV Family Applications Vehicle
1301	DMS-100F TOPS Voice Service Node
1421	DMS-100F Subscriber Services
1771	DMS Spectrum Peripheral Module (DMS-SPM)
2011	Meridian Business Sets
2013	NAV Family PowerView Services
2031	DMS-100 Family Attendant Console
2041	DMS-100 Family Automatic Call Distribution (ACD)
2061	DMS-100 Family Customer Data Change
2071	DMS-100 Family MDC Station Message Detail Recording
2081	DMS-100 Family MDC ACD-MAX 3.5
2101	DMS-100 Family Remote Line Module (RLM)
2121	DMS-100 Family Line Engineering Guidelines (DataPath)
2211	DMS-100F Automated Directory Assist. Service (ADAS)
2251	DMS-100 Family TOPS Intelligent Work Station (IWS)
2271	DMS-200 TOPS 04 (Canceled)
2281	DMS-100 Family TOPS MP
2291	DMS-100 Family TOPS MPX
2401	DMS-100F Integrated Services Digital Network (ISDN)
2451	DMS-100 Family Digital Network Termination Eng/Guides
2461	DMS-100F DMS SuperNode Dialable Wideband Services
2667	DMS-100F SDM Carrier User Guide
2671	DMS Call Center Management Information Sys (CCMIS)
5001	DMS-100F DMS SuperNode & DMS SuperNode SE
5051	DMS-100F SuperNode Data Manager (SDM)
5061	DMS-100 Family SDM Troubleshooting and User Guides
5111	DMS-100F DMS SuperNode DataSPAN Frame Relay Serv
5151	DMS-100 Family E800 SSP toll-free numbers
5161	DMS-100 Family Advanced Intelligent Network Essentials
6201	DMS-10/DMS-100 Billing Media Converter II
7001	DMS-10/DMS-100 DMS VoiceMail
8001	U.S. Stand-alone DMS-100/200
8021	U.S. DMS-100/200 TOPS Combination
8063	DMS-100 Family 1 Meg Modem Services Network
8081	DMS-200 Translations
8091	DMS-100 Wireless
8101	Signaling Transfer Point (STP) Base
8111	Signaling Transfer Point MDR7
8121	STP Signaling Engineering & Administration Sys. (SEAS)
8211	Outside Plant Access Cabinet (OPAC)
8221	Remote Switching Center (RSC)
8223	DMS-100F Remote Switching Center Multi-Access
8231	Subscriber Carrier Module-100S (SCM-100S)
8241	Subscriber Carrier Module-100 Urban (SCM-100U)
8251	Subscriber Carrier Module-100 Access (SCM-100A)
8253	Subscriber Carrier Mod-100 Access (MVI-20) (SCM-100A
8261	RSC-SONET Model A (DS1)
8263	SCM-100A Maintenance Manual (SCM-100A)
8271	RSC-SONET Model A (PCM30)
8281	RSC-SONET Model B (DS1)
8291	RSC-SONET Model B (PCM30)

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8301 Subscriber Carrier Module-100S Remote (SCM-100SR)
8321 Extended Peripheral Module (XPM) (DS1)
8331 Extended Peripheral Module (XPM) (PCM30)
8341 TOPS Message Switch
8351 RLCM Manual
8361 Outside Plant Module (OPM)
8353 Star Remote System
8403 Operator Services System AIN (OSSAIN)
8411 TOPS (Stand-alone US) (USTOPS)
8421 TOPS (Stand-alone Canadian) (CDNTOPS)
8441 DMS-100F Global TOPS Solo
8501 DMS SuperNode Service Control Point (SCP) II
8531 Network Switching Systems Advanced Intelligent Network
8601 DMSGL002 DMS Global
8981 North American common
8991 PCL common, miscellaneous, & documentation directories

Key Numbers

The last three digits of the NTP, ZZZ, denotes the type of NTP and is called the key number. The following table lists NTP types and their associated key number. It includes all currently used PCL and XPM key numbers.

NTP Type	Key Number
Translations Guide	350
Alarm and Performance Monitoring Procedures	543
Trouble Locating and Clearing Procedures	544
Recovery Procedures	545
Routine Maintenance Procedures	546
Card Replacement Procedures	547
XPM Maintenance Manual (remotes only, layers 8201 - 8353)	550
Peripheral Module Software Release	599
Feature Description Manual	801
Hardware Description Man. (layer 8991 only)	805
Service Order Reference Manual	808
XPM Operational Measurements Reference Manual (remotes only, layers 8201 - 8331)	814
XPM Translations Reference Manual	815
Log Reports Reference Manual	840
Office Parameters Reference Manual	855
Software to Data Cross-Reference	856

NTP 297-1001-ZZZ DMS-100 Family Documents

Electrostatic Discharge Protection 297-1001-010
DPP Product Guide 1001-019
Maintenance System Maintenance Guide 1001-106
Maintenance and Administration Tools 1001-107
Cabinetized Misc Equip Cabinet Planning & Eng Guide 1001-109
Magnetic Tape Reference Manual 1001-118
AMA NT Format 1001-119
Automatic Trunk Testing (ATT) Description 1001-121
Alarm System Description 1001-122
Journal File Description 1001-127
Input/Output System Reference Manual 1001-129
Synchronous Clock System 1001-130
Ringing System Description 1001-131
Blue Box Fraud Detection Feature Description 1001-132
Trunk Selection and Compatibility 1001-152
Peripheral and Trunk Group/Line Group Assignments 1001-155
Power Distribution and Grounding Guide 1001-156
Grounding Audit Procedures 1001-158
Disconnect on the DMS-100 1001-190
DMS-100F Basic Administration Procedures 1001-300
SuperNode Conversion Procedures 1001-302
ONP - HYBRID Software Application Procedures 1001-303
Capacity Administration Guide 1001-304
Memory Administration Manual 1001-305
Loading Administration Manual 1001-306
Service Problem Analysis Administration Guide 1001-318
SPMS Application Guide 1001-330
DPP Administration Guide 1001-331
Device Independent Recording Peripheral (DIRP) Guide 1001-345
Power - Grounding Routine Maintenance Manual 1001-350
Basic Translations Tools Guide 1001-360
Network Management System Reference Manual 1001-453
Maintenance System Human-Machine Interface 1001-520
Automatic Board-To-Board Testing Reference Manual 1001-522
Remote Data Polling System 1001-524
Data Packet Controller Reference Manual 1001-525

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Disk Maintenance Subsystem Reference Manual 1001-526
DRAM Maintenance Reference Manual 1001-527
Conference Reference Guide 1001-530
CCS7 Maintenance Reference Manual 1001-531
Bit Error Rate Performance Testing 1001-533
Maintenance Managers Morning Report 1001-535
DPP Hardware Component Replacement Guide 1001-539
DPP Quick Reference Guide 1001-544
DPP Commands and Messages Guide 1001-545
NORESTARTSWACT / MTCSWACT User Guide 1001-546
DPP Maintenance Procedures Guide 1001-547
Bellcore Format AMA Maintenance Guide 1001-570
Input/Output Maintenance Guide 1001-590
Networks Maintenance Guide 1001-591
Peripheral Module Maintenance Guide 1001-592
External Devices Maintenance Guide 1001-593
Lines Maintenance Guide 1001-594
Trunks Maintenance Guide 1001-595
Feature Description Manual 1001-801
Non-Menu Commands Historical Ref. Manuals V1 - V4 1001-820
Menu Commands Historical Reference Manuals V1 - VA 1001-821
Commands Reference Manual 1001-822
Glossary of Terms and Abbreviations Reference Manual 1001-825
Bellcore Format AMA Reference Guide 1001-830
Log Report Reference Manual 1001-840

Other NTP & PLN PCL Common & Misc. Documents

LRN - LNP Service Implementation Guide 297-8981-021
One Night Process (ONP) Service Implementation Guide 8981-022
NT Access User Guide 8981-301
NA DMS-100 PM Software Release Document 8981-599
DMS-10 – DMS-100 Product Documentation Directory 8991-001
DMS-10 – DMS-100 Cancellation Cross-Reference Dir. 8991-002
LIU7 External Routing Activation Guide 8991-030
DMS SN STP/SSP IN Functionality Desc Ref Manual 8991-100
Product Computing Module (PCL) Generic Traffic Tables 8991-101
Cost of Ownership Reduction Feature Specification 8991-110
One Night Process (ONP) Software Delivery Procedures 8991-303
ONP SNSE to SuperNode/ENET Conversion 8991-304
Software Delivery XA-Core Maintenance Manual 8991-307
DMS-100F Maintenance & Operations Manual 8991-500
XA-Core Maintenance Manual 8991-510
XA-Core Maintenance Guide 8991-511
Post-Release Software Manager (PRSM) Reference Guide. 8991-540
DMS-100 Family PRSM Basic Reference Guide 8991-541
DMS-100 Family PRSM Quick Reference Guide. 8991-542
Common Channel signaling 7 (CCS7) Maintenance Manual 8991-545
DMS SN STP/SSP Integrated Node Conversion Guide NMA7 8991-580
DMS SN STP/SSP Integrated Node Conversion Guide 8991-582
EDRAM PM Software Release Document Voice Files 8991-597
Enhanced DRAM (EDRAM) PM Software Release Document 8991-598
EDRAM PM Software Release Document & Voice Files 8991-599
Hardware Reference Manuals V1 through V5 8991-805
XA-Core Reference Manual 8991-810
Command Interface Reference Manual (Aug 1999) 8991-824
Software Optionality Control User Manual 8991-901
Software Navigation System User Guide 8991-902
High Speed Link Cutover Guide 8991-906
Ethernet Interface Unit User Guide 8991-910
US GETS HPC Feature Guide 9501-001
USNBD Feature Guide 9801-300
DMS-100 Feature Description Manual PLN-1001-003
TOPS MPX Technical Specification PLN-2291-001
DMS SuperNode Technical Specification PLN-5001-001
SDM0010 PCL Rel Doc PLN-5051-004
Provisioning Manuals PLN-8991-104

Technical Assistance Manuals (TAMs)

Listing of TAMs TAM-1001-000
TAS Non-Residential Enhanced Services Tool Listing TAM-1001-001
DISPCALL User Guide TAM-1001-003
PMDEBUG User Guide TAM-1001-004
PMIST User Guide TAM-1001-007
DEBUG User Guide TAM-1001-008
Data Layout Manual Reference Manual TAM-1001-011
CALLTRAK User Guide TAM-1001-012
MPCDEBUG Central Control Data Analyzer User Guide TAM-1001-013
SCANLOG User Guide TAM-1001-014
C7TU User Guide TAM-1001-014
Super Nonresident Tool Listing TAM-1001-016
Automatic Message Accounting (AMA) User Guide TAM-1001-017
DMS-100F Quick Reference Guide TAM-1001-018
DMS-100F Debug System Field Service User Manual TIG-3401-004

Installation Documentation

Note: The following table of contents for installation methods references all the methods modules. However, due to space, only the methods for "Module 24 *Equipment Loading and Diagnostics*" and "Module 28 *Routine System Level Testing*" are provided.

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5638	Commissioning of the Input Output Module (IOM)
5682	Meridian Service Module (MSM) Stand-Alone/CPE Centrex and Operational Installation
5771	Application Processor Cab. (APC) Loading & Diag. Tests
5776	TOPS VSN Load and Boot System
5777	TOPS VSN System Access
5778	TOPS VSN - Display or Test Status of SRU, PRU, or RRU
5812	Network Appl. Vehicle (NAV) Commissioning Procedures
5941	SS7/IP Gateway 2.0 Installation and Commissioning
6114	PC/Office RTIF for XA-Core
6120	SLM Data Transfer for SuperNode SE Upgrades
6123	XA-Core Cutover Software Loading
6129	MS Boot Testing for SN CM/SLM to XA-Core Upgrades
6132	SLM Data Transfer for SN CM/SLM to XA-Core Upgrades
6133	MS Boot Testing for SNSE CM/SLM to XA-Core Upgrades
6547	TOPS Message Switch (TMS) Digital Trk Card Diagnostics
6577	Remote Peripheral Module Diagnostic Tests
6750	SPM Physical Installation and Commissioning
7920	Alarm Verification Test - RLCM
7960	Alarm Verification Test - OPM or OPM256
9530	IOC to IOM Datafill
9701	XPM Commissioning Guide
9702	LCE/LCEI Commissioning Guide (Automated Test Only)

MODULE 26 OEM VENDOR MODULE

MODULE 28 ROUTINE SYSTEM LEVEL TESTING:

Method #	**Title**
0208	Remote Maintenance Control Feature Tests
0232	OPAC Power and Environmental System (PES) Tests
0355	Digital Recorded Announcement Machine (DRAM) Tests
0366	Alarm Testing
0380	Emergency Action Procedure
0405	TGA Users Guide
0410	Test Line Operational Tests
0426	Scan and Signal Distribution Point Test
0443	RLCM/OPM/OPAC Operational Tests
0446	Installation Operational Measurement Setup
0449	SCM-100R Interface Tests
0451	Outside Plant Module (OPM) Power & Enviro. Tests
0454	SMS Interface Tests
0457	SMU/ESMU Interface Tests
0461	Tones and Announcements
0472	ROTL (Remote Office Test Line) Tests
0475	Fault Location Tests
0482	Remote Assessment Test
0483	Assessment Tests for DMS-100 Family Offices
0487	Mini-Frame User Guide
0829	Stratum II Synclock Feature
904.2	RLCM/OPM ESA
1437	S/DMS Billing Server Application Commissioning
1575	Providing Service for ISDN Terminals
1587	EDRAM & CTM Installation & Testing for Meridian Cab.
2123	TOPS Tone & Scrambler Circuit
5005	RSC/RSC-Sonet Operational Tests
5064	DataSpan Frame Relay Traf. Generated Operational Testing
5065	ENET - System Integrity Test (E-SIT)
5066	SOS Traffic Generator Users Manual
5135	Conference Trunk Module (CTM) Installation and Testing
5163	#7 Message Generator Traffic Simulator (MGTS)
5168	Signaling Transfer Point Assessment Test
5250	CompuCALL System Test
5472	Alarm Testing for NTNXxxxx Style Cabinets
5501	ISDN BRI Operational Tests
5503	Installation and Upgrade of the NT1X89 (E)MPC Card
5575	TOPS MPX NT DA AOSS Stand-Alone Tests
5576	TOPS IWS Stand Alone Tests
5623	Synchronization Feature Tests - DMS-SuperNode
5645	CCS7 Loopback Tests
5690	TOPS MPX Audio Board Level Tests
5765	TOPS MPX Stand-Alone Tests
5767	TOPS MPX Transmission Tests
5768	TOPS MPX Operational Test
5772	TOPS MPX Toll and Assist Stand Alone Tests
5779	TOPS VSN - Remove/Restore Service for SRU/PRU/RRU
5780	TOPS VSN - Operational Tests
5781	TOPS VSN Spare Circuit Pack Testing
5811	Message Delivery System (MDS) Commissioning

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6149 Spares Testing for the XA-Core
6553 Ameritec AM1 ISDN Bulk Call Generator
6556 SCM Remote Transfer Guide
6558 Subscriber Module SLC-96 Remote (SMSR) NT6X02PD
6562 Ameritec AM1 SPA/SPD Bulk Call Generators
6564 TOPS MP Stand Alone Tests
6565 TPC Administration
6566 TOPS MP Computer Assisted Training
6567 TOPS Multipurpose Pos. (TOPS MP) Transmission Tests
6568 Digital Multiplex System TOPS MP Operational Tests
6569 TOPS MP Equal Access Feature Tests
6570 TOPS MP AMA Tape Tests
6571 TOPS MP Automatic Coin Toll Service (ACTS) Tests
6572 TOPS MP Sw. Sys. for Miscellaneous Call Type & Features
6573 Test for Misc. TOPS MP Terminals & Alarm Conditions
6574 DMS TOPS MP Assessment

MODULE 30 TURNOVER
MODULE 35 SYS. GROWTH
MODULE 47 DY-DOCS
MODULE 53 REMOVALS
MODULE 65 UPGRADES
MODULE 68 RETROFITS
MODULE 70 REGRADE
MODULE 72 REHOMES
MODULE 74 CONV. APPL.
MODULE 76 HOTSLIDES
MODULE 78 CUTOVERS
MODULE 80 GEN. SERVICES

Software Optionality Control (SOC)

(*297-8991-901, DMS-100F Software Optionality Control User Manual*)

Software optionality control (SOC), part of the DMS Evolution product delivery process, facilitates the definition and delivery of product computing module loads (PCL). Once the new PCL is loaded, all the features it contains can be activated by the customer as needed without a software reload. The user interface for SOC consists of SOC level commands on the MAP terminal. The **ASSIGN**, **SELECT**, **DBAUDIT** and **REMOVE** commands on the SOC level allow you to:

- assign right-to-use (RTU) to an option.
- remove RTU from an option.
- assign a usage limit to an option.
- assign RTU or usage limits to a group of options using a key code file.
- assign the on or idle state to an option.
- assign a warning threshold to a usage option.
- generate a report about one or more options in a PCL.
- perform an audit of the SOC database.

SELECT command

This command displays information about options. There are several types.

>**SELECT <select_type> <value> [<report_type>]**

>**SELECT ALL [<report_type>]**

DBAUDIT Command

This command performs a detailed audit and reports any internal database inconsistencies as well as any discrepancy between a database value and a feature's reported value.

ASSIGN RTU & REMOVE RTU commands

When an operating company purchases a state option, Nortel gives the operating company a password called a key code for the option. Once the key code is known, the ASSIGN RTU command can be used to grant the operating company permission to change the state of the option. The REMOVE RTU command allows operating company personnel to remove the right-to-use (RTU) from a state option.

DMS CI: Level Commands

(*NTP 297-1001-820, 821, or 822, Command Reference Manual*)
(*NTP 297-1001-129, Input/Output System Reference Manual*)

Note: Use >**HELP <command>** to get more details of the following CI: level commands, except for some like the **ABORT** command.

>**ABORT** use if difficulty is experienced with using a command.

>**CALLDUMP** outputs billing records using same format as AMADUMP

>**CLLIREF** use parameter MEMBERLESS to search for CLLIs in table TRKGRP against table TRKMEM CLLIs. Use SEARCH parameter to search for CLLI(s) in all or specified tables.

>**CLLIRBT** use to scan for differences between table CLLI and CLLIMTCE or between TRKMEM and CLLIMTCE sub-table DIAGDATA. Generates DFIL106 log if problems.

>**COMMAND <x>** (full command name)
used to create user defined commands to simplify routine or repetitive input tasks.
(i.e., COMMAND T (TABLE)). T is now TABLE

>**CPSTAT** display of SuperNode switch activity.

Example of CPSTAT results for a SuperNode:

```
CATMP/HR CPOCC AUXCP CPAVAIL ENGLEVEL ENGPARM CCOVRLD
     840    2%     0%    79%     BELOW      77%      OFF

SCHED FORE MAINT DNC  OM  GTERM BKG NETM SNIP IDLE
  13%    1%    6%   0%   1%    0%  33%   0%    0%  46%
```

>**CAPCI** display of XA-Core switch activity.

Example of CAPCI results for a XA-Core:

```
CATMP/HR UTIL ENGCATMP MAXCATMP COMPLEX ENGLEVEL CCOVRLD PESC
       0   0%       --       --      --    BELOW      OFF   NO
```

Do Not Disturb (DND) Queries:

>**DND STATUS** displays next wakeup time (table DNDSCHED).

>**DND DISPLAY <custname> <disprange> {DN7D <dn>, GRPNO [<group> {1 to 63}], ALLGRPS, INTERVAL}**
displays individual DN or group data.

>**DTDETECT** command to activate digitone fraud program. Suggest using this program after a restart to prevent no-dial-tone customer reports from customers that are not supposed to have digitone phones.

>**EXPAND** use to uncompress files.

>**ERASE** deletes a symbol from the user's directory (i.e., ERASE T to erase command named "T").

>**FILECLOSE <filename> <device>** closes a specified store file/device.

>**FINDTAB** Finds all tables which begin with a specific set of letters. The output indicates the table's position in the DART table, the dump and restore method and the complete table name.
(i.e. >**FINDTAB OFC** will find all tables beginning with OFC.

>**FINDREF <table name> <key> [filename] [device]** a searching tool that finds all tuples that reference a specific owner tuple. Use >**FINDREF LISTTABLES** to display a list of owner tables which the **FINDREF** command can be run against.

>**FORCEOUT <username>** used to force out a user.

>**HELP <x>** used with a command name (x) to display command syntax and parameter information, or a list of subcommands.

Keyboard Shortcuts:

<ctrl>E	deletes from current cursor position to end of line.
<ctrl>F	moves cursor forward one character.
<ctrl>I	used to insert at the current cursor position.
<ctrl>J	line feed.
<ctrl>M	enter.
<ctrl>U	erases line.
<ctrl>X	exits insert mode.
?	entering '?' displays the last line input (up to 3 lines).

>**LISTSF INFO ALL** finds store file owner.

>**LISTST** use at MAP levels to get a list of directories, then use the **PRINT <dir>** command to get list of hidden commands.

>**LISTVFGS <customer name or VFG name>**
use to get a list of VFG members and their status.

>**LTCCH** can be used to obtain detailed information on the usage of channels on both the C-Side and P-Side of certain host XPMs. Use Q LTCCH to get command syntax.

DMS CI: Level Commands continue on the next page.

>**MAPCI NODISP** use to suppress the MAP level display.

>**MSG** sends a message to another user (i.e., MSG NTAS 'Hello').

>**NAG** Node Assessment Graph (NAG) is an hourly snapshot of equipment status, REX, and overload (see NAG400 log).

>**PERMIT** defines a new valid user and assigns parameters.

>**UNPERMIT** removes an existing user.

>**PRIVCLAS** adds, deletes, or changes, the privilege class(es) for specified command(s) or program module(s).

>**OMPRDUMP** Request OMPRSPEC reports from the OMTAPE data.

Query Commands:

>**QCUST** retrieves information about all the lines associated with one or more customer group(s).

>**QDN dn** displays information about a subscriber line.

>**QDNWRK** displays a range of working lines using directory #'s.

>**QGRP** display various equipment groups using DN or LEN.

>**QHASU** display hardware assigned and software unassigned.

>**QHLR** displays DN in HLR for mobility numbers.

>**QLEN len** displays information about a subscriber line.

>**QLEN dn** displays complete information about a subscriber line.

>**QLENWRK** used to query a range of working lines using LENs.

>**QMADN** display Multiple Appearance Dir. Number (MADN).

>**QPDN** list ported in and out DNs and ported DNs of a single NPANXX

Note: The following QUERYCM and QUERYMS commands are dependent upon table PECINVs datafill being current.

>**QUERYCM** hidden command off the CM MAP level used to query information on CM hardware. Use HELP QURYCM.

>**QUERYMS** hidden command off the MS MAP level used to query information on MS hardware. Use HELP QUERYMS.

>**QUSER** displays a list of user names and associated devices.

>**QUSER COMPLETE** includes names, devices, and processes the user is running in. (see QUERY PROCID).

>**QUERY PROCID <procid>** displays what process has been started by the user (use the PROCID field data from the **QUSER COMPLETE** command).

>**RECORD QUERY** displays all recording links.

>**TRKQUERY TM <TMTYPE> <TMNO>** displays TM ckt. info.

>**TRKQUERY PM <PMTYPE> <PMNO> <CKT>** disp's ckt info.

>**QUIT** used to change current display to the previous directory.

>**RCCMAP** gives information on the channel usage of an RCC - LTC.

>**RECORD START** sends output from your dev. to dev. ispecified:

>**RECORD START ONTO <device name>** sends output to device specified.

>**RECORD START FROM <device name> ONTO <device name>** sends output from and to devices specified.

>**RECORD STOP** stops recording:

>**RECORD STOP ONTO <device name>**

>**RECORD STOP FROM <device name> ONTO <device name>**

>**RENAMECLLI <old_clli> <new_clli>** chg. clli names in CLLI table.

>**REPEAT** used to repeat CI expression specified number of times. (Ex:, >**REPEAT 3 (NEXT)** to repeat next command 3 times).

>**SEND** redirects the user's terminal response to an alternate device:

>**SEND <device> <filename>** terminal response sent to file.

>**SEND <device name>** terminal response sent to dev. specified.

>**SEND PREVIOUS** resets terminal response to original terminal.

>**SHERLOCK** request data for service failure analysis.

>**SHOW USERS** displays valid users list (use PRINT USERS for copy).

>**SHOWUSES <table>** displays dependency table(s) for specified table.

>**SHOWUSERS <table>** displays tables that use the specified table.

>**SSR** 15 min. switch status report—try DISPLAY SSR600 VERBOSE command. See tables SSRFORM & SSRDEF.

OM Commands

(*NTP 297-1001-300, Basic Administration Procedures*)

Note: The following OM commands are used to add, delete, change, display, and query OM data:

>**CLRINVREG**	Can be used to clear invalid INWATS registers after a restart. Use it before reading or resetting INWATS registers after a restart.
>**OMSHOW**	Displays all or part of a specified OM group's key structure and part or all of the contents. i.e. >**OMSHOW UTR HOLDING**
>**Q OMSHOW**	Use this command to get a list of the OM groups and classes defined by the OMCLASS command.
>**OMDUMP**	Used with table OMACC to display groups and fields already assigned.
>**OMCLASS**	Used to define or change a class for table OMACC. Once defined, a class name cannot be deleted, but it can be renamed. Registers and register groups are added to the class using commands **OMACCFLD** and **OMACCGRP**.
>**OMACCFLD**	Assigns or deletes individual OM register fields to the accumulating classes.
>**OMACCGRP**	Assigns or deletes OM groups to the accumulating classes that were previously defined by OMCLASS.
>**OMFORMAT**	Similar to the **OMSHOW** command, except that only one OM group is displayed.
>**OMACCKEY**	Allows the operating company to select specific tuples within a named group and class for display or printout.
>**OMTOTAL**	This useful command turns the totalling feature on or off for a specified OM group.
>**OMACCTOT**	Turns the totalling feature on or off for a specified class and group.
>**OMBR**	This command—along with parameters, stops, starts, displays—provides control for buffered OMs. It can be used when problems arise with buffered OM reports.
>**OMGETGD**	This command processes the header (H), class (C), group (G), field (F), and key (K) records stored at the beginning of the data file. This command causes a translation database to be built. Close the requested file in DIRP before issuing this command.
>**OMPRDUMP**	Provides the capability to generate operational measurement special reports (OMPRSPEC) for the OM data stored on the tape or disk in the standard recording format (OMTAPE).
>**OMPRTREP**	Requests the printing of the OMPRSPEC report.
>**OMPRTSET**	Sets or queries the time and date parameters for report generation.
>**OMMASTER**	This command, executed on the CM, allows the user to configure a node as the central collector for billing. This is the node (CM, FP2, or the enhanced input/output controller (EIOC)) on which the OM accumulation and reporting functions take place. **WARNING -** Use of the OMMASTER command causes loss of currently defined accumulation classes and their data. Also, do not “break” (use command HX) from the **OMMASTER** command.
>**OMRESET**	This command provides for the record count to be reset only on *reload* restarts.
>**OMREPORT**	Allows the capability to query for a list of all report names in the OMREPORT system and to request an OM report by SCHEDNO in table OMREPORT.
>**READ**	Used to query the register content of specified lines and displays the line information.
>**READPX**	Displays information for INWATS registers associated with options INW and 2WW for PX trunks.
>**READRESET**	Queries register content of specified lines, displays line information, and resets register to zero.
>**READRESETPX**	Displays the information for INWATS registers associated with options INW and 2WW for PX trunks, and resets the registers back to zero.
>**READVFG**	Displays the information for INWATS VFGs.

OM commands continue on the next page.

OM commands continue.

>**READRESETVFG**	Displays the information for INWATS VFGs, and resets the registers back to zero.
>**SETDBDEV <device>**	Designates a disk file for the storage of KEY and INFO values read from the input data file.
>**SLU**	Accesses the SLU system.
>**SLUADD & SLUDEL**	These commands add or delete line identifiers for subscriber line usage (SLU) input tables.
>**SLU_INSTALL**	Looks for errors in the SLU input tables before filling the OM group with new data. Lines not previously installed are set to zero while the installed lines are retained.
>**SLU_DEINSTALL**	Stops all OMs on lines in specified OM group but doesn't affect the entries in associated input table.
>**SLU_LMINSTALL**	For LMs and their associated lines, this command removes all lines from OM group ENG650M1 and creates an OM group ENG640M1. The SLU input table is not affected.
>**SLUDUMP**	Except for the **SLU_DEINSTALL** command, the **SLUDUMP** command lists the commands issued for SLU input tables that have been installed.
>**SLUFINDI**	Finds and displays specified line identifier within an input SLU input table. If associated with a hunt group, then all the members are displayed.
>**SLUFINDO**	Finds and displays the register counts for a specified line identifier within an OM group. This command is more effective if the **SLU_DEINSTALL** command is used to make the OM group inactive so that the register counts are held.
>**SLUSET**	Establishes a default table for commands **SLUADD**, **SLUDEL**, **SLUFINDO**, and **SLUFIND1**.
>**SLU_TABLE_STATUS**	Displays a list of active and inactive tables.
>**SLU_TEST <table_name>**	Checks each datafill in the specified SLU input table.
>**ZEROSUP**	Turns the zero suppression on or off. This command is part of the OMPRDUMP directory.

Store File Editor Commands

(*NTP 297-1001-360, Basic Translations Tools Guide*)

Note: The following store file commands are most of the commonl used commands and is not a complete list of store file commands.

>**EDIT**	creates a new file or enters an existing file.
>**READ**	CI level command used to run a specified store file.
>**ERASESF**	CI level command that erases a specified store file.
>**FILE dev_type file_name**	refiles the file to a specified device (SF if not specified) with any updated information and exits EDIT.
>**LISTSF**	lists the files in SFDEV that the user created.
>**LISTSF ALL**	lists all the files contained in SFDEV.
>**LISTSF INFO ALL**	lists all the SFDEV files and user information.
>**LISTSF <user>**	list files for a specific user—such as NTAS.
>**INPUT n**	used to add line(s) to a store file ("Enter" twice ends input).
>**DOWN n**	moves the pointer down one line or specified # (n) of lines.
>**UP n**	moves the pointer up one line or specified # (n) of lines.
>**FIND 'string'**	moves down to line beginning with 'string'.
>**VERIFY**	displays all, or any part of line at terminal after processed.
>**DELETE**	deletes line or number of lines as specified.
>**CHANGE 'old' 'new'**	change characters as defined within parameters.
>**TOP**	takes pointer to the EDIT: line within the store file.
>**END**	takes pointer to bottom line within the store file.
>**LINE n**	moves the pointer to the specified line number (n).
>**LINE 'string'**	moves down to line containing the specified string.
>**TYPE n**	displays one line(s) according to line number (n).
>**SAVE SFDEV**	saves existing store file device without exiting the editor (EDIT mode).
>**PRINT**	print all the specified store file or PRINT LINE.
>**QUIT**	exits from store file editor (EDIT mode).

To rename a file in SFDEV:

>**COPY <old_filename> <new_filename> sfdev**

Switch Performance Monitoring System (SPMS) Commands

(*NTP 297-1001-330, DMS-100F SPMS Application Guide*)

>**SPMS** enters the SPMS utility at the CI level
>**SET** sets the parameters for the **DISPLAY** command
>**SETREP** sets parameters for the SPMSREP automated log report
>**DISPLAY** displays the index values over the last 'N' days or date
>**DESCRIBE** used to describe the indexes you have selected
>**EXCEPTION** displays the critical index values over the last 'N' days
>**HELP** use help plus subcommand to get detailed parameters

Example, to get current display of SPMS report with unsatisfactory level set at 90 and unacceptable level at 80 use the following commands:

>**SET UNSATLEVEL 900;SET UNACCLEVEL 800;DISPLAY**

Example, to get a description of the INTEGFL index, use the command:

>**DESCRIBE INTEGFL**
Response = INTEGFL Basic index. Cutoffs of established calls, lost network integrity. OM:SYSPERF CINTEGFL. Check NETINTEG/INTEG at the NET/ENET level of the MAP.

DMS Scheduler (DMSSCHED) Commands

(*NTP 297-YYYY-546, DMS-100F Routine Maintenance Procedures*)

This tool replaced AUTOSCHED and is used to automatically execute pre-written exec file(s). Users, input file(s) and device name(s), output device(s), and start times are defined using the following commands:

>**DMSSCHED** enters the DMSSCHED utility at the CI level.
>**DEFINE** associates the exec file with the user and defines the output storage device (use **NOOUTPUT** if no output file is needed).
>**START** schedules user login time, day, duration, & periodic logons.
>**OUTPUT** names the output file and device. If not specified, then the output device is defaulted to the input device, and the output file name is generated automatically using the following format: **<userid><month><day><hour><min>**
>**INQUIRE** displays all automatic log-in request data.
>**CANCEL** cancels a particular automatic log-in request.
>**STOP** forces out a disconnected user that is currently logged on.
>HIST displays a history of previous DMSSCHED operations.
>**CLEAR** clears the DMSSCHED history buffer.

Note: See NTP 297-YYYY-546 for an example on how to use this tool.

Table Audit (TABAUDIT) Commands

(*NTP 297-8991-303, One Night Process Software Delivery Procedures*)

TABAUDIT is a table verification process that can be run prior to making an image tape or as a scheduled routine to verify office data. Table verification can be run manually using TABAUDIT or automatically by using AUTOTABAUDIT and scheduling the process. **Nortel recommends that table verification be an ongoing part of routine maintenance.**

TABAUDIT performs the following check with the DMS switch in sync:

Generic table checks: Performs per table verification for corruption.
Syntax checks: Perform per tuple verification for syntax field consistency.
Table specific checks: Performs per tuple verification for data consistency.

WARNING: TABAUDIT can take up to 10 hours or more to run and should not be run same time as TABXFR or an image dump.

SUGGESTION: Review any service bulletins and notices before attempting to correct any table data errors.

>**TABAUDIT** enters TABAUDIT directory at CI level.
>**AUTO** used to enter AUTOTABAUDIT from TABAUDIT.
>**INCLUDE** used to setup one table or a range of tables to be checked; including failed tables from last check or changed tables since last check.
>**EXCLUDE** used to exclude tables; NODR option used with the EXCLUDE excludes all dump and restore tables.
>**TIMEFRAME** a AUTOTABAUDIT command used for scheduling.
>**STATUS** displays included/excluded table range.
>**REPORT** used to generate data integrity reports based upon specified options (use HELP REPORT to see options).
>**CLEAR** clear included tables or specified failed table.
>**EXECUTE** used to start verification and a device to store data.
>**INFO** information about TABAUDIT.

LOGUTIL Info, Control, Routing, and Devices Commands

(*NTP 297-1001-129, Input/Output System Reference Manual*)

Note: LOGUTIL should only be used as a temporary measure for log control. Tables LOGCLASS, LOGDEV, and TERMDEV should be used for permanent control of logs. Unless there is a clear understanding of the use of the following commands and the potential loss of log reports, they should not be used.

Note: See the **REMLOGIN** command within the Tier II Support Tools area of this QRG.

>**HELP LOGUTIL** lists LOGUTIL commands.
>**LOGUTIL** access to LOGUTIL commands.
>**QUIT** or **LEAVE** quits LOGUTIL.
>**ADDCLASS** adds output report classes to specified primary IOD.
>**ADDREP** adds more reports to specified primary IOD.
>**BACKUP** assigns alternative IOD to back up primary IOD.
>**CLASS** assigns report class #'s to specified output reports.
>CONTEXT allow the user to change the context of applicable nodes without having to use the REMLOGIN command (use **LISTNODES** command for list of nodes).
>**DELCLASS** deletes specified report classes with specified IOD.
>**DELDEVICE** deletes specified IOD from receiving log reports. Note: Must use **STOPDEV** command first.
>**DELREP** deletes specified report(s) from specified IOD.
>**LISTDEVS** displays status of each IOD associated with log system.
>**LISTREPS SPECIAL**displays a list of special log reports that have special routing or thresholding, and those suppressed.
>**LISTREPS SYSLOG** displays only syslog reports.
>**LISTREPS CLASS** displays a list of reports by log class.
>**DUMPLOGS <logname> <log number>** display specified log reports in a buffer in the chronological order as they were generated.
>**LOGTRACE ON/OFF <logname and number>** turns ON/OFF the traceback feat. (**a LOGT is generated for each rep**).
>**RENUMBER** assigns a report # to all report types not assigned.
>**LISTROUTE** displays specified report classes, report names, and IOD, by CLASS, DEVICE, or REPORT.
>**LISTNODES** list all nodes in the switch.
>**LISTTIME** displays log reports on a threshold reset schedule.
>**LISTLOGS** list all lognames, except **SECRET** lognames.
>**RESET** resets to zero all threshold values that were applied. by **THRESHOLD** and resumes **SUPPRESS** reports.
>**REROUTE** reroutes reports from primary IOD to backup IOD.
>**RESETROUTE** restores the temporary routing of output reports.
>**RESUME** resumes the output reports previously suppressed.
>**START** starts log reports to specified device.
>**STOP** stops printing of reports on specified device.
>**STOPDEV** stops the output of reports to the specified device(s).
>**STARTDEV** starts the output of reports to the specified device(s).
>**SUPPRESS** suppresses specified output reports.
>**THRESHOLD** sets a threshold value for specified report(s).
>**TIMERESET** sets a time value for the threshold counter.

LOGUTIL Log Browsing Commands

(*NTP 297-1001-129, Input /Output System Reference Manual*)

Note: See the **REMLOGIN** command within the Tier II Tools area of this QRG.

>**OPEN** access to display log subsystem or SYSLOG buffers.
>**FIRST** displays oldest report in the current log subsystem.
>**LAST** displays most recent report in current log subsystem.
>**FORWARD <number or ALL>** displays report(s) after current one.
>**BACK <number or ALL>** displays report(s) before current one.
>**CLEAR** deletes all reports from specified log subsystem buffer.
>**FORMAT** queries or sets the NORMAL or SHORT format in which output reports will be printed.
>**TYPE** re-displays the report in the current log subsystem. buffer that was previously displayed by commands **LAST**, **FIRST**, **BACK**, and **FORWARD**.

DMSMON Commands

(*NTP 297-1001-318, Service Problem Analysis Administration Guide*)

CAUTION: The RESET command deletes all accumulated data.

>**DMSMON** access to DMSMON commands from CI level.
>**HIGHLOGS** displays the 20 logs most frequently issued.
>**LOGCOUNT** counts log occurrences.
>**LOGBUFFER** dumps the TRAPS, SWERRs, and MM buffers.
>**HIGHPARMS** displays the high watermarks for office parameters.
>**HIGHCPOCC** displays high-water CP occupancy (non-BRISC).
>**HIGHCAP** displays high-water CP CAPacity (BRISC only).
>**RESTARTINFO** reports number of restarts and associated downtime.
>**PMCONFIG** displays the PM configuration.
>**EQPCOUNTS** displays the office equipment counts.
>**MEMORY** displays memory usage information.
>**PMLOADS** displays the PM loads currently available.
>**ASSESS** displays normalized peg counts per 10,000 calls.
>**OMS** counts major OM peg information.
>**COUNT** executes the count procedures for switch equipment.
>**NEWPATCH** lists the new patches applied to the switch.
>**OPR** displays an office performance report.
>**DBLOCKS** displays digit block counts for various digilator tables.
>**DUMPALL** dumps all DMSMON data.
>**IBNEXPCT** counts free tuple spaces in table IBNXLA internal table.
>**RESET OMS** resets the OMs to 0.
>**RESET LOGCOUNT** resets the log counts to 0.
>**RESET RESTARTINFO** resets the number of restarts to 0.
>**RESET NEWPATCH** resets the new patch date to the current date.
>**RESET ALL** resets OMs, logcount, restartinfo, and new patch.
>**QUIT or LEAVE** leave or quit DMSMON level.

DISPCALL Commands

(*TAM-1001-003 DISPCALL User Guide*)

Note: Call deaths produce AUD395, AUD398, and some AUD4XX log messages. DISPCALL can save call deaths and make data representation easier to understand.

>**QUIT** exits DISPCALL level.
>**CLEAR** clears DISPCALL buffers.
>**DEATH [PUP|SEARCH] <ON|OFF>** toggles on/off to save call deaths; PUP can be specified to save protected/unprotected data for the agents in the call; SEARCH can be specified to search for agents linked to the call but not appearing in any part of the call.
>**DISPTID <node #> <terminal #>** verifies node and terminal number.
>**FREE** deallocates and frees the buffers.
>**QUERY** displays the number of buffers allocated and the number of buffers in use; also displays current setting of DEATH parameters.
>**SAVELEN <len>** takes a snapshot of the call on which the given line is currently active.
>**SAVETID <node #> <terminal #>** takes a snapshot of the call on which the given terminal is currently active.
>**SET <type> <num>** allocates buffers for the given buffer type.

Ranges:				
	CCB	0-30	EXT	0-34
	CDB	0-31	PROT	0-20
	MBUFF	0-600	UNPROT	0-17

>**SHOW <what> <0-255> <H|F>** shows collected data for CCB, CDB, EXT, PROT, UNPROT, P1P, P2P in hex or formatted form. i.e., to show collected data for all buffers of first call death input:
>**SHOW CALL 0 F**

SHOWAUD Command

Note: This tool is used to display audit log dumps of CCBs, CDBs, and EXTs in text format. Simply specify the file name containing the audit logs and the data is then formatted and displayed.

Note: You might have to erase RECORDFILE in store file before using.

>**SHOWAUD <filename> <ALL>** displays audit log dumps of CCBs, CDBs, and EXTs in symbolic format.

Procedure for using SHOWAUD command:

>**LOGUTIL**
>**RECORD START ONTO SFDEV**
>**OPEN AUD** find AUD logs (i.e. AUD395, AUD398) using BACK and FORWARD commands.
>**RECORD STOP ONTO SFDEV**
>**LISTSF** list SF to verify that RECORDFILE exists.
>**SHOWAUD RECORDFILE ALL**
>**LEAVE or QUIT** leaves or quits LOGUTIL.

IOC DSKUT NonMenu Commands

(*NTP 297-1001-526, Disk Maintenance Subsystem Reference Manual*)

>**DSKUT** activates this command directory.
>**DISPLAYVOLS <disk number>** displays information on all volumes in the specified disk (i.e., >**DV 0**).
>**LISTVOL <volume name> ALL** lists all files owned by a user on a Disk Volume into the User Directory: (i.e., >**LIV D010SCR1 ALL**).
>**RENAMEFL <old filename> <new filename>**renames an existing file: (i.e., >**RF LOGINFO COREDATA**).
>**ERASEFL <filename>** erases a specified file from a disk volume: (i.e., >**EF RECORDFILE**).
>**CLEARBOOT <volume name>** removes boot pointer previously assigned by SETBOOT command from the file that has the current image file status on the volume specified by LISTVOL: (i.e., >**CB D010FCIMG**).
>**SETBOOT <filename>** assigns current image file status, via boot pointer to a file on the volume specified by LISTVOL: (i.e., >**STB IMG_93_11_16**).
>**SHOWBOOT <volume name>** displays the current image file on the specified volume: (i.e., >**SHOWBOOT D010FCIMG**).
>**SHOWFL <filename> ALL** displays ALL information about a specified file name.
>**SHOWVOL <volume name> ALL** displays ALL information about a specified volume name: (i.e., >**SV D010FCIMG ALL**).
>**COPYVOLUME <volume from> <volume to>** copies all files from one volume to another (i.e., >**CV D010FCIMG D010SCR1**).
>**COPY <filename> sfdev** copies file to SFDEV

SLM DISKUT NonMenu Commands

(*NTP 297-5001-540, SuperNode Patching Procedures*)

>**DISKUT** activates this command directory.
>**HELP** (try >**HELP <command>**) the DISKUT help command.
>**ALL** list all within defined request.
>**FULL** when used with **LISTVOLS** and **LISTFL** commands, it provides more detailed info.
>**INSERTTAPE** (>**IT**) mounts the tape cartridge.
>**EJECTTAPE** (>**ET**) demounts the tape cartridge.
>**LISTVOLS** (>**LV**) lists volumes on disk.
>**LISTFL** (>**LF**) lists files on a tape or disk.
>**DELETEFL** (>**DDF**) deletes a file on a disk volume.
>**LISTBOOTFL** (>**LBF**) lists the registered boot files.
>**CLEARBOOTFL**(>**CBF**) removes a registered boot file.
>**SETBOOTFL** (>**SBF**) adds a boot file and registers it.
>**RENAMEFL** (>**RF**) renames a file on a disk volume.
>**BACKUP** (>**BA**) creates backup copies of disk files on tape.
>**RESTORE** (>**RE**) restore disk files from backup copies on tape.
>**CLEARVOL** (>**CVOL**) clears all files on a disk volume.
>**VOLINFO** (>**VINFO**) displays info about an INSV disk volume.
>**QUIT** exits the DISKUT super command.
>**COPY <filename> sfdev** copies file to SFDEV

Supernode Loading Procedure

(NTP 297-YYYY-545 *Recovery Procedures*— PCL NTPs)

To clear/set boot file:

1. List files on SLM from which you want to load (i.e., SLM 0):
   >**DISKUT;LF s00danyname** (**Note:** s00danyname is an example)
2. To clear boot file:
   >**CBF S00D CM ALL**
   >**CBF S00D MS ALL**
3. Set boot file:
   >**SBF s00danyname<filename> CM 1 ACTIVE**
   >**SBF s00danyname<filename> MS 1 ACTIVE**

To load front end:

From RTIF of inactive side: (**Note:** if JAM'd, then 'RELEASE JAM' first)

1. >**\BOOT SLM0** %Optional: add "T" to load from SLM tape.
2. Wait for "waiting for activity" prompt.

From RTIF of active side:

3. >**\JAM**
4. >**YES**

Note: If loading active side, first type >**\OVERRIDE** from its RTIF.

After loading completes then:

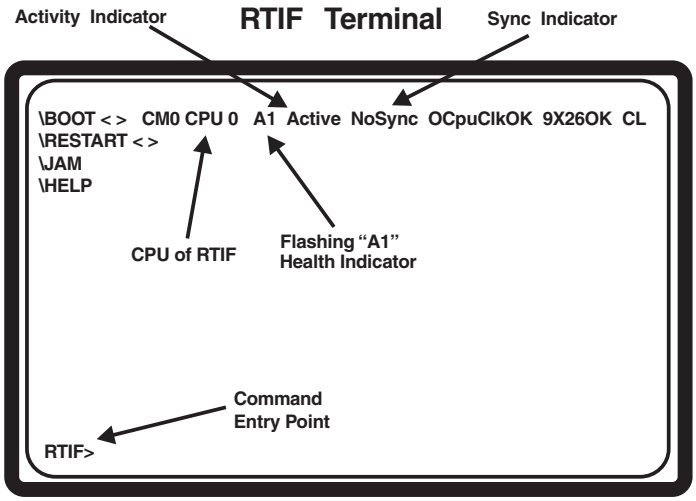
5. Place test calls to ensure that call processing is working.
6. Clear all alarms.

Note: See *RTIF Commands and Recovery* on the next page.

RTIF Commands and Recovery

(*NTP 297-YYYY-545, DMS-100 Recovery Procedures*)

Caution: Use the following only as a quick reference. Reference the NTP for detailed procedures.



RTIF Restart Procedure

Command Steps

Step	Active CPU	Inactive CPU
1		\JAM
2		YES
3		\OVERRIDE
4	**Only Perform if Switch is in sync**	\RESTART WARM
5		YES * Immediately proceed to step 6
6	\OVERRIDE	
7	\RESTART <type>	(types include Warm, Cold, Reload)
8	YES	

Watch For

- Restart is complete when 'A1' flashing on active RTIF terminal.
- Maximum Time to 'A1' flashing = 3 mins……..Processor Dependent.

RTIF Boot Procedure

Command Steps

Step	Active CPU	Inactive CPU
1		\JAM
2		YES
3		\OVERRIDE
4	**Only Perform if Switch is in sync**	\RESTART WARM
5		YES * Immediately proceed to step 6
6	\OVERRIDE	
7	\BOOT <SLM0, SLM1, SLM0T, SLM1T>	
8	YES	

Watch For

- Restart is complete when 'A1' flashing on active RTIF terminal.
- Maximum Time to 'A1' flashing = 20 mins……..Processor Dependent.

AMADUMP Commands

(*NTP 297-1001-570 & NTP 297-YYYY-545*)

>**MAPCI NODISP;MTC;IOD;DIRP;QUERY AMA**
Shows active volume. (Repeat query to verify AMA collection).
BEWARE: in a very busy office, a very large file can be generated from AMA calls after entering the next command.
>**RECORD START FROM <active vol.> ONTO <scratch vol.>**
Make test calls to generate desired AMA record(s).
>**RECORD STOP FROM <active vol.> ONTO <scratch vol.>**
>**DSKUT;LISTVOL <scratch vol.>**
List RECORDFILE on associated scratch volume.
>**AMADUMP <format—BC or NT> RECORDFILE**
Gives AMADUMP prompt.
>**FILTER ADD '00<structure code>'**
Prompts for characteristics for filter—enter blank carriage returns except for desired refinements ("$" to end).
>**FILTER ADD '10<structure code>'**
Repeat with same refinements.
>**FILTER ENABLE**
>**DUMP CALL DETAILS** use >**HELP DUMP** for details.
Note: If a filter is not used, then type:
>**DUMP CALL DETAILS <from block> <# blocks>**

CALLDUMP CI: Level Command

Outputs billing records using same format as AMADUMP. Records are dumped directly from CCs internal call record buffer rather than the DIRP file. CALLDUMP is safe to use and has little impact on real-time usage.
>**CALLDUMP <stream name (default=AMA)> <format=HEX or FULL>**
To dump records from previous CALLDUMP command:
>**CALLDUMP PREVIOUS**

Mag Tape (9 Track) Commands

>**DEMOUNT <drive #>**	demount a 9 track mag tape.
>**MOUNT <drive #>**	mount a 9 track mag tape.
>**REMOUNT <drive #>**	remount a 9 track mag tape.
>**RSETVOL vol_name**	used to reset an INERROR volume
>**TAPE (X) DEMOUNT**	force release a 9 track tape.

AFT and RASL Commands

The following AFT directory commands are used to query and manipulate the Automatic File Transfer (AFT) System. AFT automatically transfers files recorded by DIRP.

>**AFT**	enter Automatic File Transfer (AFT) utility.
>**QUERYAFT**	query information about AFT files.
>**QUERYMNP**	query MNP information.
>**SETAFT**	set the next AFT file to transfer.
>**SETOVR**	set an Override file transfer.
>**RESETPFT**	resets PFT information on a file.
>**RESETOVR**	resets the Override file pointer.
>**COPYAFT**	copy an AFT file to tape.
>**DELAFT**	delete a file from DIRPHOLD and the directory.
>**STARTAFT**	starts the AFT system transferring files.
>**STOPAFT**	stops the AFT system transferring files.
>**QUIT**	quit out of the AFT utility.

The following robust application and session layer (RASL) directory commands are used to manipulate network connections. They are used to terminate and re-enable a network connection. They also are used to disable a network connection for datafill changes, and summarize operational network connections. See table RASLAPPL for parameters that make the commands available.

>**RASL**	enter RASL utility.
>**RASLCLOSE**	manually closes a network connection.
>**RASLSTOP**	disables a network connection.
>**RASLSTART**	re-enable a network connection.
>**SHOWRASL**	display a summary of all network connections.

TRAVER Commands

(*NTP 297-1001-360, Basic Translations Tools Guide*)
(*NTP 297-YYYY-350, Translations Guide*)

The **TRAVER** command simulates a call and displays the translation and routing tables the call accesses.

Note: The following information is an overview of TRAVER and provides only samples of the many variables that are possible using TRAVER. Use **HELP TRAVER** at CI level for details. Also, see the **REVXLER** command within this QRG.

>TRAVER L <digits> [T,NT,B] %% see Notes & Trace Option
TR <clli> [T,NT,B]
TR <clli> <digits> <RPOA/RPOAS> [T,NT,B]
C <console> [T,NT,B]
V <vfg> [T,NT,B]
R <table> [T,NT,B]
L <digits> <bc> <64kdata/56kdata> [T,NT,B]

Notes: 1. For digits—'*****' substitute a '**b**'—for a '**#**' substitute a '**c**'.
2. For ISDN, bc = bearer capability.
3. For DMS PH, RPOA = registered private operating agencies.
3. T = [authcode] [mfst] [billno] [bill_mfst].
4. NT = (includes routing and digit information).
5. B = both T and NT options.

Trace Options

The "T" option uses parallel software to simulate a call and display the tables used to translate and route a call along with the appropriate tuple for each table. The "NT" (no trace) option has its own setup processor which calls translation utilities to determine a result. This option displays digit translation routes, position routes, and the circuits and/or treatments on which the call would terminate. The "B" option invokes both the T and the NT option and displays both the call's route & treatment.

Optional Parameters

<authcode> for tracing LATA Equal Access System (LEAS) calls, mfst, billno, and bill_mfst parameters are needed; enter nil value (N) for authcode before specifying other optional parameters.

<mfst> indicates the type of signalling on the trunk, the called number MF start signal. A LEAS call cannot be properly traced without this parm.

<billno> is the number to be billed (an information digit plus the calling digits). A LEAS call cannot be properly traced without this parameter.

<bill_mfst> indicates the type of signalling on the calling number trunk; a call involving LEAS cannot be properly traced without this parameter.

Line TRAVERs

>TRAVER L <calling_dn> <called_dn> [T,NT,B]
>TRAVER L <ISDN_dn> <bc> [T,NT,B]
>TRAVER L <calling_dn> <called ISDN _dn> <bc> <bc_name> [T,NT,B]

Trunk TRAVER

>TRAVER TR <CLLI> <digits> [T,NT,B]

Console TRAVER

>TRAVER C <console CLLI> <digits> [T,NT,B]

Virtual Facility Groups TRAVERs

>TRAVER V <vfg> <digits> [T,NT,B]
>TRAVER L <calling_dn> <called_dn> [T,NT,B] RTEVFG ALL

ISDN TRAVERs

Bearer Capability Routing example travers:

> **traver l 4844015 94834035 bc 64kdata b** % for BC 64kdata calls
> **traver l 4844016 94834036 bc 56kdata b** % for BC 56kdata calls

Some PRI routing examples: (PUBlic call type is traver default)

> **traver tr PRITEST1 n cdn e164 19192384567 b** % NPI:E164, NSF:nil, call type:PUBlic
> **traver tr PRITEST2 n cdn e164 2831199 prvt b** % NPI:E164, NSF:PRVT, call type:PriVaTe
> **traver tr PRITEST3 n cdn pvt 095 tie b** % NPI:PVT, NSF:TIE, call type:PriVaTe

Note: The type of number (TON) is in the "Called Party Number" and "Calling Party Number" information element. According to the Nortel PRI protocol specifications, when the NPI is "Private" the TON is "Subscriber." When the NPI is "E.164," the TON is based on the number of digits dialed as follows:

- less than 10 digits: TON is "Subscriber" (Local)
- exactly 10 digits: TON is "National" (NAtional)
- more than 10 digits: TON is "International" (INternational)

Wireless LWW Traver

>traver mx moborig 6905 5415222 b %%6905 see table MTXTRAV
%%5415222 use QHLR command

CLASS Quick References

(*NTP 297-1421-503, Subscriber Services Maintenance Guide*)
(*NTP 297-YYYY-350, Translation Guides*)

NOTE: See page 100 for the DRAMREC Utility and subcommands that can be used to manage CLASS announcements on DRAMs and EDRAMs.

REVXLVER CI: Level Command

This is a datafill verification utility that simulates reverse translations from a specified origination to a specified destination.

Note: If no netname is specified, then the default of public is used.

REVXLER Command and Variables:

```
>REVXLVER  <SUB> {AR <DN> STRING
                          <DIGITS> STRING
                          <TRACE> {T,
                                   NT,
                                   B}
                          [<NETNAME> STRING]
                          [<COMPARE> STRING],
                   ACB <DN> STRING
                        <DIGITS> STRING
                        <TRACE> {T,
                                 NT,
                                 B}
                        [<COMPARE> STRING],
                   DDN <DN> STRING
                        <DIGITS> STRING
                        <TRACE> {T,
                                 NT,
                                 B}
                        [<NETNAME> STRING]
                        [<INTL> STRING],
                   R <DIGITS> STRING
                     <RXLANAME> STRING,
                   RLT <DN> STRING
```

REVXLER Example:

```
>REVXLVER AR 6750009 9196752034 B
TABLE IBNLINES
  HOST 00 0 02 17 0 DT STN IBN 6750009 EBS01 0 0 360 (ACB) (AR)$
TABLE CUSTNTWK
  EBS01 PUBLIC 24 (PUBLIC MDCAR 10) (CLID OFFNET)
TABLE DNREVXLA
  MDCAR 919 919 (LOCAL 3 9 N)
TABLE DNREGION
  LOCAL 919675 919675 (Digits used to call 9196752034 from 6750009)
```

CNAMDVER CI: Level Command

This command allows us to check the name and the permanent privacy status associated with the name at the SCP database without making an actual call.

>CNAMDVER <Calling Number (10 digits)> STRING
<Calling Number Presentation (0-allowed, 1-restricted)>
{0 TO 1} [<Timeout (in seconds)> {0 TO 255}]

QSL CI: Level Command

The CI level command QSL provides detailed lists for each Screening List Editing (SLE) feature on a specified line. The line can be specified by either DN or LEN. One or all features can be specified. When parameter ALL is selected, information is given in FULL format; when one feature is specified, the subscriber can select FULL or HEX format.

>QSL <dn or len> <SLE feature name or ALL> <FULL or HEX>

TESTAME CI: Level Command

Test Analog Display Services Interface (ADSI) support command.

>TESTAME <Application> <Function> <Directory Number>

MAKERES Utility

This command converts POTS lines to RES lines over a given range of LENs. Subcommands are **CONVERT**, **DELOPT**, **COPY**, & **CHECKCM**.

CLASS commands continue on the next page.

CLASS commands continue.

CLOG Utility and Subcommands

This command displays the contents of a call logging subscriber's incoming callers list for a given DN. Subcommands are **STATUS**, **RESET**, **DEQ**, and **QUEUE**.

>**CLOG**

CLOG:
<subcommand> <requestee dn>

QBCLID CI: Level Command

This command displays every line in the office that belongs to a BCLID group.

QCM CI: Level Command

This command displays the contents of CLASS incoming and outgoing call memory.

>**QCM <directory number> or <line equipment number> <F or H>**
F = formatted or H = hex

SERVORD CNAMDACG Command

This SERVORD command displays the internally stored list of active CNAMDACG six-digit acg code controls, including associated gap interval, duration interval, and time remaining for the code control.

SERVORD CHL Command

SERVORD command used to change SLE list information.

CLASS References

CLASS related OM Groups:

ACB, ACRJ, ANN, AR, BCLID, BCLIDNL, BCLIDO, CALLOG, CFRA, CNAB, CNAMD, CND, CNDB, CNDXPM, COT, DRCW, DSCWID, FTRQ, MWTCAR, MWTCAR2, NETMSG, SACB, SCA, SCF, SCRJ, SLVPOPT, SPPIN, C7SCCPCO, TCAPERRS

CLASS related LOGS:

BCLID, SLE, TCAP

CLASS Engineering Parameters:

TCAPNM_BLK_QUERY_PRIVS_DNS
CNDB_ON_POTS
TCAPNM_INTERLATA_QUERY
RES_SO_SIMPLIFICATION
VSLE_PRESENT
FTRQAGENTS
AR_BLOCK_PRIVATE_RES AR_BLOCK_PRIVATE_TOLL_METHOD
AR_BLOCK_PRIVATE_CTX
SLE_TRANSACTION_THRESHOLD
SLE_TCAP_RESPONSE_TIME
SLE_ITEMS_IN_SEGMENT
SLE_LANGUAGE
SLE_MAX_PROGRAMMERS
SLE_MAX_SEGMENT_COUNT
SLE_WAKEUP_TIME

CLASS related Tables:

XLANAME, CUSTENG, DIGCOL, CUSTHEAD, NCOS, IBNXLA, CUSTSTN, IBNTREAT, CUSTNTWK, RESOFC, DNREGION, DNREVXLA, LINEATTR, TCAPTRID

Table Editor Commands

(*NTP 297-1001-360, Basic Translations Tools Guide*)

Note: In addition to the Table Editor commands below, see the **FINDTAB, FINDREF, SHOWUSES,** and **SHOWUSERS** commands under "DMS CI: Level Commands" within this QRG.

>**HELP** use **HELP <command>** to get command description.
>**ABORT** used to cancel a command or input.
>**REPlace** used to replace a specified tuple with a new tuple; user is prompted for field values or field values may be specified (i.e., **REP <field 1> <field 2> <field 3>**).
>**ADD** adds tuple(s) to a table.
>**DELete** deletes a tuple from a table.
>**CHAnge** changes the value of existing field data for a tuple.
>**CHECK** displays next **<COUNT>** tuples or **ALL** tuples
>**SUBtable** enters subtable. Parameter not required if only one subtable.
>**RETurn** exits back from a subtable in a previous level.
>**OVErride** **CAUTION:** This command cancels the system prompt when a "NO JF AVAILABLE" and/or "MACHINES OUT OF SYNC" condition exists.
>**VERIFY** **CAUTION:** This command turns on/off the system prompt for verification and confirmation when altering table data.
>**COUNT** without parameters displays the number of tuples in a table.
>**COUNT <parameters>**count number based upon the following parms:

& = And **EQ** = Equal to **GT** = Greater than
GE = Greater than or equal to **NE** = Not equal to
LE = Less than or equal to **LT** = Less than

EX: >**TABLE LINEATTR**
>**COUNT (PRTNM EQ POTS)**

Note: Counts the tuples with a pretranslator name equal to POTS.

>**FORMAT PACK** defines the format to be printed/displayed at 130 lines per character—ignores CUSTFLDS table.
>**FORMAT UNPACK** defines the format to be printed/displayed at 70 lines per character as defined in CUSTFLDS table.
>**LISt** displays tuple(s) within a table; to LIST examples, enter:
>**LIST <number of tuples to list>** or >**LIST ALL**
>**LIST <condition>** %see count parameters
>**HEADING** displays heading line without a tuple display.
>**DOWn** moves cursor down specified number of tuples in the table.
>**NEXT** positions to next tuple in table but does not display it.
>**UP** moves cursor up the specified number of tuples in the table.
>**PREV** positions to the previous tuple but does not display it.
>**POSition** positions the cursor at a specified tuple in the table.
>**DISplay** displays the tuple entry for the current tuple.
>**LOCate** locates tuple by field(s) but does not display (see DISplay).
>**RANge** displays the table heading field(s) by number and/or name plus parameter type(s) with a sample of valid inputs.
>**INForm** displays the current table name.
>**TOP** positions on the first tuple in the table and displays it.
>**FIRST** positions to first tuple in table but does not display it.
>**BOTtom** positions on the last tuple in the table and displays it.
>**LAST** positions on the last tuple in the table but does not display it.
>**LEAVE** exits current table (or number of levels specified, i.e., ALL).
>**POF** enters the Pending Order (PO) subsystem (see following).

Pending Order Subsystem

(*NTP 297-1001-360, Basic Translations Tools Guide*)

The commands available in the Pending Order (PO) subsystem include:

>**ACTIVATE** activates POs.
>**CREATE** enters the file name of any previously produced DMO file in the PO subsystem.
>**DELETE** use to delete the POF and SFDEV file.
>**DISPLAY** Use the DISPLAY command to display the contents of all or specified POs in the PO subsystem by either the due date or sort option, which uses the parameters TIME and POF.
>**HELP <cmd_name>** Use HELP command to display a brief functional description of desired PO subsystem command.
>**LEAVE** leave the Pending Order Subsystem.

Other Supporting Commands:

>**DUMPTAB** used to move table(s) into SFDEV for manipulation by user.
>**DMOPRO** activates/applies the SFDEV file to switch translations.
>**DMOVER** verifies the DUMPTAB SFDEV file and checks it for errors.
>**INPUT** replaces table tuples by looking for (a) key field(s) match.
>**PUT** add or replace tuples in a table if there is no matching key field or fields already in the table. It will replace a tuple if it finds a matching key field or fields.

DLOG Commands

(*NTP 297-YYYY-545 or NTP 297-YYYY-350 — PCL NTPs*)

Note: DLOG (Disk LOG) utility can be used to retrieve logs.

>**DLOG** enters DLOG utility >**QUIT** exits DLOG utility.

>**EXCLUDEALL** removes all logs, except PROTOLOGS from the set of logs to be formatted. %% start out by excluding all logs or it will dump out too many logs in the out file. See the EXCLUDEPROTO subcommand.

>**INCLUDEALL** resets the set of logs to format to all logs except PROTOLOGS. See INCLUDEPROTO subcommand.

>**EXCLUDE** accepts logs, except PROTOLOGS, to EXCLUDE from format executed by FORMAT subcommand. See the EXCLUDEPROTO subcommand.

>**INCLUDE <logs>** accepts logs, except PROTOLOGS, to INCLUDE in format executed by FORMAT subcommand. (i.e, >**INCLUDE ISDN PM** or >**INCLUDE PM 189**) See INCLUDEPROTO subcommand.

>**INCLUDEPROTO** & **EXCLUDEPROTO** commands removes or excludes all PROTOLOGS (TRAP, SWER, INIT, etc.) from the FORMAT subcommand execution.

>**STATUS** displays the logs and PROTOLOGS INCLUDED/EXCLUDED, earliest valid start time and previous use information.

>**FORMAT** accepts parameters for date/time range and "tofile" such as SFDEV, or "to terminal" to appear on screen.

>**FORMATFILE** accepts filename of unformatted DLOG file to format.

>**LISTFILES** displays the raw DLOG files recorded in the internal table with their start times and end times.

>**PRINT <formatted filename>** print a copy of "tofile" in FORMAT.

Post-Release Software Manager (PRSM) Quick References

(*NTP 297-8991-540, Post-Release Software Manager (PRSM) Ref. Guide*)
(*NTP 297-8991-541, PRSM Basic Commands, Syntax, and Examples (with PATCHER Command Comparison)*)
(*NTP 297-8991-542, PRSM Quick Reference Guide*)

Post-Release Software Updates (PRSU) Statuses

Note: Patches are called PRSUs.

PRSM assigns a status to each PRSU on every DEST (destination). There are five different PRSU statuses.

NV - Needs Validating—indicates a PRSU needs validating in the DEST.
VA - Validated for Application—indicates PRSU can apply in the DEST.
A - Applied—indicates the PRSU is currently applied in the DEST.
R - Removed—indicates the PRSU has been removed from the DEST.
NN - Not Needed—indicates the PRSU is not needed in a DEST.

Note: A valid SPM non-permanent PRSU will have an NN status against an SPMLOAD destination with the same loadname.

PRSU EXTENSIONS Using the Format 'AAANNTaa'

AAANN = baseid, AAA=alpha, NN=numeric
T = Processor Type: B - BRISC C - SUPERNODE
P - POWERPC I - ISN
X - XPM S - SPM
aa = Patch Release aa = alphanumeric)

Which PRSU files to keep/erase

CM, XACM and ISN (Intelligent Service Node) PRSU files, once applied, are not required in order to remove the PRSU from the device. All of these device types are capable of being imaged manually or automatically with all the patches applied so re-applying PRSUs after reloading is not required. Therefore, these files can be erased after being imaged to clean up disk space and also reduce the time taken by the nightly file audit. The one exception to this is ISN PRSUs during an office upgrade. The ISN DESTs are loaded with the new release load and patched before the XACM or CM is upgraded. It is recommended to keep these ISN PRSU files on disk until after the XACM or CM has been upgraded to the new load and the new PRSM has validated the PRSU files. The files can then be removed since the new PRSM will now have captured the information needed from the PRSU files. If retaining the ISN PRSU files is desired, it is recommended that the files be placed in a volume not datafilled in table PADNDEV.

Continues on the next page.

XPM and SPM PRSU files need to be kept on disk for as long as the PRSU is at applied status. This is because the PRSU file is always required in order to remove the PRSU from a DEST, and to automatically re-apply the PRSU following a reload or RTS of the device. Any applied XPM or SPM PRSU will have a file alarm raised if PRSM is unable to locate the PRSU file. If the applied XPM or SPM PRSU file is moved, it is recommended that the PRSU be validated following it being moved so the alarm will not be raised.

Missing PRSU Files

For situations where the current PRSM discovers PRSUs that have been applied by another instance of PRSM (for example an LIU7 patched image from another switch loaded into the LIU7), it is important that PRSM validate the PRSU files. PRSUs in this situation can display "???" for the category field. If this situation is encountered, retrieve a copy of the PRSU file and validate the PRSU in one of the DESTs that shows a category of "???". PRSM will then take the information from the PRSU file and place it in the PRSM database and the category will change to what it is supposed to be.

Note: The above procedure can be avoided if all of the PRSU files are located, placed in the users search patch, and a dbaudit is performed following loading of the DEST with the patched image. The dbaudit will find the PRSU files and immediately populate the PRSM database with the missing information. Dbaudit is only capable of doing this on the first attempt. If there are category "???" present in the PRSM database, then it is too late for the DBAUDIT command to correct the situation. Validating with the PRSU file is the only way to get the category to the correct value.

OBSolete/OBsolete Emergency (OBS/OBE) PRSUs at VA status

An OBS or OBE PRSU can be found at VA status. This is normal and not a cause for concern. When a PRSU changes category to OBS or OBE, PRSM needs to be informed. This occurs when a file with a file name of <PRSUID>$DF is downloaded and validated. This file is just the administration section of the patch and is erased after validation automatically. If the PRSU has already been removed when this occurs, the patch transitions from R to VA, the category goes from what it was (GENeral (GEN) for example) to OBS or OBE, and AUTO APPly (AUTOAPP) goes to N. *The only way to get the OBS/OBE PRSU back to R at this point is to apply it and then remove it — which is NOT RECOMMENDED.* The process requires that the OBS/OBE PRSU file be removed from the site after removal from all DESTs in the office so an accidental apply cannot occur.

Note: For XPM PRSUs the category will not change to OBS or OBE since the only two categories allowed for XPM PRSUs are SouRCe (SRC) and MANual (MAN). However, the AUTOAPP field will be N following validation of the obsolete $DF for XPM PRSUs.

SPM loadfile destinations

When an SPM loadfile is datafilled in table PMLOADS, a destination is added to the PRSM database with the type of SPMLOAD. The SPM permanent PRSUs associated with the SPMLOAD are placed in the PRSM database during a dbaudit of the SPMLOAD. These PRSUs are contained within the load file and cannot be removed from the SPMLOAD DEST (hence the designation permanent).

The DBAUDIT command can be issued manually following adding of the loadfile to PMLOADS, but this is not required since the nightly status audit will perform a dbaudit on all SPMLOAD DESTs in the office.

An SPM loadfile which contains non-permanent (and thus removable) PRSUs is called a Pre-Patched Spectrum Load (PPSL). The filename of a PPSL has 2 characters (a letter followed by a number) appended to the 14 character milestone file name. The DESTID in PRSM will only refer to the 14 character loadfilename for both milestone and PPSL files.

To determine what non-permanent PRSUs are resident in a PPSL, the SPMLFINFO command can be used. For a PPSL there is an additional permanent PRSU which contains a list of the resident non-permanent PRSUs in its description text. The naming convention of this permanent PRSU starts with "SPPSL" followed by the 7 character loadname of the given SPM load. A space separated list of removable PRSUs contained within the load will be displayed in the description section of this PRSU. An example command line would look like:

>**spmlfinfo cem16cm_010064a2 qprsu SPPSLCEM16CM**

It is recommended that the PRSU files associated with the contained removable PRSUs be located and validated before the PPSL is datafilled in table PMLOADS, but validation can be done after. Note that a validation of the given SPM PRSU file must be performed and the file must be available in order to remove the PRSU.

Note: A PPSL is the same as the milestone load with the patches already applied. It behaves the same as the milestone load with the patches applied via PRSM. Therefore, there is no reason (under normal circumstances) to upgrade from a milestone load to the PPSL version. Simply datafill the PPSL in PMLOADS to be prepared for any future reload from disk (manual or system).

PRSM Quick References continue on the next page.

PRSM Basic Commands, Syntax, and Examples (Reference NTP 297-8991-541)

PRSM Command with Syntax	PRSM Examples	Example Description
APPLY APPLY <prsu_set_def> [<IN dest_set_def>]	1. APPLY scb05ib5 2. APPLY xsb00x05 3. APPLY xsb00x05 IN dtc 0 4. APPLY 'scb05ib5 | jpp28cb5 | xsb00x05	1. Applies an ISN PRSM in all applicable DESTs. 2. Applies an XPM PRSM in all applicable DESTs. 3. Applies an XPM PRSM in both units of DTC 0. 4. Applies three PRSUs with one command.
VALIDATE VALIDATE <prsu_set_def> [<IN dest_set_def>] [<NODB>]	1. VALIDATE dmn01ib5 2. VALIDATE xmn01x05 IN ltc 0 0 3. VALIDATE 'prsus where status = nv	1. Validates an ISN PRSU against all DESTs. 2. Validates an XPM PRSU in LTC 0 unit 0. 3. Validates all PRSUs with a status of NV.
DISADMIN DISADMIN <prsu_set_def>	1. DISADMIN dmn01ib5 2. DISADMIN 'scb05ib5 | jpp28cb5 | xsb00x05	1. Displays information on an ISN PRSU. 2. Displays information on three PRSUs.
SELECT SELECT <fields> FROM PRSUSET <prsu_set_def> SELECT <fields> FROM DESTSET <dest_set_def> SELECT <seldef_name>	1. SELECT prsuid status FROM PRSUSET prsus + 'where status = r on rcc 4 0 2. SELECT prsuid appdate destid FROM + PRSUSET 'prsus where appdate < 19960101 3. SELECT informlist 4. SELECT alldests 5. SELECT prsuid status category destid FROM + DESTSET DESTS 'where destid = dtc	1. Generates a report on the removed PRSUs in RCC 4 unit 0. 2. Generates a report on all PRSUs applied before January 1, 1996. 3. Generates a report on all CM, ISN, and XPM PRSUs. 4. Generates a report on all DEST information. 5. Generates a report with the specified fields on PRSUs in all DTCs.
REPORT REPORT PRSU <PRSU name> REPORT DEST <destid> REPORT DATE <yymmdd> REPORT DATE <yyymmdd> REPORT MODULE <module name> REPORT DEPEND <PRSU name>	1. REPORT PRSU jpp28cb5 2. REPORT PRSU jpp 3. REPORT DEST ms 0 4. REPORT DATE 970310 REPORT DATE 19970310 5. REPORT MODULE Instart 6. REPORT DEPEND map08cr9	1. Outputs information on an individual PRSU. 2. Outputs information on all PRSUs with initials JPP. 3. Outputs information on DEST MS 0. 4. Outputs information on all PRSUs applied on or after March 10, 1997. 5. Outputs information on all PRSUs applied to a specific module. 6. Outputs information on all PRSUs that depend on a specific PRSU.
DBAUDIT DBAUDIT [<dest_set_def>]	1. DBAUDIT 2. DBAUDIT rcc	1. Compares all destination databases with PRSM database and updates discrepancies. 2. Database audit all RCCs in the office.
ISTBAUDIT ISTBAUDIT [<dest_set_def>]	1. ISTBAUDIT spm 2. ISTBAUDIT spm 5 cem 1 3.ISTBAUDIT ltc 8	1. Audits all SPM dests and applies or removes PRSUs to each device as required. 2. Audits SPM 5 CEM 1 and applies or removes PRSUs to it as required 3. Audits the active and inactive sides of LTC 8 and applies or removes PRSUs
ASSIGN ASSIGN <field_name> <field_value> IN <prsm_set_def>	1. ASSIGN active y IN PRSUSET scb00cb5 2. ASSIGN active n IN PRSUSET scb00cb5	1. Activates an activatable PRSU. 2. Deactivates an activatable PRSU.
REMOVE REMOVE <prsu_set_def> [<IN dest_set_def>]	1. REMOVE xsb00x05 2. REMOVE scb05ib5 IN ms 0 3. REMOVE 'prsus where category = dbg	1. Removes an XPM PRSU from all XPMs. 2. Removes an ISN PRSU from MS 0. 3. Removes all debug PRSUs.
ASSIGN ASSIGN <field_name> <field_value> IN <prsm_set_def>	1. ASSIGN upgrade_ld eli06bh IN DESTSET ltc 0 0 2. ASSIGN aor n IN PRSUSET xzs69x06	1. Used to change loadname during XPM upgrade on LTC 0 unit 0 to ELI06BH. 2. Apply on reload field changed to "N". PRSU will not apply after reloading.

Patching After Loading (PAL)

Following a reload of an XPM device, PAL is invoked. The patches to be applied are chosen by the status of the Apply On Reload (AOR) flag. If the AOR flag is set to Y for any XPM DEST with the given loadname in the office, then the PRSU will be reapplied following the reload. If the AOR flag is set to N for all XPM DESTs with the given loadname, then the PRSU will not be re-applied. Anytime a PRSU is applied to an XPM device, PRSM automatically sets the AOR flag to Y for that PRSU on that DEST. Conversely, anytime a PRSU is removed from an XPM device, PRSM automatically sets the AOR flag to N for that PRSU on that DEST. The AOR flag can also be set manually using the ASSIGN command. For example, if one wanted to soak a PRSU in one DEST and did not want it to be re-applied following a reload, just set AOR to N for the entire office:

>**assign aor n in prsuset abc04x17 on xpm**

PRSU abc04x17 will not be re-applied to any device following a reload.

SPM Patching After Return To Service (SPARTS)

Whenever an SPM destination is brought into service, the SPM maintenance software sends a request to PRSM to execute SPARTS. SPARTS will compare the patch content in the running device with the patch content associated with the given loadname and remove/apply patches to bring the device up to date patch-wise if required. What PRSUs are removed/applied is based upon the AOR flag just like PAL in XPMs. If the AOR flag is set to Y for any SPM DEST with the given loadname in the office, then the PRSU will be re-applied following the RTS if required. If the AOR flag is set to N for all SPM DESTs with the given loadname, then the PRSU will not be re-applied and in fact will be removed if found applied. PRSM similarly automatically sets the AOR flag to Y/N for a given PRSU on a given device upon application/removal just like in the XPM case.

The steps SPARTS performs are the same as the steps performed by the ISTBAUDIT command on an SPM device:

1. Query the SPM device whether or not a reload has occurred. If a reload has occurred, then continue on to the next step. If not, then inform SPM OAMP software that the patchfail is cleared and exit.
2. Run a dbaudit on the specified destinations to sync the destinations with the PRSM database.
3. Remove any extra PRSUs applied to the specified destinations as determined by the AOR flag (see above). This situation may occur with a Pre-patched SPM load (PPSL) that contained an unwanted PRSU or a device reloading from a stale flash image.
   Note: There is a time delay following removal (or application) of a patch to an SPM device before the patched image is copied from RAM memory to flash memory. If an SPM device reloads from flash memory during this time delay, then a patch that was recently removed could show up as applied. This is an example of a stale flash image.
4. Apply any missing PRSUs to the specified destinations as determined by the AOR flag (see above).
5. Inform SPM OAMP software about the status of the patchfail alarm and exit. If the above 2 steps completed successfully, then patchfail is cleared, and if not, then patchfail is failed for the given SPM device. An SPM301 log is output to show the status of the patchfail alarm.
   Note: Following any SPARTS failure (patches unable to be applied, PRSM busy etc.) SPARTS will reattempt multiple times after the failure at approximately 30 minute intervals.

The technique used in PAL for XPMs can be applied to SPMs to control re-applying or removing a PRSU following an RTS, namely setting the AOR flag to N for all SPM devices via the ASSIGN command:

>**assign aor n in prsuset def09s0p on spm**

PRSU def09s0p will now not be re-applied on any device following an RTS and removed on any DEST that it is found applied to.

Other ways to control SPARTS (these do not work for PAL) is to place a PRSU onhold or hold an SPM DEST:

>**assign onhold y in prsuset def09s0p**

The status of PRSU def09s0p will now be frozen and SPARTS will not be able to re-apply it or remove it from any device.

>**assign hold y in destset spm 3 cem 1**

The patch content of spm 3 cem 1 will now be frozen and SPARTS will not be able to apply or remove any PRSUs from the DEST.

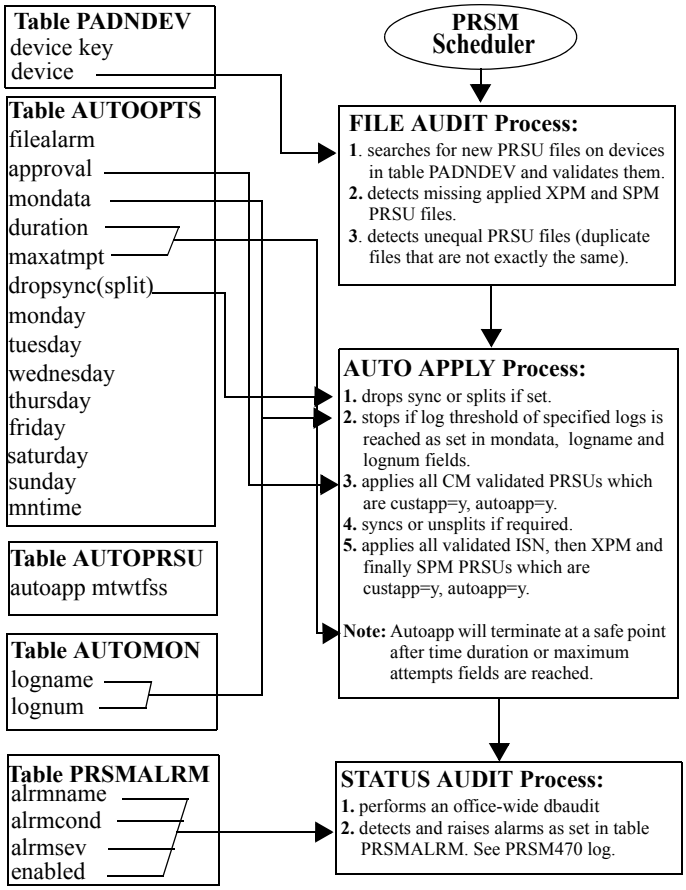
AUTOPROC command

Use the AUTOPROC command to query the status of any or all of the PRSM automated processes discussed on the following page. It can also be used to START, STOP or DELAY any of the automated processes. Type "prsm;help commands autoproc" for more information.

PRSM Quick References continue on the next page.

Summary of PRSM Auto Processes

PRSM auto processes are controlled by the PRSM scheduler. Everyday at the day of the week times set in table AUTOOPTS it executes the File Audit, Autoapp and the Status Audit. The Auto Apply process is the only optional process and can be controlled via table AUTOPRSU to set which days of the week it runs. Other fields in table AUTOOPTS (mondata, duration, maxatmpt and dropsync(split for XACore)) are used to control other attributes. The approval field is used to set the custapp default for new PRSU files. MNTIME is a field calculated and written by the system which estimates the next time autoapp will start.



Automatic Image Dump

Note: Automatic image (AUTOIMAGE) allows for image dumps to be taken automatically for DMS-100F SuperNode switches.

Autodump Commands

>**AUTODUMP <subcommands>** has the following subcommands:

>**HISTORY**	displays the history of the last scheduled image.
>**STATUS**	displays info on last dump taken and ON/OFF status.
>**ON/OFF**	turns scheduled image ON or OFF.
>**MANUAL**	starts an image dump on command.
>**RETAIN**	change the primary load route updating.
>**STOPDUMP**	used to stop a scheduled image already in progress.

AUTOIMAGE Tables

Table IMAGEDEV defines the image storage file storage devices used in the automatic image dump process. Each tuple in this table consists of 2 fields, VOLNAME and ACTIVE. This table has a maximum size of 4 corresponding to the 4 load routes.

Table IMAGESCHED is used to track and schedule the automatic image dump process. Each tuple in this table consists of four fields: DAY, DUMPHOUR, DUMPMIN, and ACTIVE. The table has a maximum size of 7 tuples corresponding to the seven days of the week.

Notes:

1. If any tuples are not datafilled, the auto-image will not run.
2. If more than one volume is defined, then the next image occurs on the next available volume. If current volume is the last one, auto-image will rotate to the top of the table and use the volume defined in the first tuple.
3. If a tuple is datafilled in either table but the ACTIVE field is set to "N", the auto-image will not run on that day nor use the oldest volume, depending on the table.
4. Some offices may need to increase the size of their disk volumes to accommodate two images.

Calculating Node and Terminal Numbers

Note: To verify results enter: >**DISPCALL;DISPTID <node #> <TID>**

DNs, LENs, Trunks:

Use CONVERT command in PMIST
>**CONVERT DN <directory #>**
>**CONVERT LEN <LEN #>**
>**CONVERT TRK <CLLI > <Ckt. #>**

MPC:

>**XPMIST**
>**NodeNO MPC_NODE MPC<MPC # from Table MPC>**
Returns node #. To XPMIST, include TID 0 (mtc. chnl.) & TID 1 (term.#).

IOC 1X67 Card:

>**MAPCI;MTC;IOD;IOC <IOC #>;Card <card #>;QUERYTTY <ckt #>**
Returns node #. To XPMIST, include TID 0 (mtc. chl.) & TID 1 (term. #).

Attendant Console:

>**AC <console CLLI> TIDS** Shows the DMODEM attached.

DTC:

>**PM;Post DTC <DTC #>;QueryPM** Provides node number.
[(* 32) + <ckt #> + 1] Provides terminal number.

DCM:

>**PM;Post DCM <DCM #>;QueryPM** Provides node number.
(See chart below for terminal number)

CIRCUITS	DCM SPANS				
	0	1	2	3	4
1	1	31	61	91	2
2	32	62	92	3	33
3	63	93	4	34	64
4	94	5	35	65	95
5	6	36	66	96	7
6	37	67	97	8	38
7	68	98	9	39	69
8	99	10	40	70	100
9	11	41	71	101	12
10	42	72	102	13	43
11	73	103	14	44	74
12	104	15	45	75	105
13	16	46	76	106	17
14	47	77	107	18	48
15	78	108	19	49	79
16	109	20	50	80	110
17	21	51	81	111	22
18	52	82	112	23	53
19	83	113	24	54	84
20	114	25	55	85	115
21	26	56	86	116	27
22	57	87	117	28	58
23	88	118	29	58	89
24	119	30	60	90	120

TOPS IV/MP DMODEM:

>**MAPCI;MTC;TRKS;TTP;Post G TOPSPOSDATA <position #>**
Provides associated DMODEM.
>**Post G DMODEM <DMODEM #>**
This shows MTM # (add one to the ckt number to get terminal number).
>**PM;Post MTM <MTM #>;QueryPM** Provides node number.

TOPS IV/MP Positions:

>**MAPCI;MTC;TRKS;TTP;POST G TOPSPOS <Pos. #>**

TOPS MPX Position:

>**Table TOPSPOS;POS <pos #>** Provides TPC number ("63").

```
TABLE:  TOPSPOS
POS  VCCKT  VCPD  CARD  DATAPATH  POSAREA  NO  GRP  CODE
-------------------------------------------------------
100 TMS 0 0 1 NPDGRP DS1SIG TMS MP ASCII 63 0 OPR 2 ALL ALL
```

>**MAPCI;MTC;PM;Post TPC <TPC #>; QueryPM** Provides node number and MP number; [<MP #> + 1] — gives terminal number.

ISDN Sets:

>**QDN <directory number>** Provides LTID.
>**QLT <LTID>** Provides node and terminal number.
(If QLT only returns a LEN, QLEN will give node and terminal number).

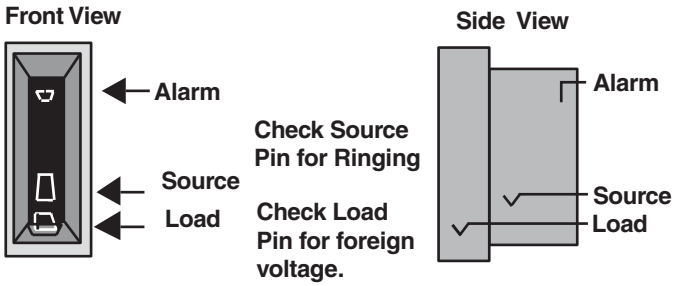
Ringing Quick References

(*NTP 297-1001-131, Ringing System*)
(*NTP 297-1001-592, Peripheral Maintenance Guide*)

Informational Notes for Ringing:

- Calls in ringing state are dropped when a warm SWACT occurs.
- Ringing is provided to all lines in the LCE frame by RG0 and RG1.
- Normally, RG0 supplies ringing to the even-numbered LCM.
- Normally, RG1 supplies ringing to the odd-numbered LCM.
- The LCM is capable of switching RGs when an RG or LD fault occurs.
- A single RG can supply ringing to all LDs in the LCE frame.
- The ANI/COIN circuit in RG0 serves unit 0 of both LCMs.
- The ANI/COIN circuit in RG1 serves unit 1 of both LCMs.
- An ANI/COIN failure in either circuit causes both LCMs to enter take-over mode. In takeover, the remaining ANI/COIN circuit is capable of serving both LCMs in the LCE frame.
- Reloading LCMs or performing a SWACT on the C-Side PM does not correct problems associated with ringing.
- Troubleshooting guidelines for ringing problems can be found in Chapter 31 of NTP 297-1001-592, *Peripheral Maintenance Guide*.
- Guidelines for changing ringing data in table LCMINV can be found in Chapter 24 of NTP 297-1001-592, *Peripheral Maintenance Guide*.
- See "LM/RLM Ringing" in this QRG for a table on "Line Class Codes by Card Type and Ring Code" and reference to table LMRNG.

RA/RB Fuse Block Reference for Ringing Check



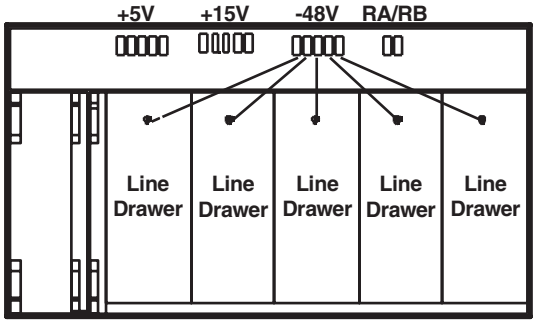
Note: **Ringing is a low-frequency AC voltage that may vary during the ringing cycle. Readings of 67 to 155 VAC may be normal. Ringing voltages are superimposed on a DC voltage that can be measured in the DC mode. The DC voltage may 36 to 60 volts. Superimposed ringing may turn positive during part of the ringing cycle.**

Cross Reference of LCMs and Drawers to RA/RB Fuses

Note: See LCE Frame in this QRG for location of LSGs and drawers.

Shelf location	04	21	38	55
LCM number	0	0	1	1
LCM Unit	0	1	0	1
Odd LSGs	RB	RA	RB	RA
Even LSGs	RA	RB	RA	RB

Line Drawers and Associated Fuses



BICRELAY Testing Note:

The BICRELAY Testing feature should be set up for testing only if party lines are assigned on NT6X17 line cards, or if any NT6X19 message waiting cards are used. Reference the LCMINV table and the BICTST field where the test is set to "Y" or "N". See the OFCENG table parameter ALLOW_RINGING_ON_TIP_SIDE. Parameter BICRELAY_XLCM_TEST_SCHEDULE is preset.

Trunk Group Types Quick References

(*NTP 297-YYYY-350, Translation Guides*)

AI	Automatic Intercept System (AIS)
AN	Automatic Number Announcement
ANI	Automatic Number Identification
AOSS	Auxiliary Operator Services System (AOSS) Trunk Group
AOSSARU	AOSS External Audio Response Unit (ARU)
ATC	Access Tandem to Carrier (Originating from SC,IT,TOPS and Terminating to SC and IT trunk group types
A5	Two-way or Outgoing from Local to North Electric AMR5
CA	Siemens ADDS Come Again Signalling for 1+, 0+, 0- calls
CELL	Cellular (Bellcore type 2A interconnect to CMC switch)
DA	Directory Assistance Charging
DS0	Digital Signal Level 0 (Transmission Link from SSP to STP)
ES	Emergency Service Bureau
E911	Enhanced 911 Emergency Service
GERIC	Incoming 1TR7 ISUP for Germany Network field trial
GEROG	Outgoing 1TR7 ISUP for Germany Network field trial
GER2W	Two-way 1TR7 ISUP for Germany Network field trial
GW	International Gateway Trunk Groups
IBNT2, TI TO	Integrated Business Network (IBN) 2-way, Incoming, and Outgoing Trunk Groups
IET	Inter-Exchange Tandem Trunk Group that us SRMF signalling
INT101	International 101 test line for a DMS Gateway Office
IR	Intercept, Information, or Repair with no outpulsing
IS	Tandem Switching — no digits incoming — route upon seizure
IT	Intertoll Trunk Group
ITL2	International 102 test trunk
ITOPS	International TOPS
LOOPA1	Loop-Around Test Line (NT2X75AA) and A-law Loop-Around (NT2X75BA) Port 1
LOOPA2	Loop-Around Test Line (NT2X75AA) and A-law Loop-Around (NT2X75BA) Port 2
LPBK	Loopback Trunk
LP4W	Four-Wire Digital Loopback for ISUP Trunks in a DMS-300
MAINT	MAINTENANCE AND TEST TRUNK GROUPS:
DCLTONE	Dialable Cable Locator Tone (NT2X90 type pack)
DTU	Digital Test Unit (NT4X23AA)
ESADGTR	Emergency Stand-Alone Digital Receiver (NT2X48AB)
HSET	Position Headset (NT2X72, NT2X88AA or NT5X30AA)
JACK	Position Jack (Local = NT1X54AA, Toll = NT2X72 type)
LTU	Line Test Unit (NT2X10 and NT2X11 type circuit packs)
MONTALK	Monitor and Talk for LTU (NT2X90 type circuit pack)
MTU	Metallic Test Unit (Domestic = NT2X11; Intl = NT4X79)
TTT	Trunk Test Transmission (NT1X90 and NT2X96 type packs)
SPARExxx	Spare Trunk Groups
OCKT	Open Circuit Test Trunk (NT2X71AA)
SCKT	Short Circuit Test Trunk (NT2X71AA)
MTR	International with Metering on Trunk Groups
NFA	Network Facility Access
NU	Nailed-Up Connection
OC	Outgoing and Two-way from Local Office to Toll CAMA
OI	Incoming Operator Verification
OOC	Overseas Operator Center
OP	Outgoing or 2-way from Local & Toll Offices to TOPS/TSPS
OPR	International with Operator
OS	Toll Completing Joint Hold
PET	PCS 1900 Equal Access Trunk
PRA	Primary Rate Access
PRIVLN	Gateway Private Line
PX	DID and DOD or both with a Digital PBX
P2	DID and DOD or both with a PBX
RC	Recording Completing to a 3CL switchboard
RONI	Remote Operator Number Identified (ONI) Trunk Group
ROTL	Remote Office Test Line
SC	Incoming and Two-way CAMA
SOCKT	Transmission Tests
SPC	Semi-Permanent for International Offices
TD	Test Desk
TDDO	Two-Stage Direct Dial Overseas
TI,TO,T2	Incoming, Outgoing, and 2-way End Office
TL	CCIS Transmission Link
TOPS	TOPS Trunk Group
TOPSARU	TOPS External Audio Response Unit
TOPSVL	TOPS Voice Link
TPS101	International 101 Test Line
TTL2	102 Test used for Carrier Milliwatt supply and Balance Test
T101	Incoming and Outgoing Trunk Group for 101 Test Line
T105	105 Test Line
UT	Utility Telemetry Trunk Group
VR	Verification Trunk
X75	X.75 Trunk Group for connection to a DMS Packet Handler
ZI	Tandem 0+ or 0- to TOPS

ISDN Quick References

(*NTP 297-2401-501, ISDN BRI Maintenance Guide*)

Note: See ISDN BRI Troubleshooting for PM180 and PM189 logs and ISDN Q931 Procedures for Traces on BRI and PRI in this QRG.

Note: See "TRAVER Commands" within this QRG for ISDN TRAVER information and examples.

ISDN Query Commands

>**QLT** The QLT command queries a logical terminal.

>**QDCH** The QDCH command displays D-channel handler (DCH) connections or ISDN service group (ISG) information. The following connection types are supported:
- LTID - specifies the number of LTIDs on a DCH.
- BRA - specifies connection info. for BRA channels.
- Bd - specifies Bd channels connection information.

>**QBB** The QBB command displays all relevant information associated with ISDN B-channel connections.

>**QLOOP** An LTPISDN level command that displays all LTIDs, DNs, and TEIs associated with a posted ISDN line. For B-channel packet terminals, the specific B channel is displayed rather than the TEI.

>**QCOUNTS** The QCOUNTS command is used to display and reset Layer 2 and Layer 3 protocol and protocol abnormality counts for a particular X.25 LTID or X.75 interface. The command provides an instantaneous snap-shot of protocol performance associated with a logical terminal, X.75 trunk, or specific XSG.

>**QIT** The QIT command displays packet provisioning information for terminals on the DPN packet handler (LTIDs in PHINFO). QIT is the primary command for packet-switched service with the DPN PH. Use the QLT command for circuit-switched service.

>**QPHF** The QPHF command displays information about XSGs, channels, DNs, PVCs, and X.75 links.

>**QSCONN** The QSCONN command displays information on special connections for ISDN XPMs. With the DMS packet handler, QSCONN can also be used to identify special connections associated with a specific XSG, and to display all special connections through the network.

>**QX75** The QX75 command displays information for the specified XSG that is associated with the X75 special connections to the DMS packet handler.

ISDN OM Groups

BCAPCG provides registers to count the number of unsuccessful call attempts for IBN and ISDN lines due to bearer capability incompatibility for a particular customer group.

BCAPOF same as OM group above, except counts for the whole office. It also measures synonym directory number activity.

ISGBRA provides registers to count the number of frames transmitted & received, number of frames discarded, and number of frames with CRC errors on a BRI DCH channel basis.

ISGBD provides registers to count the number of frames transmitted & received, number of frames discarded, and number of frames with CRC errors for Bd channels on a per-channel basis. Useful with Packet Service.

ISGCPU provides registers to measure the ISG's CPU occupancy on a per-DCH basis.

ISGOVLD provides registers to measure the degree to which an ISG is overloaded on a per-DCH basis.

CPICG provides registers to count call progress activity events.

LMD can be very useful in finding out whether an ISDN PM is under provisioned with DS30-A links to the LCME. Recommend using ORIGBLK and TERMBLK OM registers.

XPMLMK records one-way and two-way link blockage and usage for all XPMs with switched lines. Use PSLBLK and CSLBLK.

ISDN Office Engineering (OFCENG) Table Parameters

Used by Bearer Capability Routing:

NUM_RC_EXT_BLKS
DEFAULT_BEARER_CAPABILITY Recommend set to SPEECH.
BC_CHECKING_SCOPE

Used by Flexible Calling:

MAX_NO_OF_3_PORTS_IN_CHAIN
MAX_NO_MEDIUM_FTR_DATA_BLKS

Other OFCENG Table ISDN related Parameters:

ISDN_DPN_PH_GENERIC
ISDN_NET_1A_INTERWORKING

ISDN parameters continue on the next page.

ISDN parameters continue.

ISGBDOM_BLKSIZE
LAYER2_PEGS_THRESHOLD_LEVEL
LCDI_SYNC_BURST
LCDI_SYNC_DELAY
PHINFO_AUDIT_TIME
T108ISDN_TIMEOUT_IN_MINUTES

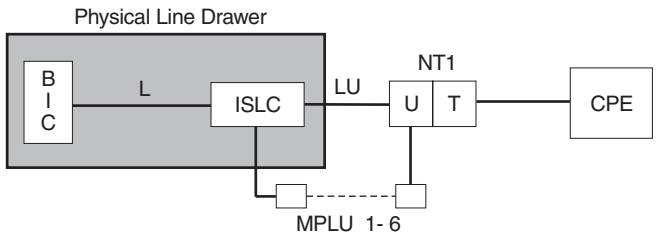
OFCOPT Table ISDN related Parameters:

ISDN_INFO_EXT_REC
MAX_BRA_LINES
MAX_PRI_LINKS

OFCVAR Table ISDN related Parameters:

QISDN_LOSS_OF_SYNC_WORD_ALARM
QISDN_LOSS_OF_SIG_DGASP_ALARM
QISDN_NT1_TEST_MODE_ALARM
QISDN_T_SYNC_LOST_ALARM
QISDN_PERFORMANCE_M0N_ALARM
ISDN_LOSS_OF_SIG_N0_DGASP_ALARM

ISDN Loopback Reference



Loopback testing can be done at one of 4 places:
T Interface: Loopback at T interface of the NT1 towards the DMS.
LU Interface: Network side of line card.
MPLU Interface: Loop extenders between the ISLC and the NT.
L Interface: CC side of line card.

Loopback points can be set at the LTPDATA level using the LOOPBK command and B1 (b-channel 1), B2 (b-channel 2), or BBD (all channels).

Configuring a BRAFS ISDN set with SPID

The Service Profile Identifier (SPID) is a number which associates a terminal to its subscribed services. A SPID must be datafilled in the physical terminal for Layer 3 ISDN connectivity. For National ISDN-1 (NI-1), a 2-digit user-definable number terminal ID (TID) must be included in the SPID configuration. The TID is not datafilled in the DMS-100.

Protocol Version Control 1 SPID = NPA + 7-digit DN + spid-suffix (if datafilled in the switch)
Protocol Version Control 2 SPID = NPA + 7-digit DN + spid-suffix (if datafilled in the switch) + TID
spid-suffix = one to two digit identifier for EKTS-based services, e.g. MADN; MUST match spid-suffix datafilled in the switch.
Note: A spid-suffix is not required for non-EKTS ISDN sets.

Reserving a Spare DCH

Nortel recommends reserving one D-channel handler (DCH) per XPM as a hot spare. For example if you have two DCHs in table DCHINV, only datafill one ISG in table ISGDEF. The second DCH becomes a hot spare.

Table DCHINV:

DCHNO	PMTYPE	PMNO	DCHPEC	LOAD	PORT
2	LTC	3	BX02BA	EDH05BC	17
3	LTC	3	BX02BA	EDH05BC	19

Table ISGDEF:

ISGNO PMTYPE PMNO SERVICE CHNLTAB
1 LTC 3 (BRA) (PD) $ (0 RESERVED) (1 BRA) (2 BRA) (3 BRA) (4 BRA) (5 BRA) (6 BRA) (7 BRA) (8 BRA) (9 BRA) (10 BRA) (11 BRA)
(12 BRA) (13 BRA) (14 BRA) (15 BRA) (16 BRA) (17 BRA) (18 BRA)
(19 BRA) (20 BRA) (21 BRA) (22 BRA) (23 BRA) (24 BRA) (25 BRA)
(26 BRA) (27 BRA) (28 BD) (29 BD) (30 BD) (31 BD) $

Note: Bd (D-channel packet service) channels start at DCH port 31 and are datafilled backwards: 31, 30, 29, etc. BRA channels are datafilled from DCH port 1 forward.

ISDN continues on the next page.

PRI Trunk AMI vs. B8ZS Capability Datafill

In this example, trunk FRS (DTCI 0, span 16) is datafilled for SF (Super-Frame) and ZCS (AMI) capability. This trunk allows 56Kbps transmission speed. Trunk PRAWBA (DTCI 0, span 0) is datafilled for ESF (Extended SuperFrame) B8ZS signalling and uses the card NT6X50AB. This datafill allows 64K clear- channel signalling capability for trunk PRAWBA.

Table TRKMEM:

CLLI EXTRKNM SGRP MEMVAR

FRS 1 0 DTCI 0 16 1
PRAWBA 1 0 DTCI 0 0 1

Table LTCPSINV:

LTCNAME PSLNKTAB

DTCI 0 N (0 DS1PRA ESF N 0 NIL) (1 DS1PRA ESF N 0 NIL)
(2 DS1PRA ESF N 0 NIL) (3 DS1PRA ESF N 0 NIL)
(4 DS1PRA ESF N 0 NIL) (5 DS1PRA ESF N 0 NIL)
(6 DS1PRA ESF N 0 NIL) (7 DS1PRA ESF N 0 NIL)
(8 DS1PRA ESF N 0 NIL) (9 DS1PRA ESF N 0 NIL)
(10 DS1PRA ESF N 0 NIL) (11 DS1PRA ESF N 0 NIL) (12 NILTYPE)
(13 DS1PRA DEFAULT N 0 NIL) (14 DS1PRA DEFAULT N 0 NIL)
(15 DS1PRA DEFAULT N 0 NIL) (16 DS1 FRS N)
(17 DS1PRA DEFAULT N 0 NIL) (18 DS1PRA DEFAULT N 0 NIL)
(19 DS1PRA DEFAULT N 1 NIL) $

Table CARRMTC:

CSPMTYPE TMPLTNM RTSML RTSOL ATTR

DTCI FRS 255 255 DS1 NT6X50AA MU_LAW SF ZCS BPV NILDL N 250 1000 50 50 150 1000 3 6 864 100 17 511 4 255

DTCI ESF 255 255 DS1 NT6X50AB MU_LAW ESF B8ZS BPV NILDL N 250 1000 50 50 150 1000 3 6 864 100 17 511 4 255

Assignment of P-Side Links to ISDN Peripherals

For DS1/DCH interface card port assignments, a maximum of 10 cards can be placed in the LGC/LTC. The port assignment begins with PORT 0 and increases sequentially.

The DS30A ports are assigned starting at the highest port number not used by the DCH and decreases sequentially.

The DCH cards (NORTEL recommends leaving one DCH as a spare pack) are datafilled starting at PORT 19 and decrease with the odd-numbered ports.

Table LTCPSINV:

LTCNAME PSLNKTAB

LTC 3 N (0 DS1 64K N) (1 DS1 DEFAULT N) (2 NILTYPE) (3NILTYPE)
(4 NILTYPE) (5 NILTYPE) (6 DS30A) (7 DS30A) (8 DS30A) (9 DS30A)
(10 DS1PRA 64K N 0 NIL) (11 DS1PRA 64K N 0 NIL) (12 DS30A) (13 DS30A)
(14 DS30A) (15 DS30A) (16 DS30A) (17 DCH) (18 DS30A) (19 DCH) $

PRI Datafill of Interface IDentifier (IID)

To bring a new PRI trunk into service, especially if this trunk interfaces an SL-1 PBX, follow the following guidelines in the corresponding XPM entry in table LTCPSINV:

- The span of the PRIMARY DCH must have an IID of "0".
- The span of the BACKUP DCH must have an IID of "1".
- For any additional spans in the trunk group:
  - For an MSL-100, if a backup DCH is not datafilled, the IID of "1" should not be used.
  - The IID's of the additional spans should ascend sequentially, though not necessarily consecutively.

TABLE LTCPSINV:

LTCNAME PSLNKTAB

DTCI 0 N (0 DS1PRA ESF N 0 NIL) (1 DS1PRA ESF N 1 NIL)
(2 DS1PRA ESF N 2 NIL) (3 DS1PRA ESF N 3 NIL)
(4 DS1PRA ESF N 0 NIL) (5 DS1PRA ESF N 0 NIL)
(6 DS1PRA ESF N 0 NIL) (7 DS1PRA ESF N 0 NIL)
(8 DS1PRA ESF N 1 NIL) (9 DS1PRA ESF N 0 NIL)
(10 DS1PRA ESF N 0 NIL) (11 DS1PRA ESF N 0 NIL) (12 NILTYPE)
(13 DS1PRA DEFAULT N 0 NIL) (14 DS1PRA DEFAULT N 0 NIL)
(15 DS1PRA DEFAULT N 0 NIL) (16 DS1 FRS N)
(17 DS1PRA DEFAULT N 0 NIL) (18 DS1PRA DEFAULT N 0 NIL)
(19 DS1PRA DEFAULT N 0 NIL) $

AIN Quick References

(*NTP 297-5161 021, AIN Essentials, Services Implementation Guide*)
(*NTP 297-5161 022, AIN Service Enablers, Services Imp. Guide*)
(*NTP 297-5161-510, AIN/LRN-LNP Maintenance Guide*)

AIN Tables:

Trigger Tables:	Announcement Tables:	Response Tables
TRIGINFO	AINANNS	RCNAME
TRIGDIG		RTECHAR
TRIGGRP	Subscription Tables:	XLAMAP
TRIGESC	TRKAIN	PXLAMAP
	OFCVAR	NCOS
		CUSTHEAD

LOGS: AIN, AUD, AUDT, CCS, TCAP, LINE, TRK, TRAP, SWERR

OM Groups: AIN, AINACG, AINOGOFF, AINOGSUB, AINICOFF, AINICSUB, AINNCR, C7LINK2, C7SCCP, CPUSTAT, EXT, FTROM, ISUPSUAG, TCAPERRS, TCAPUSAG, TRK, TRMTCM, TRMTFR2, TFRAIND, TRFAINF

AIN RESPONSE TRAVER Examples

Analyze Route Response (AR) with Called Party Number (CDN):

>traver l 6783422 n cdn na 6196783420 ainres r01 ar b

Note: na = Nature of Number

AR with CDN and Carrier information/Transit Network Selection (TNS):

>traver l 6783422 n cdn na 2016783422 tns na cic 222 ainres r01 ar b

>traver tr tasdc7t2 n cdn na 2016783422 tns na unk 222 ainres r01 ar b

Note: We use 'unk' for most trunk originators and 'cic' for line originators, IBN trunk originators, and PRI trunk originators.

Continue Response (CONT):

>traver l 6783422 96783420 ainres r01 cont b

AR with CDN, TNS, and operator information (OSA):

>traver l 6783422 n cdn na 2016783422 tns na cic 222 osa puba ainres r01 ar b

Note: puba = Operator System Access.

Forward Call (FC) with CDN:

>traver l 6783419 n cdn na 6196783421 ainres r01 rc b

Note: Originator for TRAVER is the agent with TERMATTEMPT trigger.

AINTRACE Command

To run AINTRACE type:

>**AINTRACE**
>**SELECT <parameter>**
This command selects a terminal for tracing.

Parameters are:

- AC - specify the Attendant Console CLLI for the terminal
- TID - specify a terminal ID for the terminal
- LTID - specify the Logical Terminal ID for the terminal
- DN - specify the directory number for the terminal
- LEN - specify the line equipment number for the terminal
- TRK - specify the trunk CLLI for the terminal

>**START**
"Make test call"
>**STOP**
>**BACKALL** (displays data)

Message Types

E1 - Unidirectional (Error)
E2 - Query with Permission
E4 - Response
E5 - Conversation with Permission
E6 - Abort

Local Number Portability (LNP) Quick References

(*NTP 297-8981-021, LRN - LNP Service Implementation Guide*)

LNP Tables: TOFCNAME, HOMELRN, FNPA7DIG, TRIGDIG, TRIGGRP, OFCVAR, LNPOPTS, LNPCODE
LNPRTE (see patches LNP01, LNP02, and LNP03)
VII06RTE (see patches VII05 and VII06)
ARSSTS (see patches LNP30, LNP31, and LNP32)

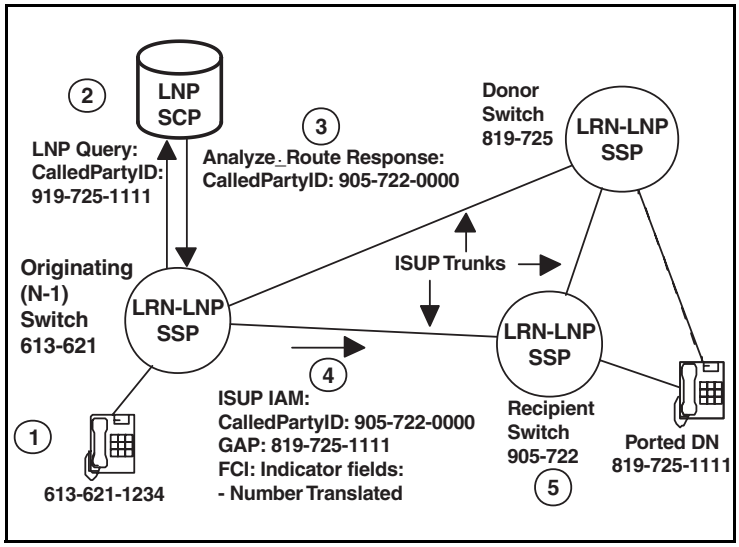
LOGS: LNP (also see AIN LOGS)

OM Groups: LNP (also see AIN OM Groups)

QLRN Command:
>**qlrn 8197251111**
Query sent: 1999/12/31 11:59:59.571 FRI.
Valid QLRN response received.
Routing number: 9057220000.
CALLING DN: 6136210000. Office:TASCAPTIVE_P.
Elapsed Time (mm:ss:mS): 0:0:5.

Call to Ported DN

Note: TRAVER examples below support this diagram.



LNP TRAVER Examples

Processing Analyze_Route from LNP SCP (see #3 from diagram above):
-CalledPartyID from response = LRN = 905-722-0000
-dialed DN = 819-725-1111
>**traver l 6211234 n cdn na 9057220000 ainres r01 lnpar 8197251111 b**

Processing Analyze_Route from LNP SCP:
-CalledPartyID from response = dialed DN = 4164671001
>**traver l 6255000 n cdn na 4164671001 ainres r01 lnpar n b**

Incoming LNP call to a DN which has ported to this switch (see #5 from diagram above):
-incoming ISUP
-LNP query occurred on a previous switch
-LRN=905-722-0000
-GAP=819-725-1111
>**traver tr isupitic 9057220000 tcni 8197251111 b**

Incoming LNP call to a non-ported portable DN on this switch:
-incoming ISUP
-LNP query occurred on a previous switch
-dialed DN = 6136631001
>**traver tr isupitic 6136631001 tcni n b**

ACD-MIS Quick References

Documentation:

NTP 297-2041-500*, ACD Maintenance Guide*
NTP 297-2041-011, *ACD Planning and Engineering Guide*
NTP 297-2041-350, *ACD Translations Guide*
NT NIS-Q209-2, *ACD MIS Interface Specifications*, Version 9.1

Base ACD Tables:

ACDGRP, ACDRTE,ACDSGRP, ACDMISPL, ACDMISSP, ACDLOGIN, DNROUTE, DNATTRS, MPC, MPCLINK.

Note: See NTP 297-YYYY-350, *Translations Guide—Volume 3* for a detailed list of ACD tables.

LOGS: ACD, IOD, MPC, NOP, RO, AUD545, DIFL151, LINE205, LMAN, RMAN, MIS, SLNK, MSRT**,** TCAP

OM Groups: ACDMISPL, ACDGRP, EXT, FCS, FTQR, NACDGRP1, NACDGRP2, MPCLINK2, MPCLINK3, ROAPPL, ROMISC, VFGIWUSE

Note: See NTP 297-2041-500, *ACD Maintenance Guide* for a detailed list of ACD related LOGS and ACD OM groups and their registers.

ACDRTD Real Time Display Command

From the CI level, the ACDRTD command will dump an ACD Real Time report to a specified device. For example, to generate a report every 20 seconds for all ACD groups:
>**ACDRTD STARTDEV <device name> INTERVAL 20 ALL**

Sample output:

TIME OF DAY	ACDGRP	PRIMEDN	CQCCW	MAN	BSY	IDL	NR	MSB
98/11/02 17:21:12	ACDGRP1	4437104	8 34	36	32	0	4	6
98/11/02 17:21:13	ACDGRP2	4433334	0 0	0	0	0	0	4

This report gives the following information for ACDGRP1:
- eight calls in queue
- next call to be answered has been waiting 34 seconds
- 36 agents currently logged in
- 32 agents active on ACD calls
- no idle agents
- four agents logged in but unavailable for ACD calls
- six agents currently in Make Set Busy mode

To stop the report, type:
>**ACDRTD STOPDEV**

ACD Commands

A CI level command that allows the user to display general information and current status of all or specific ACD pools.

ACDQSTAT Command:

>**ACDQSTAT <ACD group>**

```
    PRIME DN CALLS  AGNTS  WAIT
    8566666    0       0      0
```

ACDDEBUG Command:

Non-resident tool used to format and display real-time status of ACD agents, groups, and queues. See ACDDEBUG under Tier II Support Tools.

ACDSHOW Commands:

>**HELP**	displays available commands.
>**QUIT**	quits from ACDSHOW environment.
>**ACDDNS**	displays list of directory numbers.
>**ADMINGROUP**	displays admin groups and assoc. senior supervisors.
>**AGTPOS**	displays list of agent positions.
>**AUDIOGROUP**	displays name of audio group used to give recorded message to callers.
>**CLRROUTE**	displays the clearing route to which queued ACD calls are optionally routed while the specified ACD group is in the night service mode. The route can be displayed for all or specified ACD groups.
>**COUNTS**	displays current statistics of ACD group(s).
>**GROUPINFO**	displays ACD group information.

ACD-MIS continue on the next page.

ACD-MIS continues.

>**GROUPNAME**	displays grp name, DN type, & priority for given DN.
>**LOGINID**	displays information relating to a particular login id.
>**MODE**	sets default display mode (brief/full).
>**NSROUTE**	displays nightservice route(s).
>**OVFLROUTE**	displays overflow route(s).
>**PASSWORD**	displays password of login identifications.
>**STATUS**	displays current status of ACD group(s).
>**SUPERVISOR**	displays a list of ACD supervisors.
>**TABENTRY**	displays routing information.
>**THRESHOLD**	displays threshold limits.
>**THROUTE**	displays threshold route(s).
>**VALIDAUDIO**	displays valid audio groups.
>**VALIDROUTES**	displays valid routes for groups.
>**NSAUDGRP**	disp's name of audio grp used for night service annc.
>**FIAUDGRP**	display name of audio grp used for forced INC annc.
>**FOAUDGRP**	display name of audio grp used for forced OG annc.

ACD OM Groups

ACDGRP	Registers ACD traffic.
EXT	Registers Extension Block use.
FTRQ	Registers Feature Queue Block use.
NACDGRP1	Registers Immediate & Time Delayed Overflow Traffic.
NACDGRP2	Registers TCAP message traffic.

LOADMGMT III Commands

Note: The ACDSHOW command must be entered before entering LOADMGMT. The following list contains all the available load management commands. Not all of the commands are available with only the ACD - Load Management III feature package. Other feature packages may be required.

>**ADD ACDDISP**	associates a new name to an ACDDN datafilled in table DNATTRS.
>**CHANGE ACDDISP**	alters the display message of the ACD called name/called number that appears on the agent's telephone set.
>**CHANGE ACDDNPRI**	alters the priority of the ACDDN assigned to an ACD group.
>**CHANGE ACTIVATE**	enables a supervisor/administrator to activate anddeactivate a single login ID or a range of loginIDs. This command canbe entered from a MAP position or from an ACDMIS. This command isapplicable only to login IDs stored in table ACDENLOG.
>**CHANGE AUDIO**	alters the recorded announcement presented when callers join the incoming call queue for an ACD group by referencing one of the audio groups in table AUDIO.
>**CHANGE CIFROUTE**	alters the route calls take when the **Interflow** key is activated.
>**CHANGE CLRROUTE**	alters the clearing route to which queued ACD calls are optionally routed while specified ACD group is in the night service mode.
>**CHANGE CPKRTMR**	alters the call park recall timer value for an ACD group. The recall timer is used to recall a parked call that is not answered within a specified time.
>**CHANGE CTQSIZE**	alters the number of calls that can be queued in the call transfer queue.
>**CHANGE CTRTMR**	alters the call transfer recall timer for an ACD group. The call transfer recall timer is used to recall a transferred call that is not answered within a specified time.
>**CHANGE DEFLOB**	alters default line of business code for ACD grp.
>**CHANGE FIAUDGRP**	changes the audio group to be used for all incoming calls that are presented to an agent or queued in the incoming call queue.
>**CHANGE FOAUDGRP**	changes audio group to be used for all calls that are rerouted due to overflow condition.
>**CHANGE MAXCQSIZE**	alters the maximum number of calls that can be queued in the incoming call queue for an ACD group.
>**CHANGE MAXVQSIZE**	alters the maximum size of the overflow queue for an ACD group.

LOADMGMT commands continue on the next page.

LOADMGMT commands continue.

>CHANGE MAXWAIT alters the maximum time a call can wait in an incoming call queue before being presented to an agent position.

>CHANGE MSQSTYPE changes the type of multistage queue status(MSQS) display. The MSQS display types are WAIT (for the wait time of the call at the head of the incoming call queue) and CALLQ (for the size of the incoming call queue).

>CHANGE NSAUDGRP alters the audio group of the announcement to which incoming ACD calls are given prior to being rerouted to the night service route.

>CHANGE NSROUTE alters the route to which calls for an inactive ACD group are directed. Calls can be routed to the following destinations:

- another ACD group
- a Uniform Call Distribution (UCD) group
- a station within the switch
- an outgoing trunk group
- a recorded announcement

>CHANGE OFLTYPE changes the use of time delay overflow to priority 0 calls only or to all priority calls. This command also determines when the time delay overflow timer starts.

>CHANGE ORGANN changes the announcement heard by callers following overflow treatment to or from the original ACD group.

>CHANGE OVFLROUTE alters the list of routes (ACD groups) to which overflow calls for an ACD group can be routed. Routes can be adjusted as follows:

- replace one group with a new group
- swap two groups within the list
- add a group
- delete a group

>CHANGE PAQSIZE alters the personal agent queue size for an ACD agent.

>CHANGE PRIOPRO alters the priority promotion time interval.

>CHANGE QTHRESHOLD alters the MSQS thresholds that allow supervisors to monitor the statuses of incoming call queues.

>CHANGE RANTH alters length of time a caller hears ringing before being presented with a recorded announcement.

>CHANGE RI alters the resource index (RI) value of the destination ACD group if it is not a DMS switch.

>CHANGE SERVICE alters the type of calls to be serviced first: incoming overflow, priority 0, or oldest.

>CHANGE THROUTE alters the route to which calls for an ACD group are eventually directed if they cannot be queued.

>CHANGE TMDELOFL alters time delay overflow time-out value.

>CHANGE TMDTHRTE alters the time delay threshold route.

>CHANGE TMDTHTIME alters the wait time for a call before it is sent to the time delay threshold route.

>CHANGE WRPTIME alters the wrap-up time for an individual agent or an ACD group.

>DELETE ACDDISP deletes the ACD group name associated with a DN in table DNATTRS.

>HELP displays general information on the syntax of load management commands.

>QUIT exits load management environment and returns the system to the ACDSHOW environment.

>REASSIGN (ACDDN) reassigns an supplementary ACDDN to a new ACD group.

>REASSIGN (AGENT) reassigns up to five agent positions to a specified subgroup or supervisor in the same ACD group or in another ACD group.

>SET PROMPT determines whether the system prompts are displayed after each command entry.

DMS-250 Quick References

(*NTP 297-2621-851, UCS DMS-250 Customer Data Schema Ref. Manual*)
(*NTP 297-2621-860. UCS DMS-250 CSP Translations Reference Manual*)
(*NTP 297-2621-814, UCS DMS-250 Operational Measurements Ref. Man.*)
(*NTP 297-2621-819, UCS DMS-250 Commands Reference Manual*)

Trunk Group Types

DAL - Direct Access Line (PBX)
EANT - Equal Access Network Trunk (Feature Group D)
EDAL - Electronic Tandem network Dedicated Access Line
IMT - Inter-Machine Trks (Connect DMS-500 to other DMS 250/500)
ONAL - Off-Network Access Line (Feature Group A)
ONAT - Off-Network Access Trunk (Feature Group B and C)
PRA250 - Primary Rate Interface (ISDN)

DMS-250 Tables

ANISCRNU, ANISCUSP, ACSCRN2, AUTHDIN, AUTHCODU, COSSCRN,MULTIPIN, MULTICOS, PARTOSTS, PARTRANO, PATRRAN3, PARTRANS, STSTOPAR, STSTRANO, STSTRAN3, STSRANS, TRKGRP1, TRKCOS, UNRESDAT, UNRESDAY, UNRESTIM

QACCT Commands

The Query Account (QACCT) command manages information located in the account code screening (ACSCRN2) table. QACCT replaces the ACDQUERY command.

>**QACCT HELP <topic>**
>**QACCT IDX <index number>**
>**QACCT DUMP <with entries or datafilled only>**
>**QACCT LIST <index number>**
>**QACCT COPY <from index to index>**
>**QACCT DELETE <index number with entries prompt>**
>**QACCT FIND <account code digits>**

AUTHTEST Command

The ACCTTEST (ACCT Code Test) command performs the following:
* validates the following account code types:
  - authcode (AUTHACCT)
  - authcode and a speed number (AUTHSNAC)
  - automatic number identification (ANI)
  - travel card number (TCN)
* translates an authcode-associated private speed number (AUTHSPEE) to the destination number stored in the service control point (SCP)

>**ACCTTEST AUTHACCT <adin authcode auth_acct timeout>**
>**ACCTTEST AUTHSPEE <adin authcode speed_no timeout>**
>**ACCTTEST AUTHSNAC <adin authcode speed_no authacct timeout>**
>**ACCTTEST ANI <ani_no ani_acct timeout>**
>**ACCTTEST TCN <tcn_no tcn_acct timeout>**

Travel Card Number Test (TCNTEST) Command

The Travel Card Number Test (TCNTEST) command verifies the integrity of the travel card number (TCN) subsystem by validating calling card numbers located at remote database location(s).

Restrictions:

- Each of the TCN subsystems must be in service.
- Remote database must be operational.
- Number of simultaneous users for the TCNTEST command is limited to the number of users specified by office parameter TESTSS_MAX_USERS (table OFCVAR).

Datafill must be located in the following tables:

- C7GTT
- C7GTTYPE
- C7LKSET
- C7LINK
- C7LOCSSN
- C7NETWRK
- C7RTESET

DMS-250 quick references continue on next page.

DMS-250 quick references continue.

Note: The following are examples of DMS-250 TRAVERs and responses:

TRAVER of DAL Trunk

>**UTVSTS 611**
DMS250 TV STS SET TO: 611

>**traver tr dal237twdtls 2133603789 b**

```
STS USED FOR TRAVER IS: 611
TABLE STSTOPAR
611 00 11
TABLE TRKGRP
DAL237TWD TLS DAL 127 NPDGP NCON 0 2W DAL MIDL 16 7 16 16 S
10 NIL DL 7 5 111 MANUAL 214 0 NOAUTHS RTE8 0 VOICE_DATA Y 1
N Y NONE 00 (QHQ) (ACPROMPT)$
TABLE STDPRTCT
DAL (1)(0)0
SUBTABLE STDPRT
WARNING: CHANGES IN TABLE STDPRT MAY ALTER OFFICE BILLING.
CALL TYPE DEFAULT IS NP. PLEASE REFER TO DOCUMENTATION.
  . 21 21 CT OFFNET 8 10 0
WARNING: CHANGES IN TABLE STDPRT MAY ALTER OFFICE BILLING.
CALL TYPE DEFAULT IS NP. PLEASE REFER TO DOCUMENTATION.
TABLE HNPACONT
611 991 10 (195) (1) (0) (0) 1
  . SUBTABLE HNPACODE
  .213 216 HNPA 0
  .630 630 LRTE 630
  .SUBTABLE RTEREF
  .630 S D EAN630TWMFWK
 .EXIT TABLE RTEREF
EXIT TABLE HNPACONT

+++TRAVER: SUCCESSFUL CALL TRACE+++

STS USED FOR TRAVER IS: 611
DIGIT TRANSLATION ROUTES
1 EAN630TWMFWK          2136306789        ST
1 DIGITS_003
+++TRAVER: SUCCESSFUL CALL TRACE+++
```

TRAVER of EANT Trunk

>**UTVSTS 414**
DMS250 TV STS SET TO: 414

>**traver tr eant_2w_c7loopbk 4145442175 b**

```
STS USED FOR TRAVER IS: 414
TABLE STSTOPAR
414 00 7
TABLE TRKGRP
EANT_2W_C7LOOPBK EANT 0 TLD NCTC 0 2W P250 MIDL 15 15 15 15
EAPT 7 7 414
    UCS2EAEO NIL 407 7 NONE 0 NONE 0 0 SPEECH 160 (CASUALU) (ANI-
DIGS)
    (TMANIDLV ALWAYS) $
TABLE STDPRTCT
P250 (1) (65021) 6
 . SUBTABLE STDPRT
WARNING: CHANGES IN TABLE STDPRT MAY ALTER OFFICE
BILLING.  CALL TYPE DEFAULT IS NP.  PLEASE REFER TO
DOCUMENTATION.
 . KEY NOT FOUND
 . DEFAULT VALUE IS:   N NP 0 NA
 . SUBTABLE AMAPRT
 . KEY NOT FOUND
 . DEFAULT VALUE IS:   NONE OVRNONE  N
TABLE HNPACONT
414 Y 131 8 (27) (1) (0) (0) 0
 . SUBTABLE HNPACODE
 . 414 414 FRTE 131
Originator is not an AIN agent, therefore AIN info is not processed.
 . SUBTABLE RTEREF
 .  131 N D EANT_2W_C7LOOPBK 0 N N.
EXIT TABLE RTEREF
EXIT TABLE HNPACONT
LNP Info: Called DN is resident.
LNP Info: Called DN has native NPANXX.
LNP Info: HNPA results are used.

+++ TRAVER: SUCCESSFUL CALL TRACE +++

STS USED FOR TRAVER IS: 414
DIGIT TRANSLATION ROUTES
1 EANT_2W_C7LOOPBK      4145442175        ST

+++ TRAVER: SUCCESSFUL CALL TRACE +++
```

CC MIS Quick References

CC MIS Remote Login

1. Dialup via modem (VT220 terminal emulation)
2. At the login prompt type: "maint"
3. At the password prompt type: "password" (must be obtained from the end user)
4. At this point you will be placed in the maintenance menu.
5. From this menu you are able to perform various system functions and observe logs.
6. Examples of menu functions:

Run State Utilities
Update Switch Configuration (download ACD info. from switch)
Partition Startup and Shutdown
Shutdown (Start) the CC MIS System
Power Down

Backup and Restore Utilities
Backup
Restore

Diagnostics
Logs
Reset modem port
X.25 diagnostics
View system monitor

Configuration
System configuration
Switch link configuration
Partition configuration

CC MIS Documentation

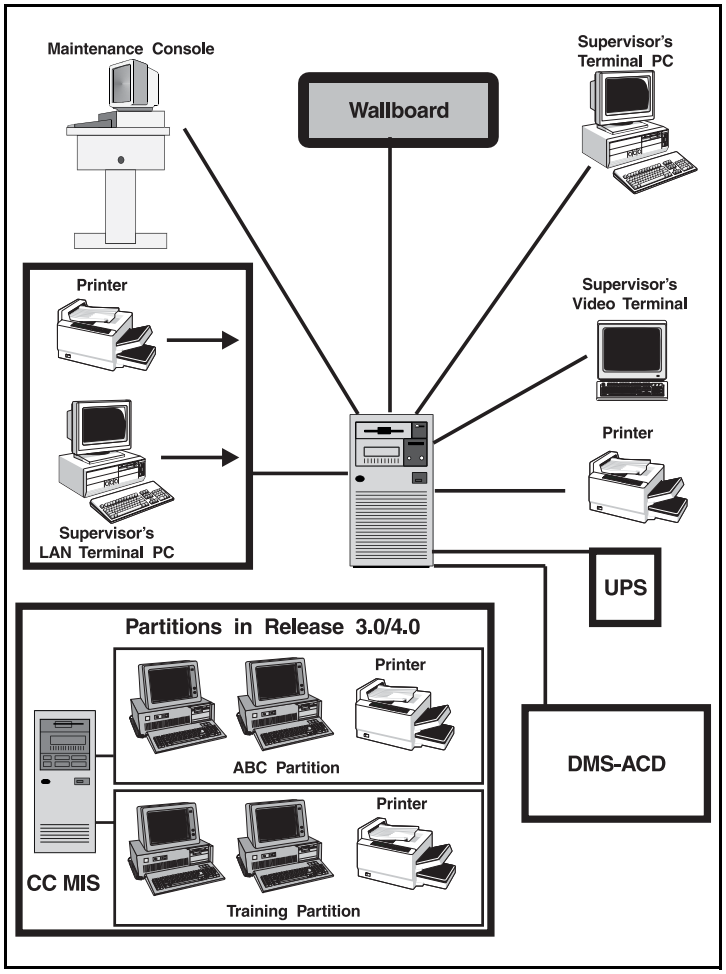
NTP 297-2671-050, *CC MIS Supervisor's Quick Reference Guide*
NTP 297-2671-150, *CC MIS System Description*
NTP 297-2671-175, *CC MIS Getting Started Guide*
NTP 297-2671-211, *CC MIS Release Notes*
NTP 297-2671-340, *CC MIS Supervisor's Guide*
NTP 297-2671-345, *CC MIS System Administrator User's Guide*
NTP 297-2671-545, *CC MIS Maintenance and Administration Guide*

CC MIS System Reports

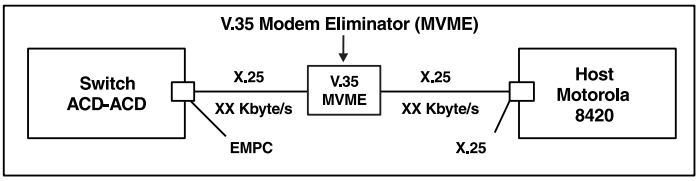
The CC MIS System Reports correspond to the system administration data built through the Parameter Administration menu. These reports are not customizable and do not require the definition of report parameters to determine the data to extract from the database. The reports are available through the System Reports menu.

Report	Description
Configuration	Contains configuration data for all positions, groups, and ACD parameters as received from the ACD switch in the download information.
Supervisor	List profile information for all supervisors.
Privilege Level	Contains privilege level information which has been entered through Parameter Administration, Privilege Level Definition.
Scope	Contains scope information which has been entered through Parm. Adm., Scope Definition.
Shift	Contains shift information which has been entered through Parm. Adm., Times Frames Def..
Period	Contains period information which has been entered through Parm. Adm., Times Frames Def..
Threshold	Lists the thresholds defined in the database.
ACD Group	List the ACD groups defined in the database that have been entered through Parameter Administration, ACD Group Definition
ACD-DN	Contains ACD-DN information which has been entered through Parm. Adm., ACD-DN Def..
Alarm Definition	Lists all alarm definitions that have been defined through the Alarm Definition mode.
Agent	Lists agents defined in the database.
Logical Group	Lists the groups sorted by the logical group.
LOB Code	Lists the LOB (line of business) codes defined in the database
Schedule Definition	Lists the schedules defined in the database.
Walkaway Code	Lists the walkaway codes defined in the database.

CC MIS Hardware Block Diagram

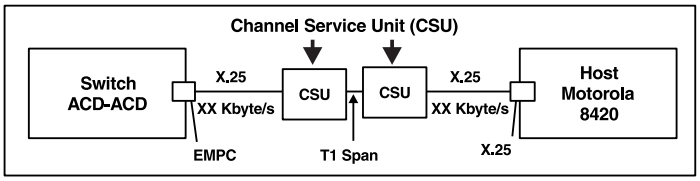


Link Requirements when Switch & Host are co-located less than 100 ca. ft.

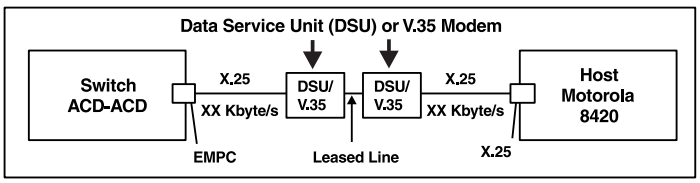


If the switch and the Motorola 8420 are not co-located, one of two options is required:

• Option 1 requires two XX Kbyte/s Channel Service Unit (CSU) connections to a T1 channel.



• Option 2 requires two Data Service Units (DSU) or two V.35 modems set to XX Kbyte/s and attached to a conditioned leased line.

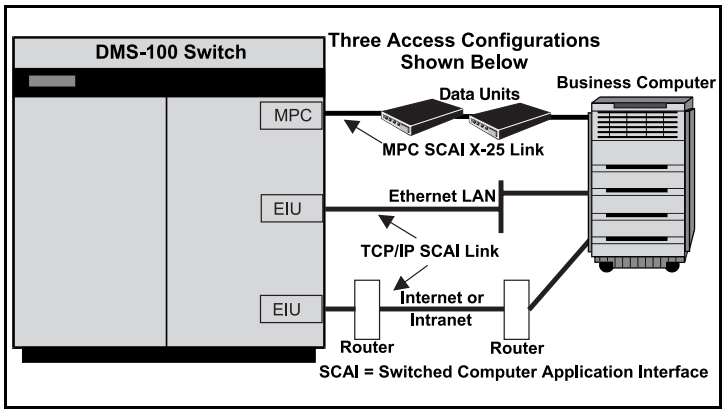


CompuCALL Quick References

CompuCALL is the Nortel product name for Switch-to-Computer Application Interface (SCAI). CompuCALL is the interactive link between a DMS-100 and the customer's general purpose business computer making it possible for a company to coordinate database information with incoming and outgoing calls. Uses for CompuCALL include telemarketing, order entry, message desk, help desk, and emergency services. It provides such service functions as:

- coordinated voice and data
- call routing
- third party call control
- resource status
- third party agent control

CompuCALL Hardware Diagram



Note: MPC = NT1X89 Multi-Protocol Controller Card located on the IOC shelf

Note: EIU = Ethernet Interface Unit. See EIU in this QRG.

CompuCALL References

CompuCALL Tables:

MPC; MPCLINK; SCAICOMS; BGDATA; SCAIGRP; SCAISSRV; SCAIPROF; CUSTNTWK; and table ACDGRP (option SCAIREDIR) if "Call Redirection" is used.

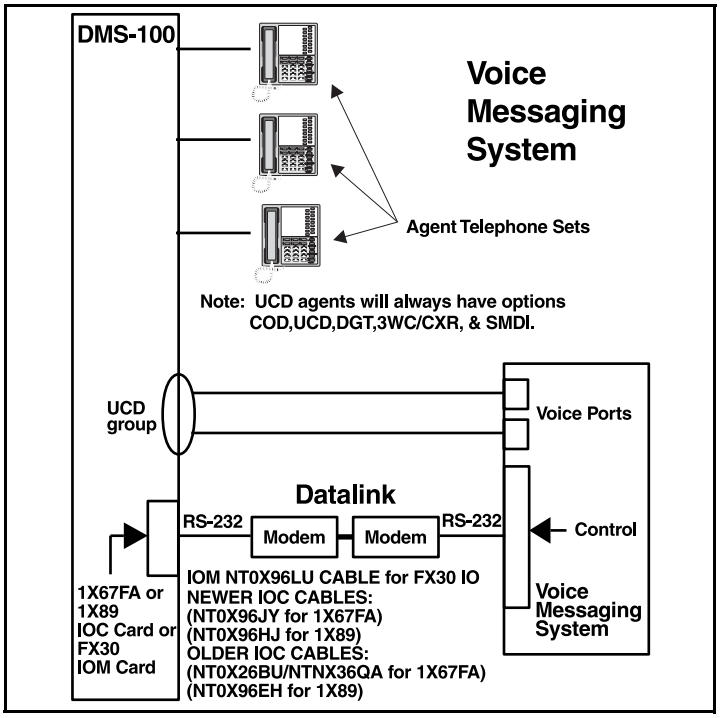
CompuCALL LOGS: SCAI and MPC

CompuCALL OM Groups:

SCAISERV, SCAISRV2, SCAITRAN, MPCBASE, MPCLINK2, MPCLINK3, and MPCFASTA

CompuCALL Documentation:

NTP NIS-Q218 *CompuCALL Interface Specification*
NTP 297-YYYY-350, *Translation Guides*
NTP 297-YYYY-550, *Maintenance Guide*
NTP 297-YYYY-544, *Trouble Locating and Clearing*
NTP 297-YYYY-545, *Recovery Procedures*
NTP 297-YYYY-814, *Operational Measurement Reference Guide*



Commands to bring link down, BSY/RTS card, & restore link:

Note: The BSY/RTS of the SMDI link at the IOC level will automatically perform the following commands:

>LNKUTIL
>SMDILNK
>SMDIDISC <vmail device name>
>DEVSTOP <vmail device name> SMDIDATA
>DEVDISC <vmail device name> KILL
>MAPCI;MTC;IOD;IOC <ioc>; CARD <SMDI card>
Note: IOC and CARD information can be found in table TERMDEV.
>BSY 0; RTS 0
>DEVCON <vmail device name>
>DEVSTART <vmail device name> SMDIDATA
>SMDICON <vmail device name>
>LNKSTAT ALL
Note: Should show transferring after entering this command.
>SMDISTAT ALL
Note: Should show routing.

The DMS accepts two kinds of incoming messages from the voice mailbox:

1. Message to activate the MWT indicator:
   OP: MWI (SP) nnnnnnn! (D)
2. Message to deactivate the MWT indicator:
   RMV: MWI (SP) nnnnnnn! (D)

The DMS sends two groups of outgoing messages to the voice mailbox:

1. Call Detail Messages:
   (CR) (LF) MDqqqmmmmannnnnnn (SP) yyyyyyy (SP) (CR) (LF) (Y)
   (CR) (LF) MDqqqmmmmannnnnnn (SP) (SP) (CR) (LF) (Y)
   (CR) (LF) MDqqqmmmma (SP) yyyyyyy (SP)(CR)(LF)(Y)
2. MWT Change Failure Messages:
   (CR) (LF) MWInnnnnnn (SP) INV (CR) (LF) (DL) (DL) (Y)
   (CR) (LF) MWInnnnnnn (SP) BLK (CR) (LF) (DL) (DL) (Y)

where —

(SP) = space (CR) = carriage return
(D) = <ctrl>D (end of transmission)
(LF) = line feed (DL) = delete character (ASCII value FF)
(Y) = <ctrl>Y qqq = message desk number (001 - 063)
mmm = msg desk terminal or line number (0001 - 2047)
nnnnnnn = forwarding from station number (7 or 10 digits)
yyyyyyy = calling station number (7 or 10 digits)
a = type of call: D = direct calls A = forward all calls,
B = forward bsy calls N = forward no ans calls

To view incoming & outgoing messages (1X67FA)

>RECORD START FROM <vmail devicename>
>RECORD START FROM <vmail devicename>

To view incoming & outgoing messages (1X89 MPC Card)

XPMIST the MPC link or use the MONMPC CI: level command (see the next page for MONMPC command).

SMDI continues on the next page.

SMDI continues.

Message Waiting Utility Commands:

>**MWQ** activates the message waiting query utility.
>**HELP MWQ** displays the subcommands and their descriptions.
>**STATUS <dn>** display messages waiting for DN with MWT/EMW option.
>**RESET <dn>** clears messages for DN with MWT or EMW option.
>**DEQ <dn> <L,M,C>** dequeues the requestor from the requestee.
>**QUEUE <dn> <L,M,C> <opt>** queue the requestor from the requestee.

Process States for SMDI:	**Should show**
>**QUERY PROCESS SMDIICT**	'queued on event'
>**QUERY PROCESS SMDIOG**	'queued on flag' (1 per 1X67)
>**QUERY PROCESS SMDIINC**	'queued on mailbox' (1 per 1X67)
>**QUERY PROCESS SLMPCOGT**	'queued on flag' (1 per 1X89)
>**QUERY PROCESS SMDINMPC**	'queued on flag' (1 if using 1X89)
>**QUERY PROCESS SMDIAUDP**	'queued on time'

The following command may be helpful for reviving MPC processes:
>**MAPCI;MTC;IOD;IOC x;CARD y;REVIVE ALL** %%x = IOC # y = CARD #

The following command provides all the lines assigned to a UCD group from line number 1 (LINE_NO: 1) and up:
>**SMDIDISP LINE_TABLE GROUP 0** %%0 is first entry in table UCDGRP that has the ucd_smdi option

UCDQUERY Utility

>**UCDQUERY** activates the UCDQUERY utility.
>**QUIT** quits from the UCDQUERY environment.
>**HELP** displays UCDQUERY commands.
>**SETGROUP** sets the global group parameter.
>**CLEARGROUP** clears the global group parameter.
>**SHOWGROUP** displays the global group parameter.
>**QUERY** displays the UCD data structures.
>**UCDDNS** displays list of UCD DNs.

Example of QUERY:

>**QUERY RUNNINGTOTALS GROUP COVM**
UCD RUNNING TOTALS FOR UCD GROUP 1 ("COVM"):

Total UCD Agents Enqueued:	48
Total UCD Agents in BUSY queue:	0
Total UCD Agents in IDLE queue:	48
Total Incoming Calls:	0
IS EMPTY.	
Total P0 Call Queue Size	0
IS EMPTY.	
Total P1 Call Queue Size	0
IS EMPTY.	
Total P2 Call Queue Size	0
IS EMPTY.	
Total P3 Call Queue Size	0
IS EMPTY	

Example of UCDDNS Command:
>**UCDDNS GROUP COVM**
UCD Directory Numbers For UCD Group COVM
Primary UCDDN: 619 675 4555
Call Priority: 0

MONMPC CI: Level Commands

>**QUIT** quits MONMPC level.
>MPCSTART starts recording MPC messages onto a device.
>MPCSTOP stops recording MPC messages onto a device.
>**MPCPRINT** parses the files and displays to terminal.
>**STARTMSGS** starts monitoring for a specified MPC.
>**STOPMSGS** stops monitoring for a specified MPC.
>**DISPLAY** displays captured MPC messages to the user.
>**ZAPDATA** clears the MPC message table.
>**QUERY** displays current MONMOCCI status information.
>**FORMAT** determines how captured data will be displayed.
>**DEALLOC** halts message capturing & deallocates MONMPC memory.
>**CAPTURE** initiates capturing of MPC messages from started MPC.

Example of MONMPC:
>**MPCSTART <mpc #> <device>** %% fname will be RECFILE
Make test calls then: >**MPCSTOP <mpc # or all>**
>**MPCPRINT <filename>**

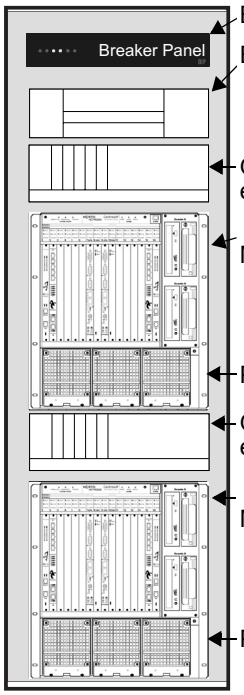
SMDI References

Tables: TERMDEV, SLLNKDEV, UCDGRP, and DNROUTE. Also, see tables MPC & MPCLINK if using 1X89 MPC card instead of 1X67FA card.
Documentation: NTP 297-2051-104, *SMDI Set-up and Operation*
NTP 297-YYYY-350, *Translations Guides*
LOGs: SMDI, SLNK, IOD, MPC, SWER
OMs: SLLNK & SLLNKINC
Eng. Parameters: AUXCP_CPU_SHARE (1X89), CFGDA_SEND_PILOT_DN_TO_SMDI_ISUP (CCM04), FTRQ2WPERMS, FTRQ8WPERMS

Centrex IP Client Manager Quick References

Important Note: Due to ongoing changes with this products hardware and provisioning recommendations, use the following only as a reference.

PTE2000 Centrex IP Frame



Breaker panel and power status.

Element Manager (Motorola 1204 chassis).
- •EIDE Hard Drive and CD-ROM
- •Floppy Disk
- •CPV5370 CPU

Optional Balun Panel for coax cable. Mounted facing the rear of the frame.

Centrex Gateway Chassis (SAM16)
MCG CPX8216T Chassis
- •Brooktrout NS300 CompactPCI TDM
- •Audiocodes TP610 DSP
- •Motorola CPV5370 CompactPCI CPU

Power Supplies/Fans/LEDs

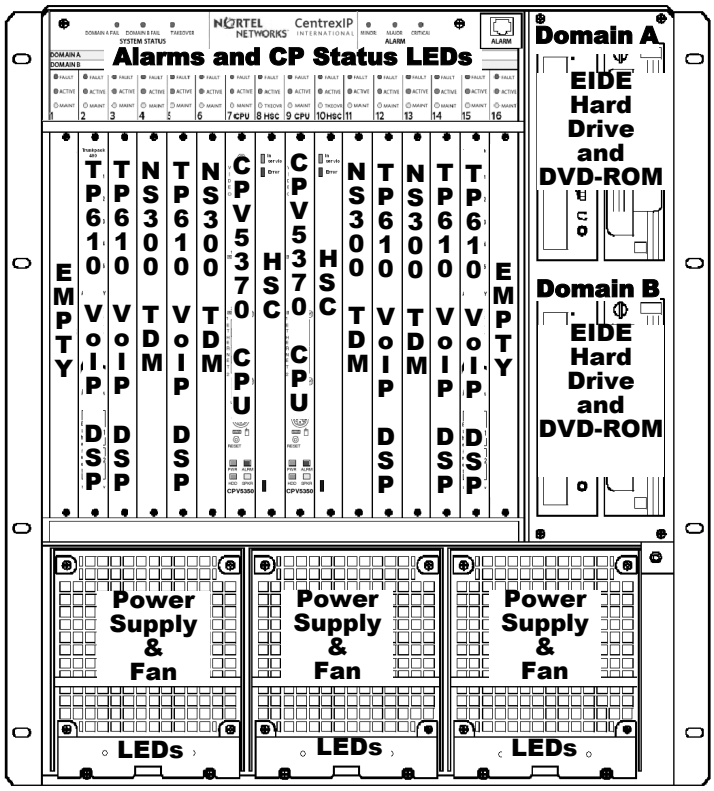
Optional Balun Panel for coax cable. Mounted facing the rear of the frame.

Centrex Gateway Chassis (SAM16)
MCG CPX8216T Chassis
- •Brooktrout NS300 CompactPCI TDM
- •Audiocodes TP610 Voice over IP (VoIP) DSP
- •Motorola CPV5370 CompactPCI CPU

Power Supplies/Fans/LEDs

Centrex IP Gateway MCG CPX8216T Chassis

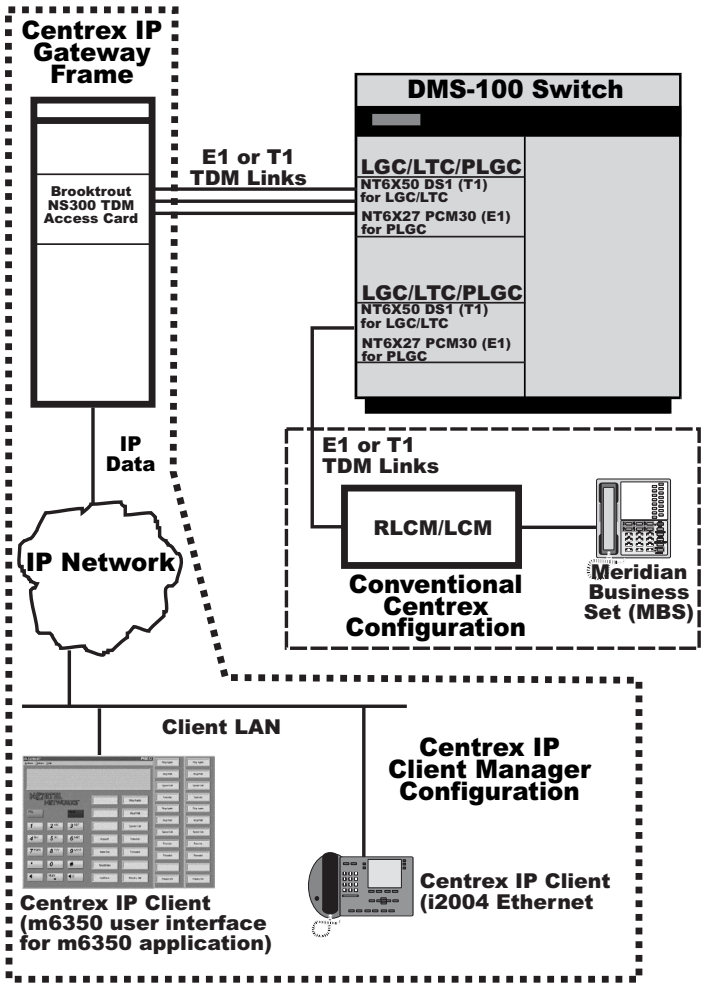
Note: Chassis provisioned for TDM maximum deployment.



MCG — Motorola Computer Group
HSC — Hot Swap Controller
NS300 — Brooktrout **Net**access TDM Access Card (E1/T1)
TP610 — AudioCoded TP-610 Voice over IP (VoIP) DSP
CPV5370 — Motorola CPV5370 CompactPCI host-slot CPU
CPN5365 — Motorola CPN5365 CompactPCI compliant non-system CPU

Note: For detailed information on the Motorola MCG CPX8216T Chassis and the components within the chassis, go to www.motorola.com, www.brooktrout.com, and www.audiocodes.com.

Centrex IP and Conventional Centrex Configuration



Centrex IP Client Manager Documentation References

- *DMS-MMP Base Product Description*
- NTP-297-5551-300, *Centrex IP Client Manager Administration Guide*
- NTP-297-5551-900, *m6350 Installation Guide*
- NTP-297-5551-901, *m6350 TAPI Service Provider Installation and Troubleshooting Guide*
- NTP-297-5551-920, *i2004 Installation Guide and User Manual*
- NTP-297-5551-100, *Centrex IP Client Manager Network Eng. Guide*

Event Logs

Besides the existing DMS logs related to RLCM, the Gateway software generates Windows NT event logs for various cases such as E1/T1 software faults, DSP faults, client session events, and initialization logs. Audits of user login successes or failures are also generated as event logs. Logs can be reviewed remotely on the Administration LAN from within the web-based Element Manager interface or by running the Windows NT event viewer.

There are five categories of logs:

- **Error.** Error logs indicate a critical event, where the Gateway is in a critical condition, such as failure to initialize hardware, or out of memory.
- **Warning.** Warning logs indicate a non-critical event, and are usually
- generated after a logic error has been detected in the software and recovery action has been taken.
- **Informational.** Informational logs provide information about the state of the Gateway.
- **Success audit.** Success audit logs provide details of successful logins. A success audit event is generated when the user has successfully logged in. Failure audit. Failure audit logs provide details of failed login attempts. A failure audit event is generated if:
  – A user has tried to log in to a currently running session.
  – A user has provided incorrect login information.
  – A user has exceeded the maximum number of failed login attempts (datafillable at the gateway).

Attendant Console Quick References

Posting Consoles and associated lines

>**MAPCI;MTC;LNS;LTP;Level IBNCON**
>**Select C <console CLLI>**
(Shows DMODEM attached; BSY, DIAG, & RTS from here)
>**MAPCI;IBNMEAS;ACMON;Select C <console clli>**
(Best place to observe console. See Table FNMAP for console CLLIs).

AC Command (@ CI: level)

>**HELP AC** will give optional parameters for using the command.
Example: >**AC <console CLLI> DISPL LAMPS**

MT Command (@ CI: level)

Shows keyhits from console via dmodem to CC.
>**MT <operation> {START, DISPL, STOP, RESET}**
<console number> {From IBNCON level of MAP}

QQ Command (@ CI: level)

Used to query the incoming call queues for ICIs and subgroups.
>**QQ <customer-name> STRING <subgroup#:> {0-7} <option:>**
{CALLQ, ICIQ [<icicode:> {0-254}]}

Trouble Key Assignment

1. Add a trouble key in table FNMAP:
   TABLE: FNMAP
   CONSNCSU41 SPECL TRBL
2. Add trouble codes in Table TRBLCODE:

CODE	MESSAGE	ALARM
2	TRUNK_TROUBLE	MJ
3	KEY_TROUBLE	MJ
7	CNF_DIS	CONSMINR
24	BOMB_THREAT_CALL	CR

3. Accessing the trouble key:
   a. Press TROUBLE key*. The TROUBLE lamp goes on and the display prompts for the trouble code
   Display: TROUBLE: INPUT
   b. Enter the appropriate two-digit numeric code. (If you are not sure of the correct trouble code for your situation press * or # to activate query mode; the display will show all codes and descriptions.)
   Display: <Code Description>
   c. Press TROUBLE key. The TROUBLE lamp goes off and a trouble report (IBN109 log & alarm) is generated to maintenance personnel. The IBN109 log identifies the parties involved in the call, the console, and other information on the state of the active loop at the time the problem occurred.

***Note:** To cancel the feature, press RELEASE DEST key prior to step c.

XPMIST the Attendant Console

To XPMIST the console, use the node and terminal number of the DMODEM. Information on breaking down Attendant Console XPMIST can be found in module *ACUTILI*.

Table References:

CUSTCONS	lists customer groups' consoles.
SUBGRP	lists DN to reach consoles ext.
ATTCONS	lists console names and LENs.
CONF3PR	contains the 3-port conference circuits.
DMODEM	contains the Dmodem cards.
FNMAP	datafill for all console keys.
ICIDATA	lists console ICI keys.
TRBLCODE	trouble code messages.
WCKCODES	lists data for wild keys.
SVRCKT	contains NT3X68AB DTMF Senders.
ACEES	AC End-to-End Signalling Feature.

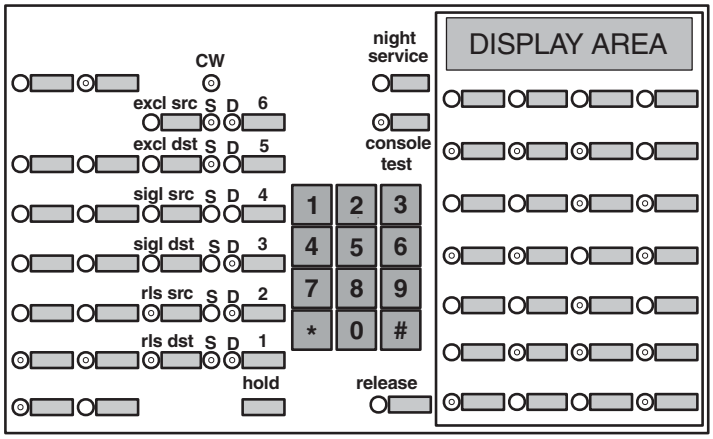
Documentation:

NTP 297-2031-100, *MDC Services Attendant Console OA & M*
NTP 297-YYYY-350, *Translations Guides*

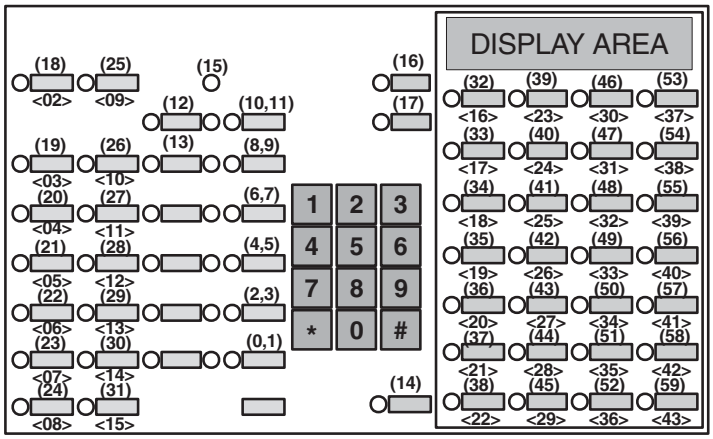
LOGS: IBN, PM, TRK

OMs: ACSYSTR, ACRTS, ACTRBL, ACTAKEDN, IBNAC, IBNSGLDN

Attendant Console Lamp Keyboard Layout



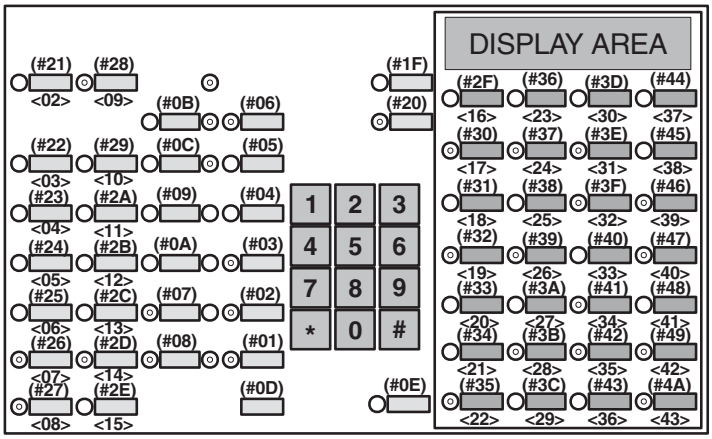
Attendant Console Lamp to Physical Key Mapping



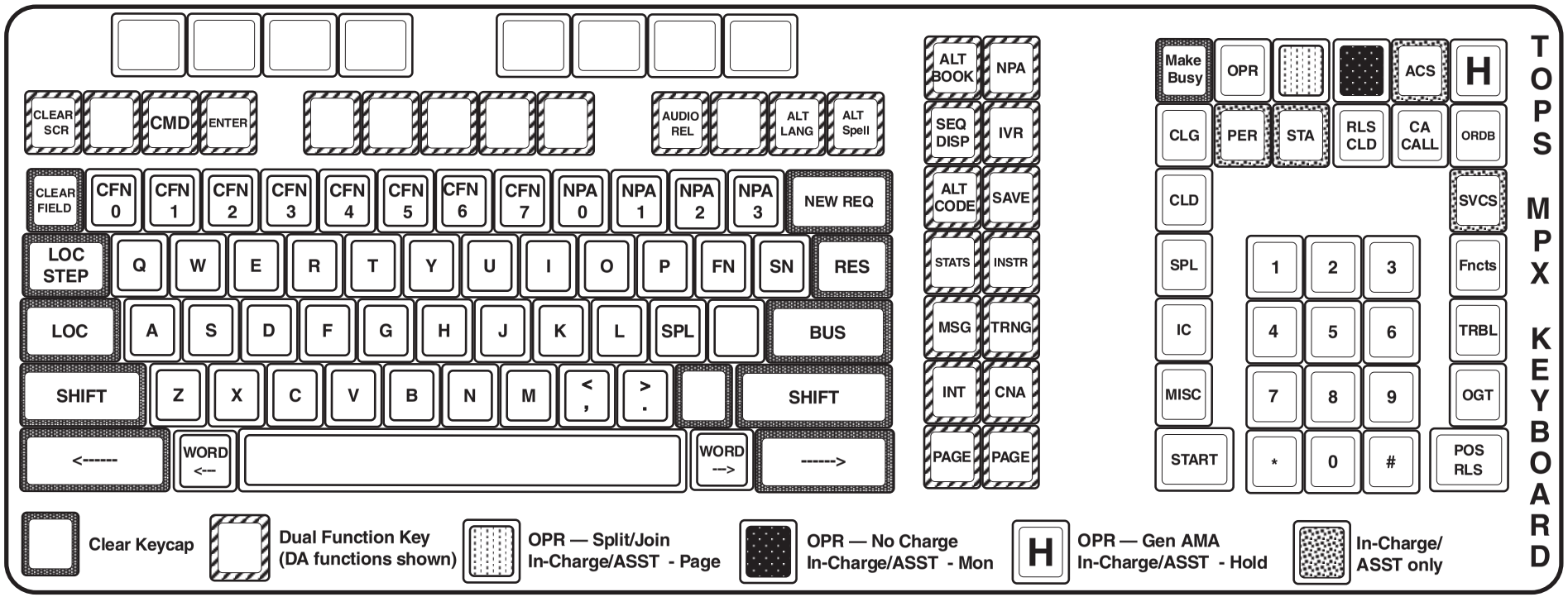
(XX) Represents the external lamp number.
<YY> Represents the physical key number (found in table FNMAP).

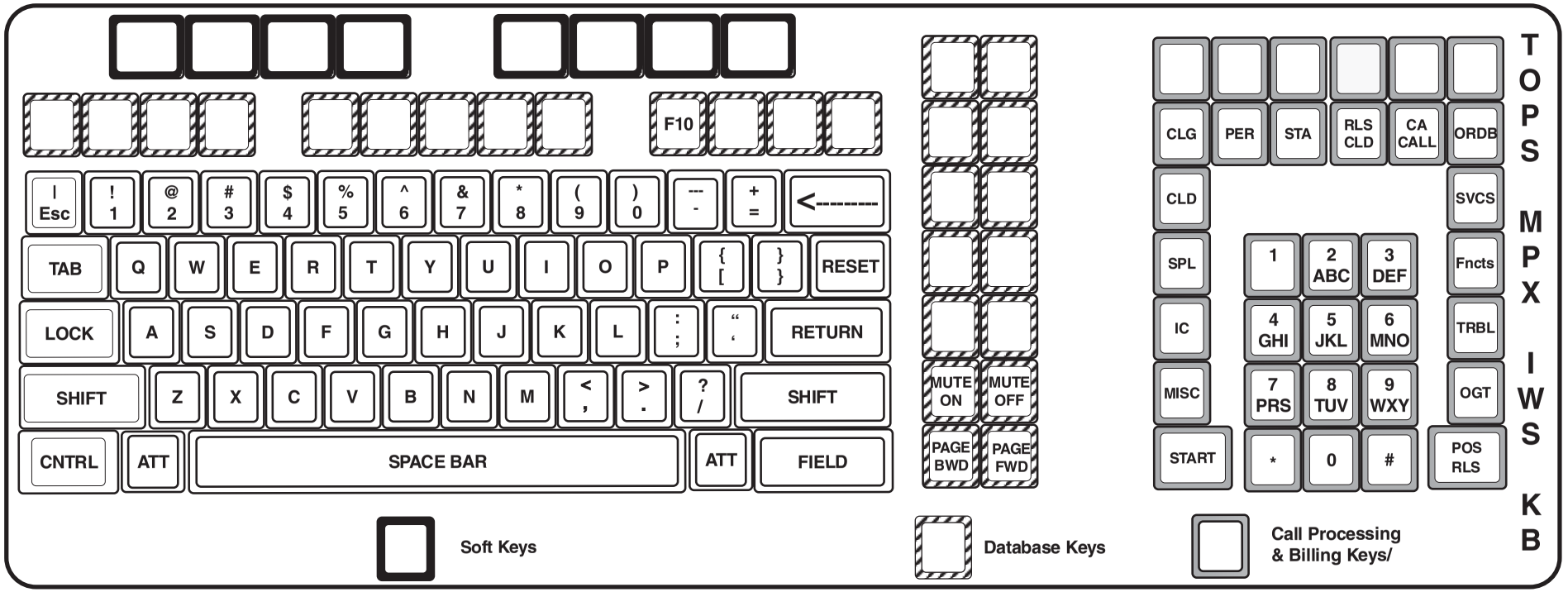
To calculate the PMIST lamp and group number
Lamp # = External lamp # MOD 16
Group # = External lamp # / 16

Attendant Console Internal to Physical Key Mapping



(#XX) Represents the internal key number (seen in PMIST).
<YY> Represents the physical key number (found in table FNMAP).


TOPS MPX KEYBOARD
CLEAR SCR
CMD
ENTER
AUDIO REL
ALT LANG
ALT Spell
CLEAR FIELD
CFN 0
CFN 1
CFN 2
CFN 3
CFN 4
CFN 5
CFN 6
CFN 7
NPA 0
NPA 1
NPA 2
NPA 3
NEW REQ
LOC STEP
Q W E R T Y U I O P FN SN RES
LOC
A S D F G H J K L SPL
BUS
SHIFT
Z X C V B N M < , > .
SHIFT
<-------
WORD <--
WORD -->
------->
ALT BOOK
NPA
SEQ DISP
IVR
ALT CODE
SAVE
STATS
INSTR
MSG
TRNG
INT
CNA
PAGE
PAGE
Make Busy
OPR
ACS
H
CLG
PER
STA
RLS CLD
CA CALL
ORDB
CLD
SVCS
SPL
1 2 3
Fncts
IC
4 5 6
TRBL
MISC
7 8 9
OGT
START
*
0
#
POS RLS
Clear Keycap
Dual Function Key (DA functions shown)
OPR — Split/Join In-Charge/ASST - Page
OPR — No Charge In-Charge/ASST - Mon
H
OPR — Gen AMA In-Charge/ASST - Hold
In-Charge/ ASST only


F10
| Esc
! 1
@ 2
# 3
$ 4
% 5
^ 6
& 7
* 8
(9
) 0
--- -
+ =
<--------
TAB
Q W E R T Y U I O P
{ [
}]
RESET
LOCK
A S D F G H J K L
: ;
" '
RETURN
SHIFT
Z X C V B N M
< ,
> .
? /
SHIFT
CNTRL
ATT
SPACE BAR
ATT
FIELD
MUTE ON
MUTE OFF
PAGE BWD
PAGE FWD
CLG
PER
STA
RLS CLD
CA CALL
ORDB
CLD
SVCS
SPL
1
2 ABC
3 DEF
Fncts
IC
4 GHI
5 JKL
6 MNO
TRBL
MISC
7 PRS
8 TUV
9 WXY
OGT
START
*
0
#
POS RLS
TOPS MPX IWS KB
Soft Keys
Database Keys
Call Processing & Billing Keys/

CCS7 Quick References

(*NTP 297-YYYY-350, Translations Guides*)

CCS7 Terminology

Associated Route — Direct route between signalling points; route where DPC of routeset equals DPC of linkset.

Connectionless — Signalling type for all signalling that is not associated with set-up or take-down (E800 database query, maintenance, etc.)

Connection-Oriented — Signalling type used for setup and take-down of calls (i.e. ISUP).

Link — Communication channel between two adjacent signalling points.

Linkset — A group of signalling links connecting two signalling points.

Point Code — Every node in the network has its own unique point code used to direct messages. Nine digit point code format equals: **<network #> <cluster #> <member #>**

OPC (Origination Point Code)

DPC (Destination Point Code)

Quasi-associated — Indirect signalling route through an STP.

Route — A signalling path in the signalling network; this path may consist of one or more linksets to a destination.

Routeset — A logical grouping of routes towards a destination.

SCP — Service Control Point provides network access to transaction services (database queries).

SP — Signalling Point is a node in the network that provides trunk signalling only.

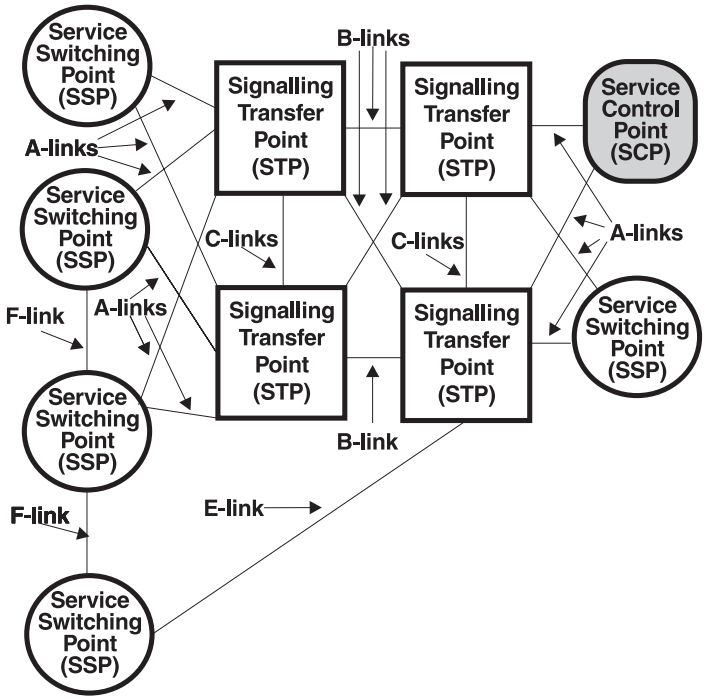
SSP — Service Switching Point is a node in the network that originates and terminates CCS7 messages (connectionless & connection-oriented).

SL — Signalling Links interconnect adjacent nodes in the network:

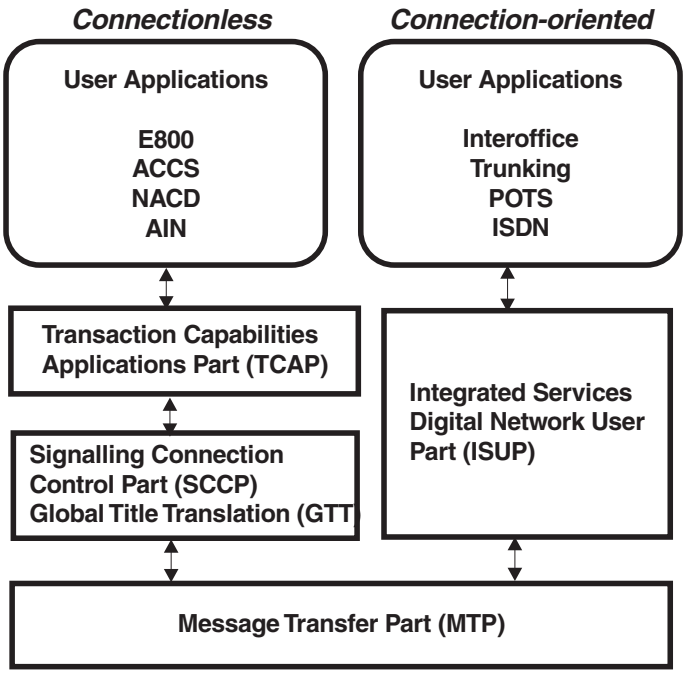
- **A-link** access links connect SPs, SSPs, and SCPs to STPs.
- **B-link** bridge links connect mated STP pairs to other mated STP pairs.
- **C-link** cross links connect two STPs creating mated a pair.
- **D-link** diagonal links connect STP quads in different regions (primary to secondary STPs).
- **E-link** extended links connect an SPs, SSPs, or SCPs to an STP in a different region.
- **F-link** fully associated links interconnect SPs, SSPs, and SCPs using associated signalling.

STP — The STP (Signal Transfer Point) is a node in the network that route messages between network nodes using signalling links; STPs do not originate or terminate CCS7 messages other than network management messages.

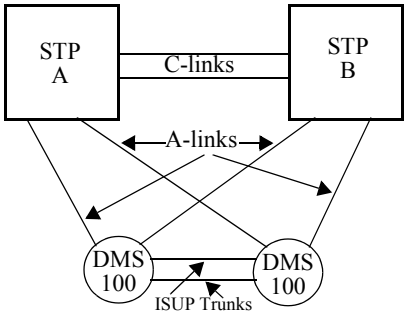
CCS7 Linksets



CCS7 Protocol Components



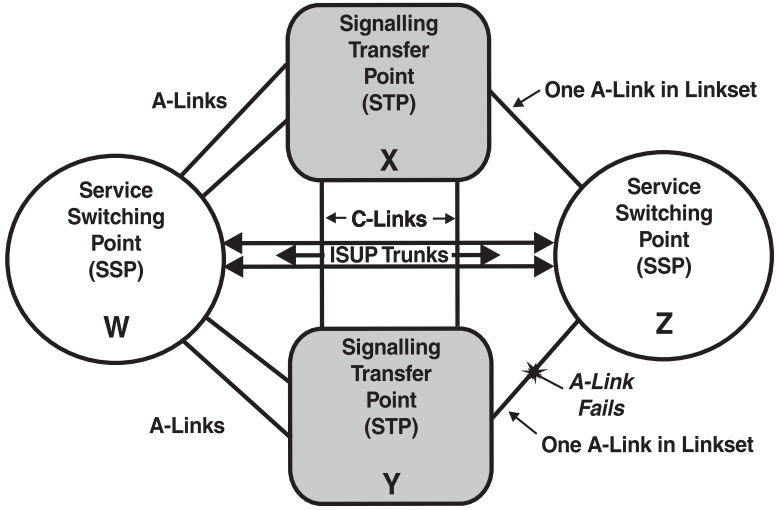
ISUP Trunk Selection



STDPRT	Incoming digits; initial path determined
OFRT	Get CLLI
TRKGRP	Associate CLLI with signalling data
TRKSGRP	Determine trunk type (SS7)
C7TRKMEM	Circuit identification code (CIC) Associated with CLLI
ISUPDEST	Associate Routeset with Trunk Group
C7RTESET	Obtain DPC; determine linkset to be used
C7NETWRK	Obtain OPC
C7LKSET	Determine link within the linkset
C7LINK	Associate hardware with the links
TRKMEM	
ADJNODE	Identifies all switches that have an ISUP signaling relationship to the originating node. This table points to a field in the TRKSGRP table that defines the signalling type.

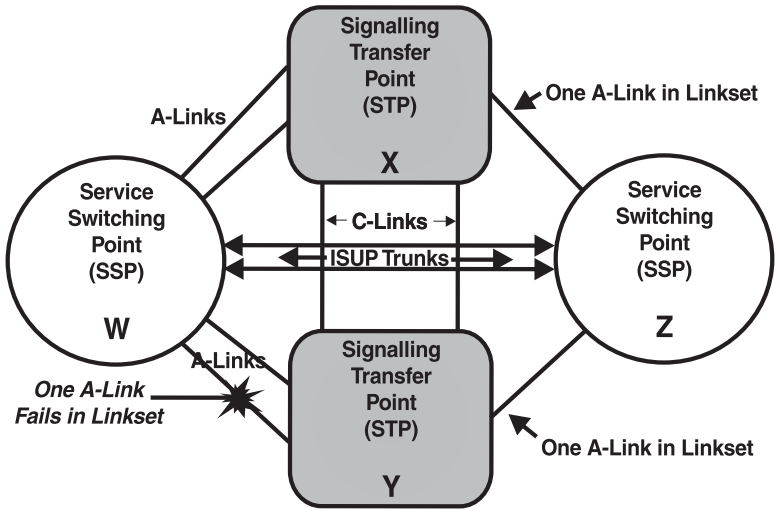
Note: You can use the C7RENAME command to change the name of a Linkset, Routeset, or a Network.

CCS7 Fault scenario—between STP "Y" and SSP "Z"—concerns a single link failure in a linkset with one "A" link.



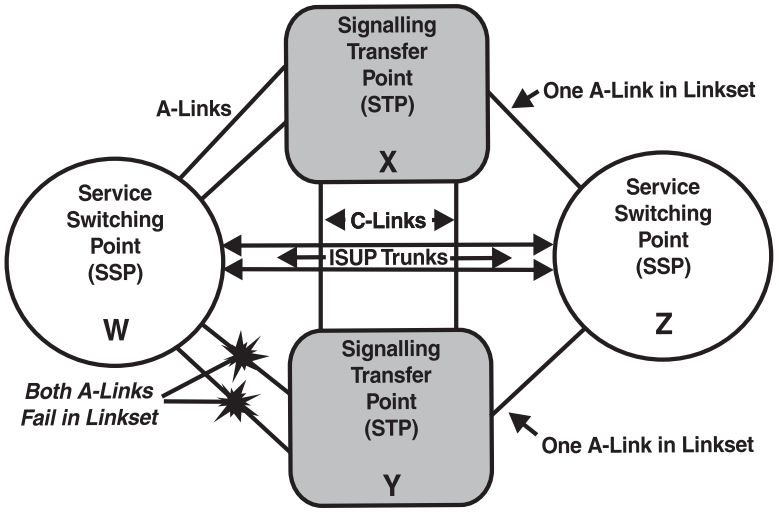
EVENT	ACTIVITY AT NODE W AND X	ACTIVITY AT NODE Y AND Z
1		The single A link between SSP "Z" and STP "Y" fails—only one link in linkset
2	**Alarms/Logs:** ** CCS167 Route Restricted **Note**: CCS167 Route Restricted alarm and log notification are sent to every SS7 NODE when a linkset fails and causes a route restriction.	**Alarms/Logs:** ** CCS101 Link failure * CCS164 Link unavailable ** CCS175 Routeset restricted ** CCS167 Route restricted Possible PM/C7UP Logs, CCS198 SLMPR
3		All SS7 messaging diverted to links X/Z. Estimate link X/Z occupancy using C7LKSET command QUERYTRF.
4	**Action:** Network status information only, since no other alarms or logs are available concerning specific links	Action at nodes Y or Z control office prime and control center: Follow detailed DMS-100 CCS alarm clearing procedures in current NTP 297-YYYY-543.
5	**Recovery Logs:** CCS166 Route allowed	**Recovery Logs:** CCS102 Link Sync CCS163 Link available CCS155 Routeset available CCS166 Route allowed PM Logs

CCS7 Fault scenario—between STP “Y” and SSP “W”—concerns a single link failure in a linkset with two “A” links.



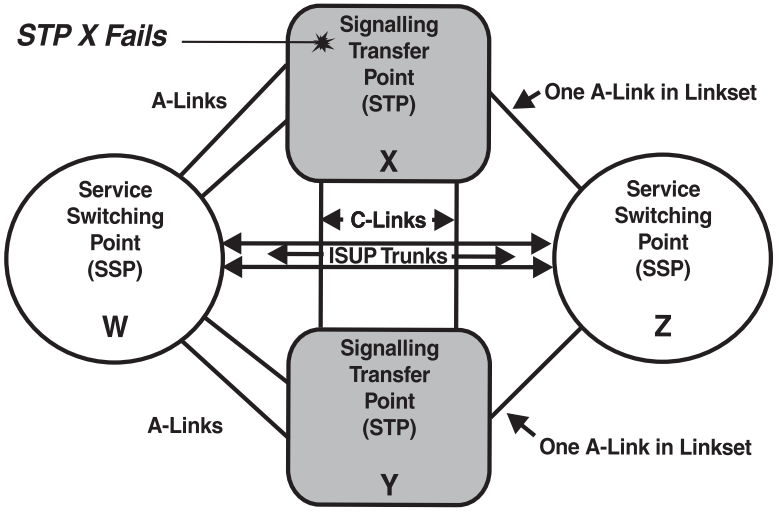
EVENT	ACTIVITY AT NODE W AND Y	ACTIVITY AT NODE X AND Z
1	One link fails in Linkset W/Y	
2	**Alarms/Logs:** * CCS101 Link failure * CCS164 Link unavailable Possible PM, C7UP Logs & CCS198 SLMPR	**Alarms/Logs:** Normally no logs or alarms are provided with this scenario.
3	All SS7 messaging diverted to links W/X. Estimate link W/X occupancy using C7LKSET command QUERYTRF.	
4	Action at nodes Y or Z control office prime and control center: Follow detailed DMS-100 CCS alarm clearing procedures in current NTP 297-YYYY-543.	**Action:** Network status information only, since no other alarms or logs are available concerning specific links.
5	**Recovery Logs:** CCS102 Link Sync CCS102 Link Sync CCS163 Link available CCS163 Link available CCS155 Routeset available CCS166 Route allowed PM Logs	**Recovery Logs:** CCS166 Route allowed

CCS7 Fault scenario—between STP "Y" and SSP "W"—concerns both links failing in a linkset with two "A" links.



EVENT	ACTIVITY AT NODE W AND Y	ACTIVITY AT NODE X AND Z
1	Two links fails in Linkset W/Y	
2	**Alarms/Logs:** * CCS101 Link failure * CCS101 Link failure * CCS164 Link unavailable * CCS164 Link unavailable ** CCS175 Routeset restricted ** CCS167 Route restricted Possible PM, C7UP Logs & CCS198 SLMPR	**Alarms/Logs:** ** CCS167 Route restricted. **Note:** CCS167 Route restricted alarm and log notification are sent to every SS7 NODE when a linkset fails and causes a route restriction.
3	All SS7 messaging diverted to links W/X. Estimate link W/X occupancy using C7LKSET command QUERYTRF.	
4	Action at nodes Y or Z control office prime and control center: Follow detailed DMS-100 CCS alarm clearing procedures in current NTP 297-YYYY-543.	**Action:** Network status information only, since no other alarms or logs are available concerning specific links.
5	**Recovery Logs:** CCS102 Link Sync (one of the links) CCS102 Link Sync (another link) CCS163 Link available (one of the links) CCS163 Link available (another link) CCS155 Routeset available CCS166 Route allowed PM Logs	**Recovery Logs:** CCS166 Route allowed

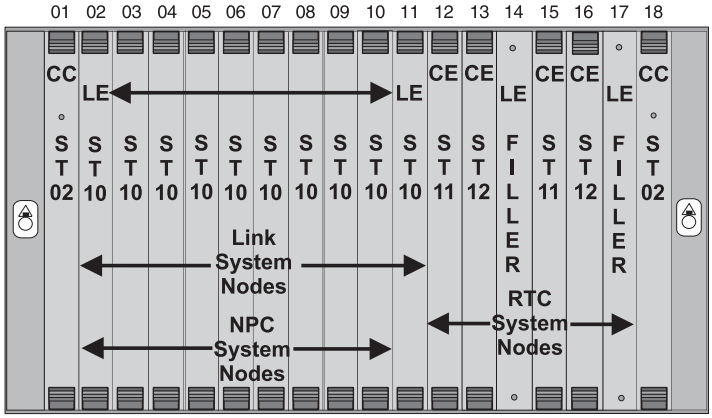
CCS7 Fault scenario— STP “X”—concerns a single STP failure.



EVENT	ACTIVITY AT NODE W AND Y	ACTIVITY AT NODE X AND Z
1		STP “X” fails.
2	**Alarms/Logs:** * CCS101 Link failure * CCS164 Link unavailable (log reports to every link to failed STP X) ** CCS175 Routeset restricted ** CCS168 Route prohibited *** CCS154 Routeset unavailable ** CCS167 Route restricted Possible PM, C7UP Logs & CCS198 SLMPR	**Alarms/Logs:** ** CCS167 Route restricted. **Note:** CCS167 Route restricted alarm and log notification are sent to every SS7 NODE when a linkset fails and causes a route restriction.
3	All SS7 messaging diverted to STP “Y”	
4	**Action:** Ensure A links to the working STP (Y) are not manual busy.	**Action:** Serious situation, network could be in jeopardy if other STP fails. Top priority to restore STP “X” and restore service. Use the following documents to clear alarms: DMS-100 CCS alarm clearing procedures..... 297-YYYY-543 DMS SN STP Alarm Performance Monitoring Procedures 297-8101-543
5	**Recovery Logs:** CCS102 Link Sync PM Logs CCS102 Link Sync CCS163 Link available CCS163 Link available CCS155 Routeset available CCS166 Route allowed	**Recovery Logs:** CCS166 Route allowed

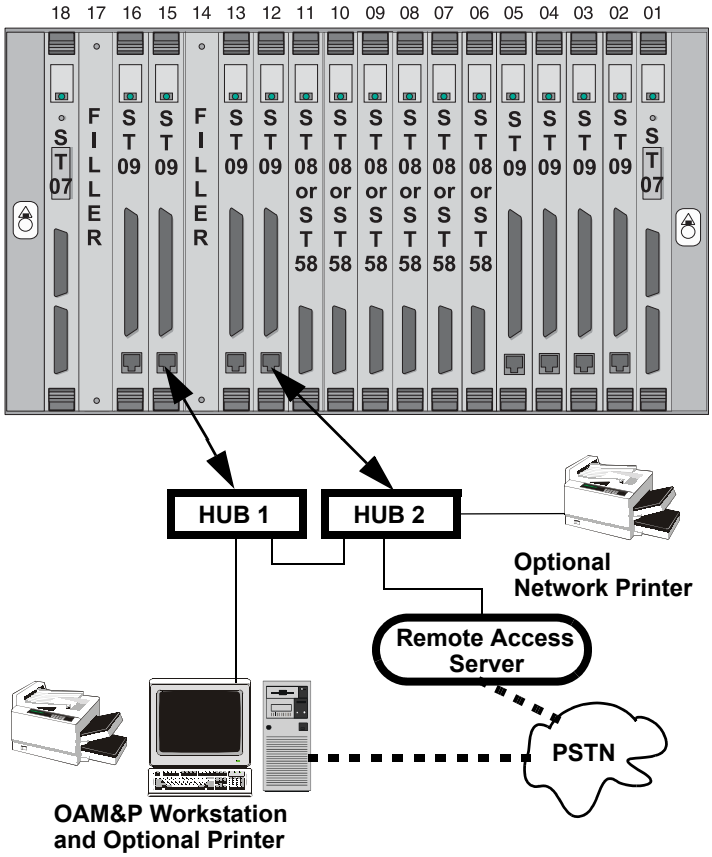
Broadband STP Quick References

Broadband STP Control CAM Shelf Front



Broadband STP Control CAM Rear Shelf with Number Portability Controller (NPC) Mission Cards in slots 2 - 5

Note: Slots 13 & 14 and 16 & 17 may be Double-slot SCSI Disk cards.



OAM& P Workstation — NTST30
Remote Access Server — NTST32
10Base-T/10Base-2 Ethernet Hub — NTST31

CAM Shelf Component PECs

NTST00 — Control or extension CAM shelf
NTST01 — Fan Unit
NTST02 — Single or dual-shelf CAM Controller (CC) Mission Card
NTST07 — OC-3 Transition Module (TM)
NTST08 — DS0A Transition Module (TM)
NTST09 — Power/SCSI/Ethernet (PSE) Transition Module (TM)
NTST10 — Link Engine (LE) Mission Card
NTST11 — Single or dual-shelf Real-time Controller (RTC) Mission CP
NTST12 — Single or two-slot SCSI Disk Card
NTST13 — Filler Card **NTST34** — 19-inch Frame **NTST35** — Air Filter
NTST58 — V.35 Transition Module (TM)

STP Broadband Quick References continue on next page.

Broadband STP OAM&P Workstation and Network Equipment Configuration Table

Item	Sample	Customer Defined
Workstation Network Configuration (TCP/IP Properties):		
IP Address (Workstation-1)	192.168.1.50	
Subnet Mask	255.255.255.0	
Gateway (Remote Access Server)	192.168.1.1	
Remote Access Server (RAS) Configuration Options:		
RAS General:		
Name	FIELD	FIELD
Password	SERVICE	SERVICE
RAS IP General:		
Rem. Access Svr (RAS) IP Address	192.168.1.1	
Subnet Mask	255.255.255.0	
Default Router (Same as RAS)	192.168.1.1	
RAS IP Addresses (If using PPP connections):		
Port 1	192.168.1.101	
Port 2	192.168.1.102	
Optional LAN Printer:		
IP Address	192.168.1.20	
Subnet Mask	255.255.255.0	
IP Gateway (Same as RAS)	192.168.1.1	
Real Time Controller (RTC) IP Addresses		
RTC_NODE_12	192.168.1.12	
RTC_NODE_15	192.168.1.15	
RTC Ethernet ID Hardware Addresses (*Samples are examples):		
Slot 12	11:22:33:44:55:66*	
Slot 15	11:22:33:44:55:67*	
Spare	11:22:33:44:55:68*	
BOOTP Server Network Configuration:		
Network Address: (Subnet)	192.168.1.0	
Default Gateway: (Same as RAS)	192.168.1.1	
Subnet Mask	255.255.255.0	
ICCM Addresses		
ICCM 01 Address	10.0.0.1	10.0.0.1
ICCM 02 Address	10.0.0.2	10.0.0.2
ICCM Subnet Mask	255.0.0.0	255.0.0.0
Default Gateway	192.168.1.1	
Ethernet Subnet Mask	255.255.255.0	
ICCM 01 Ethernet IP Address	192.168.1	
ICCM 02 Ethernet IP Address	192.168.2	

CAM Shelf LED State Notes

Note: Filler cards do not have active LEDs.

Note: Unlit LED(s) on the front shelf do *not* always indicate a problem.

- SCSI Disk cards always display a dark LED on the front CAM shelf.
- Real-time Controller (RTC), CAM Controller (CC), or Application System Nodes LED are *not* lit when in the off-line state.
- Card guides contain Filler Cards.
- Card guides contain SCSI Disk Cards

Note: Other than the cards above, a dark LED indicate the card is not functioning properly.

Note: Flashing green LED(s) indicate the associated card(s) are operational, but are not currently available for use.

Note: Flashing green LED(s) on the front of a CAM shelf indicate that the associated mission cards are enabled, but locked.

PEC CODES & Description

(MD = Manufacture Discontinued)

NTAX74AA Cellular Access Proc (CAP)
NTAX74AB Cellular Access Processor
NTAX74CA Cellular Access Processor
NTAX78AA Enhanced ISDN Time Sw CP
NTAX78AB Enhanced Time Switch CP
NTAX78BA Universal Enhanced Time Sw
NTBX01AA ISDN Sig Pre-Processor (MD)
NTBX01AB Enh ISDN Sig. Pre-Proc (MD)
NTBX01AC Enh ISDN Sig. Pre-Proc (MD)
NTBX01BA Enhanced ISDN Sig. Pre-Proc
NTBX02AA ISDN Msg Fr Proc (MD)
NTBX02BA Enhanced D-channel Handler
NTBX04AA Optical ISDN Line Card
NTBX1001 ISDN Net Term Unit (MD)
NTBX1003 ISDN Net Term Unit (MD)
NTBX11AA ISDN Network Termination
NTBX11AB ISDN Net Termination (MD)
NTBX25AA ISDN U Line Card (MD)
NTBX25AB ISDN U Line Card (MD)
NTBX26AA ISDN T Line Card
NTBX27AA ISDN 2B1Q U-interface CP
NTBX30AB ISDN Line Concentrating
NTBX3104 ISDN Line Conc. Array (LCA)
NTBX32AA ISDN Line Drawer Unit
NTBX32BA ISDN Enhanced Line Drawer
NTBX34AA LCMI Processor CP (MD)
NTBX34AB LCMI Processor CP (MD)
NTBX34BA ISDN Enhanced Proc (MD)
NTBX34BC LCME Processor C (MD)
NTBX34CA SRU ISDN LCM Proc (MD)
NTBX34CB SRU Enh'd ISDN LCM Proc.
NTBX34DA SRU LCM Processor
NTBX35AA LCMI Digroup Controller CP
NTBX35CA SRU ISDN LCM Digroup Cont
NTBX36AA ISDN LD Bus I/F CP (MD)
NTBX36BA ISDN ENH Line Drawer BIC
NTBX37AB LCEI Frame Supervisory
NTBX40AA ISDN1A Acc. Cont. Frm. (MD)
NTBX40BA ISDN1A Access Cont CP Filler
NTBX4011 ISDN1A Access Ctl Sh Assy
NTBX43AA ISDNIA Sig Terminal (MD)
NTBX44AC ISDNIA Sig Terminal (MD)
NTBX44AD ISDNIA Sig Terminal (MD)
NTBX45AA ISDNIA Sig Terminal (MD)
NTBX56AA ISDN1A Rem. Lk DS60 (MD)
NTBX60AA ISDN1B Service Line Mod F
NTBX62AA ISDN1B Line Drawer Unit
NTBX63AA DC Fan Unit (7")
NTBX65AA ISDN Host Link Ext Fr. (MD)
NTBX66AA ISDN Rem Fib LK EX F (MD)
NTBX71AA ISDN Enh L Dwr PUPS CP
NTBX72AA ISDN LCME Bat/Rng Router
NTBX82AA NT1 Rack-mount Shelf
NTDX15AA LSI Pwr Converter +-5V (MD)
NTDX15AB Global Power Converter
NTDX16AA +5V Dual Power Converter
NTEX01AA Enhanced Multi EMC Cabinet
NTEX01AB Enhanced Multi -Purpose Cab.
NTEX17AA 1 Meg Modem 2-slot LC (MD)
NTEX17AB 1 Meg Modem 1-slot LC (MD)
NTEX17BA 1 Meg Modem 2-slot LC (MD)
NTEX17CA 1 Meg Modem Hi Densty (MD)
NTEX17DA 1 Meg Modem Hi Density (RLCM/Star Remote) (MD)
(NTEX17EA 2-slot xDSL Line Card
NTEX20AA Intra F-Bus A Termination
NTEX20BA Intra F-Bus B Termination
NTEX22AA Integrated Proc. F-bus (MD)
NTEX22BA Integrated Proc. F-bus (MD)
NTEX22BB Integrated Proc. F-bus Upgrad
NTEX22CA 32MB ASU Proc & F-bus Cont
NTEX22FA 128MB ASU Proc & Fbus Cont
NTEX25AA NUI Channel Bus Controller
NTEX25BA NUI Channel Bus Controller
NTEX26AA LIU Channel Bus Interface
NTEX28AA NIU DS30 Link Interface
NTEX30AA Frame Relay T1 Paddle Board
NTEX31AA Frm Relay Access Proc (MD)
NTEX31BA ESF Frame Relay Access
NTEX35AA IT1000 Modm CPE Unit (MD)
NTEX35AB 1 Meg Modem (Canada)
NTEX35BA 1 Meg Modem Asmbly (MD)
NTEX35AAAA 1 Meg Modem Asm. (MD)
NTEX35AAAB 1 Meg Modem Asm. (MD)
NTEX35AAAC 1 Meg Modem Asm. (MD)
NTEX35AAAD 1 Meg Modem Asm. (MD)
NTEX35BAAB 1 Meg Modem Asm. (MD)
NTEX35BAAC 1 Meg Modem Asm. (MD)
NTEX35BAAD 1 Meg Modem Asm. (MD)
NTEX36AA IT1000 Modem CP (MD)
NTEX36AB 1 Meg Modem Cost Reduced
NTEX36BA 1 Meg Modem Assembly
NTEX38BA 1 MMS Wall Mnt Filter Assem
NTEX39BA 1 MMS Wall Mnt Filter Assem
NTEX48AA OC-3 Express MX Installation
NTEX54AA Data Enh'd BIC (DBIC) (MD)
NTEX54AB 1Meg Modem DBIC 50 Mhz (MD)
NTEX54BA 1 Meg Mod DBIC 10/100BaseT (MD)
NTEX54CA 1 Meg Modem DBIC with 10/100BaseT (RLCM/Star Remote) (MD)
NTEX54BAAB, BAAC, BAAD 1 Meg Modem for Phase 2B
NTEX76AA High Speed Signaling Term
NTEX78AA DS1 Paddleboard
NTFX05AA EAS PDC Alarm CP
NTFX09AA CBUS Interface Paddle Board
NTFX10AA HDLC Frame Processor
NTFX30AA IOM Main Controller Card
NTFX30EA 2.4GB Dual VME Disk 3 Slot
NTFX30FA 5GB Dual VME Disk 3 Slot
NTFX31AA IOM Paddle Board (Pow. Feed and Connection Feeders)
NTFX32AA IOM Storage Media Card
NTFX32BA IOM DDU Plug-in Unit
NTFX32CA IOM Digital Audio Tape Unit
NTFX32DA IOM Filler Plate
NTFX34AA IOM RS232 Smart Conn. Assy
NTFX35AA IOM V.35 Smart Conn. Assy
NTFX35BA IOM 512Kbps V.35 Smart Assembly
NTFX36AA IOM PERTC Smart Connector Assembly
NTFX38AA Current Loop Sm Con Assy
NTFX38BA Cur. Loop Sm Con Assy (MD)
NTFX39AA BH 1-9 Cable Splitter Assem.
NTFX30BA Input/Output Module (IOM)
NTFX30EA 2.4GB Dual VME Disk
NTFX30FA 5.0GB Dual VME Disk
NTFX32CA Dig Audio Tape (DAT) Asmbly
NTFX33AA Cabinetized Fiber LGC/DTC
NTFX33CA LTE Frame (MD)
NTFX36AA IOM PERTEC Smart Conn.
NTFX38AA IOM Current Loop Smart Con
NTFX39AA ISM Bulkhead Splitter Unit
NTFX40BA ISM Frame
NTFX40FA MTA Equipment Frame
NTFX4101 ISM Shelf Assembly
NTFX42AA ISM Processor CP
NTFX43AA ISM DC Converter
NTFX44AA Improved Loop Test Access
NTFX50BA NAV Base Platform
NTFX51AA Service Bay
NTFX5107 Attendant Controller (V.35)
NTFX52BA LAN Bay (Mod B)
NTFX52CA LAN Bay (Mod B) (MD)
NTFX53AA Operations Bay
NTFX55BA NAV Controller Cabinet (MD)
NTFX55BB NAVB003 Controller Bay
NTFX55CA SS7 Server Bay (MD 4/2000)
NTFX56AA NAV Shelf Assembly
NTFX60AA Power Converter Assembly
NTFX61BA 2.4GB Disk/ CP
NTFX61EA 2.4GB Disk/Disk Module CP
NTFX61FA 5GB Disk Drive CP
NTFX61GA 5GB Disk/DAT Module CP
NTFX61ZA Filler Disk Module CP
NTFX76CA 50Mhz System Processor
NTFX76DA 50Mhz System Processor
NTFX8586 SCSI-2 SCSI Cable (Short)
NTFX8617 ABS Cable
NTFX86AA SS7 Card (MD 4/2000)
NTFX89AA SS7 Translation Mod (MD)
NTFX92AA Digital Signal Processing CP
NTFY10AB Local X.11 Terminal
NTGX01AA Meridian Mail Service Module (MSM) Cabinet
NTGX01AB MSM Message Services Mod
NTGX04AA MSM Bus Term Trans Mod PB
NTGX04BA MSM Bus Ext Trans Mod PB
NTGX05AA MSM 68K Main Circuit Pack
NTGX06AA MSM 68K Trans Mod PB
NTGX06AB MSM 4-Port 68K RS232 TM
NTGX06AC MSM 68K TRANS. Module
NTGX07AA MSM Modem Trans Mod PB
NTGX08AA MSM T1 Maint Circuit Pack
NTGX09AA MSM T1 Transition Mod PB
NTGX10AA MSM Bus Controller Main CP
NTGX11AA MSM Bus Ctlr Trans Mod. PB
NTGX12AA MSM VP12 Circuit Pack (MD)
NTGX12AB MSM VP12A 57Mhz DSPS
NTGX1301 MSM Disk Conn Mount
NTGX14AA MSM 1200MB Disk Mod (MD)
NTGX14AB MSM 3 1/2" Disk Mod Asm
NTGX14BA MSM Dual 1200MB Disk (MD)
NTGX14BB MSM 3 1/2" Dual Disk Mod
NTGX15AA MSM Disk Tape Module (MD)
NTGX15AB MSM Disk Tape Module (MD)
NTGX15BA MSM 2.5 GB Disk Module
NTGX19BC MSM Disk Shelf Rear Filler
NTGX19CA MSM Power Conv Filler Pack
NTLX01AA XA-Core Dual Plane Cabinet
NTLX02AA XA-Core 256MB Proc PPC604
NTLX02BA XA-Core 256MB Proc PPC604
NTLX02CA XA-Core 256MB Proc PPC604
NTLX02DA XA-Core 512MB Pc MPC7410
NTLX03AA XA-Core I/O Common Equip
NTLX03BA XA-Core I/O Processor 2-Slot for IOP Disk and Tape
NTLX03BB XA-Core Double Width IOP
NTLX05AA XA-Core OC-3 2-Port IF
NTLX05AB XA-Core OC-3 2-Port IF
NTLX05BA XA-Core OC-3 SM 2-Port IF
NTLX06AA XA-Core Disk Drive 4GB Packlet
NTLX06AB XA-Core Disk Drive 8.4GB Packlet
NTLX06AC XA-Core Disk Drive 32.2GB Packlet
NTLX07AA XA-Core DAT Tape Drive Packlet
NTLX07AB XA-Core DAT Tape Drive Packlet
NTLX08AA XA-Core RTIF Packlet
NTLX08AB XA-Core RTIF Packlet
NTLX09AA XA-Core Ethernet IF Packlet
NTLX10AA XA-Core Hi Cap Cooling Unit
NTLX10BA XA-Core Temp. Cooling Unit
NTLX10BB XA-Core Temp. Cooling Unit

NTLX10CA	XA-Core Cooling Unit Baf. Sh.
NTLX11AA	XA-Core Fan Drawer
NTLX12AA	XA-Core Shelf IF Mod (SIM) Pwr Supply/Pwr Conditioner
NTLX14AA	XA-Core 128MB Shared Mem
NTLX14BA	XA-Core 256MB Shared Mem
NTLX14CA	XA-Core 384MB Shared Mem
NTLX14DA	XA-Core 512MB Shared Mem
NTLX20AA	XA-Core Blank Filler Module
NTLX20BA	XA-Core Terminat'g Filler Pk
NTLX21AA	XA-Core Packlet Filler 1-slot
NTLX25BA	XA-Core RTIF Esternal Cable
NTLX44AA	SPM Sync Resource Module
NTLX50AA	SPM-DMS Frm Asmbly (MD)
NTLX5010	SPM Upper Grill Assembly
NTLX5011	SPM Lower Grill Assembly
NTLX5015	SPM Air Filter Pt # A0665487
NTLX5016	SPM Air Filter Tray Assembly
NTLX51AA	SPM Dual-shelf Assem 2-slot
NTLX51BA	SPM Shelf Unit Assem 4-slot
NTLX55AA	SPM Cooling Unit Assembly
NTLX56AA	SPM Fan Units
NTLX57AA	SPM Pow Ca IF Unit (PCIU)
NTLX58AA	SPM Alarm Card
NTLX59AA	Fan Management Unit Assem
NTLX60AA	SPM Filler Module Assembly
NTLX61AA	SPM Shelf IF Module (SIM)
NTLX63AA	SPM Common Eq Mod (MD)
NTLX63BA	SPM 128/92M Com Eq Mod
NTLX65AA	SPM DSP Resource Mod (MD)
NTLX65BA	SPM 16M DSP Module (MD)
NTLX66AA	SPM VSP Resource Mod (MD)
NTLX66BA	SPM 16M VSP Resource Mod
NTLX66BB	SPM 16M VSP Resource Mod
NTLX67AA	SPM Media Gateway Pro
NTLX68AA	SPM ST-1 Optical Res Module
NTLX69AA	SPM CEM Stand-alone
NTLX70AA	SPM Sync Module
NTLX71AA	SPM OC-3 IF Resource Mod
NTLX71AB	SPM OC-3 IF Resource Mod
NTLX72AA	SPM DLC Resource Module
NTLX72AB	SPM DLC Resource Module
NTLX72BA	SPM DLC Resource Module
NTLX73AA	SPM ATM Resource Mo
NTLX73AB	SPM ATM Resource Mo
NTLX73AC	SPM ATM Resource Mod
NTLX73BA	SPM ATM Resource Mo
NTLX73BB	SPM ATM Resource Mod
NTLX74AA	SPM STS-1 Resource Mod
NTLX76AA	SPM STS-1 Wiring Acc Asmby
NTLX77AA	SPM STS-1 Term. Complex
NTLX78AA	SPM PWR QUICC BRM
NTLX79AA	SPM Messaging Manager Resource Module
NTLX82AA	SPM Enh'd CEM w/Ethernet
NTLX82BA	SPM CEM PPMC750 w/Ether.
NTLX83AA	SPM Alarm Module
NTLX84AA	SPM PCM30 LSA Resource
NTLX84DA	SPM DS1 LSA Res Complex
NTLX85AA	SPM 64ms Echo Canceller RM
NTLX86AA	SPM 128ms Echo Canc RM
NTLX87AA	SPM Transcoder Res Mod
NTLX88AA	SPM RCM Assembly
NTLX89AA	SPM PCM30 IF Elect Mod
NTLX89DA	SPM DS1 IF Electronics Mod
NTLX90AA	SPM 8Kb Subrate Time Switch Resource Module
NTLX91AA	SPME Assembly (MD)
NTLX91BA	SPM DMS Frame Assembly
NTLX92AA	SPM Termination IF Module
NTLX94AA	SPM High Density <Dead> Cable Transition Module
NTLX94CA	SPM PCM30 Ca Trans Mod
NTLX94DA	SPM DS1 Cable Trans Mod
NTLX94EA	SPM PCM30 TW Pair Cable Transition Module
NTLX94GA	SPM CTMD with no SPM Side Loopback
NTLX99AA	SPM STM-1 Resource Module
NTM609AB	BMC-DPP PCP Assembly
NTMX26BA	S/RSC FSP
NTMX26CD	FSP Assembly
NTMX35AA	Channel Frame Interface PCP
NTMX36AA	Programmable Sig. Processor
NTMX37AA	HDLC Frame Transceiver
NTMX3801	Link Multiplexer CB
NTMX38AA	Link Multiplexer CP
NTMX39AA	CFP Paddle Board CP
NTMX44AA	Meridian CCS7 Link Module
NTMX45AA	RLCM ESA Processor
NTMX71AA	XPM Plus Terminator Pad. Bd.
NTMX71BA	Address Terminator PB
NTMX72AA	Power Converter (MD)
NTMX72AB	Pwere Converter
NTMX73AA	PCM Signalling Proc (MD)
NTMX73AB	PCM Signalling Processor
NTMX73BA	PCM Signalling Processor
NTMX73CA	PCM Signalling Processor
NTMX74AA	32 DS30A I/F Pack (MD)
NTMX74AB	32 DS30A I/F Pack
NTMX75AA	Enhanced Time Switch Matrix
NTMX75BA	Enhanced Time Switch Matrix
NTMX75CA	Enhanced Time Switch Matrix
NTMX75DA	Enhanced Time Switch Matrix for 20 C-side DS1s
NTMX76AA	Msg Protocol & Tone CP (MD)
NTMX76AB	Msg Protocol & Tone CP
NTMX76BA	Msg Protocol & Tone CP
NTMX76CA	Msg Protocol & Tone CP
MTMX76DA	Msg Protocol & HDLC Sig CP
NTMX77AA	Unified Processor
NTMX77AB	Unified Processor (MD)
NTMX79AA	DS60 Extender
NTMX79AB	DS60 Extender
NTMX79BA	DS60 Extender
NTMX81AA	Remote Dual DS1 Packlet
NTMX81BA	Remote Enh Dual DS1 Packlet
NTMX82AA	Dual PCM30 Packlet
NTMX83AA	Packlet Filler Pack
NTMX83BA	Enhanced Packlet Filler Pack
NTMX8501	RCC2 Shelf
NTMX8504	CPM Shelf Assembly
NTMX8601	RCC2-EXT Shelf
NTMX8604	CPM Extension Shelf Assem.
NTMX87AA	Quad PCM Carrier Frame
NTMX87AB	Quad PCM Carrier Frame
NTMX87BA	Enhanced Quad PCM Carrier Frame for 20 C-side DS1s
NTMX88AA	Extension Cabinet Assembly
NTMX88BA	International Remote Sw. Ctr.
NTMX89AA	RSC Cabinet Assembly
NTMX89BA	Intl Remote Swt Cent (MD)
NTMX89CA	Intl Remote Swt Cent (MD)
NTMX89FA	RSC-S CRSC/LCM Cab. Asm.
NTMX89FB	RSC-S CRSC/LCM Cabinet
NTMX89FC	RSC-S CEXT Cabinet Assemb.
NTMX97AA	Recording/Annc. Processor CP
NTMX99AA	Channel bus IF 512 chnl PB
NTNX12AA	Meridian Cabinet SS7 Module
NTNX12LA	MC7M Common Circuit Pack
NTNX1201	Enhanced Line Module Shelf
NTNX13AA	MSL100 Fan Mgm Unit
NTNX14AA	Remote Line Concentrating
NTNX15AA	Enhance Fuse Panel Assembly
NTNX16AA	Meridian Power Distribution
NTNX17AA	Meridian Cab. Remote (MD)
NTNX21AA	Meridian Cabinet Memory
NTNX22BA	Meridian Cabinet Space ST
NTNX2201	Spare Storage Shelf Assembly
NTNX2203	Spares Storage Shelf
NTNX24BA	Power Distribution Panel
NTNX24CA	Power Distribution Panel
NTNX24CB	AAE Power Distribution Panel
NTNX24DA	Power Distribution Panel
NTNX25BA	CPE Cabinet Assembly
NTNX25EA	DMS-100 6' Cabinet Assembly
NTNX26AA	FSP Shelf
NTNX26BA	Meridian Cabinet Line
NTNX26CA	Meridian Cabinet Line
NTNX26DA	Meridian Cabinet Line
NTNX26GA	FSP, Mdn EIOC Process (MD)
NTNX26HA	MC7M Frame Supv. Pnl (FSP)
NTNX26LA	MCLM-I FSP
NTNX26MA	MCGM FSP w Interlock (MD)
NTNX26NA	Frame Supervisory Panel
NTNX27AA	Cooling Unit
NTNX27BA	Cooling Unit — TOPS MP
NTNX27CA	10" Cooling Unit
NTNX27DA	16" Cooling Unit
NTNX29BA	Meridian Cabinet Service
NTNX31AA	Frame, Meridian EIOC Proc.
NTNX32AA	Meridian Cab EIOC Ext (MD)
NTNX33AA	Meridian Cabinet Trunk (MD)
NTNX33CA	MCTM-I Meridian Cabinet T
NTNX33DA	Meridian Cabinet Trunk
NTNX33EA	Meridian Cabinet Trunk
NTNX33FA	Meridian Cabinet Trunk
NTNX34BA	Meridian Cabinet CCS #6
NTNX3401	Shelf Assembly, Dual IOC
NTNX35AA	Meridian Cabinet EIOC
NTNX37AA	Meridian Cabinet Auxillary
NTNX37AB	Meridian Cabinet Aux (MD)
NTNX38AA	Meridian Cabinet Line
NTNX38BA	Meridian Cabinet Line
NTNX3826	ISDN Cabinet LCA Shelf Assy
NTNX40AA	Meridian Cabinet Network
NTNX41AA	HSI DS1 Line Card (MD)
NTNX42AA	HSI DS3 Line Card
NTNX43AA	HSI DS1 Paddleboard (MD)
NTNX44AA	HSI DS3 Paddleboard
NTNX45AA	HSI Host Processor
NTNX45BA	HSI Host Processor 4-Ports
NTNX45ZZ	HSI Host Proc w/Mult Mods
NTNX46AA	HSI DS-512 Paddleboard
NTNX46BA	HSI DS-512 Paddleboard
NTNX47AA	Meridian Cab. General MD)
NTNX47BA	Meridan MCGM Frame (MD)
NTNX51AA	TOPS MP Rack Mount System
NTNX51BC	TOPS MPX PCP (MD)
NTNX51BD	TOPS MPX Audio PCP (MD)
NTNX51BE	TOPS MPX Audio Card (MD)
NTNX51DB	IBM7696 NT2 Term-Type 1C
NTNX51DC	IBM7696 NT2 Term-Type 2C
NTNX51DD	IBM7696 NT1 Term-Type 3C
NTNX51LN	TOPS IWS 17" Mon. (MD)
NTNX51LQ	TOPS IWS 17 inch Monitor
NTNX52BC	TOPS MPX Audio Card (MD)
NTNX52CC	TOPS MPX Audio Card
NTNX54BA	EMI Alum Filler CP (MD)
NTNX55JA	TOPSMPX Sgl Pt T1 Chn Bk
NTNX55LA	TOPSMPX Sgl Pt RS422 C Bk
NTNX55MA	TOPSMTX 4-Pt G.703 Ch Bk
NTNX57AA	Aux. Access Equipment (MD)
NTNX57AC	Aux. Access Equipment
NTNX58AA	TOPS MPX CP
NTNX58BA	TOPS MPX CP
NTNX59AA	TOPS MPX Sonalert (MD)
NTNX60AA	Position Controller Equipment
NTNX61AA	Circuit Pack Filler Kit (MD)
NTNX62AA	TOPSMPX Hi Sp Lk IF (MD)
NTNX62AB	TOPSMPX HSLI Enh (MD)
NTNX62CA	TOPS DNET LAN IF
NTNX63AA	TOPS MP 4 MB Mem (MD)
NTNX63AB	TOPS MP 6 MB Mem (MD)

NTNX64AA TOPS Position Sgl Bd (MD)
NTNX64AB TOPS TPC Single Bd. (MD)
NTNX65AA TOPS Pos. Controller (MD)
NTNX65BA TOPS Pos Controller (MD)
NTNX66AA TOPS Pos Cont HS Data (MD)
NTNX67BA TOPS EMI Sheld PCP (MD)
NTNX68AA TOPS Pos Cont Disk (MD)
NTNX68BA TOPS Pos Cont Disk (MD)
NTNX68CA Floppy Disk Cont CP (MD)
NTNX68DA Hard Disk Controller CP (MD)
NTNX71AA Line Resource Unit Processor
NTNX72AA Line Res Unit RCON/TCON
NTNX73AA Line Res Unit Formatter Clk
NTNX74AA Line Res Unit D-Chn Mux
NTNX75AA Line Resource Unit DS1
NTNX76AA Line Resource Unit BIC
NTNX77AA LRU Programmable Pwr Con
NTNX79AA Line Res Unit Ring Generator
NTNX81AA Line Res Unit Scan/SD/Z X'in
NTNX96AA Meridian Cabinet
NTNX97AA Meridian Cabinet DNI
NTNX97AB Network Junctor Connection
NTNX98AA HSI STS-1 line Card
NTNX99AA HS1 STS-1 Paddleboard
NTQX90AA Multi-vendor Main Frame
NTRX01AD Bus Shelf Assembly
NTRX02AA Breaker Panel Assembly
NTRX02AB Breaker Panel Assy (1 SN)
NTRX02AD Breaker Panel Assy (S/DMS)
NTRX30AA Cab. LCE (CLCE) (MD)
NTRX30BA Cabinetized Line Module I
NTRX31AA CPDC Cabinet Assembly
NTRX31DH Inverter
NTRX32AA Cabinetized TME (CTME)
NTRX32BA Cabinetized Trunk Module
NTRX33AA Cabinetized I/O Equipment
NTRX33CA Cabinetized I/O Equipment
NTRX34AA Cabinetized MIS (CMIS)
NTRX34AB Misc. Equipment Cab (MD)
NTRX34BA Miscellaneous Equipment Cab
NTRX35AA Cabinetized DSN (CDSN)
NTRX35BA Cabinetized Dual Shelf Netwk
NTRX36AA Cabinetized CPE (CCPE)
NTRX36AB Common Peripheral Eq. (MD)
NTRX36BA LTE Frame Model B (MD)
NTRX37AA Cabinetized SLC/DNI (CSLC
NTRX38AA Cabinetized DNI (CDNI)
NTRX40AA Modular Supervisory Panel
NTRX41AA Alarm Module
NTRX42AA Breaker Module (10A)
NTRX42BA MSP Breaker Module (15A)
NTRX42CA MSP Breaker Module (20A)
NTRX42DA Breaker Module 10/15A
NTRX42EA Breaker Module 10/20A
NTRX42FA Breaker Module 15/20A
NTRX43AA Thermal Breaker Module
NTRX44AA Talk Battery Filter Module
NTRX45AA CMIS Frame Supt Panel
NTRX46AA Cab Intl Periph Eq (MD)
NTRX47AA Cab Intl Digital Cont (MD)
NTRX48AA Cab Internat'l Mess. & Buff
NTRX49AA Misc Spares Storage Cab (MD)
NTRX509 SDM-FT Cable
NTRX510 SDM-FT to cust LAN Cable
NTRX50CF SDM CPU 128MB (MD 4Q99)
NTRX50CG SDM CPU 256MB DRAM
NTRX50CH SDM CPU 512MB DRAM
NTRX50FA Cabanitized SN Data Manager
NTRX50FD SDM Console Pt Person'y Mod
NTRX50FE SDM Fan Tray 0 Upper Mod
NTRX50FF SDM Fan Tray 1 Lower Mod
NTRX50FG SDM Interconnect Cont Mod
NTRX50FH SDM Interconnect Cont Mod
NTRX50FJ SDM CPU w/64MB DRAM
NTRX50FK CPUSET 128MB DRAM (MD)
NTRX50FL CPUSET 256MB DRAM (MD)
NTRX50FM CPUSET 512MB DRAM (MD)
NTRX50FQ SDM IOC Cont w/DAT Eth'nt
NTRX50FS SDM IOC Cont Person'ty Mod
NTRX50FT SDM-FT Ethernet Controller
NTRX50FU SDM-FT Eth Personality Mod
NTRX50FV SDM 16 Pt ASYNC Controller
NTRX50FW SDM ASYNC Pt Person't Cod
NTRX50FX SDM ASYNC Pt Patch Panel
NTRX50FY SDM 2-Pt Sync Controller
NTRX50FZ SDM 2-Pt Sync Person't Mod
NTRX50GA SDM DS512 Front Module
NTRX50GB SDM DS512 Daughter Board
NTRX50GC SDM Line Handler Mother Bd
NTRX50GE SDM DS512 Bridge Card
NTRX50GF SDM DS512 Personality Mod
NTRX50GG SDM DS512 Transition Mod
NTRX50GH SDM DS512 Back Module
NTRX50GL SDM DS512 Transition Mod
NTRX50GM SDM DS512 Bd w/Faceplate
NTRX50GN SDM IO w/DAT & 4-Gig Disk
NTRX50GP SDM IO with two 4GB Disks
NTRX50GQ SDM IO w/DAT & 2-Gig Disk
NTRX50GX Enhanced DS-512 Interface CP
NTRX50JE SDM (06) Alm Trans Mod
NTRX50JF SDM (06) SCSI Trans Mod
NTRX50JG SDM (06) Proc Trans Mod
NTRX50JH SDM (06) PRoc Tran Mod
NTRX50JP SDM (06) VME Proc Card
NTRX50JQ SDM (06) VME Proc Card
NTRX50JR SDM (06) VME Proc Card
NTRX50JS SDM (06) VME Proc Card
NTRX50JV SDM (06) VME Ethernet Cont
NTRX50JW SDM (06) Ethernet Trans Mod
NTRX50NB SDM Arther 750 512-MB Ram
NTRX50NC SDM 9 + 9GB datavg MFIO
NTRX50ND SDM 9GB + DAT MFIO
NTRX50NK SDM LAN Personality Module for UMFIO
NTRX50NL 36 + 36GB datavg UMFIO
NTRX50NM 36GB + DAT rootvg UMFIO
NTRX53AA MSP C Feed Module
NTRX54AA MSP FMU Module
NTRX54BA MSP Fan Control Module
NTRX59AB CMIS Lamarche Inverter Kit
NTRX59AC CMIS DTH ROTL Kit
NTRX59AD CMIS Audible/Visual Alarm
NTRX59AE CMIS Pylon RG-2 Ring Gen.
NTRX59AF CMIS Inactive Sys Timing Ckt
NTRX66AA Remotes Fan Alarm Module
NTRX82AA SDM 32Mhz Cache Processor
NTRX82AB SDM 48Mhz Cache Processor
NTRX82AC SDM 48Mhz Cache Processor
NTRX82AD SDM 64Mhz Cache Processor
NTRX83AA SDM 32M Memory Card
NTRX83AB SDM Memory Ext for 32M
NTRX83AC SDM 32M Memory Module
NTRX84AA SDM Multi-functional IO CP
NTRX84AB SDM 8-Pt Asych MUX Card
NTRX85AA SDM Ethernet LAN IF Card
NTRX85AB SDM Native ACC Card
NTRX85AC SDM HP HSNIO Data Kit IF
NTRX85AD SDM Sgl Port X.25 IF Card
NTRX90AA Cooling Unit
NTRX91AA Cooling Unit
NTSX05AA XPM Power PC Processor
NTSX05CA Remotes Power PC Processor
NTSX05DA Enhance Peripheral Processor
NTSX06AA Filler Pack
NTSX06BA XPM 60MB Packlet
NTSX06CA XPM 120MB Packlet
NTTR60AA Star Remote Ring Generator
NTTR62AA Star Rem Outdoor AC Panel
NTTR63AA Star Rem Indoor Bat Sensor
NTTR63AB Star Remote Bat Sensor CP
NTTR64AA Star Remote Meter Jumper
NTTR65AA Star Remote Rectifier Pack
NTTR66AA Star Rem EMI/RFI Filter CP
NTTR67AA Star Remote DCP Pack
NTTR68AA Star Rem ISDN P/S Domestic
NTTR70AA Star Remote Mod Controller
NTTR71AA Star Rem Line Maint CP
NTTR72AA Star Rem Pwr Sup/Ringer CP
NTTR73AA Star Rem Universal Maint CP
NTTR74AA Star Remote Alarm Card
NTTR75AA Star Remote Fuse Card
NTTR76AA Star Remote Breaker Card
NTTR77AA Star Remote Control Pack
NTTR78AA Star Remote Spare Fuse CP
NTTR80AB Star Rem CP For NTTR80AA
NTTR87AA Star Rem Quad PCM Carrier
NTX901FB Filler Shelf for CM/SLM when Replaced with XA-Core Shelf
NTZZ00AA Modular Engineering SN Cab
NTZZ01AA SN Cabinet & Common CPs
NTZZ01AM SuperNode & Common CPs
NTZZ01BA SLM Common Circuit Packs
NTZZ01CA Nwk & IOC Mod. Interface
NTZZ01CB 4 Port Network & IOC I/F
NTZZ01DA LIM/LPP Interface
NTZZ01DB 4 Port LIM/LPP Interface
NTZZ01EA I/F Filler Face Plates
NTZZ01FA Series 10 CPU Circuit Packs
NTZZ01GA Series 20 CPU Circuit Packs
NTZZ01HA Series 30 CPU Circuit Packs
NTZZ01JA Series 40 CPU Circuit Packs
NTZZ01KA 6 MBYTE Memory CP
NTZZ01LA 24 MBYTE Memory CP
NTZZ01MA Filler Face Plates
NTZZ01NA Initial ENET Circuit Packs
NTZZ01NM Initial Enhanced Network I/F
NTZZ01PA Intermediate ENET CP
NTZZ01QA Final ENET Circuit Packs
NTZZ01QM Final Enhanced Network I/F
NTZZ01RA S-DMS Core
NTZZ01RB SuperNode in C42 Cabinet
NTZZ01RC SN S/DMS w/variable memory
NTZZ01RD SN S/DMS w/variable memory
NTZZ01RM SN S/DMS w/variable memory
NTZZ01SA 33 MHZ 88000 BRISC CPU
NTZZ01TA Streamline S-Node Cabinet
NTZZ01UA Streamline 4-Port Net & IOC
NTZZ01UB 4-Port Netwrk IOC I/F for CA
NTZZ01VA Streamline 4-Port LIM/LPP
NTZZ01VB 4-Port LIM/LPP I/F for CA
NTZZ01WA Meridian Mail Service
NTZZ01ZA Link Interface for FLIS
NTZZ02AA 4 DS30 Network IF
NTZZ02BA Line Group Controller
NTZZ02CA Line Group Controller
NTZZ02DA DS1 Interface CP
NTZZ02EA CLASS Modem Resource CP
NTZZ02FA Universal Tone Receiver Ckt
NTZZ02FB Universal Tone Receiver Ckt
NTZZ02GA DS30 Network Interface CP
NTZZ02GB 16 DS30 Net I/F & Bracket
NTZZ02HA DS512 Network Interface CP
NTZZ02HM DS512 Network Interface CP
NTZZ02JA DS30A LCM Interface CP
NTZZ02KA DS30A LCM I/F CP
NTZZ02LA Line Group Controller
NTZZ02MA Line Trunk Controller
NTZZ02PA LTC with XPM Plus
NTZZ02QA LGC with XPM Plus
NTZZ03BA Subscriber Module for SLC-96
NTZZ03BB Subscriber Module for SLC-96
NTZZ03BC SMS+ Common CP
NTZZ03BD Subscriber Module for SLC-96
NTZZ03CA Sub. Module Remote Common

NTZZ03DA	Sub. Module DMS-1 Urban
NTZZ03DB	SMU+ Common CP
NTZZ03DC	Sub. Module DMS-1 Urban
NTZZ03EA	Sub. Module DMS-100S Carr.
NTZZ03EB	SMS-Rural + Common CP
NTZZ03EC	Sub. Module for SLC-96 Rem.
NTZZ03FA	DS1 Interface CP
NTZZ03GA	SCM DS1 Interface CP
NTZZ03HA	Subscriber MOD for SLC-96
NTZZ03JA	Sub. MOD for Rem Comm
NTZZ03KA	Sub. MOD for DMS-1 Urban
NTZZ03LA	Sub. Carr MOD for 100S Rem.
NTZZ03MA	E-SMU Common CP
NTZZ03NA	Time Switch
NTZZ03RA	ISDN Subscriber Module
NTZZ04AA	DS0A Interface CP
NTXX04BA	Digital Trunk Controller
NTZZ04BB	DTC for DWS
NTZZ04CA	Continuity Tone Detection CP
NTZZ04DA	Digital Trunk Controller
NTZZ04EA	XPM PC Kit NT6X02AA
NTZZ04HA	DTC with XPM Plus
NTZZ04HB	DTC with XPM Plus
NTZZ04KA	DTC with XPM Plus and DWS
NTZZ05DA	CCS& Sig. Term. I/F
NTZZ05EA	CCS7 Signaling Terminal
NTZZ05FA	CCS7 Signaling Terminal I/F
NTZZ05HA	MS7E Frame
NTZZ05JA	Earthquake MS7E Frame
NTZZ06AA	Trunk Module Equipment Fr.
NTZZ06AM	Maintenance Trunk Module
NTZZ06BA	Maintenance Trunk Module
NTZZ06CA	Maint. Trk. Mod. for DRA
NTZZ06DA	Line Test Unit
NTZZ06EA	Line Test Unit
NTZZ06FA	Transmission Test Unit
NTZZ06GA	Transmission Test Trunk
NTZZ06HA	Digital Modem
NTZZ06JA	CLASS Phase I
NTZZ06KA	CLASS Phase II A
NTZZ06LA	CLASS Phase II B
NTZZ06MA	CLASS Phase II C
NTZZ06NA	Maintenance Trunk Module
NTZZ06PA	TME Strapping Option 1
NTZZ06QA	TME Strapping Option 2
NTZZ06RA	Trunk Module 8
NTZZ06SA	Maint. Trk. Mod. for DRA
NTZZ06YA	TME Frame
NTZZ06ZA	Earthquake TME Frame
NTZZ07AA	DNSE Equipment Frame
NTZZ07BA	Network Common CP
NTZZ07CA	NT-40 Network Clock I/F
NTZZ07DA	SN Network Clock Interface
NTZZ07EA	DSNE Frame
NTZZ07FA	Cabinetized DSNE
NTZZ07GA	Network Common CP Kit
NTZZ07HA	Cabinetized Dual Shelf Netwk
NTZZ07JA	Network Common CP Kit
NTZZ07KA	Network P-Side Message Proc.
NTZZ07LA	Network P-Side Message Proc.
NTZZ07MA	Network Port CP
NTZZ07NA	Double Shelf Network CP
NTZZ07PA	Earthquake DSNE Frame
NTZZ07QA	Double Shelf Network CP
NTZZ07RA	Model B Network Common CP
NTZZ07SA	Model B Network Common CP
NTZZ08AA	Line Concentrating Equip.
NTZZ08AB	LCE E/W Earthquake FrmWk
NTZZ08BA	Line Concentrating Module
NTZZ08BB	LCM for Cabinetized LCE
NTZZ08CA	LCE
NTZZ08CB	LCE (U.S.)
NTZZ08CC	LCE E/W Common FrmWork
NTZZ08CD	Line Concentrating Equip.
NTZZ08DA	Cabinetized LCE
NTZZ08DB	Cabinetized LCE
NTZZ08HA	Earthquake LCE
NTZZ09AA	I/O Equipment Frame
NTZZ09BA	Dual Disk Drive Unit Shelf
NTZZ09BB	Dual Disk Drive Unit Shelf
NTZZ09CA	Input/Output Controller (MD)
NTZZ09CB	Input/Output Controller (MD)
NTZZ09DA	I/O Terminal Controller CP
NTZZ09EA	I/O Terminal Controller CP w
NTZZ09GA	Multi-Protocol Controller
NTZZ09HA	Cook MTD Interface CP
NTZZ09JA	MDS DDU Controller CP
NTZZ09KA	EMPC Converter CP
NTZZ09LA	DPP Shelf
NTZZ09MA	Stratum II Shelf
NTZZ09PA	Stratum II OSC & I/F CP
NTZZ09RA	DPP Unit 380 MBYTE
NTZZ09SA	DPP Unit760 MBYTE
NTZZ09TA	IOE Frame
NTZZ09TB	IOE Frame
NTZZ09UA	228MB Disk Drive
NTZZ09VA	I/O Controller Module (NT-40)
NTZZ09VB	I/O Controller Module
NTZZ09WA	Earthquake IOE Frame
NTZZ09WB	1.67 GB DPP W/56K Comp.
NTZZ09XA	DPP Shelf
NTZZ09YA	DPP Shelf 56K Compression
NTZZ09ZA	1.67 GB DPP W/56K Comp.
NTZZ10AA	Network Simplex Cabinet
NTZZ10AG	Enhanced Network Simplex
NTZZ10BA	Network Shelf Assembly CP
NTZZ10CA	Blank Shelf Assembly CP
NTZZ10DA	48 DS30 Bulkhead Assembly
NTZZ10EA	112 DS30 Bulkhead Assembly
NTZZ10FA	Fiber Bulkhead Assembly
NTZZ10GA	DS30 Interface Assembly
NTZZ10HA	Quad DS512 Fiber I/F
NTZZ10JA	16K*16K Channel Term. XPT
NTZZ10KA	16K*16K Channel XPT CP
NTZZ10LA	S-DMS ENET
NTZZ10MA	3 DS512/16 DS30 ENET I/F
NTZZ10NA	64K Enhanced Network
NTZZ11AA	Link I/F Modular Cabinet
NTZZ11AG	24 Link Interface Cabinet
NTZZ11BA	DS0A Link I/F unit
NTZZ11CA	E-DS0A Link I/F Unit
NTZZ11DA	V.35 Link I/F Unit
NTZZ11GA	3 Sot LIU COM
NTZZ12AA	REM Controller Equipment
NTZZ12AB	RCE Frame
NTZZ12BA	Remote Maintenance Module
NTZZ12BB	RMM STD 51
NTZZ12CA	Remote Maintenance Module
NTZZ12CB	RMM Shelf POS 65 RCE Frm.
NTZZ12CC	Remote Maint. Mod. RCE (65)
NTZZ12DA	DS1 W/O EFF C-Side I/F CP
NTZZ12EA	DS1 with EFF C-Side I/F CP
NTZZ12FA	REM Maintenance Module
NTZZ12GA	REM Power Dist. Module
NTZZ12HA	RCE Frame
NTZZ12HB	REM Controller Equip. Frame
NTZZ12HC	RCE Frame (U.S.)
NTZZ12HD	Remote Controller Equipment
NTZZ12JA	Std. RSC-S REM Maint. Mod.
NTZZ12LA	Earthquake RCR Frame
NTZZ12LB	Earthquake RCE Frame (U.S.)
NTZZ12MA	ISDN RCE Frame
NTZZ12NA	ISDN RCC Packfill
NTZZ12NB	RCCI XPM Plus Common CP
NTZZ12PA	ISDN RCC Shelf 65 RMM
NTZZ12PB	RMM Shelf RCEI
NTZZ12QA	Cabinetized RSC
NTZZ12QB	Cabinetized RSC
NTZZ12RA	LCME Module
NTZZ12SA	Cabinetized EXT
NTZZ12SB	Cabinetized EXT
NTZZ12UA	RSC-S CLASS Modem Resrce.
NTZZ12VA	RSC-S Univ. Tone Receiver
NTZZ12WA	EXT Left Filler Kit
NTZZ12XA	RCC2 Shelf Packfill
NTZZ12XB	RCC2 Packfill (W/O EISP)
NTZZ12YA	Remote Cluster Controller
NTZZ12YB	Remote Cluster Controller
NTZZ12YD	RCC Com. CP Fill (MP/SP)
NTZZ12YE	RCC Com. CP Fill (MP/SP)
NTZZ12ZA	RCC2 EDC Packfill
NTZZ13AA	PDC Frame Top Feed
NTZZ13BA	PDC Frame Bottom Feed
NTZZ13DA	Fully Equipped PDC Frame
NTZZ13EA	PWR Dist. Center Frame
NTZZ13FA	Distribution Fuse Panel A/B
NTZZ13HA	PDC Frame Top Feed
NTZZ13JA	PDC Frame Bottom Feed
NTZZ13KA	Fully Equipped PDC Frame
NTZZ13LA	Cabinetized PDC
NTZZ13MA	S/N Bulkhead Panel Assembly
NTZZ13PA	Lamarche Inverter for CPD
NTZZ13RA	Equake PDC Frame TOP Feed
NTZZ13RC	PDC Top Feed (U.L. Listed)
NTZZ13SA	Equake PDC Frame BOT Feed
NTZZ13TA	Equake Fully Equip'd PDC Fr
NTZZ13TC	PDC Top Feed Fully Equip'd
NTZZ13UA	PDC Bottom Feed
NTZZ13UB	PDC Bottom Feed
NTZZ13VA	Earthquake PDC Bottom Feed
NTZZ13VC	PDC Bottom Feed (U.L. List.)
NTZZ13WA	Earthquake PDC Bottom Feed
NTZZ13WC	PDC Bottom Feed Fully Eqp'd
NTXX14AA	Maintenance Area Provisioned
NTXX14CA	MAP Position VDU
NTXX14EA	MAP Position Printer
NTXX14EB	MAP Printer (DEC LA755)
NTXX14EC	MAP Printer (DEC LA424)
NTXX14FA	Norstar Digital Key Service
NTXX14GA	TCS 1800 1A2 Key Service
NTXX14HA	Lamarche 500 Watt Inverter
NTXX14JA	MAP Amber VDU (HP700/22)
NTXX14KA	MAP Color VDU (CT220R)
NTXX14LA	KSR Printer (GE-2120)
NTXX14MA	KSR Printer (TI-820)
NTXX14NA	Companion3 Handsfree
NTXX14PA	Companion3 Handsfree
NTXX14QA	SuperNode OPC (BCS36)
NTXX14RA	LAN Bay
NTXX14SA	Duplex Work Station LAN Eq.
NTXX14TA	X-Terminal for OA&M Works
NTXX14UA	Work Station for Simple AD
NTZZ15AA	REM Misc. Eq. Frm. W/PDC
NTZZ15BA	REM Misc. Equipment Frame
NTZZ15CA	RME Frame W/PDC
NTZZ15CB	UL RME PWR Distrib. Mod.
NTZZ15DA	UL RME PWR Dist. Module
NTZZ15DB	REM Misc Equipment Frame
NTZZ15EA	Equake RME Frame with PDC
NTZZ15FA	Equake RME Frame
NTZZ15GA	Misc Equip Frame
NTZZ15HA	OEM LAN, HUB & MAU Fr.
NTZZ15JA	OEM LAN HUB & MAU Erth
NTZZ15KA	OEM LAN HUB & MAU Eq.
NTZZ16AA	REM LCM Module Frame
NTZZ16AC	RLCM
NTZZ16AD	RLCM
NTZZ16BA	RLCM Frm. Supv. Panel
NTZZ16CA	RLCM Supervisory Frm. Pnl.
NTZZ16DA	RLCM ESA CP Package
NTZZ16DB	RLCM ESA CP Package
NTZZ16EA	Remote LCM
NTZZ16EB	Remote LCM
NTZZ16EC	Remote LCM

NTZZ16ED RLCM
NTZZ16FA Remote Maint. Module Std.
NTZZ16GA Earthquake Remote LCM
NTZZ16HA Remote Maintenance Module
NTZZ16JA Host Interface Equipment
NTZZ16LA RLCM W/O Line Drawers
NTZZ16LB RLCM W/O Line Drawers
NTZZ16LC RLCM W/O Line Drawers
NTZZ17AA ISDN CPCE Frame
NTZZ17AM CPEI (NT6X01AD)
NTZZ17AN CPCE Frame
NTZZ17AT CPCE Earthquake Frame
NTZZ17BA D-channel handler CP
NTZZ17BB Enhanced D-Channel Handler
NTZZ17CA ISDN CPC Module
NTZZ17DA ISDN CPC Module
NTZZ17EA ISDN Line Concen. Equipment
NTZZ17EB ISDN LCE
NTZZ17FA ISDN LCM
NTZZ17GA ISDN CPC Module
NTZZ17GB ISDN CPC Module
NTZZ17GC ISDN XPM Plus Periph. Ctrl.
NTZZ17HA ISDN 2B1Q LCM
NTZZ17JA ISDN LCE
NTZZ17JB ISDN LCM
NTZZ17KA ISDN CPCE Frame (U.S.)
NTZZ17KK Universal Connector Bracket
NTZZ17LA Equake ISDN CPCE Frame
NTZZ17NA Ringing Generator for POTS
NTZZ17PA Earthquake ISDN LCE
NTZZ17PB ISDN LCE W/Ringing Gen.
NTZZ17PC ISDN LCE
NTZZ17QA ISDN XPM Line Trk. Cntl.
NTZZ17QM ISDN XPM Plus LTC
NTZZ17RA ISDN XPM Line Grp. Cntl.
NTZZ17RM ISDN XPM Plus LGC
NTZZ17SA ISDN XPM Dig. Trk. Cntl.
NTZZ17SM ISDN XPM Plus DTC
NTZZ17TM ISDN XPM Plus DWS Com.
NTZZ18AA Misc. Equipment Frame
NTZZ18AB Misc. Equipment Frame
NTZZ18BA Inverter
NTZZ18CA Metallic Test Access unit
NTZZ18DA Alarm Extension Circuit
NTZZ18EA Remote Office Test Line
NTZZ18FA Tellabs 292BR01 System
NTZZ18GA Tellabs 292 Line Expansion
NTZZ18HA DTH-REM Office Test Line
NTZZ18JA Misc. Frame
NTZZ18KA Cabinetized Misc Equipment
NTZZ18LA Inactive System Timing Ckt
NTZZ18MA RM4200 Data Set Shlf 115VAC
NTZZ18NA RM4200 Data Set Shlf -48VDC
NTZZ18PA DTH-ROTL Unit
NTZZ18PB DTT Ready DTH-ROTL Unit
NTZZ18QA Lamarche Inverter Unit
NTZZ18SA DF Mounting Adapter
NTZZ18TA DF Mounting Adapter
NTZZ18UA MLT Applique Shelf
NTZZ18VA Aud/Vis Alarm Ext Unit
NTZZ18WA Aud ALM Cutoff Control Unit
NTZZ18XA Digital Alarm Scanner H/W
NTZZ18YA Common Equip Shlf Assembly
NTZZ18ZA CMIS Terminal Block Assemb.
NTZZ19AA Outside Plant Module — 256
NTZZ19AB Outside Plant Module — 256
NTZZ19BA Emergency Standalone CP
NTZZ19CA 320 Line Upgrade W/4-Pin
NTZZ19DA 320 Line Upgrade 5P Stub
NTZZ19EA 320 Line Upgrade 5P Stub
NTZZ19MA Outside Plant Module Main.
NTZZ19NA 8th HR battery String
NTZZ19PA OPM-640
NTZZ19PB OPM-640
NTZZ19QA OPM ESA CP Package
NTZZ19QB OPM ESA CP Package
NTZZ19VA OPM Cab. Assem. Grey-Green
NTZZ19WA OPM Cab. Assem. Maple-Brw.
NTZZ19XA OPM Cab. Assembly Ivory
NTZZ20AA Digital Network Connection
NTZZ20BA DNC Frame
NTZZ20CA DNI Cabinet
NTZZ20DA Earthquake DNC Frame
NTZZ21AA Speech Link Connector Frame
NTZZ21BA SLC Frame
NTZZ21CA SLC Cabinet
NTZZ21DA Earthquake SLC Frame
NTZZ21EA NSL/PSL Panel & Cable Kit
NTZZ21EM NSL Panel & Cable Kit
NTZZ22AA Common Peripheral Frame
NTZZ22BA CPCE Frame
NTZZ22CA Cabinetized CPE
NTZZ22DA Earthquake CPCE Frame
NTZZ23AA Earthquake Miscellaneous Fr.
NTZZ23BA Bulkhead Plate Assembly
NTZZ23CA RM4200 Bulkhead Assembly
NTZZ23DA DTH/ROTL Bulkhead Assem.
NTZZ23EA MLT Bulkhead Assembly
NTZZ23FA Alarm EXT Bulkhead Assem.
NTZZ23GA Dig. Alm. Scan. Bulkhead
NTZZ23HA RM4200 Bulkhead Asm. Conf.
NTZZ23JA RM4200 Bulkhead Asm. Conf.
NTZZ23LA ISDN Transaction Language
NTZZ23MA Cook Digital Announcer 4
NTZZ23NA Cook Digital Announcer 8
NTZZ23WA Cook Digital Announcer 8
NTZZ24AA Modem Equipment Frame
NTZZ24BA Rack Mounted Data Unit Shelf
NTZZ27BA Maintenance Spare Storage Fr.
NTZZ27CA SNODE Spare Storage Cabinet
NTZZ27DA CMSS Hardware Kit—Grey
NTZZ27DB CMSS HW Kit-Grey-Model B
NTZZ27EA CMSS HW Kit-Brown- Mod B
NTZZ27EB CMSS HW Kit-Brown- Mod B
NTZZ27FA Cabinetized Misc. Spare Stor.
NTZZ29AA TOPS Pos. Cntl. Equip. Cab.
NTZZ29BA Aux Access Equip. (AAE)
NTZZ29CA Modular TOPS Position
NTZZ29CB Modular TOPS Position
NTZZ29DA Integrated TOPS Pos. Monitor
NTZZ29LA 4 Operator TPC Shelf
NTZZ29MA UDS Modem Shelf Assembly
NTZZ29SB TOPS MPX Type 3 TA/DA Pos
NTZZ29XA TOPS MPX Type 1 DA Pos.
NTZZ29XB MPX Typ 1 TA/DA w/o Mod'm
NTZZ29YA TOPS MPX Type 2 DA Pos.
NTZZ29YB MPX Typ 2 TA/DA w/o Mod'm
NTZZ29ZA TOPS Headset Jack Assem. 8F
NTZZ30AA LIM Cabinet (36 Link)
NTZZ30AB LPP S/DMS Cabinet
NTZZ30AC LIM Cabinet (36 Link)
NTZZ30BA CCS7 Link I/F Unit
NTZZ30EA Ethernet Interface Unit (EIU)
NTZZ30EB Ethernet Interface Unit
NTZZ30EC EIU for BCS??
NTZZ30FA Frame Relay Interface Unit
NTZZ30HA Fiberized LIU Shelf Assembly
NTZZ30JA Miscellaneous Hardware
NTZZ30KA Miscellaneous HW — Brown
NTZZ30LA Frame Relay I/F Unit EST
NTZZ30MA Network Interface Unit
NTZZ30NA X.25/X.75 Link I/F Unit
NTZZ30PA FLIS Cabinet
NTZZ30PM Single Shelf LPP (FLIS)
NTZZ30SA Link I/F Shelf without CBUS
NTZZ30SB Link I/F Shelf with CBUS
NTZZ30SC LIM Enhanced Cabinet
NTZZ30SD LIM Cabinet (36 Link)
NTZZ30SE Link I/F Module Cabinet
NTZZ30TA CCS7 8MEG LIU (DS0A)
NTZZ30UA CCS7 8MEG LIU (E-DS0A)
NTZZ30VA CCS7 8M LIU (E/HC-DS0A)
NTZZ30WA CCS7 8MEG LIU (V.35)
NTZZ30XA LIM Cabinet Gray (36 Link)
NTZZ30YA Local Message Switch (LMS)
NTZZ30YB LMS (36 Link)
NTZZ30ZA Link I/F Shelf (LIS)
NTZZ30ZB LIS (36 Link)
NTZZ30ZC LIS (36 Link)
NTZZ31AA Cabinetized TME
NTZZ31BA Office Alarm X-conn/OAU
NTZZ31CA Trunk Module 8 Wire
NTZZ31CM TM 8 Wire (Model B)
NTZZ31DA Maintenance Trunk Module
NTZZ31DM MTM (Model B)
NTZZ31EA Maint Trunk Module for DRA
NTZZ31FA MSP (Primary Alarm)
NTZZ31GA MSP (Secondary Alarm)
NTZZ31HA Modular Supervisory Panel
NTZZ31JA Office Alm X-connect/Primary
NTZZ31KA CTME MTM Model B Intl.
NTZZ31LA CTME Model B Intl.
NTZZ31MA CTME DRA Model B Intl.
NTZZ31NA CTME T8A Model B Intl.
NTZZ31PA Trunk Module 8 Shelf
NTZZ31QA Cabinetized Remote Misc. Eq.
NTZZ32AA Cabinetized IOE
NTZZ32BA Mag Tape Drive Asmbly (MD)
NTZZ32BM MTD CIOE Model B
NTZZ32BN MTD Assembly -48V (MD)
NTZZ32CA 380 MByte DPP Assembly
NTZZ32DA 760 MByte DPP Assembly
NTZZ32DM 760 MB DPP CIOE Model B
NTZZ32EA IO Controller MOD Package
NTZZ32EM IOC for CIOE Model B
NTZZ32EN I/O Controller MOD Package
NTZZ32FA Disk Drive Unit Shelf Package
NTZZ32FM DDU for CIOE Model B
NTZZ32GA 228 Disk Drive Package
NTZZ32HM Stratum II ROS CIOE Mod. B
NTZZ32QA DPP Mounting HW CIOE "B"
NTZZ33AA Cabinetized Line Mod ISDN
NTZZ34AA DMS SuperNode SE Combin'd
NTZZ34AB DMS SuperNode SE Combin'd
NTZZ34AC DMS SuperNode SE
NTZZ34AD DMS SuperNode SE
NTZZ34AE DMS SuperNode SE
NTZZ34BA DMS SuperNode SE ENI Com
NTZZ34CA SuperNode SE MS LIS/E
NTZZ34DA SuperNode SE MS 32XDS
NTZZ34EA SuperNode SE LIS Common
NTZZ34FA SuperNode SE 4K ENET
NTZZ34GA SuperNode SE ENI F-Bus
NTZZ34JA SuperNode SE MS 8XDS3
NTZZ34KA SuperNode SE ENI Com. C
NTZZ34LA SuperNode SE LIS Common
NTZZ34MA DMS SuperNode SE Combin'd
NTZZ34MB DMS SuperNode SE Combin'd
NTZZ34NA SuperNode OPC HP Spares
NTZZ42BA MDS Messaging Controller
NTZZ42DA MDS Messaging Controller
NTZZ42EA MDS Attendant Controller
NTZZ42GA MDS Operations Controller
NTZZ42HA MDS Modem Shelf
NTZZ42JA MDS Aux. Shelf Building Blk.
NTZZ42KA MDS IOC (V.35) Building Blk.
NTZZ42LA MDS IOC (RS232) Building Bk
NTZZ42MA MDS Inverter Building Block
NTZZ42NA MDS X.25 Modem (V.35) Build
NTZZ42PA MDS Hub Unit Building Block
NTZZ42QA MDS Service Bay
NTZZ42RA MDS Operations Bay
NTZZ42SA MDS LAN Bay
NTZZ42TA MDS Storage Node

NTZZ42TB	MDS Storage Node
NTZZ42UA	MDS Miscellaneous Equip.
NTZZ42UB	MDS Miscellaneous Equip.
NTZZ42VA	MDS Local X.11 Terminal
NTZZ42VB	MDS Local X.11 Terminal K
NTZZ44AA	Application Processor Unit
NTZZ44BA	Voice Processor Unit
NTZZ44CA	36 Link LPP -48V Brown
NTZZ44CB	36 Link LPP -48V BCS33 &
NTZZ44CM	36 Link LPP -48V Brown
NTZZ44CN	36 Link LPP -48V BCS33
NTZZ44DA	CCS7 8 Meg LIU (CBI)
NTZZ44EA	CCS7 8 Meg LIU–ISUP w/CBI
NTZZ44FA	36 Link LPP -48V Grey
NTZZ44FM	36 Link LPP -48V Gray
NTZZ44GA	36 Link LPP -60V Grey
NTZZ44GB	36 Link LPP -60V BCS33
NTZZ44GM	36 Link LPP -60V Gray
NTZZ44GN	36 Link LPP -60V BCS33
NTZZ44KM	36 Link LPP -48V Brown-Fil
NTZZ44KN	36 Link LPP -48V Non-Cab.
NTZZ45EA	Remote Maint. Mod. in CMIS
NTZZ45FA	RMM in CMIS Bulkhead Kit
NTZZ45GA	Nokia TF21462 (Mux/Data)
NTZZ45HA	Tellabs 1014U (2W/4W/R.GE)
NTZZ45JA	Tellabs 254A (BCHO/COMP)
NTZZ45MM	MSP B-Feed Filtered Battery
NTZZ45NA	Teltrend Modem Shlf HW Kit
NTZZ46DA	CRSC W/LCM (Brown)
NTZZ46EA	RCC Packfill W/Unified Proc.
NTZZ46EB	RCC Common CP Fill XPM+
NTZZ47AA	LCE Model B Cabinet
NTZZ47AB	Cabinetized LCM
NTZZ47BA	LCEI Model B Cabinet
NTZZ47BB	Cabinetized ISDN Line Mod.
NTZZ47CA	PDC Model B Cabinet
NTZZ47CB	Cabinetized Power Distrib.
NTZZ47DA	TME Model B Cabinet
NTZZ47DB	Cabinetized Trunk Module
NTZZ47EA	IOE Model B Cabinet
NTZZ47EB	Cabinetized I/O Module
NTZZ47FA	DSN Model B Cabinet
NTZZ47FB	Cabinetized Dual Shelf Net.
NTZZ47GA	CPE Model B Cabinet
NTZZ47GB	Cabinetized Common PM
NTZZ47HA	SLC Model B Cabinet
NTZZ47HB	Cabinetized Speech Link Conn
NTZZ47JA	DNI Model B Cabinet
NTZZ47JB	Cabinetized DNI
NTZZ47PB	Cabinetized CMIS
NTZZ47QA	RSC-S Model B CRSC (LCM)
NTZZ47QB	RSC-S Cab. Model B CRSC
NTZZ47QM	RSC-S Model B CRSC (LCM)
NTZZ47RA	RSC-S Model B CRSC (LCM)
NTZZ47RM	RSC-S Model B CRSC (LCM)
NTZZ47RN	RSC-S Model B CRSC (LCM)
NTZZ47SA	RSC-S Model B CEXT
NTZZ47SB	RSC-S Model B CEXT
NTZZ47SM	RSC-S Model B CRSC (LCM)
NTZZ47SN	RSC-S Model B CRSC (LCM)
NTZZ47TA	RSC-S Model B CEXT
NTZZ47TB	RSC-S Model B CRSC (LCM)
NTZZ47UA	RSC-S Model B CRSC (LCM)
NTZZ47UB	RSC-S Model B CRSC (LCM)
NTZZ47VA	RSC-S Cab. Mod. B (LCME)
NTZZ97AA	CLASS Modem Resorce CP
NTZZ97BA	SuperNode Cabinet
NTZZ97BG	SLM Common CP w/9X12
NTZZ97BH	SN Cab. & Com. CP (U.S.)
NTZZ97CA	Streamline SN Cabinet
NTZZ99AA	PC Kit for CBUS Access
NTZZ99AB	NTZZ17GA to GB Change Kit
NTZZ99AD	SMS Product Change Kit
NTZZ99AE	SMS Product Change Kit
NTZZ99AF	PC Kit (ZZ19QA to ZZ19QB)
NTZZ99AG	Univ. 5.25 DDU Upgrade Kit
NTZZ99AH	XPM Plus ISDN Change Kit
NTZZ99AK	FRIU Change Kit
NTZZ99AM	ZZ17GB to DA Change Kit
NTZZ99AN	XPM to XPM Plus PC Kit
NTZZ99AQ	XPM Plus ISDN Change Kit
NTZZ99ZA	Alltel XPM to XPM Chg Kit
NTZZ99ZB	Alltel XPM Plus Packfill
NTZZ99ZC	Alltel XPM to XPM+ Chg Kit
NTZZ99ZD	Alltel RCCI to XPM+ Kit
NTZZ99ZE	Alltel RCC to XPM+ Kit
NTZZ99ZF	Alltel XPM+ ISDN Chg Kit
NT0M90AA	Controller Telephony
NT0M90BA	Non-Tel Controller
NT0M90DA	PCB Assy
NT0M90EA	Controller, Tele II, M/C
NT0M90EB	Controller, Telephony II,
NT0M90GA	Cntl, Tele III, M/C
NT0M90GB	Nontelephy, M/C (MD)
NT0M90HA	Tele III, M/C, International.
NT0M90JA	Non Telephony, M/C
NT0M90KA	Tele, III, M/C, Workstation
NT0M90LA	Cont, Non-Tel, M/C, Term
NT0M90MA	Cont, Non-Tel, M/C
NT0M90NA	Controller, TOPS II, M/C IF
NT0M90SA	Controller, TOPS III, M/C IF
NT0M91AA	Assy Keyboard SL1C/En
NT0M91AB	Assy Keyboard SL1C/Sw
NT0M91BA	Keyboard
NT0M92AA	PCB Assy
NT0M92BA	Monochrome 115V 50-60Hz
NT0M92BB	Monitor, Mono, 220V
NT0M92CA	Monitor, Color 115V 60Hz
NT0M92CB	Monitor, Color 220V 60Hz
NT0M92DA	Monochrome Monitor
NT0M92DB	Monitor, Mono 2 220 V/60Hz
NT0M92FA	12” Display Power Supply
NT0X02AA	Miscellaneous Equipment
NT0X02AB	Miscellaneous Equip. Frm.
NT0X03AA	RM 6- Channel Recorded Ann
NT0X03AB	RM 12-Channel Recorded Ann
NT0X03AC	RM 6-Chan Rec Ann 13.5 Sec
NT0X03AD	RM 12-Chan Rec Ann 13.5 Sec
NT0X03AE	RM 6-Chan Rec Ann (MD)
NT0X10AA	Miscellaneous Scan Card
NT0X18AA	Dig Net. Interconnect (MD)
NT0X18AB	DNI Shelf Network (MD)
NT0X18CB	Dig Net Interconnecting Frame
NT0X18DC	Netwk Jct Connecting Panels
NT0X18DD	Netwk Jct Connecting Panels
NT0X19AA	Cabinet — Mechanical (MD)
NT0X24AA	Enhanced Core Cabinet
NT0X24BR	E-Core Spare Storage Shelf
NT0X25AA	Framework Assembly-Canada
NT0X25AB	Com. Frmwk (19.00) (MD)
NT0X25AC	Com. Frmwk (23.00 I) (MD)
NT0X25AE	EMI Framework Assy
NT0X25AH	Earthquake EMI Framework
NT0X25AJ	Mechanical Framework Assy
NT0X28AA	CCC Frm. Supv. Panel (MD)
NT0X28AB	MEX Frm. Supv. Pan. (MD)
NT0X28AC	Net Fr Supv. Panel (MD)
NT0X28AD	Input/Output Equip. (MD)
NT0X28AF	Central Control Frame
NT0X28AG	Network Frame Supv. (MD)
NT0X28AJ	Mag Tape Center Frame
NT0X28AK	Network Frame Supervisory
NT0X28AL	Input/Output Equipment
NT0X28AM	CPCE Frame Supervisory
NT0X28AN	Msg Switching 6 Equipment
NT0X28AP	ST Extension Fr Supv Pnl
NT0X28AR	RC Equip. Frame Supervisor
NT0X28AS	RCE Supervisory Panel
NT0X28EB	CPEI Frame Supv. Panel
NT0X28EC	RCEI Frame Supv Panel
NT0X29AA	Line Frame FSP
NT0X29AB	Line Frame Supervisory
NT0X30AD	Cooling Unit (MD)
NT0X30AF	Fan Unit Assy (MD)
NT0X36AA	Power Control & Alm (MD)
NT0X36AB	Power Control & Alarm CP
NT0X36AF	ARLB Cont. & Alm (MD)
NT0X38AA	FSP Filler Circuit Pack
NT0X40AA	PDC Frm. Supv. Panel
NT0X40AB	PDC Frame Supervisory Cent.
NT0X40UA	PDC FSP (UL)
NT0X40UB	Power Distribution Frame
NT0X41AB	Memory Extension Frame
NT0X41AC	CCC Fr Plane Zero
NT0X41AJ	Double Bay Central Control
NT0X41AK	Memory Extension Frame
NT0X42AA	Power Distribution Centre
NT0X42AB	Distributing Fuse Panel
NT0X42AC	Distributing Fuse Panel
NT0X42AE	Ground Panel
NT0X42AF	Ground Panel
NT0X42AH	Filler Panel
NT0X42AJ	10A Distribution Fusing
NT0X42AM	Ground Panel for Power
NT0X42AR	FSP Enh’d Pnl Alm CP (MD)
NT0X42AU	ISDN Fuse Panel Assembly
NT0X42UA	Power Distribution Center
NT0X42UB	Fuse Distributing Panel
NT0X42UC	Fuse Distributing Panel
NT0X42UE	Ground Panel (Top) UL
NT0X42UG	Filter Panel (UL)
NT0X43AA	I/O Equip. Frame Repl’ment
NT0X43AB	Input/Output Frame Rep’ment
NT0X43AC	Mag Tape Centre Frame
NT0X43AD	Input/Output Equipment Frm
NT0X44AA	Mag Tape Drive (HP) (MD)
NT0X44AB	Mag Tape Drive (Cook) (MD)
NT0X44AC	Hardware for MTD (HP) (MD)
NT0X44AD	Hardware - Cook MTD (MD)
NT0X45AA	Line Frame (MD)
NT0X45AB	Line Module Equip. (MD)
NT0X45AC	Line Module Equip. (MD)
NT0X45AD	Line Module Equip.
NT0X45BA	RLM Frame (MD)
NT0X45BB	RLM Frame (MD)
NT0X45BC	RLM Frm. (Bay 0) (MD)
NT0X45BD	RLM Frm. (Bay 1) (MD)
NT0X45BE	RLM Frame (MD)
NT0X45BF	RLM Frame (MD)
NT0X45BG	RLM Frame (MD)
NT0X46AA	Peripheral Frame Replaced
NT0X46AB	Peripheral Frame (MD)
NT0X48AA	Network Frame
NT0X48AB	1/2 Network Frame
NT0X48AC	1/4 Network Frame
NT0X48AD	Single Bay Junctor Frame
NT0X48AE	Pro Chg 1/4-1/2 Network Frm
NT0X48AF	Prod Chg 1/4 to Full Network
NT0X48AG	Network Frame
NT0X48AH	1/2 Network Frame
NT0X48AJ	1/4 Network Frame
NT0X50AA	Filler Faceplate .875
NT0X50AB	Filler Faceplate 1.00
NT0X50AC	Filler Faceplate 1.12
NT0X50AD	Filler Faceplate 1.50
NT0X50AE	Filler Faceplate 2.62
NT0X50AF	Filler Faceplate 1.75 INC
NT0X50BA	Filler Faceplate .875
NT0X51AA	FSP Fuse Alarm CP (MD)
NT0X51AB	FSP Fuse Alarm CP
NT0X51AC	FSP Alm Ckt Pk Assem (MD)
NT0X56AA	Speech Link Connecting
NT0X56AB	SLC Patch Panel
NT0X56AC	SLC Peripheral Module

NT0X56BB Network Speech Link
NT0X56BC Peripheral Speech Link
NT0X57AA Map Centre Section E/W
NT0X57AB Map Centre Section
NT0X57AC Map Counter Section
NT0X57AD Map Shelf Section
NT0X57AG Test Trunk Jack Assembly
NT0X61AA Tst Trk Ctr Audible Alarm Pnl
NT0X61AB Trk Test Ctr Alm Pan (MD)
NT0X62AA Alarm X-Pt Field Shelf (MD)
NT0X62AB Alm Xpoint Shelf Exp (MD)
NT0X63AA Alm Control & Display (MD)
NT0X63AB Alm Control & Display (MD)
NT0X63AC Alm Control & Display (MD)
NT0X63LA ACD Panel (Rpl AA -KA)
NT0X63LB Alarm Control Panel
NT0X63MA Central Alm Display Panel
NT0X63MD Audible Alm Cutoff (ACO)
NT0X64AA Exit Alarm Panel (MD)
NT0X66AA Audible Alm Panel (MD Y2K)
NT0X66BA Audible Alm Panel (MD Y2K)
NT0X66CA Audible Alarm Panel
NT0X67AA Input/Output Term. CP (MD)
NT0X70AA Trunk Mod Proc CP (MD)
NT0X70AB Trunk Mod Proc CP (MD)
NT0X70AC Trunk Mod Proc 32K (MD)
NT0X70BA Intl Trunk Mod Proc (MD)
NT0X73DA Frame End Guard (81.00)
NT0X73DB Frame End Guard Assem.
NT0X73DD Frame End Guard Assem.
NT0X73EA Frame End Guard 81 in.
NT0X82AA Periph. Frm Supv Pan. (MD)
NT0X82AB Periph. Frame Supv Panel
NT0X84AA Cage Filler Panel Assem.
NT0X85AA Circuit Pack Storage Frame
NT0X87AA Inverter Unit
NT0X88AA Miscellaneous Equipment
NT0X88AB Miscellaneous Equipment
NT0X88AC Miscellaneous Filtered
NT0X88AD Remote Service Equipment
NT0X88AE 10 Amp Filtered Misc
NT0X88AF 20 Amp Filtered Misc
NT0X89AA Data Link Control (MD)
NT0X89AB Data Link Control CP (MD)
NT0X91AA Alarm & Converter Drive
NT0X91AB Alarm & Converter Drive
NT0X91AD Converter Drive & Protect
NT0X91AE Converter Drive & Protect
NT0X91AF ARLM Conv Drive (MD)
NT0X91AG TOPS MP AAE Alm CP (MD)
NT0X91BF ARLB Conv Drive (MD)
NT0X91DA FSP Conv Dr & Prot CP (MD)
NT0X91DE FSP Protection CP (MD)
NT0X91KA FSP Alarm 7 Converter Drive
NT0X93AA 48V to 24V Fan Inverter (MD)
NT1M40AA Meridian Cab. Appl. Processor
NT1M41AB Assembly, Aux. Frame MS-1
NT1M41AC Cage, Card, LAN (24")
NT1M41AF Kit, RLIU Option
NT1M41AN Assembly, Double Shelf
NT1M41BA Assembly, Auxiliary Modem
NT1M41BW Kit, Selectable Alarm Opt
NT1M41CG MAC Cabinet Bay 1
NT1M41CH MAC Cabinet Bay 2
NT1M41CM Redundant Power Upgrade Kt
NT1M41DU T1 Filter Assembly
NT1X00AA 102 Test Trunk CP (MD)
NT1X00AB 102 Test Trunk CP (MD)
NT1X00AC Rec. Off Hook Tone (MD)
NT1X00AD Rec. Off-hook Tone CP (MD)
NT1X00AE International 102 Test (MD)
NT1X00AF 102 10db Test TrK CP (MD)
NT1X00AG 102 20db Test Line CP (MD)
NT1X00AH 102 Test Line CP (MD)
NT1X00KA 102 Test Trunk (China) (MD)
NT1X10AA IOC MemX Disk Cont (MD)
NT1X29AA Conference Circuit CP (MD)
NT1X30AA Floppy Disc Cont CP (MD)
NT1X31AA Conference Circuit CP (MD)
NT1X32AA Central Msg Controller
NT1X32AB CMC Shelf
NT1X33AA CMC Processor IF (MD)
NT1X33BA CMC Processor IF (MD)
NT1X34AA CMC Outgoing Cont CP (MD)
NT1X34BA CMC Outgoing Cont CP (MD)
NT1X34BB CMC Outgoing Cont CP (MD)
NT1X35AA CMC Incoming Cont CP (MD)
NT1X35BA CMC Incoming Cont CP (MD)
NT1X36AA CMC Peripheral IF (MD)
NT1X36AB Central Message Cont (MD)
NT1X36BB Central Message Cont (MD)
NT1X36CA EIOC CMP-CMC Msg (MD)
NT1X37AA CMC Common Cont CP (MD)
NT1X37BA CMC Common Cont CP (MD)
NT1X41AA Processor Module
NT1X41AB Processor Shelf
NT1X42AA E2A Telem. Serial I/F (MD)
NT1X43AA Proc Prog Store Port (MD)
NT1X43AC DMS Proc Program Port (MD)
NT1X43BC DMS Proc Program Port (MD)
NT1X43BD Processor Program Store (MD)
NT1X43CA Processor Program Store (MD)
NT1X43DA Proc 8MW Program (MD)
NT1X44AA Processor Stack CP (MD)
NT1X44BA Processor Stack CP (MD)
NT1X44BB Processor Stack ESD CP
NT1X44DA Processor Stack (MD)
NT1X45AA Processor ALF (MD)
NT1X45BA Processor ALF CP (MD)
NT1X45BB Processor ALF CP (MD)
NT1X45DA Processor ALF CP (MD)
NT1X46AA Processor ROM CP (MD)
NT1X46BA Processor ROM CP (MD)
NT1X46BB Processor ROM ESD CP (MD)
NT1X46BC Processor ROM CP (MD)
NT1X46CA Processor 8K ROM CP (MD)
NT1X46CB Processor 8K ROM CP (MD)
NT1X46CC Processor 8K ROM CP (MD)
NT1X46CD Processor 8K ROM CP (MD)
NT1X46DA Processor 8K ROM CP (MD)
NT1X47AA Timing & Control (MD)
NT1X47BA Proce Timing & Cont (MD)
NT1X47BB Proc Timing & Control (MD)
NT1X47DA Proc Timing & Control (MD)
NT1X48AA Processor Maint. (MD)
NT1X48BA Proc Maintenance CP (MD)
NT1X48CA Remote Control Proc (MD)
NT1X48DA Proc Maintenance CP (MD)
NT1X49AA Unbal Data Port Extend' (MD)
NT1X49BA Unbal Data Port Extend' (MD)
NT1X49DA Unbal Data Port Extend' (MD)
NT1X50AA Bal Data Port Extender (MD)
NT1X50AB Bal Data Port Extender (MD)
NT1X50BB Bal Data Port Extender (MD)
NT1X50DA Bal Data Port Extender (MD)
NT1X51AA I/O Channel Interface (MD)
NT1X51BA CMC Interface CP (MD)
NT1X51DA CMC IF (40MHz) CP (MD)
NT1X52AA Processor Termination (MD)
NT1X53AA 4K ROM Extender CP (MD)
NT1X53BA 4K ROM Extender CP (MD)
NT1X53BB 4K ROM Extender CP (MD)
NT1X53BC 4K ROM Extender CP (MD)
NT1X54AA Jack Ended Trunk Circuit
NT1X55AA Disk Drive Controller (MD)
NT1X55AB Disk Drive Controller (MD)
NT1X55CA PRIAM 806 Dsk Drive (MD)
NT1X55DA 8" Disk Drive Cont CP (MD)
NT1X55FA IOC SCSI DDU (MD Y2K)
NT1X58AA Service Trunk Module (STM)
NT1X60AA Data Set Shelf
NT1X61AA IOC Shelf
NT1X61AB Input Output Controller
NT1X61AD IOC Shelf
NT1X61AG I/O Cont. Shelf (MD 1Q00)
NT1X62AA I/O Peripheral Cont. (MD)
NT1X62AB I/O Message Cont. CP (MD)
NT1X62BB I/O Message Cont. CP (MD)
NT1X62CA I/O Message Cont. CP (MD)
NT1X62CB I/O Msg Cont. (MD Y2K)
NT1X67AA I/O Peripheral Cont (MD)
NT1X67AB Input Output Terminal (MD)
NT1X67BA Synchronous Data Link (MD)
NT1X67BB Bit Synchron Data Lk (MD)
NT1X67BC I/O Terminal Cont CP (MD)
NT1X67BD Echo Off Line (MD Y2K)
NT1X67CB Input/Output Terminal (MD)
NT1X67DA Asynchronous Data Lk (MD)
NT1X67DB Bit Synchron Data Lk (MD)
NT1X67EA Hi-Speed Output Async. D. Lk (MD Y2K)
NT1X67FA SMDI Interface Card (MD)
NT1X68AA Magnetic Tape IF (MD)
NT1X68AB Nine Track Tape Cont (MD)
NT1X68AC Nine Track Tape Cont (MD)
NT1X68BB Nine Track Tape Cont (MD)
NT1X68BC Cook 9-Track Tape Controller (MD Y2K)
NT1X68BD 9 Track Tape Controller
NT1X75AA Digital Recorded Ann (MD)
NT1X75BA Mech Credit Card Cont (MD)
NT1X75DA Dig Rec Ann A-Law (MD)
NT1X76AA Digital Recorded Ann (MD)
NT1X76AB US Bell Standard Ann (MD)'
NT1X76AE ACTS (US) DRA PROM (MD)
NT1X76AF AOSS VRU Ann. Eng (1) (MD)
NT1X76AG AOSS VRU Ann. Eng (2) (MD)
NT1X76AH AOSS VRU Ann. Eng (3) (MD)
NT1X76AJ AOSS VRU Ann. Eng (4) (MD)
NT1X76AK Class Phase 1 English (MD)
NT1X76AM Class Phase 1 English (MD)
NT1X76AP Class Phase 2 English (MD)
NT1X76AQ Class Phase 2 English (MD)
NT1X76AR Class Phase 2 English (MD)
NT1X76AS Class Phase 2 English (MD)
NT1X76AT Class Phase 2 English (MD)
NT1X76AU Class Phase 2 English (MD)
NT1X76AV Class Phase 2 English (MD)
NT1X76AW Class Phase 2 English (MD)
NT1X76BA Digital Rec Ann Fr (MD)
NT1X76BG AOSS VRU Ann (MD)
NT1X76BH Cust Chg Calling Fr (MD)
NT1X76BJ thru BWClass Phase French Announcements (all MD)
NT1X76CA MCCS PROM Mem CP (MD)
NT1X76GA Class Phase 2 English (MD)
NT1X76GB Class Phase 2 English (MD)
NT1X76GC Class Phase 2 English (MD)
NT1X76GE Class Phase 2 U.S. Cust (MD)
NT1X76GF Class Phase 2 U.S. Cust (MD)
NT1X76GH Class Phase 2 U.S. Cust (MD)
NT1X76GJ Class Phase 2 U.S. Cust (MD)
NT1X76GK Class Phase 2 U.S. Cust (MD)
NT1X76GL Class Phase 2 U.S. Cust (MD)
NT1X76GM Class Phase 2 U.S. Cust (MD)
NT1X76HC Auto Call Cd Ann Eng (MD)
NT1X76HD Auto Call Cd Ann Fr (MD)
NT1X76JA AQ Date/Time AOSS SCP Announcements (MD)
NT1X76JB AR Date/Time AOSS SCP Announcements (MD)
NT1X77AA Digital Recorded RAM (MD)
NT1X78AA Power Converter (+5/+12)

NT1X79AA Digital Recorded Announce'mt
NT1X80AA EDRAM card
NT1X80BA International EDRAM
NT1X81AA Compact Conference Circuit
NT1X81BA Compact Conf Ckt (Japan)
NT1X89AA Multiprotocol Controller (MD)
NT1X89BA ENH MPC (MD)
NT1X89BB ENH Multiprotocol Controller (planned for MD Y2K)
NT1X90AA Test Signal Generator (MD)
NT1X90BA Tst Sig Gen A Law TTT (MD)
NT2X01AA Auto Identified Outward Dial
NT2X02AA Line Drawer IF CP (MD)
NT2X03AA +48V Power Conv Unit (MD)
NT2X05AA LM Converter +24 (MD)
NT2X05AB LM Converter +24 (MD)
NT2X05AC LM Power Pack (MD)
NT2X06AA Power Conv. (5V/40A) (MD)
NT2X06AB Power Conv (5V/40A) (MD)
NT2X06BB Power Conv (5V/40A) (MD)
NT2X07AB Power Conv (5V/12A) (MD)
NT2X09AA Multi Output Power
NT2X09BA Multi OP Pwr Con w/EMI Sh
NT2X10AA Line Test Unit (MD-use AC)
NT2X10AB LTU Analog Card (MD)
NT2X10AC Line Test Unit Analog
NT2X10BA Multi-line Test Unit Analog
NT2X10BB Multi-line test Unit Analog
NT2X11AA Line Test Unit Digital (MD)
NT2X11AC Line Test Unit Digital (MD)
NT2X11AD Line Test Unit Digital
NT2X11BA Multi-line Test Unit
NT2X12AA Digital Echo Supp. (MD)
NT2X12AB Digital Echo Supp. (MD)
NT2X12AD Digital Echo Supp. (MD)
NT2X14AA LM Control Shelf (MD)
NT2X14AB LME/RLM Cont. Shf. (MD)
NT2X14AC LM Control Shelf (MD)
NT2X14AE Line Module Control Shelf
NT2X14AF RLM Control Shelf (MD)
NT2X15AA Inverter Unit Control (MD)
NT2X16AA I/O Bus Interface CP (MD)
NT2X16AB I/O Bus Interface CP (MD)
NT2X17AA Line Ckt Type A (MD)
NT2X17AB Std. Line Circuit Type (MD)
NT2X17AC Std. Line Ckt Type A (MD)
NT2X17AD Stand Line Ckt Type A (MD)
NT2X17AE Standard Line Ckt Type A
NT2X18AA Line Cir. Type B CP (MD)
NT2X18AC Line Cir. Type B CP (MD)
NT2X18AD Line Cir. Type B CP (MD)
NT2X18AE Line Cir. Type B CP (MD)
NT2X20AA Ringing Bus Multiplexer (MD)
NT2X20AB Ringing Bus Multiplexer (MD)
NT2X21AA Terminal Address I/F (MD)
NT2X21AC Terminal Address I/F (MD)
NT2X22AA Conn Mem & TransX (MD)
NT2X22AB RLM Connector Mem (MD)
NT2X23AA Receive Multiplexer CP (MD)
NT2X24AA Signalling Processor CP (MD)
NT2X24AB Signalling Processor CP (MD)
NT2X25AB Signalling Processor (MD)
NT2X26AA Master Processor CP (MD)
NT2X26AB RLM Master Proc CP (MD)
NT2X27AA Ringing Gen. Interface (MD)
NT2X27AB Ringing Gen. Interface (MD)
NT2X27AC Ringing Gen. Interface (MD)
NT2X27AD Ringing Gen. Interface (MD)
NT2X27AE Ringing Gen. Interface (MD)
NT2X27AF Ringing Gen. Interface (MD)
NT2X32AA DCM Processor (MD)
NT2X33AA Central Control Message (MD)
NT2X33AB Control Card CP (MD)
NT2X33AE DCM Control Card CP
NT2X34AA DCM Peripheral Proc (MD)
NT2X35AA DCM Interface CP (MD)
NT2X35AB DCM Interface CP (MD)
NT2X36AA 4-Port Network IF (MD)
NT2X37AA DCM Tone Supply (MD)
NT2X37AB DCM Tone CP (MD)
NT2X37AC DCM Tone Card CP (MD)
NT2X38AA DCM Signalling CP (MD)
NT2X38AB DCM Signalling CP (MD)
NT2X38AC DCM Signalling CP (MD)
NT2X38AD DCM Sig Board CP (MD)
NT2X38AE DCM Signalling CP (MD)
NT2X41AA Office Alm. Circuit # 1 (MD)
NT2X42AA Office Alm. Circuit # 2 (MD)
NT2X43AB Office Alm. Circuit # 3 (MD)
NT2X42AA TM/Network IF CP (MD)
NT2X45AB Trunk Module IF CP (MD)
NT2X45BA Trunk Module IF CP (MD)
NT2X47AA Transmission Test Unit (MD)
NT2X47AB Transmission Test Unit (MD)
NT2X47AC Transmission Test Unit (MD)
NT2X47AD Transmission Test Unit (MD)
NT2X47BA TTU Controller (A Law)
NT2X48AA Dig 4 Chnl MF Rcv (MD)
NT2X48AB Dig 4 Chnl MF Receiver
NT2X48BA Digital 4 Channel DTMF Rcvr
NT2X48BB Digital 4 Channel DGT / ESA
NT2X48CA DTMF for Turkey
NT2X48CB DTMF for British Telecom
NT2X48CC Digital 4 Channel DGT for UK
NT2X50AA Minibar Driver CP (MD)
NT2X50AB Minibar Driver CP (MD) Replaced by NT3X09BA
NT2X52AD Basic Teleglobe Trunk
NT2X52AE Basic 2Wire Trunk Shelf
NT2X52AF Basic 4Wire Trunk Shelf
NT2X52AG Basic 8Wire Trunk Shelf
NT2X53AA TM/DCM/ISM Control (MD)
NT2X55AA Sig. Dist.Card 2 (MD)
NT2X56AA Transmission Test Mod (MD)
NT2X56AB TTL Digital Filter (MD)
NT2X56BA Dig Filter (A-law TTU) (MD)
NT2X57AA TM/ISM Sig Distribution CP
NT2X57AB Signal Dist Alm Unit CP (MD)
NT2X58AA Maintenance Trunk Shelf
NT2X58AB Office Alarm Shelf
NT2X58AC Maintenance Module
NT2X58AD Office Alarm Unit
NT2X58AE Remote Service Module
NT2X58AF Office Alarm Shelf
NT2X58AG MTM (Mtce Trk Mod) (MD)
NT2X58AK MTM (Mtce Trk Mod) (MD)
NT2X58AL MTM (Mtce Trk Mod) (MD)
NT2X58ANMMTM (Mtce Trk Mod) (MD)
NT2X58AT MTM Office Alarm Shelf
NT2X58AU MTM Shelf for DRA (MD)
NT2X58CA International DRA (UK)
NT2X58CB Intl MTM (UK) (MD)
NT2X58CF Remote Service Module
NT2X59AA Group Codec
NT2X59AB Group Codec DMS300 (MD)
NT2X59AC Grp Codec (CTS-MTM) (MD)
NT2X59CB TM Codec DMS300 Mer (MD)
NT2X59EA Grp Codec DMS250 Mer (MD)
NT2X62AA Lamp Resistor (MD)
NT2X63AA MF Receiver (MD)
NT2X64AA DGT Receiver (MD)
NT2X65AA CAMA Pos. Sig. Trk
NT2X66AA CAMA Suspension/CW (MD)
NT2X67AA 101 Test Line CP (MD)
NT2X70AA Power Conveter +- 5V (MD)
NT2X70AB Power Conv +-5V&12 (MD)
NT2X70AC Power Conv +-5V&+-12 (MD)
NT2X70AD Pwr Cv +-5V+-12V 50A (MD)
NT2X70AE +-5V +-12V Power Conv (MD)
NT2X70AF +-5V +-12V Power Converter
NT2X70BA Pwr Conv (5V/12A) CP (MD)
NT2X70EA Pwr Conv +-5+-12V 50A (MD)
NT2X70KA +-5V +-12V Power Converter
NT2X71AA Transmission Termination Trk
NT2X71AB Transmission Test Trunk (MD)
NT2X72AA 4W E&M, Type1 IF
NT2X72AB 4Wire E&M Type 1 I/F (MD)
NT2X72AC 4Wire E&M, Echo Control
NT2X72BA 4W Trunk 600 Ohm DC5A
NT2X72BB 4Wire E/M, Echo Cont (MD)
NT2X73AA 4W Inc RB, Spv, MF 600/1200
NT2X74AA 4W Outgoing RB SUPV (MD)
NT2X75AA Loop Ground Test Line
NT2X76AA Central Message & I/O
NT2X76BA Central Message & I/O
NT2X77AA Compromise Bal. Network
NT2X77AB Compromise Bal. Network
NT2X77AC Compromise Bal. Network
NT2X77AD Compromise Bal. Network
NT2X77BA Compromise Bal Network
NT2X77BB Compromise Bal Network
NT2X78AA Trk 4W SF Signalling (MD)
NT2X80AA Precision Balance Network
NT2X81AA Trk 2W E&M 900 Ohm
NT2X81AB Trk 2W E&M 600 Ohm (MD)
NT2X81BA 2W Trunk 600 Ohm
NT2X82AA Trk 2W Inc MF/DP, RB Supv
NT2X83AA Trk 2W O/G BG, RB Supv,RM
NT2X83AB Trk 2W E&M 600 Ohm (MD)
NT2X84BA Trk 2W BT PSTN (UK) (MD)
NT2X85AA Recording Completing Trunk
NT2X86AA Toll Switching Trunk (MD)
NT2X88AA Trk 4-wire E&M 600¾
NT2X90AA Tk.LTD NE14/CALRS (MD)
NT2X90AB Incoming/Outgoing Test (MD)
NT2X90AC Inc/Ogt Test Trunk CP (MD)
NT2X90AD Incoming/Outgoing Test
NT2X92AA Reverse Battery Supv (MD)
NT2X95AA 2W PBX Trunk DID/DOD
NT2X95BA Trk 2W BT PSTN DDI (MD)
NT2X96AA PCM Level Meter (MD)
NT2X96BA Test Signal Generator
NT2X98AA 2Wire Inc MF/DP RB (MD)
NT3X00AA Printer Unit
NT3X01AA Visual Display Unit
NT3X02AA TOPS Control Processor CP
NT3X02BA TOPS DUAQ Control
NT3X03AA TOPS Digital Signal
NT3X04AA Incoming Test Trunk (MD)
NT3X05AA Dig. Data Line Card (MD)
NT3X05AB Dig. Data Line Card (MD)
NT3X05AC Dig Data Line Card CP (MD)
NT3X06AA 2Wire Outgoing Trk (MD)
NT3X07AA 2W Incoming Trunk (MD)
NT3X08AA Auto. Coin Det. Ckt. (MD)
NT3X08AB ACTS Detection Ckt
NT3X09AA Remote Metallic Test
NT3X09BA 8 X 8 Matrix CP
NT3X13AA Master Clock Generator (MD)
NT3X13BA Master Clock Generator (MD)
NT3X14AA Synchronizable Master (MD)
NT3X14BA Synchronizable Master (MD)
NT3X14BB Synchronizable Master (MD)
NT3X14BC Sync Clock Controller (MD)
NT3X14CA Sync Clock Controller
NT3X15AA Synchronizable Master (MD)
NT3X15AB Synchronizable Master (MD)
NT3X15BA Synchronizable Master (MD)
NT3X15BB Synchronizable Master (MD)
NT3X15CA Strat 3 Synchronizable (MD)
NT3X15DA Strat 2 Synchronizable (MD)
NT3X16AA Strat 2 Oscillator & IF (MD)
NT3X16AB Stratum 2 Clock Board
NT3X16BA Strat 2 Oscillator & IF

NT3X16BB Stratum 2.5 Clock Board (MD)
NT3X17AA Network Inc Xpoint (MD)
NT3X18AA Network Out Xpoint (MD)
NT3X19AA Network Speech I/F (MD)
NT3X20AA Network Test Access (MD)
NT3X21AA Network Bus I/F (MD)
NT3X22AA Network I/O I/F (MD)
NT3X22AB Network I/O I/F (MD)
NT3X23AA Network I/O Processor (MD)
NT3X23AB Network Signaling (MD)
NT3X23AD Ntwk X-Point Controller (MD)
NT3X24AA Network Clock (MD)
NT3X25AA Equipment Shelf Assembly
NT3X25BA Terminal Block Assembly
NT3X25BB Terminal Block Assembly
NT3X31AA Program Store Module
NT3X31AB Call Data Store Module
NT3X31AC Connectorized Data Store
NT3X31AD (1MW) Program Store Shelf
NT3X31AE (1MW) Data Store Shelf
NT3X31AF (1MW) Connectorized Data
NT3X32AA 1M Word Program Store
NT3X32AB 1M Word Data Store Shelf
NT3X32AC 1M Word Conn. Data Store
NT3X32BA 1M Word Program Store
NT3X32BB 1M Word Data Store Shelf
NT3X32BC 1M Word Conn. Data Store
NT3X32DA 4M Word Data Store Shelf
NT3X32DB 4M Word Connector Data
NT3X33AA Line Traffic Simulator (MD)
NT3X34AA Sgl Ended Mem Bus Tm (MD)
NT3X35AB Differential Memory Bus (MD)
NT3X36AB Differential Memory Bus (MD)
NT3X36AC Differential Memory Bus (MD)
NT3X36BB Differential Memory Bus (MD)
NT3X36BC Differential Memory Bus (MD)
NT3X37AA Single Ended Mem Bus (MD)
NT3X37AC Single Ended Bus I/F (MD)
NT3X37BA Single Ended Mem Bus (MD)
NT3X37BC Single Ended Mem Bus (MD)
NT3X38AA Memory Controller (MD)
NT3X39AA 16K MOS Memory (MD)
NT3X40AA 64K MOS Memory CP (MD)
NT3X40BA 64K MOS Memory CP (MD)
NT3X41AA Central Processor & Mem
NT3X41BA Processor/Memory Shelf
NT3X41DA Central Processor & Mem
NT3X42AA 1M Word Mem Cont CP (MD)
NT3X42BA 1M Word Mem Cont CP (MD)
NT3X4302 (1MW) Mem Backpanel (MD)
NT3X4303 Processor Backpanel (MD)
NT3X4304 CMC/IOC Backpanel (MD)
NT3X4307 PS Controller Backpanel (MD)
NT3X4309 16MW Memory BP Term(MD)
NT3X45AA CC Frame (MD)
NT3X45AB Memory Extension Frm (MD)
NT3X45AX Program Store Memory (MD)
NT3X45CA Central Control Frame (MD)
NT3X45CB Memory Extension Frm (MD)
NT3X45DA Central Control Frame (MD)
NT3X45DB Memory Extension Frm (MD)
NT3X45DC Firmware Changes (MD)
NT3X45DD Central Processor (MD)
NT3X45DE Prog Store Mixed Mem (MD)
NT3X45DF Prog Store Mixed Mem (MD)
NT3X45DG Prog Store Mixed Mem (MD)
NT3X45DH Data Store Mixed Mem (MD)
NT3X45DJ Data Store Expansion (MD)
NT3X45DK Firmware Changes (MD)
NT3X45DL Firmware Changes (MD)
NT3X45DM Firmware Changes (MD)
NT3X45DN CPM Prog Store Incr (MD)
NT3X45DP CPM Prog Store Incr (MD)
NT3X45DQ Program Store Exp (MD)
NT3X45DR CPM Prog Store Incr (MD)
NT3X45EA Central Control Frm (MD)
NT3X45EW Central Control Frn (MD)
NT3X47AA RLM Message Cont (MD)
NT3X48AA RLM T1 Line Card (MD)
NT3X49AA RLM Ext. Mem. CP (MD)
NT3X51AA RLM Service Shelf (MD)
NT3X65AA Echo Suppression CP (MD)
NT3X67AA 6 Pty Conf Circuit CP (MD)
NT3X67BA 6 Pty A-Law Conf CP (MD)
NT3X67BB 6 Pty A-Law Conf CP (MD)
NT3X68AA Perm Sig, Conf Tone (MD)
NT3X68AB Multifrequency Dual Tone
NT3X68AC Autovon Tone Gen (MD)
NT3X68BA PS & Conf Tone Gen (UK)
NT3X68BB MF Dual Tone Gen (UK)
NT3X68BC Call Waiting Tone Gen (UK)
NT3X70AA Network Crosspoint CP (MD)
NT3X70AB Network Crosspoint Plus (MD)
NT3X70BA Network Xpoint A-law (MD)
NT3X71AA Network Test Code CP (MD)
NT3X72AA Network Serial Port (MD)
NT3X72AB Ntwk Serial Port I/F
NT3X73AA Network Serial-Parallel (MD)
NT3X74AA Network Control Proc. (MD)
NT3X74AB Ntwk Control Proc CP (MD)
NT3X74BA Network Control Proc. (MD)
NT3X74BB SN Netw. Cont. Proc. (MD)
NT3X75AA Network P-side Message (MD)
NT3X75AB Ntwk P-side Msg Proc (MD)
NT3X75BA Network P-side Msg. (MD)
NT3X75BB Ntwk P-side Msg Proc. (MD)
NT3X76AA Network Clock CP (MD)
NT3X76AB Network Clock CP (MD)
NT3X76AC Network Clock CP
NT3X82AA OAU Dead System (MD)
NT3X82AB OAU Dead System (MD)
NT3X82AC OAU Dead System (MD)
NT3X82AD OAU Dead System (MD)
NT3X82AE OAU Dead System (MD)
NT3X82AF OAU Dead System (MD)
NT3X82AH OAU Dead System (MD Y2K)
NT3X82AJ OAU Dead System (MD Y2K)
NT3X82AK 60 Volt Office Alm (MD Y2K)
NT3X82BA LP Alm Dead Sys w/Aud Alm
NT3X83AA OAU Alarm Transfer (MD)
NT3X83BA OAU Alarm Transfer (MD)
NT3X83AC OAU Alm Transfer CP (MD)
NT3X83AD 60 Volt Ofc Alm Xfer (MD)
NT3X83BA 60V Ofc Alarm Transfer CP
NT3X84AA OAU Alm Sender CP (MD)
NT3X84AB OAU Alarm Sender CP (MD)
NT3X85AA OAU Alm Grp'ing CP (MD)
NT3X85AB OAU Alm Grouping CP (MD)
NT3X86AA Network Parallel-Serial (MD)
NT3X89AA Alarm Cross Connect Shelf
NT3X89AB Alm Xconnect Shelf (MD Y2K)
NT3X89CA Alm Xconnect Pan (MD Y2K)
NT3X89EA Alarm Cross Connect Panel
NT3X90AA Cooling Inverter Unit
NT3X90AB Cooling Inverter Unit Fan
NT3X90AC DC Fan Cooling Unit
NT3X91AA Rem. Ofc Test Line CP (MD)
NT3X93AA 256 KW MOSS Mem CP (MD)
NT3X94AA 4MW Mem Control CP (MD)
NT3X94AB 4MW Mem Control CP (MD)
NT3X95AA Stratum II Oscillator
NT3X95BA Rem Osc ECOR Sh. Unit Assm
NT3X95BB Stratum 2.5 ISG Sh Assy (MD)
NT3X9507 Stratum 2.5 Oscillator
NT4G08AA SCSI 9 Track Tape Drive
NT4G14BA LAN Link SRU
NT4G14BB Small Rem. Unit CO LAN Lk.
NT4G14DA SRU LAN Link (FCC Enh)
NT4G14DB SRU, CO, LAN Lk (FCC Enh)
NT4G16EE SRU Primary Processor
NT4G16EF SRU, CO, Primary Processor
NT4G16GA Primary Processor 4M SR
NT4G16HA Primary Processor 5M SR
NT4G16NA SRU, 68020 Primary Proc
NT4G19EA Power Supply SRU
NT4G19FA Power Supply SRU 1/4"
NT4G20FA Storage Unit 80M SRU
NT4G20FB Disk Drive
NT4G20GA Storage Unit 350M SRU
NT4G20HA Storage Unit 170M SRU
NT4G20JA Storage Unit 350M SCSI
NT4G20LA SRU Storage Disk/Tape SC
NT4G20LC SRU, CO, 80 MB Dsk/QIC-150
NT4G20PA SRU 160MB Disk
NT4G20QA SRU 160MB Disk/QIT/150
NT4G20QB SRU 160MB Disk/Tape
NT4G20SA SRU Storage 350M SAS1 1
NT4G20TA SRU Storage 350M SAS1 1
NT4G20VA SRU1/4 160MB Disk/QIC-150
NT4G21AA Q1C Tape SRU
NT4G22DA SRU, Network Service
NT4G23BA Digital Trunk Link
NT4G23EA SRU Digital Trunk Link
NT4G24DA SRU Conferencing Circuit
NT4G25CA SRU (Application Processor)
NT4G25CD SRU (Application Processor)
NT4G25DA SRU (Application Processor)
NT4G25EA SRU Application 7 MB
NT4G25GA Applications Processor
NT4G26BA File Processor, SASI SRU
NT4G26BC File Proc., SASI SRU 5
NT4G26CA File Processor, SCSI 6 (MD)
NT4G26CB SRU File Processor 68010
NT4G26JA SRU, 68020 Primary Proc
NT4G27BA SRU Voice Interface
NT4G40BA Horz. Jumper Unit (MD)
NT4G40CA Jumper, Horizontal Unit 1
NT4G41BA Vertical Jumper Unit
NT4G42BA Input Jumper Unit
NT4G42CA Input Jumper Unit
NT4G46BA LAN Interface Unit (A&M'd)
NT4G46BD IBM PC LAN Kit
NT4G46CA LAN Interface Unit
NT4G49CA SRU Digital Tine Receiver
NT4G50DA -48V/32V Converter SRU
NT4G50FA SRU CO -48V/32V Pwr Conv
NT4G50FB CO -48/32V Power Converter
NT4G53FA Rack Mount DVS (Mod)
NT4G54AA Campus Area Network SRU
NT4G54BA SRU, CO, Local DATAN
NT4G60AA DS-30 Link, SRU
NT4G60BA DS-30 Link, SRU
NT4K90FA AN10 Software Load
NT4X00AA Disk Drive Unit 14 in (EOL)
NT4X00AB Disk Drive Unit 14 in (EOL)
NT4X00AC Disk Drive Unit 8 in (EOL)
NT4X00AG Disk Drive Unit 5.25 in (EOL)
NT4X01BA TOPS Ver. 04 BOI Cnt (MD)
NT4X08AA Attendant Console 1200b (MD)
NT4X08AB Attendant Console 1200 Baud
NT4X08BB Attendant Console 1200b (MD)
NT4X09AA Attendant Console
NT4X09AB Attendant Console Main Unit
NT4X09AE Attendant Console (Engl)
NT4X09AG Attendant Console -1200
NT4X09BB Meridian Attendant Console
NT4X10AC Attendant Console (MD)
NT4X13AA Keylamp Driver (MD)
NT4X14AA Keylamp LED (MD)
NT4X15AA Keylamp Display (MD)
NT4X21AA P-phone Basic Main Set CP
NT4X21AB P-phone Main Set Display
NT4X21AG P-phone Main Set Disp (MD)
NT4X23AA DTU Dig. Test Unit CP (MD)

NT4X25AD	Data Unit Rackmount (MD)
NT4X25AF	Low Spd F.E. EKB Data Unit
NT4X25AV	Hi Spd Rackmt Data Ut (MD)
NT4X25BA	Dial/Key PCB (MD)
NT4X25BB	Switch IF ACE PCB (MD)
NT4X25BC	Low Speed Main PCB (MD)
NT4X25BE	High Speed Main PCB (MD)
NT4X25BH	Data Unit Rackmount Shelf
NT4X25CH	Low Spd Rackmount
NT4X25BZ	Data Unit Keypad (MD)
NT4X25CH	Low Speed Rackmount (MD)
NT4X25DA	3194 Netwk Sw'd Access (MD)
NT4X45AA	Dig Test Unit (DTU) CP
NT4X50AA	Call Through Simulator
NT4X50AB	CTS SBC86/05 Microproc CP
NT4X50AF	CTS SBC204 Disk Controller
NT4X50AH	CTS Floppy Disk Drive
NT4X50AJ	CTS Floppy Disk Drive
NT4X51AA	Clock & Time Switch CP (MD)
NT4X52AA	Biphase Interface CP (MD)
NT4X53AA	Front Panel Cont CP (MD)
NT4X54AA	Keyboard & Display CP (MD)
NT4X54AB	Tone & Amp CP (MD)
NT4X55AA	Digital Line Test CP (MD)
NT4X56AA	CTS Keypad & Displ Unit
NT4X57AA	CTS-MTM Shelf
NT4X58AA	E&M Applique CPNTA
NT4X59AA	Call Through Simulator
NT4X6008	TOPS Pwr Supply (MD)
NT4X61AA	Audio Control CP (MD)
NT4X62AA	Data Control CP (MD)
NT4X63AA	AOSS Display
NT4X63EA	ITOPS Data Controller (MD)
NT4X64AC	Oper. Headset Volt Supp (MD)
NT4X64BA	TOPS Trn'g Adapter (MD)
NT4X64BB	TOPS Trn'g Adapter (MD)
NT4X64CA	TOPS Trn'g Adapter (MD)
NT4X65AA	TM Controller CP (MD)
NT4X65AB	TM Controller CP (MD)
NT4X71AA	Traffic OP Position Sys (MD)
NT4X71AB	Traffic OP Position Sys
NT4X71AC	Traffic OP Position Sys (MD)
NT4X71AD	Traffic OP Position Sys
NT4X71AE	TOPS Ver 04 Force (MD)
NT4X71AF	TOPS Version 04 Force
NT4X72AA	AOSS Furniture Unit (MD)
NT4X73AF	Controller (-48V DC) (MD)
NT4X73BA	TOPS-OOC Cntl 110V (MD)
NT4X73CA	TOPS 04 Cntl -48V I/F (MD)
NT4X73DA	TOPS Intl Controller (MD)
NT4X74AB	TOPS Monitor Assem. (MD)
NT4X75AA	DC Distr Panel Unit
NT4X76AA	TOPS Keyboard Reg (MD)
NT4X76AB	TOPS Keyboard Intl (MD)
NT4X76AC	TOPS Keyboard Asst (MD)
NT4X76AD	TOPS Kbrd French (MD)
NT4X76AE	TOPS Kbrd Inchg Fr (MD)
NT4X76AF	TOPS Kbrd Asst Fr (MD)
NT4X79AA	16MW Memory Cont (MD)
NT4X80AA	1MW Mem (MD)
NT4X81DA	TOPS MP Keyboard Assy
NT4X81EA	TOPS MP Telemex Keyboard
NT4X81EB	TOPS MP Telemex Keycap Kit
NT4X97AA	MTU Controller Card
NT4X98AA	MTU Analog CP (MD)
NT4X98BA	MTU Analog Card (MD)
NT4X98BB	MTU Analog Card
NT4X98BC	MTU Analog CP (Internationl)
NT5X00AB	Test Access Network Shelf
NT5X00AD	Test Access Network Shelf
NT5X01AA	Relay Circuit (MD)
NT5X02AA	Test Position, Test Trk (MD)
NT5X03AA	CCITT R1 Trunk CP
NT5X04AA	CCITT #5 Trunk CP (MD)
NT5X04AB	CCITT #5 trk w/Guard Tone
NT5X06AA	CCITT #6 Trunk CP (MD)
NT5X08AC	AC Modem Assy Modified
NT5X09BA	Data Set (Modem) Shelf
NT5X12AB	Test Access Net Frame
NT5X13AA	Network Frame (NETC) (MD)
NT5X15AA	Network Crosspoint Shelf
NT5X15AB	Network Crosspoint Shelf
NT5X16AA	Network Serial Interface
NT5X20AA	No. 6 Signal IF A CP (MD)
NT5X23AA	Master Reference Freq. FR
NT5X23AB	Master Reference Freq. FR
NT5X24AA	Master Ref Freq. FR (MD)
NT5X25AA	1-way CO Trk Ckt Ogt (MD)
NT5X29AA	CCIS Continuity Check (MD)
NT5X29AB	AUTOVON Svc Analysis
NT5X29AC	Audio, Answer, Detect
NT5X29BA	Audio Tone Detector (UK)
NT5X30AA	101 Communication Test
NT5X30BA	Communications TL (UK)
NT5X30CA	Communications TL (Ger)
NT4X48AA	Tone Generator (MD)
NT5X48AB	TOPS Tone Amplifier (MD)
NT5X48AC	Tone Monitor
NT5X49AA	5.8VConverter (TOPS) (MD)
NT5X50AA	Auxiliary Circuit
NT5X51AA	Conversion of NE (TSD)
NT5X52AA	High Tone Circuit CP
NT5X54AA	CP Extender Assembly
NT5X55AA	Key Panel Assembly
NT5X55AB	1A2 Key System Interrupt
NT5X56AA	1A2 Frame
NT5X57AA	Auxiliary Recording
NT5X58AA	7KTU Standalone 1A2 Key
NT5X59AA	Alarm Indication Applique
NT5X59AB	Alm Indication App (MD Y2K)
NT5X63AA	Applique Circuit Unit
NT5X64AA	Communication Module
NT5X64AB	Communication Module
NT5X64AC	Comm. Module (DGT)
NT5X64AD	Communication Module
NT5X64BA	Comm. Module (DGT)
NT5X64BC	Communication Module
NT5X65AA	Applique Circuit for
NT5X66AA	Applique Ckt Outgoing Test
NT5X67AA	DCM Cutover Ckt Pack (MD)
NT5X68AA	DCM Cutover Unit (MD)
NT5X69AA	Inactive Sys Time'g (MD Y2K)
NT5X70AA	911 Auxiliary Ckt to
NT5X70AB	911 Aux Ckt Emerg. SWB
NT5X71AA	Applique Ckt for O/G Trk
NT5X72AA	Central Alarm Display (MD)
NT5X72AB	Central Alarm Ckt Unit (MD)
NT5X73AA	Board to Board Testing
NT5X73AB	Board to Board Testing
NT5X74AA	Universal CAMA Position
NT5X75AA	Auxiliary CAMA Position
NT5X75AB	Auxiliary CAMA Pos Ckt
NT5X76AA	Aux CAMA Pos Ckt ONI
NT5X77AA	Auxiliary CAMA Position
NT5X78AA	Auxiliary Trunk Circuit
NT5X79AA	Board to Board Test
NT5X80AA	Horiz. Tel & Data Jack
NT5X80AB	Vertical Tel & Data Jack
NT5X80AC	Tel & Data Jack Unit Assy
NT5X82AA	Trunk Test Pos Console
NT5X82AB	4W Dual Port Frame Assy
NT5X82AC	2W Single Port Frame Assy
NT5X82AK	ATAS Connectorized Cables
NT5X83AA	ATAS Sel & Control Ckt
NT5X83AB	4W Test Circuit Unit
NT5X83AC	4W Test Circuit Unit
NT5X83AD	2W Test & Attenuator Unit
NT5X83AE	Voltmeter Circuit Unit
NT5X83AF	Circuit Pack Shelf
NT5X83AG	Circuit Pack Shelf
NT5X83BB	ATAS (Single Port) Assy
NT5X83BC	ATAS (9") Assembly
NT5X83BD	ATAS (Dual Port) Assy
NT5X85AA	Audible & Visual Alarm (MD)
NT5X86AA	Aud Alm Cutoff (MD Y2K)
NT5X86AB	Audible Alm Cutoff (MD Y2K)
NT5X86AD	Aud Alm Cutoff Pan (MD)
NT5X87AA	Split Mode Switch CP
NT5X8702	Split Mode Swt Compt Assy
NT5X8703	Split Mode Swt Compt Assy
NT5X88AA	ABBT Applique for Common
NT5X90AA	Auxiliary Test Circuit
NT5X91AA	Aux. Trk for TOPS Access
NT5X92AA	Com Aud Alm Pan Asbly (MD)
NT5X92AB	Alm Ext Panel (MD Y2K)
NT5X93AA	Applique Ckt for TTS
NT6M01AA	DPP with 72MB (MD)
NT6M01AB	DPP (Replaced with 8M05AB)
NT6M01BA	DPP (Replaced with 8M05AB)
NT6M01DA	DPP (Replaced with 8M05AB)
NT6M01EA	DPP (Replaced with 8M05AB)
NT6M48AA	DPP PCB Assy (56K Xovr Ckt)
NT6M49AA	DPP PCB Assy (56K Conn CB)
NT6M54AL	DPP 56K Mounting Panel Assy
NT6M56AB	DPP PCB Assem. (MD)
NT6M59AA	DPP Status Panel
NT6M60AA	DPP Quad SIO (MD)
NT6M60BA	DPP Quad SIO
NT6M62BA	DPP PCB Assembly
NT6M63BA	DPP PCM Assembly (MD)
NT6M63BF	DPP ASSY Firmware (MD)
NT6M63CF	DPP EPROM (MD)
NT6M63CH	DPP EPROM (BCS25) (MD)
NT6M63CJ	DPP EPROM (BCS29) (MD)
NT6M63CL	DPP EPROM (21-29)(MD)
NT6M63FE	DPP EPROMw/DOS Firmwar
NT6M63FL	BMC EPROM
NT6M64AA	DPP/BMC Extended Memory
NT6M65AA	PCA Err Cntrl Logic II (MD)
NT6M65AB	PCB (Error Control) (MD)
NT6M65AC	PCB (Error Control) (MD)
NT6M65AH	PCA ErrCntrl Logic II (MD)
NT6M66AC	Hi Perf Disk I/F (A&M'd)
NT6M66AH	DPP High Perf Disk I/F (MD)
NT6M66AJ	DPP High Perf Disk I/F (MD)
NT6M66AK	DPP High Perf Disk I/F (MD)
NT6M66AL	DPP High Perf Disk I/F (MD)
NT6M66BA	DPP High Perf Disk I/F (MD)
NT6M66CA	DPP SCSI PCA Interface
NT6M68AA	DPP Bus Terminator
NT6M70AA	DPP Data Stream IF (MD)
NT6M70AB	DPP Data Stream IF
NT6M70AC	DPP Data Stream IF (MD)
NT6M70CF	DPP Data Stream IF (MD)
NT6M71AB	DPP Heatsink + Pwr Supply
NT6M72AA	DPP Disk Drive II X-over CP
NT6M72AC	DPP DD X-over CP (MD)
NT6M72AD	DPP DD X-over CP (MD)
NT6M72AE	DPP Disk Dr II X-over (MD)
NT6M72BA	DPP Disk Drive Assem. 140MB
NT6M72DA	DPP Disk Drive Assem. 380MB
NT6M72DB	DPP Disk Drive Assem. 380MB
NT6M72DD	DPP Disk Drive Assem. 380MB
NT6M72EA	DPP Disk Drive Assem. 760MB
NT6M72GA	DPP Disk Drive Assem. 1G
NT6M72HA	DPP Disk Drive Assem. 2G
NT6M84AA	DPP Pwr/Alm Com. (MD)
NT6M84BA	DPP Pwr/Alm Communication
NT6M85AA	DPP 56K X-over I/F (A&M'd)
NT6M93AA	DPP Assy (MD)
NT6M93BA	SCSI Crossover PCA
NT6M94AA	PCB Assy (56K I/F D)
NT6M94BA	DPP 56K Compression I/F
NT6M98AA	DMS-100 I/F Box

NT6X01AA	Common Peripheral (MD)
NT6X01AB	Common Periph. (ISDN) (MD)
NT6X01AD	ISDN_Ready XPM (MD)
NT6X01AF	IP Ready LTCI XPM
NT6X01BA	International Common (MD)
NT6X02xx	Peripheral Module Sh. (MD)
NT6X03AA	Line Concentrating Equip.
NT6X03RA	LCE Frame Common
NT6X03RB	LCE Frame Earthquake
NT6X03RC	LCE Frame Common
NT6X03RD	LCE Frame Earthquake
NT6X03RE	LCE Frame Universal
NT6X05AA	LCM Drawer Unit
NT6X05AY	Line Drawer Stop Kit
NT6X05DA	ISDN Line Drawer (LD) Asmly
NT6X05EA	Line Drawer for 1-Meg LCs
NT6X0511	ISDN Drawer Controller CP
NT6X0512	ISDN Line Dwr Backplane CP
NT6X0513	ISDN LC Backplane Assembly
NT6X0514	ISDN Line Drawer Assembly
NT6X06AA	Msg Switching 6 (MD)
NT6X06AB	MSB6 Equipment (MD)
NT6X06AC	MSB6 Equipment (MD)
NT6X08AA	Signalling Term Shelf
NT6X08CA	Signalling Term Shelf
NT6X08CC	Signalling Term Shelf
NT6X0801	Signalling Terminal Shelf
NT6X09AA	Signalling Terminal '6'
NT6X10AA	Remote Cntl. Equip. (MD)
NT6X10AC	Remote Contr Equip Fr (MD)
NT6X10AD	Remote Contr Frame (MD)
NT6X10AE	Remote Contr Frame (MD)
NT6X12AG	Remote Cluster Controller
NT6X1201	Remote Control Array
NT6X1205	Com Periph Ctl BP PB (MD)
NT6X13AB	Remote Maintenance Module
NT6X1301	Remote Maintenance Module
NT6X14AA	Remote Line Concen.
NT6X14CA	Remote Control & Mtce
NT6X17AA	Std Line Card Type A (MD)
NT6X17AB	Std Line Card Type A (MD)
NT6X17AC	LC Type A E/W Cutover (MD)
NT6X17AD	LC Type A Current Lim (MD)
NT6X17BA	World Line Card POTS Type
NT6X18AA	Line Card Type B (MD)
NT6X18AB	LC Type B with +48V (MD)
NT6X18BA	World Line Card Type B
NT6X19AA	Message Waiting Line Card
NT6X20AA	Message Waiting Converter
NT6X20AB	Message Waiting Converter
NT6X21AA	P-Phone Line Card (MD)
NT6X21AB	P-Phone Line Card 15kft (MD)
NT6X21AC	EBS P-Phone Line Card 15kft
NT6X21AD	UDLC P-Phone LC 15kft
NT6X21BC	P-phone Line Card (UK)
NT6X23AA	+48V Converter CP (MD)
NT6X25AA	RLCM Frame Supervisory
NT6X25AB	CRLCM FSP
NT6X25BA	RLCM Remote FSP Unit
NT6X25BB	OPM FSP Unit
NT6X27AA	PCM 30 Interface CP (MD)
NT6X27AB	PCM30 Trunk Interface CP
NT6X27AC	PCM30 Trunk IF CP (MD)
NT6X27BA	PCM30 Trunk IF CP (MD)
NT6X27BB	Enhanced PCM30 IF CP
NT6X27BC	Enhanced PCM30 IF CP
NT6X27BD	Enhanced PCM30 IF CP
NT6X27CA	PCM30 75 Ohm IF CP (MD)
NT6X27JA	Japan TTC Port Card
NT6X28AA	PCM30 Signalling CP (MD)
NT6X28AB	PCM30 Signalling Gen (MD)
NT6X28AC	PCM30 Sig Control CP
NT6X30AA	N American Rng. Gen. (MD)
NT6X30AB	Ringing Generator (U.K.)
NT6X30AE	Ringing Generator (Australia)
NT6X30BA	Japan Ringing Generator CP
NT6X30BB	Japan Ringing Generator CP
NT6X30CA	North American Rng. Gen. CP
NT6X30DA	Ringing Gen. (China) (MD)
NT6X30DB	Ring. Gen. (China/Australia)
NT6X30EA	Low Profile Intl Ringing Gen
NT6X30FA	LCM Ring Gen (UK)
NT6X30GA	LCM Ring Gen (UK)
NT6X30GB	EURO Ringing Generator
NT6X30HA	North Am. Rng. Gen. (Cab.)
NT6X30JA	Low Profile Ring Gen (UK)
NT6X31AA	Msg Sw 7 Equip. (MSB7)
NT6X3201	Signaling Terminal (MSB7)
NT6X33AA	Japan Type A Line Card
NT6X35AA	LCM Frame Supv. Panel (FSP)
NT6X35BA	LCE FSP (MD)
NT6X36AA	FSP Alarm CP
NT6X36AB	Alm Card for NT7X34EA FSP
NT6X36AC	Universal FSP Alarm CPNTA
NT6X36AE	FSP Alarm Card CP (MD)
NT6X36AF	FSP Alarm Card
NT6X36EA	ISLM FSP Alm/Ctl (MD)
NT6X36KA	FSP Alarm Card
NT6X37AA	Ringing Amplifier CP (MD)
NT6X37BA	Ringing Amplifier CP (MD)
NT6X38AA	Ringing Control CP (MD)
NT6X38AC	Japan Ringing Control CP
NT6X38AE	Ringing Control CP (MD)
NT6X38DA	Ringing Control CP (MD)
NT6X40AA	DS30 Network I/F CP (MD)
NT6X40AB	DS30 Network I/F CP (MD)
NT6X40AC	DS30 Network I/F CP (MD)
NT6X40AD	DS30 Network I/F CP
NT6X40BA	SCM DS30 I/F CP (MD)
NT6X40CA	XPM DS512 Lk Cont. (MD)
NT6X40DA	XPM DS512 Link Card (MD)
NT6X40EA	DS30 Switcher Box Daughter
NT6X40FA	XPM DS512 Lk Cont CP (MD)
NT6X40FB	XPM DS512 Link Control CP
NT6X40FC	XPM DS512 Link Control CP
NT6X40GA	DS512 Link Paddle Board
NT6X41AA	Spch Bus Formt. (MD 1Q99)
NT6X41AB	Spch Bus Formt (Turk) (MD)
NT6X41AC	Speech Bus Formatter CP
NT6X41AD	Speech Bus Formatter CP
NT6X42AA	Channel Supervision Msg CP
NT6X42CA	CSM and N5 Splitter CP
NT6X43AA	Message Interface CP (MD)
NT6X43BA	Message Interface CP (MD)
NT6X43CA	Message IF (UK) (MD)
NT6X43DA	Message IF (Mercury) (MD)
NT6X43FA	Message IF (CEP) (MD)
NT6X44AA	Time Switch CP
NT6X44AB	Time Switch CP (MD)
NT6X44AC	Time Switch CP (MD)
NT6X44BA	Time Switch A/MU CP (MD)
NT6X44CA	Time Switch (SMU) CP
NT6X44DA	Time Sw (DPNSS) CP (MD)
NT6X44EA	Universal Time Switch CP
NT6X45AA	LGC/DTC Proc CP (MD)
NT6X45AB	LGC/DTC Proc CP (MD)
NT6X45AC	LGC/DTC Proc CP (MD)
NT6X45AD	LGC/DTC Processor (MD)
NT6X45AE	LGC/DTC Processor (MD)
NT6X45AF	LGC/DTC Processor
NT6X45BA	LGC/DTC Processor
NT6X45BB	LGC/DTC Processor (MD)
NT6X45BC	LGC/DTC Processor (MD)
NT6X45BD	LGC/LTC Processor (MD)
NT6X45CA	SMS Processor CP (MD)
NT6X45EA	SCM-100S Sig Proc. (MD)
NT6X46AA	Signal Proc Mem CP (MD)
NT6X46AB	SP Memory Plus CP (MD)
NT6X46AC	SP Memory Plus CP (MD)
NT6X46BA	SP Mem+ (Enh Msg) (MD)
NT6X46BB	Signal Proc Memory CP
NT6X47AA	Master Proc Mem CP (MD)
NT6X47AB	MP Mem+ CP (MD)
NT6X47AC	4MB MP Memory CP
NT6X48AA	DS30A LCM I/F CP
NT6X50AA	DS1 Interface CP (MD)
NT6X50AB	DS1 EFF Card CP
NT6X50AD	DS1 EFF Card CP
NT6X50EC	DS1 (Echo Cancellation)
NT6X51AA	LCM 64K Processor CP (MD)
NT6X51AB	LCM 256K Processor CP (MD)
NT6X51AC	LCM 256K Processor CP
NT6X51BA	LCM Processor CP
NT6X51DA	LCM Process Controller CP
NT6X52AA	Digroup Ctrl Card CP
NT6X52AB	Intl Digroup Ctrl
NT6X53AA	Power Converter 5V/15V CP
NT6X53AB	Global Pwr Con (MD)
NT6X53BA	ISDN Power Converter (MD)
NT6X53CA	ISDN LCME Pwr Conv +5/15
NT6X53EA	ISDN1BD Pwr Conv (MD)
NT6X54AA	Bus Interface Card (BIC)
NT6X54BA	Intl Bus Interface Card (BIC)
NT6X54CA	PLD Bus IF CP (MD)
NT6X54DA	ISDN BIC for ISDN Line Dwr
NT6X5411	ISDN Drawer Controller CP
NT6X55AA	2 Party Line Card
NT6X55AB	DS0A Interface Card
NT6X55BA	CCITT 64K Bit Access CP
NT6X55CA	Digital Test Access CP
NT6X55JA	DTC CII/CMI I/F CP
NT6X60AA	RLCM Ring. Gen (MD)
NT6X60AB	RLCM Ring Gen (Scope Dial)
NT6X60AE	Ring Gen (Australia) (MD)
NT6X60BA	Remote Ringing Gen (Japan)
NT6X60BB	RLCM Ringing Gen (Japan)
NT6X60CA	North American Rng. Gen.
NT6X60DA	RG for OPAC (MD)
NT6X60GA	SRU Ringing Generator (UK)
NT6X60GB	SRU Ringing Generator (UK)
NT6X62AA	Specialized Tone Rec (MD)
NT6X62AB	Specialized Tone Rec (MD)
NT6X62DA	CCITT N5 Ver. Special Tone Receiver
NT6X62EA	Enhanced Specialized Tone Receiver (Replaces DA)
NT6X64AA	Japan Misc. Use Line Cd (MD)
NT6X64AC	Japan Type B Line Card (MD)
NT6X65AA	CCIS Sig. Term CP (MD)
NT6X66AA	CCS7 Signaling Term (MD)
NT6X66AC	CCS7 Signature CP (MD)
NT6X66BA	ISDN 1 DCHM Signaling (MD)
NT6X66CA	DPNSS Sig Term IF (UK)
NT6X67AA	Sig Term Buffer CP (MD)
NT6X68AA	Signalling Term IF (MD)
NT6X68AB	Signalling Term IF (MD)
NT6X68AC	Signalling Term IF (MD)
NT6X68AD	Signalling Term Interface
NT6X68BA	ISDN DCH Sig Term (MD)
NT6X68CA	NCCI7 Sig Terminal (MD)
NT6X68DA	NCCI7 Sig Terminal (MD)
NT6X69AA	CPP Mess Protocol (MD)
NT6X69AB	CPP Mess Protocol (MD)
NT6X69AC	Message Protocol & Tone
NT6X69AD	Message Protocol & Tone
NT6X69BA	CPP ISDN Msg Prot CP (MD)
NT6X69BB	CPP Msg Prot (Turk) (MD)
NT6X69DA	CPP Msg Prot (UK) (MD)
NT6X69FA	CPP Msg Prot (CEP) (MD)
NT6X69KA	CPP Msg Prot (China) (MD)
NT6X69LA	CPP Mess. Protocol (MD)
NT6X69LB	CPP Mess. Protocol/Download
NT6X69LC	Msg Protocol Proc (MD)
NT6X69MA	Asiced Ckt Board (CP) (MD)

NT6X70AA	Continuity Tone Detector
NT6X70BA	Continuity Tone Det (MD)
NT6X71AA	Data Line Card (DLC) (MD)
NT6X71AB	Data Line Card (DLC) (MD)
NT6X71AC	Data Line Card (DLC) (MD)
NT6X71BA	DLC Single Slot CP
NT6X72AA	Host Link Formatter (MD)
NT6X72AB	Remote Formatter CP (MD)
NT6X72BA	Remote Formatter Card
NT6X73AA	Link Control Card CP
NT6X73BA	International Link Controller
NT6X74AA	RMM Control Card CP (MD)
NT6X74AB	RMM Control Card CP
NT6X75AA	ESA Tone & Clock Card CP
NT6X75DA	IRLCM EAS Tone/Clk (CEP)
NT6X75EA	IRLCM EAS Tone/Clk (Mer)
NT6X75KA	IRLCM EAS Tone/Clk (China)
NT6X76AA	Asynchronous IF LC (MD)
NT6X76AC	Asynchronous IF LC (MD)
NT6X76AD	Asynchronous IF LC (MD)
NT6X77AA	Remote Alarm Panel (MD)
NT6X78AA	CLASS Modem Resrce (MD)
NT6X78AB	CLASS Modem Resource CP
NT6X79AA	CPCE Tone Generator (MD)
NT6X80AA	SCM Pad/Ring Card CP (MD)
NT6X80BA	SMU Pad/Ring Card CP (MD)
NT6X81AA	SCM A Bit/B Word Card (MD)
NT6X81BA	A Bit/B Word CP (MD)
NTX82AA	Serial I/O CP (MD)
NTX84AA	I/O Transformer Pan CP (MD)
NT6X85AA	DS1 I/F for (SLC 96) (MD)
NT6X85AB	DS1 I/F for (SLC 96) (MD)
NT6X85AC	DS1 I/F for (SLC 96)
NT6X85BA	DS1 IF (MD)
NT6X86AA	A-Bit Msg Card CP (MD)
NT6X86AB	A-Bit Msg Card CP (MD)
NT6X90AA	MTX Lk Cont CSC end (MD)
NT6X90AB	MTX Lk Cont CSC end (MD)
NT6X90CA	MTX Lk Cont CSC end (MD)
NT6X91AA	MTX Link Controller (MD)
NT6X91AB	MTX Link Controller (MD)
NT6X91BB	X25 LAPB Linkk Cont (MD)
NT6X91CA	KBD Link Cont - Host (MD)
NT6X92AA	Universal Tone Rcvr. (MD) (Rep'd by 6X92BB Rel 18+)
NT6X92BA	Domestic UTR (MD) (Rep'd by 6X92BB Rel 18+)
NT6X92BB	Domestic UTR (MD)
NT6X92BC	Domestic UTR (MD 2Q99) Replaced with NT6X92EA
NT6X92CA	International UTR
NT6X92DA	UTR (MD)
NT6X92EA	Global Tone Receiver (GTR)
NT6X93AA	Type A LC 600 Ohm Intl (MD)
NT6X93BA	Type A LC 600 Ohm Intl (MD)
NT6X93CA	Type A LC 600 (China) (MD)
NT6X93DA	Type A LC (Moroccan) (MD)
NT6X93EA	Type A LC (Australian) (MD)
NT6X93FA	Type A LC (China)
NT6X94AA	Type B LC 600 Ohm Intl (MD)
NT6X94AB	Type B LC 600 (Turkey) (MD)
NT6X94BA	Type B LC 600 Ohm Intl (MD)
NT6X94BB	Type B LC 600 (CEP) (MD)
NT6X94CA	Type B LC 600 (China (MD)
NT6X94DA	Type A LC (Moroccan) (MD)
NT6X95AB	Metering Tone Conv (MD)
NT6X98AA	Scope Dial LC (UK) (MD)
NT6X99AA	IBERT Line Card
NT6V54DA	ISDN Dwr Crtl Firmware
NT7F18AB	DTH/ROTL
NT7F23AA	DTH/ROTL Power Supply
NT7F23AB	DTH/ROTL Control Processor
NT7F25AB	DTH/ROTL DS0 Handler
NT7F26AD	DTH/ROTL Enh ROM CP
NT7F29AA	DTH/ROTL VF Interface CP
NT7F30AA	DTH/ROTL Filler Face Pack
NT7F30BA	DTH/ROTL Filler Face Pack
NT7F30CA	DTH/ROTL Filler Face Pack
NT7F32AA	DTH/ROTL DS1 Interface CP
NT7X05AA	XPM Flash EEPROM Pack
NT7X05CA	XPM Flash EEPROM Pack
NT7X07AA	IP Gateway Card for LTCI
NT7X2801	Message Device Controller
NT7X3004	Service Trunk Module
NT7X34AA	DNPC Frame Supv Panel
NT7X34DA	DTE Frame Supv Panel
NT7X60AA	Super Tracer Buffer PB
NT7X76AA	WTA Panel Assembly
NT7X76BA	WTA Pnl Dedicated LTU/MTU
NT7X80AA	Bus Shorter Circuit Pack
NT8M01AC	Billing Media Converter
NT8M01AE	BMC Unit, 72MB EMC
NT8M01AF	BMC Unit, 72MB EMC
NT8M01AJ	BMC Unit, 72MB EMC
NT8M01AN	BMC International, 70MB
NT8M01BA	BMC Unit, 140MB EMC
NT8M01BC	Billing Media Converter
NT8M01BE	BMC Unit, 140MB EMC
NT8M01BF	BMC Unit, 140MB EMC
NT8M01BJ	BMC Unit, 140MB EMC
NT8M01BN	BMC International, 140MB
NT8M01CA	BMC Unit, 30MB EMC
NT8M01CC	BMC Unit
NT8M01CE	BMC Unit, 30MB EMC
NT8M01CF	BMC Unit, 30MB EMC
NT8M01CJ	BMC Unit, 30MB EMC
NT8M01CN	BMC International, 30MB
NT8M01EE	BMC Unit
NT8M03AE	BMC Unit
NT8M03BE	BMC Unit
NT8M03CE	BMC Unit
NT8M03DE	BMC Unit
NT8M03EE	BMC Unit
NT8M03FE	BMC System
NT8M04AA	BMC Unit
NT8M04AC	BMC Unit, 72MB EMC
NT8M04AD	BMC Unit, 72MB EMC
NT8M04AF	BMC Unit, 72MB EMC
NT8M04AG	BMC Unit
NT8M04AL	BMC DUECE, ASCII, 70MB
NT8M04AM	BMC SMDR, ASCII, 70MB
NT8M04BA	BMC Unit
NT8M04BC	BMC Unit, 140MB EMC
NT8M04BD	BMC Unit, 140MB EMC
NT8M04BE	BMC Unit, 140MB EMC
NT8M04BF	BMC Unit, 140MB EMC
NT8M04BG	BMC Unit
NT8M04BL	BMC DUECE, ASCII, 140MB
NT8M04BM	BMC SMDR, ASCII, 140MB
NT8M04CA	BMC Unit
NT8M04CC	BMC Unit, 30MB EMC
NT8M04CD	BMC Unit, 30MB EMC
NT8M04DE	BMC Connector
NT8M04DF	BMC Unit
NT8M04EE	BMC Unit
NT8M04FE	BMC Sys DMS-100 AMAT 7
NT8M04GC	BMC 1G System BX.25
NT8M04GE	BMC Sys
NT8M04HE	BMC 1G System BISYNC
NT8M04IE	BMC Sys
NT8M05AB	Provisionable DPP, EMC
NT8M05BB	Provisionable DPP, EMC
NT8X01AA	Outside Plant Module
NT8X01AB	OPM E/W 640 Lines
NT8X01AC	OPM E/W 640 Lines
NT8X01BA	OPM-256 (Sys)
NT8X01BC	OPM-256 (Sys)
NT8X02AA	Bat Charger Cont'r (MD)
NT8X02AB	Battery Charger Controller
NT8X02AC	SRU Battery Charger
NT8X05AA	Power Control Unit
NT8X06AA	Environmental Ctrl Unit
NT8X06AB	Environmental Ctrl Unit
NT8X06BA	Booster Fan Unit
NT8X10AA	Double Shelf Network (MD)
NT8X1101	Netw. Mod. Shelf Assy (MD)
NT8X12AA	Network Port CP (MD)
NT8X13AA	Crosspoint CP (MD)
NT8X14AA	Test Code CP (MD)
NT8X18AA	DS30A Network IF (MD)
NT8X18BA	SMSR DS30A C-side I/F (MD)
NT8X18BB	DS30A C-side I/F
NT8X46AA	MSL-100 Ser Time Sw (MD)
NT8X47AA	MSL-100 V/D LC (MD)
NT8X48AA	DPP (A&M)
NT8X48AB	DPP
NT8X48AC	DPP Conv. to NT8X48AB Kit
NT8X48BA	Dist Proc Periph 140M
NT8X49AA	MSL-100 P/S I/O Proc (MD)
NT8X49AB	MSL-100 IVD P/S Proc (MD)
NT8X70AA	ISDN1A Service Line Module
NT8X72AA	ISDN1A Bus I/F CP (MD)
NT8X73AA	ISLC1A X95 PALTF LC (MD)
NT8X85AA	ISDN PC Terminal Adp (MD)
NT8X85AB	ISDN PC Terminal Adp (MD)
NT8X85AC	ISDN Call Manager
NT8X85AD	ISDN Microsoft Networks
NT8X85AE	ISDN PC Access/SNA 3270
NT8X85AF	ISDN PCTA Test Tool Soft-
NT8X85AH	ISDN PCTA VT100
NT8X8520	ISDN PCTA Base Package
NT8X86AA	T2317 Dig Phone (MD)
NT8X86AB	ISDN Display Set (T2317)
NT8X95AA	Small Remote Unit (MD)
NT8X96AB	SRU Frame Supv. Panel (FSP)
NT8X99AB	SPU Power Converter
NT9X01AA	CM Duplex Cabinet
NT9X01BA	Dual Plane Combin Core CA
NT9X01CA	Msg Swt Simplex Cabinet
NT9X01FA	E-Core Spares Cabinet
NT9X01GA	Msg. Switch Duplex Cabinet
NT9X01JA	Dual Plane Comb. Core (MD)
NT9X01JB	Dual Plane Combined Core
NT9X01MB	S/DMS SuperNode Cabinet
NT9X03AA	E-Core FSP
NT9X03BA	FSP Assembly
NT9X04AG	Message Switch CP Fill
NT9X0401	Simplex Shelf Assy
NT9X0440	Message Switch Shelf Assy
NT9X05AB	Enhanced Network Simplex
NT9X05AC	128K ENET Cabinet (MD)
NT9X05AD	64K ENET Cabinet (MD)
NT9X0601	Duplex Shelf Assy
NT9X0605	CM Module Shelf Assy
NT9X0610	Compact CM Shelf Assy
NT9X07AB	System Load Module
NT9X0701	S.L.U. Shelf Assembly
NT9X0702	SLM Shelf
NT9X08AA	Enhanced Network Sh. CP Fill
NT9X08BA	Enhanced Network Sh. CP Fill
NT9X0818	ENET Shelf Assembly
NT9X10AA	33Mhz 88K BRISC CPU CP
NT9X10AB	60Mhz BRISC for Series 60 SN
NT9X10BA	60Mhz BRISC for Series 70 SN
NT9X10CA	60Mhz BRISC for Series 70 SN
NT9X10DA	66Mhz BRISC 512MB CPU
NT9X11AA	SN remote Mode 20 Mhz CPU
NT9X12AA	CPU Prt CP (MD)
NT9X12AB	CPU Port CP (MD)
NT9X12AC	Port Card with Parity (MD)
NT9X12AD	CPU Port CP
NT9X1312	40 Mhz CPU Motherboad
NT9X13AA	CPU CP (MD)
NT9X13BA	CPU (Static RAM)

NT9X13BB	CPU (Static RAM) CP (MD)
NT9X13BC	CPU (Static RAM) CP (MD)
NT9X13CA	CPU Plus 4MB CP (MD)
NT9X13DA	CPU PCP (MD)
NT9X13DB	CPU (16MHZ) CP (MD)
NT9X13DC	CPU (16MHZ) CP (MD)
NT9X13DD	Simplex CPU 16MHz, 16MEG
NT9X13DE	CPU 16M/16Mhz
NT9X13DF	CPU 4M/16Mhz
NT9X13DG	CPU 16M/16Mhz
NT9X13EA	CPU (68030, SRAM) (MD)
NT9X13FA	CPU (ENET) (MD)
NT9X13GA	CPU (68030, 33MHz) (MD)
NT9X13HA	CPU (68030, 40MHz) (MD)
NT9X13HB	CPU (68030, 40MHz) (MD)
NT9X13JA	CPU (Static RAM) CP (MD)
NT9X13KA	CPU 16MB DRAM ENET
NT9X13LA	CPU (68030, 40MHz) HPM
NT9X13MA	WSS CM (MD)
NT9X13MB	WSS Computing Module
NT9X13NA	WSS Message Network I/F
NT9X14AA	4M Memory CP (MD)
NT9X14BB	Memory 6M CP (MD)
NT9X14DA	Memory 24M CP (MD)
NT9X14DB	Memory 24M CP
NT9X14EA	Memory 96M CP
NT9X14FA	Memory 96M CP
NT9X15AA	Mapper Circuit Pack
NT9X16AA	System Clock Circuit Pack
NT9X17AA	MS 4-Port Circuit Pack (MD)
NT9X17AC	MS-4 Port Universal CP (MD)
NT9X17AD	MS-4 Circuit Pack
NT9X17BA	Msg Switch 32 Port CP
NT9X17BB	MS 32-Port Circuit Pack
NT9X17CA	MS128 Port CP
NT9X17DA	MS 64-Port Circuit Pack
NT9X19AA	Filler Circuit Pack
NT9X19BA	Filler Paddle Board CP
NT9X19CA	Pwr Convert Filler Pk Assy
NT9X19EA	STP Power Filler Pack
NT9X20AA	DS512 Paddle Board CP.
NT9X20BA	DS512 cpnta CM-MS, MS-EN
NT9X20BB	ENET/MS Fiber I/F (MD)
NT9X20BC	ENET/MS Fiber I/F CPNT
NT9X21AA	Bus Terminator Paddle Board
NT9X21AB	Bus Terminator Paddle Board
NT9X22AA	Subsys Clock PB (MD)
NT9X22CA	CM Sbsys Clock Pdbrd
NT9X22DA	CM DS30 Sbsys Clk PB (MD)
NT9X23AA	DS30 4-Port Paddle Board
NT9X23BA	DS30 4-Port Paddle Board
NT9X24BA	Msg Switch P-bus Ext PB
NT9X25AA	MS-Port Extender PB
NT9X25BA	MS-Port Expander PB
NT9X26AA	Terminator Interface PB (MD)
NT9X26AB	Remote Term. I/F CP
NT9X26CA	Remote Term. I/F CP (MD)
NT9X26DA	BRISC RTIF PB (MD)
NT9X26DB	BRISC RTIF PB (MD)
NT9X26DC	BRISC RTIF CP for Series 50
NT9X26EA	BRISC RTIF PB Ser 70 (MD)
NT9X26FA	BRISC RTIF PB for Series 70
NT9X26GA	BRISC RTIF PB for Series 70
NT9X27AA	CM Bus Extension
NT9X27BA	CM Ext Shelf Extender CP
NT9X29AA	Diagnostic Port CP (MD)
NT9X30AA	+5V Power Converter (80A)
NT9X30AB	Global +5V86A Pwr Con (MD)
NT9X31AA	-5V Pwr Con (20A) (MD)
NT9X31AB	Global +5V, 20A Power Conv
NT9X32AA	Bus Load Paddle Board
NT9X35AA	ENET X-Point CP (MD)
NT9X35BA	ENET 16K X 16K X-Point
NT9X35CA	ENET X-Point Macro Module
NT9X35FA	4K X 8K X-Point CP
NT9X36AA	ENET Clock & Message (MD)
NT9X36BA	ENET Clock & Message CP
NT9X40AA	DS512 2-Port Paddle Board
NT9X40BA	ENET Quad Fiber I/F (MD)
NT9X40BB	ENET Quad DS512 Fiber I/F
NT9X40DA	ENET HCS Fiber Link Interface (needed for SPM interface)
NT9X41AA	Ntwk I/F Mod PB (MD)
NT9X41BA	ENET DS-30 I/F (MD)
NT9X44AA	SLM Shelf Assembly (MD)
NT9X44AB	SLM II Assembly (MD)
NT9X44AC	SLM 1A Assembly (MD)
NT9X44AD	SLM III Assembly
NT9X4402	Network Interface Module
NT9X4404	SLM II CP
NT9X4417	SLM Assembly
NT9X45AA	Reset Control IF PB (MD)
NT9X45BA	ENET DS512/DS30 I/F PB
NT9X46AA	Network Parallel Port I/F Mod
NT9X47AA	+12V Pwr Con Fan Alm (MD)
NT9X47AB	Global SLM Power Converter
NT9X48AA	MS P-Bus Extension PB
NT9X49BA	MS T-Bus Terminator CP
NT9X49CA	MS P-Bus Terminator CP
NT9X49CB	DMS Bus Tracer CP
NT9X49CC	MS P-Bus Terminator CP
NT9X52AA	T-Bus Access CP
NT9X53AA	MS Clock CP (MD)
NT9X53AB	MS System Ext Clock (MD)
NT9X53AC	DMS-Bus System Clock
NT9X53AD	DMS-Bus System Clock
NT9X53BA	Combined Stratum 1 Clock
NT9X54AA	MS Ext Clk I/F PB (MD)
NT9X54AB	Ext Clock I/F (MD)
NT9X54AC	DMS-BUS Stratum 1 Ext Clk
NT9X54AD	MS Ext. Clock I/F
NT9X54AE	DMS Bus Ext Clock IF PB
NT9X55AA	DS30 Remote Switcher CP
NT9X56AA	DS30 Remote Switcher CP
NT9X62AA	2-Port Subrate DS512 Pad
NT9X62BA	4-Port Subrate DS512 Pad
NT9X62CA	SR-512 2 Links PB
NT9X62CB	SR-512 2 Links PB (MD)
NT9X63AA	XACore OC-3 Port IF PB
NT9X63AB	XACore OC-3 Port IF PB
NT9X6534	LPP Bulkhead Assembly
NT9X66AA	ENET Msg Lk IF PB (MD)
NT9X67AA	Message Extender CP
NT9X68AA	Super Tracer
NT9X69AA	16P DS30 MS I/F PB (MD)
NT9X69BA	16 Link DS30 MS PB
NT9X70AA	Line I/F Mod Cabinet
NT9X70BA	LIU7/DCP Cabinet (MD)
NT9X70BB	Link Peripheral Processor
NT9X71AB	Local Message Switch CP
NT9X7101	Local Msg Swt Shelf Assy
NT9X7204	36 LIU Link Interface Shelf
NT9X73AA	LMS-FBUS Rate Adap (MD)
NT9X73BA	Enh LMS-FBUS Rate Adpt
NT9X73BB	LMS-F-Bus Rate Adapter
NT9X73CA	F-Bus Rate Adapter/Rep
NT9X74AA	F-Bus Rep/Term (MD)
NT9X74BA	F-Bus Repeater/Term (MD)
NT9X74CA	FBUS Repeater CP (MD)
NT9X74DA	FBUS/CBUS Repeater-Termin
NT9X75AA	CPU-FBUS I/F CP (MD)
NT9X76AA	STP Signalling Terminal
NT9X76BA	LIU–Com Sig Term. CP (MD)
NT9X76CA	TTC7 Sig Terminal CP
NT9X77AA	STP V35 I/F CPNTA PB (MD)
NT9X77AB	STP V35 I/F CPNTA PB
NT9X77BA	LIU RS-232/V.35 I/F PB (MD)
NT9X78AA	STP DS0A I/F CPNTA (MD)
NT9X78BA	Enhanced STP DS0A I/F (MD)
NT9X78CA	Enhanced STP DS0A I/F (MD)
NT9X78DA	Enhanced STP DS0A I/F with Link Fault Sectionalization
NT9X78DB	STP DS0A IF with LFS CP
NT9X79AA	F-Bus Extension PB
NT9X79BA	F-Bus Extension Paddle Board
NT9X79BB	F-Bus Extension Paddle Board
NT9X80BA	Application Processor Cabinet
NT9X80CA	Application Processor Cabinet
NT9X81AA	File Processor (FP) Shelf (MD)
NT9X83AA	FP Storage Device Shelf (MD)
NT9X84AA	Ethernet CP
NT9X85AA	Ether. Attachment Unit IF PB
NT9X85BA	Ethernet Twisted Pair IF PB
NT9X86AA	Dual Port Msg Cntl (DPMC)
NT9X86AB	DPMC SNSE 60 CP
NT9X87AA	Dual Access Buffer Mem CP
NT9X88AA	Dual SCSI I/F Cont PB
NT9X89AA	SCSI Device I/F PB
NT9X89BA	SCSI Device I/F PB
NT9X90AA	FP Storage Dev Asmbly (MD)
NT9X90AB	FP Storage Device Assembly
NT9X90BA	FP Storage Device Assembly
NT9X91AA	+5, +12V Power Con (MD)
NT9X91AB	+5, +12V Power Con (MD)
NT9X91AC	Global +5, +12V Pwr Conv.
NT9X95AA	S/DMS SuperNode Cabinet
NT9X96AA	LIS FBUS Controller CP
NT9X98AA	LIS Fiber Interface PB

SLC-96 RCS Line Cards

SCD203	Single Party Line Card
SCD221	Multi-party Line Card
SCD222	900 Ohm Loop Line Card
SCD233	Coin Line Card
SCD252	1500 Ohm Loop Line Card
SCD271	Special POTS (SPOTS) LC

Circuit Pack Descriptions

Note: The following circuit pack descriptions are for most of the packs shown within the various hardware shelves in this QRG.

NTAX78AB or BA — The Enhanced time switch (ETS) card is functionally equivalent to the NT6X44CA time switch card. As of NA003, the NTAX78 replaces the NT6X44 that will implement DTA for ESMU or SMA. As of NA004, SMA interfacing TR-303 compliant terminals require the NTAX78 card. The ETS card is required to perform ISDN DTA functions on an ESMU or any subtending RCU ISDN lines.

NTBX01AB — This enhanced ISDN card is a redesign of the ISDN signaling pre-processor (ISP) card. Memory size and processor speed have been increased to meet changing system requirements. The card provides interfaces both to the signaling processor (SP) and to the speech bus. It terminates a single messaging link for each D-channel handler (DCH) and processes layer-3 information. Signaling information that is extracted by the DCH is sent to the master processor (MP) by way of the enhanced ISDN signaling pre-processor (EISP).

NTBX02 — The D-channel handler card is the main interface to all D-channels through the speech bus. The DCH sets up communication with an ISDN terminal on request from the terminal or the line group controller (LGC) master processor (MP). NTBX02BA is an enhanced DCH card.

NTBX34 —This LCME Processor card is responsible for processing associated with scanning the line cards for calls, setting up call connections through the digroup controller card (NTBX35) and DMS-X messaging with the Host. This card also carries out background tasks for diagnostics. It is also located in the SRU.

NTBX35 —The LCME Digroup Controller card provides time switching for external and internal channel assignments, and provides digital loop around paths. It also interface with the Link Control Card (LCC) and the Line Drawers. It is also located in the SRU.

NTBX36 —This is the Bus Interface Card (BIC) for ISDN LCME and is located in the Line Drawer.

NTBX72 — The ISDN enhanced LCME battery and ringing router card monitors the current of various ANI/COIN inputs selected by a multiplexer (MUX) circuit.

NTDX15AA — This +/-5V power converter provides a regulated and protected nominal output of +5.15 V and -5.2 V. The maximum current available on the positive output is determined by the negative output load. At no load, up to 69 Amps can be drawn from the positive rail; at -10 A, up to 55 Amps can be drawn from the positive rail. This pack supports the following products: high-speed interface (HSI); network programming platform (NPP); channel frame processor (CFP). It can be used in the SNSE CM/SLM shelf.

NTDX15AB is the global +/-5V power converter.

NTDX16AA — The +5V dual power converter can provide full redundancy for an LPP/LIS shelf. If one NTDX16 power converter fails, or requires power-down or replacement, the other NTDX16 power converter supplies power for the entire LPP or LIS shelf.

NTDX91 — A dual power converter used in the file processor (FP) storage device shelf.

NTEX17 — The AA card is a 1 Meg Modem line card that provides for data networking as well as a POTS interface. The CA and DA cards are xDSL line cards that provide full voice service and high-speed data communications in the 1-Meg Modem Service. The DA is used for the RLCM and STAR remotes and works only with the NTEX54CA DBIC card.

NTEX20 —The intra F-bus terminator PBs (NTEX20AA and NTEX20BA) provide intrashelf F-bus termination. NTEX20AA provides intrashelf termination for F-bus (A) 0 signals. NTEX20BA provides intrashelf termination for F-bus (B) 1 signals.

NTEX22 — The integrated processor & F-bus interface card (IPF) provides a LIU7 link general processor, a dual F-bus interface capability, and is used for LIUs, EIUs, FRIUs, and NUIs. It replaces the NT9X13CA link general processor and the NT9X75AA F-bus to F-bus interface. In regard to the LIU7, the NTEX22BA card is optional in North America, but is required in the United Kingdom. The NTEX22BA is functionally identical to the NTEX22AA, except that the BA card has 8 Mbytes of DRAM. The AA card is no longer supported. The upgrade NTEX22BB is functionally identical to the NTEX22AA and BA cards except that the BB card supports 32-bit asynchronous P-bus slaves and spared peripherals. The NTEX22CA is a 32MB LIU7 Integrated Processor that provides 2.5 to 2.7 times the capacity of the 8MB LIU7. The FA version is a 128MB card.

NTEX25 — The NTEX25AA network interface unit (NIU) channel bus controller (CBC) card in the link peripheral processor (LPP) allows direct network connection to the LPP. The NTEX25AA takes channels from the network and transmits them to the application specific units (ASU) over the C-bus, and takes channels from the ASUs via the C-bus and transmits them to both planes of the network. The NIU is a hot standby. Unit 0 uses the NTEX25AA, which interfaces to C-bus 0 and Unit 1 uses the NTEX25BA, which interfaces to C-bus 1.

NTEX26 — The NTEX26AA link interface unit (LIU) channel-bus interface (CBI) circuit pack is used in the CCS7 LIU (LIU7) within a link peripheral processor (LPP) equipped for channelized access. The NTEX26AA is located behind the NT9X76AA signaling terminal (ST) in an LIU7.

NTEX28 — The NTEX28AA network interface unit (NIU) DS30 link interface Paddle Board (LPB) is used in the link peripheral processor (LPP) for channel access. The card is a 4-port DS30 link interface board that provides DS30 links between the peripheral side (P-side) of the network and channel bus controllers (CBC) in an application-specific unit (ASU) shelf.

NTEX30 — The NTEX30AA T1 analog paddle board (T1PB) is the printed circuit pack (PCP) within the frame relay interface unit (FRIU) that provides the interface between the NTEX31AA frame relay access processor (FRAP) and the physical T1 transmission medium. T1PB is also used with NTEX31BA-based FRIUs.

NTEX31 — The frame relay access processor (FRAP) is the main processor for the frame relay interface unit (FRIU).

NTEX54 — An enhanced data bus interface card (DBIC) required in LCM drawers that provide Ethernet 1 Meg Modem Service. The DBIC separates the voice and data traffic. The card multiplexes the voice traffic to standard DS-30A interfaces to the existing circuit switched voice network. The card multiplexes the data traffic to one 10BaseT Ethernet connection to the transport network. **NTEX54BAAB, BAAC, and BAAD are for Phase 2B.**

NTFX09 — The NTFX09AA network channel bus (C-bus) interface Paddle Board (CIP) is used in the X.25/X.75 link interface unit (XLIU). The CIP is one of three circuit packs that form the XLIU. The CIP connects to the backplane C-bus to provide the high-level data link control (HDLC) frame processor (HFP) with channelized data. When combined with software, the XLIU hardware implements the DMS-100 packet handler (DMSPH).

NTFX10 — The NTFX10AA high-level data link control (HDLC) frame processor (HFP) circuit pack is used in the X.25/X.75 link interface unit (XLIU). The HFP is one of three circuit packs that together form the XLIU. When combined with software, the XLIU hardware implements the DMS-100 packet handler (DMS-PH). By provisioning the LIU shelf with a network interface unit (NIU) pair, each XLIU will have logical access to both the message switch frame bus (F-bus) and the network channel bus (C-bus).

NTFX30 — The IOM controller card (NTFX30), located in slot 3 of the ISM shelf, contains hardware and firmware to support 16 general purpose ports. The ports include the RS-232C, V.35, current loop and PERTEC. The hardware and firmware also support two DS-30 links to the message switch (MS) and two optional external SCSI devices on the storage media card. The NTFX30 controls the entire operation of the IOM.

NTFX31 — The IOM Paddle Board (NTFX31) contains the power feed circuits. The Paddle Board contains a maximum of 16 smart connectors and circuits. The Paddle Board implements a local loopback for diagnostic purposes. The Paddle Board is at the rear of the ISM shelf backplane at the slot 3 position.

NTFX32 — The storage media card (NTFX32AA) occupies slot 4 of the ISM shelf. This card has slots for plug-in digital audio tape (DAT) (NTFX32CA) and disk drive unit (DDU) (NTFX32BA) plug-in units.

NTFX42 — The ISM processor card ISM processor circuit card is designed to be functionally compatible with the existing TM/MTM service circuit cards. It provides a combined functionality of the NT0X70, NT3X45, NT2X53, and NT2X59 controller cards.

NTFX43 — The ISM DC converter card provides regulated and protected power supplies required by the ISM shelf. The converted voltages are +5 V, +12 V, +25 V, and -15 V (dc).

NTFX44 — The improved loop test accessory (ILTA) card is provisionable in the ISM shelf and is designed to be used with some external test units like the Mod 3703 LTC or Teradyne's 4-Tel Colt. It connect to up to four NT2X90 IC/OG test trunks. See the ISM shelf and the NTFX44/NT2X90 assignments within this QRG.

NTGX04— The NTG04AA Bus Terminal Transition Module Paddle Board and the NTGX04BA Bus Extender Transition Module Paddle Board can be found in the rear of the MSM shelves.

NTGX05 — NTGX05AA 68-kbyte memory card is part of the DMS Mail Service Peripheral Module. It provides the processing environment for the common system program, for example, directory and message transfer agent. The 68Kbyte card supports two RS-232C Electronic Industries Assoc. communication ports.

NTGX06 — The NTG06AA 68K Transition Module Paddle Board can be found in the rear of the MSM shelves.

NTGX07— The NTG07AA Modem Transition Module Paddle Board can be found in the rear of the MSM shelves.

NTGX08 — The NTGX08AA T1 Main card terminates 4 spans and is located on the electronics shelves of the MSM.

NTGX09 — The NTG08AA T1 Transition Module Paddle Board can be found in the rear of the MSM shelves.

NTGX10 — The NTGX10AA Bus Controller Main card provides system clocks and acts as the bus master for the MSM.

NTGX11 — The NTG08AA Bus Controller Transition Module Paddle Board can be found in the rear of the MSM shelves.

NTGX12 — The NTGX12AA VP12 voice channel cards on an MSM provide a maximum of 24 channels for each SPN, or 12 channels for each voice processor card. The cards provide the channels for a maximum of four SPNs to an NTGX0201 electronics shelf.

NTGX13 — This is a 600MB disk card that can be used in a MSM.

NTGX14 — The NTGX14AA is a 1200MB disk card and the NTGX14BA is a dual 1200MB disk card used in a MSM.

NTGX15 — The NTGX15AA Disk Tape Module Assembly is used in the primary disk shelf of the MSM.

NTLX02 — The processor element (PE) provides XA-Core with a computing device that has fault detection and a spare PE. AA through AC is a PPC604 256MB processor and the AD is a MPC7401 512MB processor.

NTLX03 — The input/output processor (IOP) for the XA-Core comes in two versions: the NTLX03AA one-slot IOP for CMIC and RTIF packlets and the NTLX03BA two-slot IOP for the 4MB disk drive packlet and DAT tape drive packlet.

NTLX05 — The OC-3 two-port IF packlet provides the CMIC interconnect between the Message Switch and XA-Core.

NTLX06 — Disk drive packlet for XA-Core (AA = 4GB; AB = 8.7GB).

NTLX07 — This is the digital audio tape (DAT) tape drive packlet.

NTLX08 — This is the RS232/RS422 remote terminal IF (RTIF).

NTLX09 — This is the Ethernet remote terminal IF (RTIF).

NTLX12 — The shelf interface module (SIM) provides the power for the XA-Core. The packs are located on the back shelf.

NTLX44 — The Sync resource module (RM) provides the timing source for the building internal timing source (BITS).

NTLX14 — This shared memory (SM) card provides the XA-Core with a memory device for data store. The AA version is 128MB; BA is 256MB; the CA is 384MB; and the DA is 512MB.

NTLX61 — This shelf interface module (SIM) is the DC power conditioner for SPM NTLX51AA dual-shelf assembly.

NTLX63 — The common equipment module (CEM), located in the SPM, provides centralized resources—bandwidth allocation, communication/messaging, computing platform, synchronization, etc.

NTLX65 — The digital signal processor (DSP) resource module (RM) provides digital signal processing services for the SPM.

NTLX66 — The voice signal processor (VSP) resource module (RM) provides resources for call processing such as echo cancellation for the SPM.

NTLX71 — This OC-3 interface module is a synchronous optical network (SONET) OC-3 trunk interface for the SPM. It allows the SPM to terminate SONET OC-3 transmission systems carrying DS3, asynchronous VT1.5, and byte-synchronous VT1.5 payloads.

NTL73 — The asychronous transfer mode (ATM) resource module (RM) provides ATM digital signal processing services for the SPM.

NTLX74 — The synchronous transport signal (STS) resource module (RM) provides synchronous transport signal-level one (STS-1) digital signal processing services for the SPM.

NTLX82 — This common equipment module (CEM), located in the SPM, is an enhanced replacement for the NTLX63AA CEM.

NTMX72 — A power converter provides +5 V, +12 V, –12 V power for the RCC2 and GPP CPM shelves. The NTMX72AA pack has test points, a reset switch, and power fail LED while the NTMX73AB has only a fail and active LED.

NTMX73 — This pulse code modulation (PCM) signaling pack controls all low-level PCM and DS1 signaling tasks, and it generates the system clock. The PCM and DS1 signaling tasks include link maintenance, receiving and sending derived data link (DDL), and receiving and sending ABCD bits. It supports DS1 and PCM30 trunks on both the core side (C-side) and the peripheral side (P-side). This pack replaces the 6X28, 6X41, 6X44, and 6X86 packs, either partially or totally.

NTMX74 — The principal function of this DS30 interface pack is to convert data that come from the matrix in DS60 format into balanced DS30A format, and to convert balanced DS30A signals into DS60 format for the matrix. See the RCC2 shelf in this QRG.

NTMX75 — This enhanced matrix pack performs all speech channel switching functions for the RCC2 and GPP CPM shelves. Those functions include: providing digital connections between all C- and P-side channels, moving ABCD bits from the DS1 ports to the SIGP pack, supporting the parallel buses for service circuits, selecting C-side input and output links and channels, and selecting P-side link connections. The DA pack version is needed for the 16 to 20 C-side DS1 upgrade for the RCC2.

NTMX76 — This message and tone generator card provides DMSX and HDLC messaging capability, and tone generation for DMS-100

XMS-based peripheral modules. It is a hybrid of features in the NT6X69 & NT6X42, with added logic for extra features. The AB version is required if the RSC-S will also support Spontaneous Call Waiting Display (SCWID) based on an Analog Display Services Interface (ADSI) service. The AB version is also required in the LTC or LGC that supports the Star Remote. The AD version is used in the TOPS Voice over IP Gateway peripheral.

NTMX77AA — The unified processor card replaced the NT6X45, NT6X46, and the NT6X47 cards with the XPM PLUS Upgrade. The NTMX77AA is a 68020-based unified processor (UP) CP. The NTMX77AA is the main processing unit in the central processor and memory (CPM) shelf. It controls all the service packs, and the trunks and lines, and communicates with the central control.

NTMX79 — This DS30 extender pack transfers signals between the main RCC2-EXT shelf and the packs placed in the extension shelf of the RCC2 and GPP CPM extension shelf, and provides +5 V and +12 V or –12 V of power.

NTMX81 — This dual DS1 packlet pack's main function is to provide an interface between two physical DS1 links, and to perform low-level DS1 signaling and speech interface functions. The BA version smaller packlet is needed for the 16 to 20 C-side DS1 RCC2 upgrade (see the RCC2 shelf hardware in this QRG).

NTMX87 — The quad frame carrier card provides a DS1 interface between the SMA2 shelf and the RDT, and the RCC2 and the RSC. It also supports the GPP CPM for PCM30. The NTMX87 is a normal sized circuit card that contains four slots (0-3) in its faceplate. Smaller-sized circuit cards known as dual DS1 NTMX81 or PCM30 NMTX82 packlets are inserted into these slots to supply the NTMX87AA with its functional identity. Each NTMX87 holds a maximum of four dual DS1 or PCM30 packlets. Each packlet has two ports for a total of 8 ports per card. The BA version is needed for the 16 to 20 C-side DS1 RCC2 upgrade.

NTSX05 — A new revolution XPM Processor with 64 MB of DRAM that replaces the NTMX77 Unified Processor. It is ten times faster. It is equipped with NTSX06BA 60 MB or NTSX06CA 120MB Packlet Cards, or NTSX06AA Filler Packs when not equipped. It also features an Ethernet connection through the backplane for linkage to IP networking equipment.

NT0X67 — This IOC terminator card contains terminating resistors for the IOCs parallel data bus.

NT0X70 — This processor card is used in the TM, MTM, DRAM, and the STM. It performs or controls all of the operations accomplished by the components of the STM. It also store the load and includes circuits that generate the clock signal, check parity, and perform synchronization. The NT0X70BA is the international card.

NT1X55 — The disk drive controller card, located on the IOC shelf, contains the logic to provide an interface to one DDU, always on port 0 at the MAP display. It physically connects 2 control cables using ports 2 and 3. Ports 0 and 1 are always unequipped. Because a DMS office requires at least two DDUs, at least two NT1X55s are required. They are housed in IOE frame 0 and IOE frame 1 respectively, within slot 4. The SCSI DDU (NT1X55FA), also referred to as an IOC DDU, is a disk drive mounted directly on the IOC card. It replaces the disk drive controller NT1X55DA card and associated DDU in the DDU shelf. The NT0X44BB card is the international version of the DDU.

NT1X62 — The I/O message processor card, located on the IOC shelf, contains a microprocessor capable of connecting serial message links to the message switch, and a parallel data bus to the individual device controller cards. The NT1X62 controls the overall operation of the IOC. The NT1X62CB functions the same as the existing NT1X62CA; however to increase robustness, it contains a new DS30 interface using a customized N03 integrated circuit (IC) device, and a modified 00B reset circuitry.

NT1X67 — The terminal controller card, located in the IOC shelf, contains the logic to provide an interface for any combination of four VDUs, printers (read-only or keyboard send-receive), or modems. The number of NT1X67s required depends on the number of console devices equipped in the DMS switch.

NT1X68 — The magnetic tape controller card contains the logic to provide an interface for one MTD, always on port 0 at the MAP display. It connects a read cable, a write cable, and a control cable, using ports 1, 2 and 3 respectively. Port 0 is always unequipped.

NT1X75 — The DRAM controller card, located on the DRAM shelf, controls reception and transmission of messages to the DMS-core. It must always be located in slot 5, and assigned card number 0 and trunk module circuit number 0. The card can address up to 1 Mbyte of speech memory (which is equivalent to eight virtual cards: 8 x 128 Kbyte) representing about 254 s of speech. It can be configured to function as either a 16-, 24-, or 30-speech channel interface by means of switches. The switches provide the option of using the specified blocks of channels for uses other than DRAM.

NT1X80 — The enhanced digital recorded announcement machine card (EDRAM) provides voice messages to the user. The NT1X80AA provides 4.3 minutes of announcement time and 30 announcement channels. The NT1X80AA is positioned as a peripheral module (PM) to the DMS (a dig-

ital trunk module (DTM). The card is located in a provisional trunk slot of the maintenance trunk module (MTM), the services trunk module (STM), or the integrated services module (ISM). The card has its own DS30 link and is connected to the network by means of a direct cable.

NT1X89 — The multi-protocol controller (MPC) card, located on the IOC shelf, allows data communications between a DMS-100 switch and an external computer (for example, between a central office [(CO)] billing computer and a DMS-100 switch). The NT1X89 protocol software is downloaded from the DMS-100 CPU. The NT1X89BB card can be used for data communications that exceed 9600 bps.

NT2X05AC — The line module (LM) power pack with improved grounding card provides a regulated 24-V dc power supply and operates as a ringing generator in LMs and remote line modules (RLM) in DMS-100 equipment.

NT2X06 — A power converter (5V/40 A) card, located in the MTM and RMM shelves, receives a nominal -48V input and converts it to a regulated 5-V output. The card monitors the output and shuts down the converter if the output exceeds a recommended threshold. If the converter is used with a frame supervisory panel (FSP), the shutdown continues until the RESET button on the converter faceplate is pushed.

NT2X07 — A power converter (+5V/+12V 40 A) card, located in the DCM and JNET shelves (NT0X48AG Frame, receives a nominal -48V input and converts it to a regulated +5V/+12V output.

NT2X09 — The 5V 40Amp power converter produces five outputs (-5V, -15V, +5V, +12V, and +24V dc). This pack is used in the TM, MTM, DRAM, STM, and RMM modules.

NT2X21 — Terminal address interface and tone generator card is located in the LM or RLM. The tone generator section contains the audible tones encoded digitally in a ROM. Tones are applied as required via the R-MUX, under control of the Signaling Processor.

NT2X22 — The connection memory and transmit multiplexer card is located in the LM or RLM. In addition to the 20 terminal transmit digroups, a maintenance input (looparound) from the Receive MUX, and tone generator input, are also applied to the input of the Transmit MUX. Four of these input signals are connected at any channel time, under Connection Memory control, to four
"transmit" network digroups.

NT2X23 — The receive multiplexer card is located in the LM or RLM. Under control of the Connection Memory, four of the "receive" network digroup inputs are selected every channel time, and connected to four of the 20 terminal receive digroups (TRD 0 through 19). The Receive MUX has an additional maintenance digroup output which can be connected to the Transmit MUX maintenance digroup input for looparound.

NT2X24 — The signalling processor (SP) card, located in the LM or RLM, is the interface between the Master Processor and the control circuits in the line side of the LM. Through the SP, the line circuits, ringing multiplexers, programmable ringing generators and the activity circuit are controlled, and their status is reported.

NT2X25 — The signalling processor interface provides an interface between the Signaling Processor, the Receive & Transmit MUX and the Connection Memory. Handles insertion and extraction of signalling information into and from the terminal digroups.

NT2X26AA — Master processor for the LM is a microprocessor unit with 48 Kbytes of dynamic RAM and 2 Kbytes of EPROM.

NT2X26AB — Master processor for the RLM.

NT2X27AA–AF — Various ringing generators.

NT2X32 — This DCM processor card contains a microprocessor, up to 3K of RAM, and a 2K PROM controls the operation of the circuit cards in the DCM-B shelf by interpreting and acting on commands received from the DMS control module (CM) and responding to line changes detected by the supervision and signaling circuit cards. The processor, which communicates with the other circuit cards in the control section over the processor bus, includes interrupt capabilities and features single-line, per-card enable signals. Parity over data is used for detecting memory faults.

NT2X33 — This card acts as a message processor card in the LM or as a control card for DCMs. In the LM, it is the interface between the Master Processor and the message channel to the CC. For the DCM, the control circuit card contains ROM-controlled message-handling circuits that work with the CM. It comprises a message buffer, reset-message detection-code firmware, and a sanity timer that is responsible for DCM sanity. It also includes a phase-locked loop (PLL) that extracts the 10.24-MHz clock signal from the network speech data. The NT2X33AE is used in ENET applications and is backward compatible with the NT2X33AB, which is used in older J-Net applications.

NT2X34 — This card acts as a PP message processor in the LM and as a supervision card in the DCM. For the LM, it does not communicate with the CC, but with hierarchically equal units (i.e: the PP in other peripheral modules). The LM PPMP communicates with the Master Processor through a 1.5 Kbyte section of RAM, an interrupt line, and a first-in, first-out (FIFO) memory which stores causes of interrupts. For the DCM,

the supervision circuit card includes a hard-wired sequencer that exchanges channel supervi- sory messages with the network and parity-detection circuits that check incoming speech signals; the circuits are shared by all 120 speech channels. The circuit card also includes a processor bus interface with interrupt capabilities.

NT2X35 — This DCM interface (DS1 line) circuit card contains the DS1 transmit and receive interface circuits. The circuit card sends alarm, error, and administration data to the signaling circuit card over the maintenance bus. It also includes a number of maintenance features such as local alarm input, remote alarm, slips, bipolar violation outputs, slip buffer phase monitoring outputs for office synchronization, and card-present output. The DCM interface also incorporates looparound for the DS1 circuits.

NT2X36 — The network interface (NI) card is located in the LM or the DCM. Up to four speech links (0 - 3) from the network (receive) enter the LM at the Network Interface card. In this card, signals on the speech links are converted from diphase serial format to unipolar serial data, and the clock and frame pulses are extracted. The DCM NI card contains eight biphase modulators, one for both planes of the four DS30 ports. The circuit card includes parity generation for signals sent to the network as well as maintenance looparound circuits for the eight speech bits.

NT2X37 — This tone circuit card in the DCM contains a digital tone generator and a channel memory, controls tone insertion and looparound. The tone circuit card generates dial tone, alternative dial tone, audible ring, and multifrequency (MF) signaling signals.

NT2X38 — This DCM signalling card contains circuits that extract the A/B signaling bits from the DS1 data streams received from the DCM interface (DS1 line) circuit cards. A filter eliminates the effects of contact bounce and carrier hits, and a ROM-controlled scanner monitors buffers and reports changes in received A/B bits. Buffers and timers are used to produce output pulses and to insert A/B bits onto the speech bus, and provides line-monitoring and maintenance circuits for all DCM IF (DS1 line) circuit cards.

NT2X45 — The trunk module (TM) interface card is used in the TM, MTM, DRAM, and OAU shelves. The TM interface card serves as the network interface for both planes of the network. In addition to providing two 2-way interfaces for the two transmission paths from both network planes, it contains message registers, bit and channel timing circuits, parity-checking circuits, and circuits
that reformat data.

NT2X48 — A digital 4-channel dual-tone multifrequency (DTMF) or digitone (DGT) receiver. NT2X48AA = DTMF; NT2X48AB = DGT; NT2X48BB = ESA DGT; NT2X48CA = A-law DTMF receiver (international—Turkey); NT2X48CB= DTMF for British Telecom; NT2X48CC A-law DTMF for U.K.

NT2X53 — The trunk module (TM) control card is used in the TM MTM, DRAM, and OAU shelves. This card includes message registers as well as bit and channel timing, parity-checking, and data-reformatting circuit. This circuit includes three controllers that handle trunk, network, and integrity messages, and it generates enabling signals for the 30 individual trunk interfaces.

NT2X59 — The A-law TM CODEC with BT tones card is used in the TM, MTM, RMM, DRAM, and OAU shelves. The card codes pulse amplitude modulation (PAM) signals into PCM and decodes PCM signals into PAM signals. The card also produces PCM tones for signaling and supervision purposes. The NT2X59EA is the DMS-250 CODEC.

NT2X70 — A dc-to-dc regulated power converter card. It works from a -48V dc input and supplies voltages of +5V, -5V, +12V, and -12V, each with a common ground. Some features include fixed current limiting, over-voltage/under-voltage shutdown, an interlock (to ensure that 5V is present before +12V) and dc isolation between input and output. An on-off-reset switch (Converter Fail) LED is provided to operate in conjunction with a frame supervisory panel (FSP) power control and alarm circuit. **CAUTION:** When replacing a NT2X70AF Power Converter, follow the replacement procedures within the NTP.

NT2X90 — An incoming/outgoing (IC/OG) test trunk card that provides and interface between a TM, MTM, ISM, or RMM and test facilities such as the #14LTD, #3LTD, CALRS, and MLT. It provides access to subscriber lines through the metallic test access (MTA) network and is also used for incoming operator verification. The NT2X90AD version includes all the “AC” version capabilities in addition to “on-hook dc signature,” “bypass initiate signal detector,” and “ring ground signal detector” capabilities.

NT3X09 —The Metallic Test Access (MTA) card provides 8 by 8 two wire metallic matrix for cross connection between the test equipment, test card, line and line card.

NT3X17 — This **incoming** crosspoint card, used in the NT0X48 Junctored Network. The eight outputs from IF-0 and IF-1, each representing 32 channels of serial data, enter the incoming formatter and are converted to 32 sets of parallel data words, 10-bits per word, having 8 words per set.

NT3X18 — This **outgoing** crosspoint card, used in the NT0X48 J-Net, converts incoming parallel speech and signalling data to serial.

NT3X19 — This speech interface card, used in the NT0X48 Junctored Network, contains decoders and buffers for the incoming circuits, and buffers and encoders for the outgoing circuits. The decoders can accommodate four 32-channel ports (0-3) of incoming serial PCM at 2.56Mb/s, therefore, for the 64-port NM, 16 speech IF cards are required (designated IF-0 through IF-15).

NT3X20 — This MD'd test card, used in the NT0X48 J-Net, inserts & detects test codes and provides an active bus termination.

NT3X21 — This MD'd bus card, used in the NT0X48 Junctored Network, provides an interface/termination for cables from other shelves, and regenerates clock and sync pulses and multiplexes data streams.

NT3X22AA/AB — This I/O card, used in the NT0X48 Junctored Network, interfaces the transmission of signaling and control messages to and from the CMC in the CCC or the MS in the DMS-SuperNode, and the two processors in the NMC. The AA card is for the NT40 and the AB for the SuperNode.

NT3X23AA/AD — This MD'd processor card, used in the NT0X48 Junctored Network, handles all messages from the CMC or the MS, and is referred to as the C-side processor. The AA card is for the NT40 and the AD for the SuperNode.

NT3X24 — This MD'd clock card, used in the NT0X48 Junctored Network, provides timing & sync signals to the processor cards.

NT3X47 — The HDLC message processor, located in the RLM, is the interface between the Master Processor and the message channel to the CC in the host office. In addition, it handles the reception and transmission of PP to PP messages between the RLM and other connected PM via the host office DCM-R. These tasks are performed by a processor section and a controller (HDLC) section. Also included are timing and control circuits which provide synchronization between the RLM circuits (2.56 MHz) and the clock signal extracted from the DS1 links (1.544 MHz).

NT3X48 — The DS1 interface card is located in the RLM. One or two cards, depending on the number of DS1 or MRLM links required (2 links per card). Each card provides two ports to the DS1 or MRLM links.

NT3X49 — This is an optional extension memory card for the RLM. It provides extra memory capability for the Master Processor when the ESA option is in use.

NT3X70 — This crosspoint card, used in the NT5X13 Junctored Network, contains the TS for 512 channels (one quarter) of one side of an NM. Speech data enters the XPT card in parallel format on a 10-bit wide bus carrying 512 channels. Since the format is parallel, the ports are separated in time, not in space. The data on this bus is written into the DM of the first-stage TS. The data in the DM is subsequently distributed to its own second-stage TS and to those on its three mate XPT cards through the interswitch link buses.

NT3X71 — This test code card, used in the NT5X13 Junctored Network, interfaces with a network control processor card (NT3X74) to allow the insertion and extraction of test code (TC).

NT3X72 — This speech interface card, used in the NT5X13 Junctored Network, provides eight bi-directional, 2.56 Mb/s serial port interfaces on shelf 18. Each card interface contains decoders and data alignment buffers for the incoming circuits, and encoders and buffers for the outgoing circuits.

NT3X73 — This serial-to-parallel (SP) formatter card, used in the NT5X13 Junctored Network, converts the incoming serial data received from the speech interface cards to the parallel format required for the crosspoint cards. The SP formatter consists of four identical sections. Each section is responsible for converting 16 ports (8 pairs) of speech data into a 512-channel, 10-bit parallel bus. Thirty-two (4 sections X 8 pairs) dual-port (1-pair) serial data buses from eight serial interface cards are received by the four SP formatter sections. It outputs four 10-bit parallel buses, one to each of the four crosspoint cards which comprise one side of an NM.

NT3X74AB — This SuperNode network control processor card, used in the NT5X13 Junctored Network, handles message transfer between the CC and PM.

NT3X75AA and AB — This P-side processor card, used in the NT5X13 Junctored Network, handles message transfer between NM and PM via SP and PS formatters.

NT3X75BA and BB — This P-side processor card, used in the NT8X10 Junctored Network, handles message transfer between NM and PM via SP and PS formatters.

NT3X76AC — This SuperNode network clock card, used in the NT5X13 Junctored Network, interfaces the transmission of signaling and control messages to and from the computing module in the DMS-SuperNode, and the two processors in the NMC. It also generates a 10.24 Mhz clock pulse and a frame pulse (125us). The clock circuit periodically synchronizes itself with the frame pulse received from the incoming data from the computing module. These clock and frame pulses control timing within the NM and, through the interface cards, to the PM.

NT3X86 — This parallel-to-serial (PS) card, used in the NT5X13 Junctored Network, converts parallel speech buses from the XPT cards to the

serial format required by the serial port IF cards. The PS formatter consists of four identical sections. Each section is responsible for converting a 512-channel 10-bit parallel bus into sixteen (8-pairs) serial buses. Four parallel buses are received by the PS formatter, one from each of the four XPT cards which comprise one side of an NM. It outputs thirty-two (4 sections x 8 pairs) dual port (1-pair) serial data buses to eight serial IF cards.

NT4X65 — The trunk module (TM) combination control card combines the functions of the NT0X70 Processor Card, the NT2X45 Interface Card, and the NT2X53 Control Card. It is used in the TM, MTM, and the STM. It provides the high level control within the module. It controls signaling and supervision functions, network messaging to the host DMS, and processing of PCM data. This control card is an interface to analog and digital test trunks, service circuits, and alarm circuits.

NT4X97 & NT4X98 — The NT4X98 metallic test unit (MTU) is a microprocessor-controlled test unit that is used for line card testing and subscriber loop diagnostics. The MTU consists of two cards: the NT4X97 MTU controller card, and the NT4X98AA MTU analog card. The NT4X98AA contains the measurement test head, and is directly controlled by the NT4X97 by way of a dedicated 22 conductor bus (MTU bus).

NT6X05 — The NT6X05 Line Drawer provides signalling and voice interfaces between 64 two-wire line cards and the two LCA control complexes. It also controls the application of ringing. Each drawer contains a bus interface card (BIC). NT6X05EA is Line Drawer for 1-Meg Modem LCs.

NT6X27 — The PCM30 interface card provides an interface between an NT6X02 common peripheral controller (CPC) and European-standard PCM30 trunk transmission equipment. The PCM30 interface card translates PCM voice signals and signaling data between two 32-channel, 2.048-Mbps external PCM 30 trunk circuits and one 64-channel, 5.12-Mbps duplicated port in the CPC.

Note: For further information on the following NT6X40 card link and port assignments, see the "XPM PACK RELATIONSHIP DIAGRAM" and the "XPM LINK CONFIGURATION DIAGRAM" within this QRG.

NT6X40 (see previous note) — The DS30 network interface (NI) card, found in the DTC, LGC, LTC, SMA, SMU, SMR, LTCI/DTCI, TMS, and RCC shelves, is available in two versions: the NT6X40AB (NT6X40AA is MD'd) eight port card and the NT6X40AC 16 port card. The card provides a central-side (C-side) interface for DS30 links to the network. Each port of a DS30 NI card provides a two-way voice and data interface and contains a looparound circuit for fault isolation. **Note:** If equipped with SLC-96 6X85AA CPs, replacethe 6X40AA/AB/AC with a 6X40BA in slot 22. If equipped with SLC-966X85AB CPs, then 6X40AA/AB/AC packs can be left in.

NT6X40BA — This DS30 network interface (NI) card, found in the C-side of the subscriber carrier module SLC-96 (SMS). The NT6X40BA provides four DS30 ports instead of the 16 provided by two NT6X40AB cards or 16 by one NT6X40AC card.

NT6X40FA & FB — Extended network (ENET) XPM DS512 link control card (one per unit/plane).

NT6X40GA — DS-512 link paddle board card connects 512 pulse code modulation circuits to ENET by means of a fiber optic cable.

NT6X41 — The speech bus formatter card, found in the DTC, LGC, LTC, SMA, SMU, SMR, LTCI/DTCI, TMS, and RCC shelves, consists of two sections: the clock section and the formatting section. The clock section generates the 10.24-MHz shelf clock. The formatting section of the card provides parallel-to-serial conversion of the encoded voice signals received from the CSM interface card and destined for the C-side links. It also provides serial-to-parallel conversion of the encoded voice signals received from the C-side interface cards, network plane selection, parity error generation for test purposes, and T1 clock generation.
The NT6X41AB version is for use in Turkey.

NT6X42 — The CSM card, found in the DTC, LGC, LTC, SMA, SMU, SMR, LTCI/DTCI, TMS, and RCC shelves, performs several functions. It extracts the CSM bit from the C-side channels, assembles the CSM for each channel, and inserts the CSM into the outgoing C-side bytes. The CSM CP also performs parity checking on all incoming bytes, as well as parity generation on all outgoing bytes.

NT6X43 — The messaging interface card, an older messaging card found in the SMA, SMR, SMU, LTCI/DTCI, TMS, and RCC shelves, provides interface for the parallel speech bus and extracts control messages received on channel zero from the control module (CM).

NT6X44 — The time switch TS, found in the DTC, LGC, LTC, SMA, SMU, SMR, LTCI/DTCI, TMS, and RCC shelves, card converts between the serial stream that is received from (or transmitted to) the DS30 interface card or DS1 interface card and the parallel stream that is used on the internal speech bus. When controlled by the SP, the TS also associates any of the DS30 interface cards and DS1 interface cards with any of the time slots on the parallel speech bus and transfers data between the associated channel and the time slot. NA6X44AA not acceptable for PCL loads. See the NTAX78 ETS card used for ISDN PRI and Digital Test Access.

NT6X44EA — The universal time switch card provides pulse code modu-

lation (PCM) conversions on a per channel basis, allowing compatibility between the North American and international DMS-100 switches. The universal time switch can perform nine different types of PCM conversions from central side (C-side) to peripheral side (P-side) and vice versa. The NT6X44EA can directly replace all current versions of the NT6X44 except the AC and CA versions.

NT6X45 — Master processor has been replaced has been replaced with the NTMX77 Unified Processor (XPM PLUS).

NT6X46 — Signalling processor memory has been replaced with the NTMX77 Unified Processor (XPM PLUS).

NT6X47 — Master processor memory has been replaced with the NTMX77 Unified Processor (XPM PLUS).

Note: For further information on the NT6X48 card link and port assignments, see the "XPM PACK RELATIONSHIP DIAGRAM" and the "LTC/LGC shelf" hardware diagram within this QRG.

NT6X48 (see previous note) — The DS30A interface card, located in the LGC, LTC, LTCI/DTCI, RCC, MSB7, and TPC contains ten separate ports. Each port provides a two-way voice and data interface and carries a 32-channel, 2.56-Mbps bit stream. Each DS30A port contains a looparound circuit for fault isolation.

Note: For further information on the following NT6X50 card DIP switch settings, see the "DIP Switch Settings for the 6X50 & 6X85 DS1" within this QRG.

NT6X50 (see previous note) — The DS1 card, found in the DTC, LGC, LTC, SMA, SMR, LTCI/DTCI, HIE, TMS, and RCC shelves, contains 2 DS1 ports. One to ten cards provisionable for each LTC module provides 2-way voice and data interface, looparound paths, Xmission of local alms, detection of remote alarms, anddetection of error conditions such as loss of synchronization, bipolar errors, and slips. **Note:** It has been reported that 6X50AA cards below release #OU can cause slips. The NT6X50AB card is the DS1 Extended Super Frame (ESF) interface card. The NT6X50BA will be required for ISDN-3 applications. The NT6X50EC is used to provide near-end echo cancellation on one or more DS1 trunks.

NT6X51 — The line concentrating module (LCM) processor controls the activity of the LCA and functions as the interface between the DS30A links and the digroup controller; preforms sanity checks, collects digits and messaging for up to 640 lines, monitors power and ringing functions, and recovers and generates clock signals. NT6X51AA = 64K Memory NT6X51AB/AC = 256K Memory

NT6X52 — The digroup controller functions as an interface for up to three DS30A links and up to ten LCM drawers; supplies time switching for both external and internal channel assignments and provides the digital looparound paths used for troubleshooting.

NT6X53 — This power converter supplies +5V, -5V, +15V,-15V dc; includes relay circuits that apply the ringing, ANI, and coin voltages (which are generated by the ringing generators) to the line cards in the NT6X05 Line Drawers. Each power converter functions as a backup for the converter in the associated LCA.

NT6X54 — The Bus Interface Card (BIC) is located in the Line Drawer. It provides Ethernet data functions when installed in a Line Drawer with a NTEX54 Data BIC (DBIC)—a subscriber is provided with data at 1 MBPS downstream and 128 Kbit/s upstream with POTS service.

NT6X60 — This ringing generator contains two cards: the NT6X38 for ringing control and the NT6X37 for ringing amplification. Ringing signals originate in the NT6X38 and are amplified to the required output level by the NT6X37.

NT6X65 — The CCIS terminal card, located in the MSB6 shelf and ST7G extension shelf, transmits and receives signaling data between a DMS switch and CCIS and CCITT6 transmission links.

NT6X66 — The CCS7 terminal card, located within the MSB7 and ST7G shelves, transmits and receives signaling data over CCS7 transmission links, implements the CCS7 link protocol, and monitors signaling link performance. The NT6X66CA is a signaling terminal interface circuit pack used for digital private network signaling system (DPNSS) applications. NT6X66BA is used for a NTT-NCCI #7 signalling link.

NT6X67 — This signalling terminal buffer card, located within the MSB6 and MSB7 shelves, generates and verifies parity on data transmitted between the MSB6 and the ST controller (STC).

NT6X68 — The signaling terminal interface (STI) card, located within the MSB6,MSB7, and ST7G shelves, provides latches for address, data, and control lines to the STC for fault diagnosis and maintenance. Two STIs are provided for each of the two groups of ST cards. Each group is referred to as a signaling terminal group (STG). See the NT6X68 PEC code list within this QRG.

NT6X69 — Common peripheral processor messaging protocol and tone card, found in the DTC, LGC, LTC, SMA, SMR, SMU, LTCI/DTCI, MSB7, TMS, and RCC shelves, provides interface for the parallel speech bus and extracts control messages received on channel zero from the control module (CM). See the PEC codes within this QRG for a list of the NT6X69 cards available.

NT6X70 — The continuity tone detector card detects tones that are used in call processing to verify the continuity of the voice/data path between LTCs. It monitors and records the frequency and level of the tones. The continuity tone detector CP retains this data for use by the XPM processor CP in the LTC.

NT6X72 — The remote formatter card is located in the RCC shelf. All RCC functional changes in adapting network side communication ports from DS30 to DS1 are made by replacing the NT6X41 speech bus formatter card.

NT6X73 — The link control card (LCC), located within the RLCM/OPM/SRU Host Interface Equipment (HIE), provides an interface between eight ports from an RLCM LCA shelf and the DS1 links to the host. Also provides an interface between the ESA processor, if provisioned, and the LCM. The NT6X73BA card is the international version for the HIE and acts as the messaging interface and provides data rate conversion between the SCU, RMU, and the PCM30. It also acts as the clock source for the SRU.

NT6X74 — The control circuit card, located within the RMM/RIM shelves, functions as the link between line control arrays (LCA) of the LCM and test trunks, service circuits, and RMM alarm circuits. It processes DMS-X messages, trunk messages, and PCM data.

NT6X75 — The optional ESA clock and tone circuit card, located within the RLCM/OPM Host Interface Equipment (HIE) and RIM shelves, generates the clock signal for the LGC/DTC processor and the tones (dial, busy/reorder, receiver off hook, audible ringback, and electronic business set ring-down) needed for ESA operation.

NT6X78 — The CLASS modem resource card, found in SCMs, provides various residential (RES) enhanced features and can be provisioned in slot 16 of the SMU shelf. The CMR card is required if the calling number delivery (CND) feature is being provisioned.

NT6X80 — The pad/ring card, found in SCMs, generates ringing frequency instructions using PCM. The frequencies are switched by the TS card onto the DS1 channels which are associated with the subscriber loops that are to be rung.

NT6X81 — The A/B interface card, found in SCMs, inserts and extracts A and B bits from the PCM stream. These per-channel signaling bits are used for ringing, hook status detection, and, in some instances, ANI and coin functions.

Note: For further information on the following NT6X85 card DIP switch settings, see the "DIP Switch Settings for the 6X50 & 6X85 DS1 Cards" within this QRG.

NT6X85 (see previous note) — The SLC-96 DS1 interface card contains two DS1 ports. One to ten cards are provisionable for each SMS, SMS-R, or SMU module. The DS1 interface card operates in one of two modes: (1) DDL mode and (2) non-DDL mode. Each port provides a two-way voice, data, and signaling interface. The card provides looparound paths for each DS1 port to allow isolation of faults. It also provides transmission of local alarms and the detection of remote alarms as well as detection of error conditions such as loss of synchronization, bipolar error, and slip.

NT6X86 — The A/B interface card, located in the SCMs, inserts and extracts A and B bits from the PCM stream. These per-channel signaling bits are used for ringing, hook status detection, and, in some instances, ANI and coin functions. NT6X86AB card is required for XPM PLUS upgrades.

NT6X91 — The NT6X91 provides a mobile telephone exchange link between the CC and the corresponding peripheral unit.

NT6X92 — The UTR is a 32-channel tone receiver, found in the DTC, LGC, LTC, SMA, SMR, SMU, LTCI/DTCI, MSB7, TMS, and RCC shelves, detects a variety of tones, including dual-tone multifrequency (DTMF) and multifrequency (MF). Tone samples are switched onto the parallel speech bus by the TS and are collected by the UTR at appropriate time slots. The UTR analyzes the samples and identifies tones. Results are sent to the XPM processor. NT6X92EA is the Global Tone Receiver.

NT7X07 — The Internet Protocol (IP) Gateway (IPGW) card provides the bridge between the TDM(time division multiplex) network and the IP Unified Network. It converts voice data from the IP terminals to TDM voice data for the PSTN. Up to five of these cards can reside on an IP Ready LTCI XPM shelf for a total of 10 cards per two-shelf module. Each module has 480 channels (48 channels per card). See Centrix IP in this QRG.

NT7X80 — The bus shorter card connects the FP bus, the MP bus, and the SP bus on 3 processor XPMs. The NT7X80AA is inserted in slots 13 and 17 of PDTCs and PLGCs as part of the upgrade to PDTC+ and PLGC+.

NT8X12 — This interface card, used in the NT8X10 Junctored Network, provides sixteen bi-directional, 2.56 Mb/s port interfaces for the DS-30 format of NMs or PMs and also provides the serial to parallel and parallel to serial formatter functions for interfacing with the NT8X13 crosspoint card. The card provides sixteen ports and in a set of four provides sixty-four ports per NM. The card also handles the insertion and extraction of test code (TC) from card NT8X14. The TC is inserted only on the port card in the speech channel immediately after the outgoing circuit. When the TC is inserted, the speech bus is disabled for involved port and channel.

NT8X13 — This crosspoint card, used in the NT8X10 Junctored Network, contains the TS for 2048 input channels and 1024 output channels. Two pairs of cards are required, one pair for switching from the peripheral input channels to the junctor output channels on the A-side, and one pair for switching from the junctor input channels to the peripheral output channels on the B-side.

NT8X14 — This test code card, used in the NT8X10 Junctored Network, interfaces the NM with the network control processor (NCP) card for the insertion and extraction of test code (TC) and for the testing of the digital pads. The TC is used by the CC or the computing module to check the continuity of a PCM path. If the TC card does not trace the expected test code, the location is read by the NCP and sent to the CC or the computing module. A card list of suspected faulty card(s) is displayed at the MAP.

NT8X18AA — DS30A C-side Interface Card, located in the SMS-R shelf, connects to the RSC.

NT8X99 — The LCME Power converter circuit pack provides +5v dc to the NTBX34 and the two NTBX35s for its own LCM or the SRU of the SRU, and provides +15v dc to the Line Drawers and has the capability to power the mate LCM/SCU for power redundancy. This pack also contains the Ring, ANI and Coin detector/multiplexer circuit, and in addition, has isolating diodes for serving the Line Drawer voltage needs.

NT9X10AA — The 33-MHz 88100 BRISC CPU card, located in the SN Computing Module (CM) Processor shelf and the SNSE CM/SLM shelf, provides a stepped performance increase over the NT9X13 family of processors. This processor card can be replaced card-for-card with the NT9X13 DMS-core processor card, with the exception of a remote terminal interface (RTIF) board. The NT9X10AB BRISC CPU card is currently supported for use in the Series 60 CM. The NT9X10BA BRISC CPU card is currently supported for use in the Series 70 CM. It is based on the Motorola 88110 microprocessor, operated at 60 MHz. The NT9X10BA behaves as both CPU and memory card. It will contain 256Mbyte of general purpose (PS and DS) memory. It is used for Series 70 SN & SNSE applications.

NT9X12 — The CPU port card, located in the SN Computing Module (CM) Processor, SLM, and the SNSE CM/SLM shelves, provides a high-bandwidth communications link between the CPU and message switch. The transport mediums can be either a DS512 fiber optic link, with a 40.96 Mbps capacity or DS30 transmission link, with a 2.084 Mbps capacity. A standard configuration consists of four port cards per system, with each half of the processor having two port cards in the card slots immediately adjacent to each processor. The NT9X12AC supersedes the NT9X12AB CPU port card. It adds parity and fault isolation capabilities to the transmit and receive buffers located on the card.

NT9X13BB — This DMS SuperNode processor card, located in the Computing Module (CM) Processor shelf, is a high-perfor- mance microcomputer board based on the Motorola MC68020 32-bit microprocessor. The NT9X13BC uses the E87 version of the 68020 rather than A70, and it uses the H42 version of the memory access unit. See the NT9X13MA card.

NT9X13CA — This CPU circuit card is a high-performance microcomputer board based on the Motorola MC68020 32-bit microprocessor. Its primary application is in signaling transfer point (STP) and enhanced network (ENET). It has the potential for other applications that are based on Supernode hardware.

NT9X13DA/DB — This CPU 20-MHz processor card, primarily located within the Message Switch (MS), is a high-performance microcomputer board based on the Motorola MC68020 32-bit microprocessor. It is intended for general purpose applications as well as special purpose applications such as the DMS SuperNode.

NT9X13DC — This CPU 20-MHz processor card is a high-performance microcomputer board based on the Motorola MC68020 32-bit microprocessor. It uses all 4 Mbytes of available memory.

NT9X13DD and DG — This CPU 20-MHz processor card performs special applications in the junctor network (JNET), enhanced network (ENET), single shelf link peripheral processor (SS LPP), and link interface module (LIM). The NT9X13DG is an upgrade.

NT9X13FA — This CPU 20-MHz processor card, located in the ENET shelf, is a high-performance microcomputer board based on the Motorola MC68020 32-bit microprocessor.

NT9X13GA — The DMS-core 33-MHz 68030 HPM-based CPU card high-performance module (HPM)-based CPU card that provides a real-time performance gain while supporting software compatibility. The processor card allows a direct card-for-card replacement with the NT9X13 DMS-core processor card.

NT9X13HB — The CPU (68030) 40-MHz processor card provides a real-time performance gain while supporting software compatibility. The processor card allows a direct card-for-card replacement with the existing NT9X13 DMS-core processor card.

NT9X13KA — This 20-MHz MC68020 CPU card, located in the ENET shelf, is a high-performance microcomputer card that is based on the Motorola MC68020 32-bit microprocessor.

NT9X13LA — The AP/FP 68030 HPM-based CPU card provides the processing capability for the application processor (AP) or the file processor (FP). The capability to run foreign (not switch) operating systems is provided by the 68030 CPU on the card.

NT9X13MA or MB — These 20-MHz 68020 CPU SuperNode SE core CM processor cards are high-performance microcomputer boards based on a 68020 32-bit microprocessor. The NT9X13MA and MB is a recycled board based on the NT9X13BC.

NT9X13NA and NB — The 16-MHz MC68020 CPU card, located on the SNSE message switch (MS) shelf. The NT9X13NA card is similar to the NT9X13Dx-series cards that are used for SN applications. It has 16 Mbyte of DRAM and is used for SNSE applications. The NT9X13NB is an upgrade from the NT9X13NA.

NT9X13PA — A SNSE ENET processor pack that is based upon the NT9X13FA ENET processor but has specific SNSE firmware added.

NT9X14BB — This 6-Mbyte memory board equipped with error checking and correction (ECC). It can be functionally divided into three separate 2-Mbyte memory modules. Each memory module is organized as a 2X40 array of 256X1 dynamic RAM (DRAM). Modules are further subdivided into banks of 1X40 DRAMs. The 40-bit memory width is composed of 32 data bits, 7 check bits, and 1 parity bit. The NT9X14BB supports all types of memory access. The synchronous memory bus should be used to access the memory, while the asynchronous peripheral bus should be used to read the (ID) PROM and to access the status registers. This board is not compatible with the address-bus (A-bus). The NT9X14DB is a 24-Mbyte memory card and the NT9X14EA is a 96-Mbyte card.

NT9X15AA — The mapper card is part of the message switch. The mapper circuit card changes addresses on the transaction bus (T-bus) from the logical node ID used by the software to the physical address used by the routing hardware.

NT9X17AA — This is a message switch four-port card that provides a data path for messaging between the message switch (MS) and four external links. It transfers messages between four links and the transaction bus (T-bus). The T-bus is a packet switch that can connect the links to any port on the MS, or to the message switch processor (MSP). The links can be one of two physical types: DS30 or DS512, and one of four logical types: DS30, DMSX, DMSY, or Framer. The NT9X17AA can also, through its on-card maintenance unit (CMU), be used to report the status of the links and link data transfers to the MSP. The NT9X17AC provides a data path for messaging between the message switch (MS) and four subrate (SR512) optical links. It is paired with the NT9X62BA paddle board to interface with the fiber link interface unit shelf (FLIS). The NT9X17BB = 32-port card; NT9X17CA = 128-port card; and the NT9X17DA = 64-port card.

NT9X19AA & BA — The AA is a circuit pack filler and the BA is a paddle board filler pack.

NT9X20AA — The DS512 paddle board is the fiber interface paddle board used for messaging links between the computing module (CM) and message switch (MS). The card interface on the backplane side is a shorting bus (S-bus), running at an average rate of no more than 4.088 Mwords per second.

NT9X20BB — The DS512 interface CM-MS EN-MS paddle board is a DMS-bus fiber interface paddle board used for messaging links between DMS-bus and the enhanced network (ENET). The card interface on the backplane side is a shorting bus (S-bus), running at an average rate of no more than 4.088 Mwords per second.

NT9X21AA or AB — The CM-bus terminator paddle board contains element identification (ID) PROM.

NT9X22AA or CA — The CM subsystem clock paddle board is used in the computing module (CM) of the DMS-core.

NT9X23AA or BA — The DS30 4-port paddle board provides an interface between a parallel 4.096-MHz backplane data bus and the twisted-pair transmission cables associated with four DS30 links. Secondary functions include transmitting out-of-band (OOB) data, receiving OOB, and providing a reference frame pulse extracted from the link. It is used in conjunction with the NT9X17 MS 4-port.

NT9X25AA or BA — The MS port expander paddle board connects the S-bus of slot N to the S-bus of slot N+1, with an NT9X25BA (MS port expander/terminator paddle board) terminating the chain. The NT9X25AA is used between an NT9X20BB and an NT9X25BA in the S-bus daisy chain. The NT9X25BA and NT9X25AA allows up to four NT9X17CAs to share a single NT9X20BB. The NT9X25BA is the final paddle board in the daisy chain, connecting the S-bus of slot N to the S-bus of slot N+1. NT9X25BA also contains an identification (ID) PROM so that the system can identify the card.

NT9X26AA/AB or CA — The remote terminal interface (RTIF) card monitors and controls the DMS-100 SuperNode. It operates in a monitoring mode when the SuperNode equipment is functioning properly. When the equipment fails, a technician uses the remote system to restore service. The remote system connects to the master DMS-Core, which reboots the DMS-bus.

NT9X26DA, DB, or DC — This reduced instruction set computer (BRISC) remote terminal interface (RTIF) paddle board incorporates the features of all existing RTIF cards. It also provides CPU firmware (CPUFW) PROM residence for the NT9X10AA and the NT9X13MA CPU cards. This card provides a reset system for monitoring and controlling the subsystems of the DMS-100 SuperNode and related subsystems. The NT9X26DC is available to support mixed memory configuration available in NA004.

NT9X26EA — A BRISC RTIF paddle board that contains firmware to support the NT9X10AB BRISC CPU card on Series 60 SN and SNSE switches or the NT9X10BA BRISC CPU card on Series 70 SN and SNSE switches.

NT9X27AA & BA — The CM bus extender paddle board extends the peripheral bus (P-bus) from the NT9X06AA (computing module (CM) processor shelf), used for housing CPU and memory, to the NT9X07AA (CM extension shelf), used for housing the system load unit (SLU). An NT9X27BA card (CM extension shelf bus extender) installed in the extension shelf receives the signals from the NT9X27AA and buffers them onto the extension shelf backplane. Two NT9X27AAs are required on a CM processor shelf for each installed extension shelf.

NT9X30AA — This is a dc-to-dc +5V 86-A power converter.

NT9X30AB — A global dc-to-dc +5V 86-A power converter.

NT9X31AA — This is a dc-to-dc -5V 20-A power converter.

NT9X31AB — A global dc-to-dc -5V 20-A power converter.

NT9X32 — The DMS-bus load paddle board, located in the SN message switch shelf, is designed for the DMS-bus environment. The card ensures a consistent load distribution on the main clock and frame pulse signals driving the shelf, independent of card population or shelf type (master or extension). This results in a significant improvement in signal edge integrity, noise margin, and duty
cycle on these key signals.

NT9X35BA or CA — The Enhanced Network (ENET) 128K crosspoint card performs the nonblocking switching function.

NT9X36BA — The ENET message clock card provides two DS512 message links between the ENET shelf processor and the message switch. It also provides the clocks and timing signals required by the shelf. The card and its associated paddle board NT9X40BA (ENET+ quad fiber paddle board) provide two DS512 communication links between the ENET shelf and the duplicated message switches (one link per plane).

NT9X40BA — The ENET+ quad fiber paddle board is used to receive, transmit, and repeat four DS512 fiber links.

NT9X40BB is an enhanced version of the BA card and utilizes the latest version of the DS512 treatment receiver controller (DTRC).

NT9X40DA — This ENET paddle board uses four hard-clad silica (HCS) fibers operating at 650 nm wavelength to provide 2048 channels to the ENET XPT cards. The SPM IF to ENET uses this card.

NT9X41BA — The 16-port DS30 paddle board links DS30 peripherals to the enhanced network through twisted-pair copper cables.

NT9X44AD — This is the SLM III Unit (CM load greater than 350 MB). The SLM-III's 1-gig drive, which replaces the SLM II 600-megabyte disk drive, NT9X44AB which is MD'd. The NT9X44AC 1A SLM is also MD.

The NT9X44AA, AB, and AC SLM are at end-of-life (EOL) on 5/02.

NT9X45BA — This three-DS512 link and 16-DS30 port paddle board, located within the SNSE ENET shelf, is a combination ENET paddle board equivalent to three quarters of the functionality of NT9X40BA, plus the full capacity of NT9X41BA.

NT9X46AA — This parallel computing module (CM) port interface paddle board operates as a pair with one paddle board mounted behind an NT9X12 CPU port card and the other mounted behind an NT9X4402 system load module (SLM) controller. An interconnect cable joins the two paddle boards.

NT9X47AA — This +12V power converter provides power to the NT9X44 system load module (SLM). The card interfaces with DMS-100 alarm circuits using the NT9X03 frame supervisory panel (FSP). The NT9X47AB is the 60V input global version.

NT9X49BA — This message switch (MS) transaction bus (T-bus) terminator card's primary function is to provide bus termination on the T-bus. The NT9X49BA also houses T-bus shelf arbitration logic and a set of buffers for the system clocks.

NT9X49CA — This SuperNode message switch (MS) processor-bus (P-bus) terminator circuit card provides termination for MS backplane tracks used by the message switch processor (MSP). It also provides an interface to the P-bus extender paddle board (PB) (NT9X48AA) and a time-out on the MS transaction bus (T-bus).

NT9X49CB — This is a logic analyzer that traces transaction bus (T-bus) messages. It is configured by the SN message switch processor. It also serves as a T-bus activity monitor with programmable threshold detection, and as a processor bus (P-bus) terminator, performing the same functions as NT9X49CA (MS P-bus term.).

NT9X49CC — This message switch (MS) processor-bus (P-bus) terminator card, located only in the combined MS of the SNSE, provides termination for message switch backplane tracks primarily used by the message switch processor (MSP). This pack provides a time-out on the MS transaction bus (T-bus). The time-out on the MS T-bus is longer for the NT9X49CC than for the NT9X49CA.

NT9X52AA — This message switch processor (MSP) transaction bus (T-bus) access card, located within the SN and SNSE MS shelves, provides the IF between MSP and T-bus within the MSP.

NT9X53AA/AB or AD — This SN message switch system clock card generates accurate timing signals from two digital phase-locked loops (DPLL) that use Stratum 3 oscillators. The NT9X53AC and AD cards are combined clock cards.

NT9X54AA — This DMS-bus clock interface paddle board provides ext. cable connections for the NT9X53AA card (MS clock).

NT9X54AC — This external clock interface paddle board provides the appropriate interfaces to convert remote and external analog reference signals to transistor-transistor logic (TTL) levels acceptable by the system clock circuit card. NT9X54AD is Japan version.

NT9X62AA — This two-port subrate DS512 paddle board provides the appropriate interfaces to convert remote and external analog reference signals to transistor-transistor logic (TTL) levels acceptable by the system clock circuit card. The NT9X62BA is the four-port version and the NT9X62CA is the SR-512 version.

NT9X63AA or BA — This OC-3 interface paddle board is used to connect the CMIC links (OC-3) between MS & XA-core NTLX05 CMIC packlet.

NT9X69AA — The NT9X69AA is a 16 port DS30 link interface paddle board, which provides DS30 links between the message switch and the existing DS30-based junctor networks (JNET). It interfaces to the NT9X17DA or CA to provide a high-density DS30 interface capability when retrofitting JNETs with enhanced network (ENET) in large offices.

NT9X73AA or BA — This local message switch (LMS) to F-bus rate adapter (RA) card is used in a link interface module (LIM) to transfer packets from the 32-bit LMS transaction bus (T-Bus) to the 8-bit frame transport bus (F-bus) and from the 8-bit F-bus to the 32-bit LMS T-bus. All link interface units (LIU7) sit on the F-bus, which is duplicated for reliability.

NT9X74AA — The Frame transport bus (F-bus) repeater card, located within the LIU7 shelves, reclocks and repeats all F-bus correspondence between the intershelf F-bus and the intrashelf F-bus. The NT9X74BA version of the repeater card is similar to the AA version with the exception that the far-end F-bus terminations have been removed and placed on the NTEX20AA and BA. The NT9X74CA version of the repeater card is similar to the BA version with the added firmware function of querying the identification (ID) PROM of the NTEX20AA and BA. The NT9X74DA supersedes the NT9X74CA by adding channel bus (C-bus) terminations for link peripheral processor (LPP) channel access.

NT9X75AA — This processor bus (P-bus) to frame transport bus (F-bus) interface (PFI) card is a component of the signal transfer point (STP) link interface unit (LIU7). It provides an interface between P-bus & both instances of the F-bus (F-bus A & F-bus B).

NT9X76AA or BA — The signaling terminal (ST) card, located within the link interface shelf, is a single board with two processors that handle the data link level functions of the CCS7 protocol. The signaling transfer point (STP) connects to each CCS7 link through an ST card. The NT9X76CA is for the Japanese market.

NT9X77AA — The NT9X77AA paddle board, like the following NT9X78 PB, provides the electrical interface between the LIU and the CCS7 signalling link (SL).

NT9X78AA thru DA — These DS-0A interface paddle boards are contained in the link interface unit (LIU7) of the link interface modules of the signaling transfer point (STP) switch or the SNSE ENET shelves when equipped with LIUs. The DS-0 interface provides layer-1 functions such as level shifting drivers/receivers between the signaling terminal (ST) and a digital line.

NT9X79AA or BA — NT9X79AA is a frame transport bus (F-bus) extension paddle board. Both are located behind the NT9X74 (F-bus repeater card) in the top and middle link interface shelves (LIS) of the link interface module (LIM). The NT9X79BA is located behind the NT9X73AA (rate adaptor) in the LMS shelf.

NT9X84 — The ethernet interface card provides temporary storage for incoming/outgoing (I/O) link messages and protocol management and handshaking for Ethernet CSMA/CD. It generates proper voltage and impedance levels to drive standard twisted pair drop cable signal lines.

NT9X85AA or BA — The attachment unit interface (AUI) PB is a 15-pin D-type connector that provides the interface between the Ethernet controller and the media access unit (MAU). This is the most generic interface and supported as an industry standard (IEEE 802.3 10Base5 implementation). **Note:** This interface is compatible with all implementations of Ethernet through external equipment. The unshielded twisted pair BA version contains a UTP MAU and hub integrated onto the paddle board. The card pro-

vides a 4-wire twisted-pair connection externally.

NT9X86 — The dual-port message controller, with a link paddle board, provides two serial message communications links to the DMS-bus from a computing module, an applications processor module, or a file processor module. It provides up to two high-bandwidth communications links to the DMS-bus through the message switch and a local time-of-day (TOD) clock for applications running in a computing module environment, a file processor, or an applications processor

NT9X87 — This dual-access buffer memory card located within the file processor (FP) shelf provides a large random-access dual-ported buffer memory. This memory is used when passing commands to the controllers, and to hold the data going to and coming from the disk.

NT9X88 — The SCSI interface processor (SIP) paddle board is an integral part of the file processor (FP) disk and tape drive interface. It provides a standard small computer system interface (SCSI) port to connect to disk and tape mass storage devices.

NT9X89 — The FP accesses mass storage devices using a small computer systems interface (SCSI) bus. The NT9X89AA is an interface between these storage devices and the SCSI bus.

NT9X90 — The storage device assembly is located in the file processor (FP) storage device shelf. The NT9X90AA is the hard disk 600 Mbyte device version, the NT9X90AB the 2.1 Gbyte disk version, and the NT9X90BA is the 1.2 Gbyte device version.

NT9X91 — This power converter provides regulated and protected output of +5 V and +12 V to storage devices on SuperNode shelves.

NT9X96 — The link interface shelf (LIS) frame transport bus (F-bus) controller card, NT9X96AA, in conjunction with a NT9X98AA paddle board (LIS fiber interface), allows the LIS to connect directly to the DMS-bus by means of a fiber cable.

NT9X98 — The link interface shelf (LIS) fiber interface paddle board provides a direct link by a fiber cable between the link interface shelf and the DMS-bus.

Office Hardware Inventory Package (OHIP) Table

(*NTP 297-YYYY-350, Translations Guide*)

Two tables within the switch—OHIP and OHIPBULK—can be used to keep track of all the in-service and spare hardware inventory (including HOST and REMOTES). Table OHIP can be used to keep track of all the in-service and spare hardware inventory, except line cards, while table OHIPBULK keeps track of all the spare circuit packs and all the line cards on a quantity basis. Tables OHIP and OHIPBULK are interdependent.

The initial and ongoing datafill of tables OHIP and OHIPBULK is the responsibility of the operating company.

Ringing Generators

The following ringing generators contain two cards: the 6X38 Ringing Control Card and the 6X37 Ringing Amplifier card:

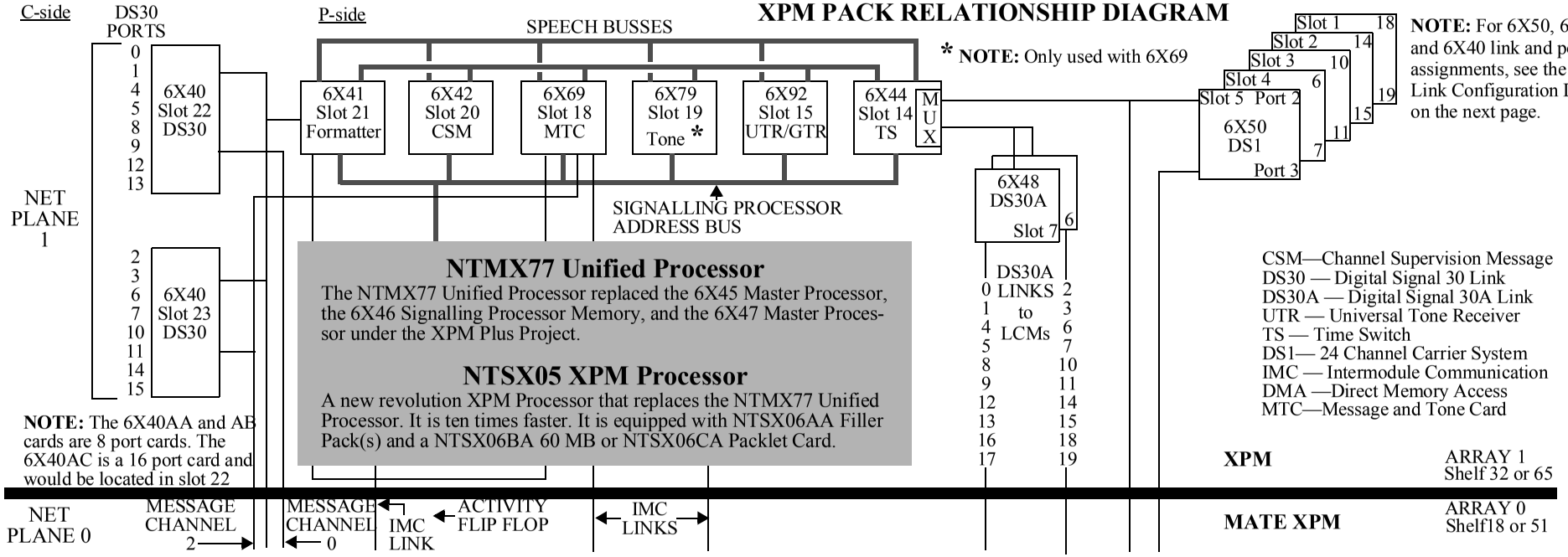
6X30AA — Ringing Generator
6X30CA — Ringing Generator
6X30AE — Australian market
6X30BA — Japanese market
6X30BB — Japanese market
6X30DA — DMS-10 in China and the Australian DMS-100 market

The following ringing generators contain a single card providing the same functions of the 6X38 and 6X37 as was required with the generators above:

6X30DB — DMS-10 in China and the Australian DMS-100 market
6X30EA — Australia (Small Remote Unit)
6X30AB or FA — United Kingdom (U.K.)
6X30GA — U.K. (SRU)
6X30HA — U.S. & Canada
6X30JA — Japan

Note: For information about setting DIP switches, tolerances for ringing, and ANI and coin voltages, see the NT6X30 Ringing Generators in NTP 297-8991-805, *Hardware Description Manuals*. Also, see NTP 297-1001-131, *Ringing System Description* and Installation documentation (Method 2231 within Module 22).

XPM PACK RELATIONSHIP DIAGRAM



NTMX77 Unified Processor

The NTMX77 Unified Processor replaced the 6X45 Master Processor, the 6X46 Signalling Processor Memory, and the 6X47 Master Processor under the XPM Plus Project.

NTSX05 XPM Processor

A new revolution XPM Processor that replaces the NTMX77 Unified Processor. It is ten times faster. It is equipped with NTSX06AA Filler Pack(s) and a NTSX06BA 60 MB or NTSX06CA Packlet Card.

XPM Link Configuration

Note: See the "XPM PACK RELATIONSHIP DIAGRAM" on the previous page for another view of the XPM.

19	15	11	7	3	18 19 14 15 10 11 6 7 2 3	16 17 12 13 8 9 4 5 0 1	UNIT 1 (Shelf 32 & 65)	27 25 19 17 11 9 3 1	31 29 23 21 15 13 7 5
18	14	10	6	2					
17	13	9	5	1	18 19 14 15 10 11 6 7 2 3	16 17 12 13 8 9 4 5 0 1	UNIT 0 (Shelf 18 & 51)	26 24 18 16 10 8 2 0	30 28 22 20 14 12 6 4
16	12	8	4	0					
01	02	03	04	05	06	07	<— SLOTS —>	22	23
NT6X50 DS1 Interface P-side Links **Note:** See DIP switch settings for 6X50 in this QRG.					NT6X48 DS30A LCM Links		Unit 0 & 1 Cards	NT6X40 DS30 Network Interface C-side Links	

Notes: **P-Side**

- DS1 Links 0,1,4,5,8,9,12,13,16, and 17 are in Unit 0.
- DS1 Links 2,3,6,7,10,11,14,15,18, and 19 are in Unit 1.

Note: See following pages for a DTC (DS1) Network (DS30) port and Channel Mapping table and 6X50 and 6X85 DIP switch settings.

C-Side

- All even-numbered NT6X40 Network Links are Plane 0.
- All odd-numbered NT6X40 Network Links are Plane 1.
- Links 0 and 1 are dedicated to Unit 0 when loading.
- Links 4 and 5 are dedicated to Unit 1 when loading.
- The Message Links for Unit 0 are on the NT6X40 in slot 22 of each unit at Link 0 and Link 1 (Port 0).
- The Message Links for Unit 1 are on the NT6X40 in slot 23 of each unit at Link 4 and Link 5 (Port 2).

NT6X40 DS30 Network Interface Port to Link Assignments			
XPM Port	Network Links	XPM Port	Network Links
0	0 & 1	8	16 & 17
1	2 & 3	9	18 & 19
2	4 & 5	10	20 & 21
3	6 & 7	11	22 & 23
4	8 & 9	12	24 & 25
5	10 & 11	13	26 & 27
6	12 & 13	14	28 & 29
7	14 & 15	15	30 & 31

DTC (DS1) & Network (DS30) Port and Channel Mapping

C-Side Ports ——————>

DS1 Spans and DS0 Circuits ——————>
(Ex: Span 0 and Circuit 18)

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	NET_CHAN_NO
-	-	-	-	-	-	Message Channel				-	-	-	-	-	-	Channel 0
1-1	2-1	3-1	4-1	6-1	7-1	8-1	9-1	11-1	12-1	13-1	14-1	16-1	17-1	18-1	19-1	Channel 1
0-2	1-2	2-2	3-2	5-2	6-2	7-2	8-2	10-2	11-2	12-2	13-2	15-2	16-2	17-2	18-2	Channel 2
4-2	0-3	1-3	2-3	9-2	5-3	6-3	7-3	14-2	10-3	11-3	12-3	19-2	15-3	16-3	17-3	Channel 3
3-3	4-3	0-4	1-4	8-3	9-3	5-4	6-4	13-3	14-3	10-4	11-4	18-3	19-3	15-4	16-4	Channel 4
2-4	3-4	4-4	0-5	7-4	8-4	9-4	5-5	12-4	13-4	14-4	10-5	17-4	18-4	19-4	15-5	Channel 5
1-5	2-5	3-5	4-5	6-5	7-5	8-5	9-5	11-5	12-5	13-5	14-5	16-5	17-5	18-5	19-5	Channel 6
0-6	1-6	2-6	3-6	5-6	6-6	7-6	8-6	10-6	11-6	12-6	13-6	15-6	16-6	17-6	18-6	Channel 7
4-6	0-7	1-7	2-7	9-6	5-7	6-7	7-7	14-6	10-7	11-7	12-7	19-6	15-7	16-7	17-7	Channel 8
3-7	4-7	0-8	1-8	8-7	9-7	5-8	6-8	13-7	14-7	10-8	11-8	18-7	19-7	15-8	16-8	Channel 9
2-8	3-8	4-8	0-9	7-8	8-8	9-8	5-9	12-8	13-8	14-8	10-9	17-8	18-8	19-8	15-9	Channel 10
1-9	2-9	3-9	4-9	6-9	7-9	8-9	9-9	11-9	12-9	13-9	14-9	16-9	17-9	18-9	19-9	Channel 11
0-10	1-10	2-10	3-10	5-10	6-10	7-10	8-10	10-10	11-10	12-10	13-10	15-10	16-10	17-10	18-10	Channel 12
4-10	0-11	1-11	2-11	9-10	5-11	6-11	7-11	14-10	10-11	11-11	12-11	19-10	15-11	16-11	17-11	Channel 13
3-11	4-11	0-12	1-12	8-11	9-11	5-12	6-12	13-11	14-11	10-12	11-12	18-11	19-11	15-12	16-12	Channel 14
2-12	3-12	4-12	0-13	7-12	8-12	9-12	5-13	12-12	13-12	14-12	10-13	17-12	18-12	19-12	15-13	Channel 15
-	-	-	-	-	-	Message Channel				-	-	-	-	-	-	Channel 16
1-13	2-13	3-13	4-13	6-13	7-13	8-13	9-13	11-13	12-13	13-13	14-13	16-13	17-13	18-13	19-13	Channel 17
0-14	1-14	2-14	3-14	5-14	6-14	7-14	8-14	10-14	11-14	12-14	13-14	15-14	16-14	17-14	18-14	Channel 18
4-14	0-15	1-15	2-15	9-14	5-15	6-15	7-15	14-14	10-15	11-15	12-15	19-14	15-15	16-15	17-15	Channel 19
3-15	4-15	0-16	1-16	8-15	9-15	5-16	6-16	13-15	14-15	10-16	11-16	18-15	19-15	15-16	16-16	Channel 20
2-16	3-16	4-16	0-17	7-16	8-16	9-16	5-17	12-16	13-16	14-16	10-17	17-16	18-16	19-16	15-17	Channel 21
1-17	2-17	3-17	4-17	6-17	7-17	8-17	9-17	11-17	12-17	13-17	14-17	16-17	17-17	18-17	19-17	Channel 22
0-18	1-18	2-18	3-18	5-18	6-18	7-18	8-18	10-18	11-18	12-18	13-18	15-18	16-18	17-18	18-18	Channel 23
4-18	0-19	1-19	2-19	9-18	5-19	6-19	7-19	14-18	10-19	11-19	12-19	19-18	15-19	16-19	17-19	Channel 24
3-19	4-19	0-20	1-20	8-19	9-19	5-20	6-20	13-19	14-19	10-20	11-20	18-19	19-19	15-20	16-20	Channel 25
2-20	3-20	4-20	0-21	7-20	8-20	9-20	5-21	12-20	13-20	14-20	10-21	17-20	18-20	19-20	15-21	Channel 26
1-21	2-21	3-21	4-21	6-21	7-21	8-21	9-21	11-21	12-21	13-21	14-21	16-21	17-21	18-21	19-21	Channel 27
0-22	1-22	2-22	3-22	5-22	6-22	7-22	8-22	10-22	11-22	12-22	13-22	15-22	16-22	17-22	18-22	Channel 28
4-22	0-23	1-23	2-23	9-22	5-23	6-23	7-23	14-22	10-23	11-23	12-23	19-22	15-23	16-23	17-23	Channel 29
3-23	4-23	0-24	1-24	8-23	9-23	5-24	6-24	13-23	14-23	10-24	11-24	18-23	19-23	15-24	16-24	Channel 30
2-24	3-24	4-24	0-1	7-24	8-24	9-24	5-1	12-24	13-24	14-24	10-1	17-24	18-24	19-24	15-1	Channel 31

DIP Switch Settings for 6X50 and 6X85 DS1 Cards

(*NTP 297-8991-505 & NTP 297-YYYY-847*)

The following equalization/build-out DIP switch settings are for 6X50AA & AB DS1 packs located in the DTC/LGC frames, and 6X85AA & AB DS1 packs located in the SMS/SMU/SMS-R frames. It is important that the DIP switch settings are set properly to prevent SLIPs on the P-side of the carrier system. This can cause customer complaints about problems with FAXing and errors with data transmission, as well as noise if the slips are excessive.

Note: It is important to know the card type (AA, AB etc.), release number on the card, and gauge and length of the DS1 cable from the equipment bay (DTC/LGC etc.) to DSX bay before making any settings.

Note: S1& S2 or S320 & S620 are banks of DIP switches for the even and odd links/ports and are different depending upon the card type.

Note: NTMX81 DS1 Interface Card DIP Switch Settings and the Star Hub Backplane DIP Switch Settings can be found with the Star Remote within this QRG.

6X50AA Cards	
S1 = Even & S2 = Odd Link/Port	
000-300 ft.	Sw 2 & 4 = “On”
301-450 ft.	Sw 3, 6, & 8 = “On”
451-750 ft.	Sw 1, 5, & 7 =”On”

6X50AB Rel 39 and Lower		**6X50AB Rel 40 through 59**	
S1 = Even & S2 = Odd Link/Port		S1 = Even & S2 = Odd Link/Port	
000-300 ft.	Sw 1 = “On”	000-300 ft.	Sw 4 = “On”
301-450 ft.	Sw 2, 5, & 7 = “On”	301-450 ft	Sw 3, 6, & 8 = “On”
451-750 ft.	Sw 3, 6, & 8 =”On”	451-750 ft.	Sw 1, 5, & 7 =”On”

6X50AB Rel 60 & Higher “22” AWG (Gauge) DS1 Cable		**6X50AB Rel 60 & Higher “24” AWG (Gauge) DS1 Cable**	
S1 = Odd & S2 = Even Link/Port		S1 = Odd & S2 = Even Link/Port	
000-133 ft.	Sw 1 = “On”	000-88.6 ft.	Sw 1 = “On”
134-266 ft	Sw 2 & 3 = “On”	88.7-180.5 ft.	Sw 2 & 3 = “On”
267-399 ft.	Sw 2 = “On”	180.6-269 ft.	Sw 2 = “On”
400-533 ft.	Sw 3 = “On”	270-361 ft.	Sw 3 = “On”
534-655 ft.	All switches to “Off”	362-449.5 ft.	All switches to “Off”

Note: EMI = Electromagnetic Interference Protection

6X85AA Cards *Without* “EMI” Protection			
S1 Bank = Even Link/Port 0		S2 Bank = Odd Link/Port 1	
000-300 ft.	Sw 4 = “On”	000-300 ft.	Sw 1 = “On”
301-452 ft.	Sw 2, 6, & 8 = “On”	301-452 ft.	Sw 2, 5, & 8 = “On”
453-655 ft.	Sw 1, 5, & 7 = “On”	453-655 ft.	Sw 3, 6, & 7 = “On”

6X85AA Cards *With* “EMI” Protection			
S1 Bank = Even Link/Port 0		S2 Bank = Odd Link/Port 1	
000-204 ft.	Sw 4 = “On”	000-204 ft.	Sw 1 = “On”
205-514 ft.	Sw 2 = “On”	205-514 ft.	Sw 2 = “On”
515-772 ft.	Sw 1, 5, & 7 = “On”	515-772 ft.	Sw 3, 6, & 7 = “On”

6X85AB/AC “22” AWG (Gauge) DS1 Cable		**6X85AB/AC “24” AWG (Gauge) DS1 Cable**	
S320 Bank = Even Link/Port 0 S620 Bank = Odd Link/Port 1		S320 Bank = Even Link/Port 0 S620 Bank = Odd Link/Port 1	
000-300 ft.	Sw 2 & 4 = “On”	000-200 ft.	Sw 2 & 4 = “On”
301-452 ft.	Sw 3, 6, & 8 = “On”	201-325 ft	Sw 3, 6, & 8 = “On”
453-655 ft.	Sw 1, 5, & 7 = “On”	326-450 ft.	Sw 1, 5, & 7 = “On”

DIP Switch Settings for 6X21AD Line Card

(*NTP 297-8991-805, Hardware Description Manual*)

Note: DIP switch settings for the card are dependent on the customer equipment, distance from the office, and cable characteristics

Note: Default setting from the factory are S1 **OFF**, S3 **ON**, S3 & S4 **OFF**. Ralationship of this setting is for a Nortel UDLC line that is Non-loaded, and has a signaling level required for a .14 peak to peak voltage (Vpp) setting.

APPL Item #	D/A Voice (S1)		Balance (S2)		Signaling Level (S3)			
	ON	OFF	ON	OFF	Both ON	Only S4 ON	Only S3 ON	Both OFF
	0 dB	-3.5 dB	NL	9+2	1.3Vpp	.8Vpp	.6Vpp	.14Vpp
*1	X		X		X			
*2	X		X			X		
*3		X		X			X	
*4		X		X				X
*5		X	X					X
*6	X			X			X	
*7		X	X		X			

*1 MSB phone sets with long loops (21-24 dB estimated measured loss (EML))

*2 MSB phone sets with medium loops (17-21 dB EML)

*3 MSB phone sets with medium loops (4-17 db EML)

*4 MSB phone sets with short loops (0-4 dB EML)

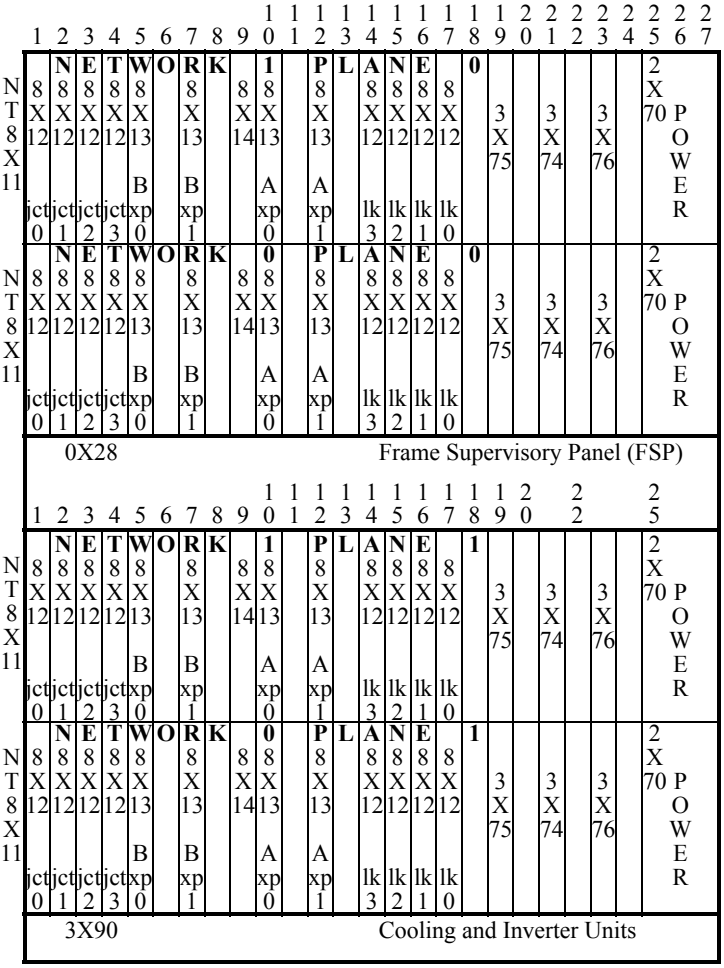
*5 Nortel Networks universal digital loop carriers (UDLCs)

*6 Other vendor UDLCs

*7 NT6X21AC equivalent settings

Junctored Double Shelf Network (NT8X10) (MD)

Note: The NT8X10 is a dual shelf network (DSN) equipped with two networks per frame. The DSN was MD'd in 1998



Note: For further description of the following DSN packs, see the "Circuit Pack Description" within this QRG or see NTP 297-8991-805.

2X70 — Power Converter
3X74 — Network Control Processor
3X75 — P-Side Processor Card
3X76 — Network Clock Card
8X12 — DS30 Interface Card
8X13 — Crosspoint Card
8X14 — Test Code Card

DSN JUNCTOR and LINK TABLE	
NT8X12 SLOTS	JUNCTOR and LINK COUNT
1	Junctors 0-15
2	Junctors 16-31
3	Junctors 32-47
4	Junctors 48-63
14	Links 48-63
15	Links 32-47
16	Links 16-31
17	Links 0-15

Reference: NTP 297-1001-591, *Network Maintenance Guide*

OM Groups: PM2, ENETMAT, ENETOCC, ENETPLNK, ENETSYS, NETMSG, NMC, OFZ, TM, TS, ENETMAT, ENETPLNK

Logs: ENCP100 thru ENCP105, ENCP131 thru ENCP136, ENCP143, ENCP150, ENDB101, ENET100 thru ENET112, ENET114, ENET120, ENET200 thru ENET211, ENET220 thru ENET222, ENET230, ENET300 thru ENET315, ENET401, ENET402, ENET500 thru ENET522, ENET600, ENET601, ENET700, NET100 thru NET155, NETM103 thru NETM161

Input/Output Controller (IOC) shelf (NT1X61) (MD)

Note: The MD'd IOC has bee replaced with the IOM

0X50	1X62	MSG PROC	OPTIONAL	0X50	OPTIONAL	0X50	OPTIONAL	0X50	OPTIONAL	0X50	OPTIONAL	0X50	OPTIONAL	0X50	OPTIONAL	0X50	OPTIONAL	0X50	OPTIONAL	0X50	0X67	0X50	0X50	2X70	POWER	
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27

Note: For further description of the following IOC packs, see the "Circuit Pack Description" within this QRG or see NTP 297-8991-805.

0X67 — I/O Controller Terminator
1X62 — I/O Message Processor
2X70 — Power Converter

Optional IOC Cards (Replaced with IOM Cards)

1X55 — Disk Drive Unit (DDU) Controller (takes two slots)
1X67 — Terminal Controller
1X68 — MTD Controller Billing Media Converter (BMC)
1X89 — Multi-Protocol Controller (MPC)
6X91 — Mobile Telephone Exchange Link Controller

Digital Carrier Module (DCM) shelf (NT2X31)

0X50	0X50	2X35 DS10	2X35 DS11	2X35 DS12	2X35 DS13	2X35 DS14	2X38 SIG	2X37 TONE	2X36 NET IF	0X50	2X34 SUPV	2X33 CONT	2X32 MP	0X50	0X50	0X50	0X50	2X70 POWER	See Note
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21

Note: For further description of the following DCM packs, see the "Circuit Pack Description" within this QRG or see NTP 297-8991-805.

2X32 — Master Processor
2X33 — Control or Processor
2X34 — Supv. or Processor
2X35 — DS1 Line
2X36 — Network Interface
2X37 — Tone
2X38 — Signalling & Timing
2X70 — Power Converter

Note: Some vintages of the DCM NT2X31 shelves may be equipped with both the NT2X06 and NT2X07 Power Converters.

Note: The type of NT2X38AA thru AE cards is dependent upon the application of the DCM (i.e., NT2X38AC for ENET)

Trunk Module (TM8) shelf (NT2X52)

2X45 NET IF	0X70 PROC	2X53 CONT	2X59 CODEC	<	—	T	ORN	PUO	TNT	IKSE	OE	NCEB	AAE	LAL	DO	SW	—	>	2X09 POWER	
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21

Note: For further description of the following TM8 packs, see the "Circuit Pack Description" within this QRG or see NTP 297-8991-805.

0X70 — TM Processor
2X09 — Mult. Power Converter
2X45 — TM Network Interface
2X53 — TM Control
2X37 — Group Codec
0X50 — Filler

Note: See NTP 297-8991-103, *Engineering Manuals* (Being canceled) and EMA 14-01-000 Tables A3 thru A4 for trunk cards located in slots 05 thru 19. Also see NTP 297-1001-152, *Trunk Selection and Compatibility Reference* for other supporting information.

Line Module (LM) shelf (NT2X14) (MD)

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18
2X05 RINGING GENERATOR	2X05 RINGING GENERATOR	2X27 RG IF	2X24 SP	2X25 SP IF	0X50	0X50	2X26 MP	2X33 PROC	2X34 PROC	0X50	2X22	2X23 MUX	2X36	2X21	2X70	POWER	

Remote Line Module (RLM) shelf (NT2X14) (MD)

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18
2X05 RINGING GENERATOR	2X05 RINGING GENERATOR	2X27 RG IF	2X24 SP	2X25 SP IF	0X50	3X49 MEM	2X26 MP	3X47 MC	3X48 T1	3X48 T1	2X22	2X23 MUX	0X50	2X21	2X70	POWER	

Note: For further description of the following RLM packs, see the "Circuit Pack Description" within this QRG or see NTP 297-8991-805.

2X05 — Ringing Generator
2X21 — Term. Adr. IF & Tone Gen.
2X22 — Connection Mem. and Mux.
2X23 — Receive Multiplexer
2X24 — Signalling Processor
2X25 — Signalling Processor IF
***2X26** —LM/RLM Master Processor
2X27 — Ring. Gen. Interface
2X70 — Power Converter
2X33 — LM CC Msg. Processor
2X34 — LM PP Msg. Processor
2X36 — LM Network Interface
3X47 — RLM Msg. Controller
3X48 — Optional T1 line card
3X49 — Extension Memory

***Note:** Suggest reviewing CSRs concerning RAM parity (RAMP) errors.

LM/RLM Ringing Table

(*NTP 297-1001-131, Ringing System*)

Line Class Codes by Line Card Type and Ring Code

Line Class Code	Ringers Bridged (B) Divided (D)	Coded Ringing		Superimposed Ringing		Frequency Selective	
		Line Card	Ring Code	Line Card	Ring Code	Line Card	Ring Code
1FR	B or D	A	0	A	0	A	0
2FR	D	A**	0	A	0	B	1 - 5
2FR	B	—	—	—	—	A* or B	1 - 5
4FR	D	B	1 - 4	B	1 - 4	B	1 - 5
4FR	B	B	1 - 4	—	—	A* or B	1 - 5
8FR	D	B	1 - 5	B	1 - 4	B	1 - 5
10FR	D	B	1 - 5	—	—	—	—

* — Type A line card is recommended for these applications.
** — Type A line card cannot be used for 2FR divided ringing when CC patch TLA67 is used (in LCMs).

Table LMRNG

This table contains ringing data for LM and RLM. A description of the fields in table LMRNG as well as a sample of datafill for table LMRNG can be found in NTP 297-YYYY-350, *Translation Guides* and Installation documentation (Methods 2231 & 4165 within Module 22 "Preparation and Power-up").

Maintenance Trunk Module (MTM) shelf (NT2X58)

2X45 or 4X65	0X70 PROC	2X53 CONT	2X59	< — OPTIONAL — > CIRCUITS 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	2X09 POWER	0X50	2X06 or 2X70 POWER
01	02	03	04	05 06 07 08 09 10 11 12 13 14 15 16	17 18	19	20 21 22

Note: For further description of the following MTM packs, see the "Circuit Pack Description" within this QRG or see NTP 297-8991-805.

0X70 — Processor
2X06 — Power Converter
2X09 — Power Converter
2X45 — MTM Interface
2X53 — Control
2X59 — CODEC
2X70 — Power Converter
4X65 — Control

Examples of Optional Maintenance Cards

1X00 — 102 Milliwatt Test Trunk; **1X00AE** — International Version
1X31 — Conference Circuit
1X80 — EDRAM (post as DTM at PM MAP level) (see note below)
1X80 — International EDRAM (post as DTM at PM level of MAP)

Note: The 1X80 is a digital trunk module (DTM) with its own ports to the network. The power comes from the host MTM.

Note: See NTP 297-1001-527 for the following EDRAM procedures:

- Recording custom announcements on EDRAM
- Reloading factory-produced voice files to EDRAM
- Uploading EDRAM files to a storage device
- Reloading custom announcements to EDRAM

1X81 — Compact Conference
1X90 — TTT Test Signal Generator
2X11 — LTU Digital Card
2X43 — Office Alarm Circuit #3
2X48AB — Digital 4-channel DGT Receiver (2X48BB for ESA Digitone)
2X50 — Horizontal/Vertical TAN Driver
2X66 — CAMA Suspension and Calls Waiting Loop or E&M
2X71 — Transmission Terminating Trunk
2X96 — TTT PCM Level Meter (Level & Frequency)
3X09 — Remote Metallic Test
5X30 — 101 Communication Test Line Circuit

TOPS Digital Modem located within slots 5 thru 16

3X02 — Even MTM slot: Digital Signal Processor
3X03 — Odd MTM slot: Control Processor (stand-alone)

Remote Maintenance Module (RMM) shelf

2X59 GC	6X74 CNTL	OPTICAL 0 1	2 3	4 5	6 7	CNIU 8 9	10 11	TRMCB 12 13	14 15	UE 16	IR 17	TS 18	19	20	21	22	23	24	25	26	27	2X09 POWER	0X50	2X06 POWER
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22			

Note: For further description of the following RMM packs, see the "Circuit Pack Description" or the OPAC and OPM hardware within this QRG. Also, see NTP 297-8991-805.

2X06 — Power Converter
2X09 — Power Converter
6X47 — ESA Memory
6X50 — DS1 Interface
2X59 — Group CODEC
6X60 — RLCM/OPM Ringing Generator
6X74 — RMM Control Card

RMM Optional Cards

2X90 — Test Trunk Card (VER90, NOTEST, REPAIR, MONTALK)
2X10 — MTU Analog (Odd slot)
2X11 — MTU Digital (Next adjacent slot)
2X48 — Digitone Receiver (2X48BB for ESA Digitone calls)
3X09 — Remote Metallic Test Access
0X10 — Scan Card
2X57 — Signalling Distribution (SD) Card

Integrated Services Module (ISM) shelf (NTFX4101)

The ISM is a single shelf unit that replaces the existing TM or MTM shelves. The ISM shelf is mounted on either the cabinetized ISM (CISM), the frame ISM (ISME), the cabinetized metallic test access (CMTA), or the metallic test access equipment (MTAE).

Slot	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21
Card	FX43 or 0X50	POWER	OPTIONAL < SERVICE CIRCUITS >																		FX42 PROC
CIRCUIT NUMBERS			34	32	30	28	26	24	22	20	18	16	14	12	10	8	6	4	2	0	
			35	33	31	29	27	25	23	21	19	17	15	13	11	9	7	5	3	1	

Note: There are 90 or more optional service circuits. See the PLN-8991-103, *Engineering Manuals* (No longer provided) for slot assignments and other provisioning information. Also, see the ISM NTFX44/NT2X90 assignment information below.

Note: For further description of the following ISM packs, see the "Circuit Pack Description" within this QRG or see NTP 297-8991-805.

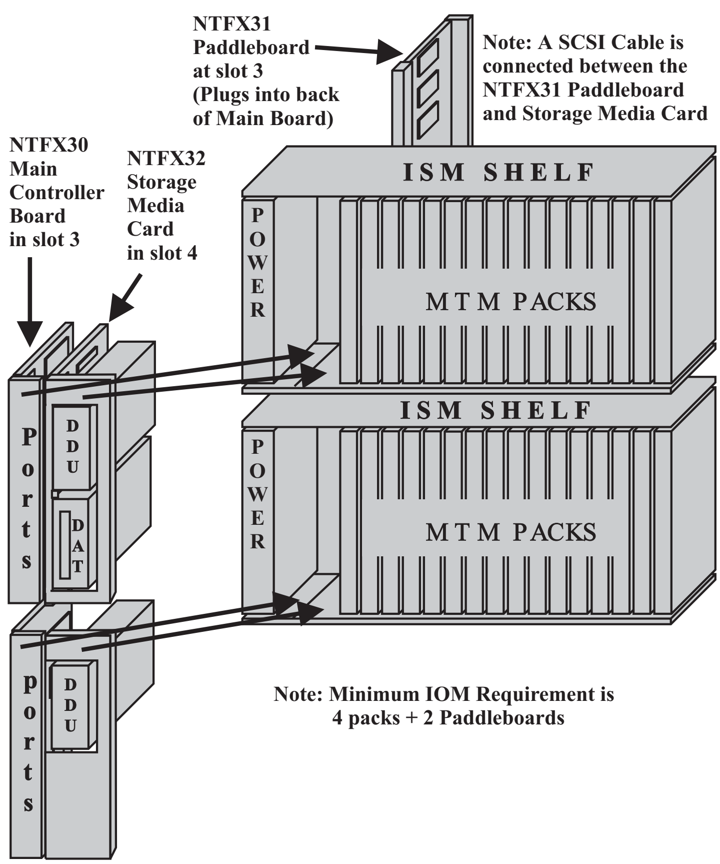
NTFX42 — ISM Processor Card **NTFX43** — ISM DC Converter

Input Output Module (IOM) (Located in ISM shelf)

(*NTP 297-1001-591, Input/Output Devices Maintenance Manual*)

The input/output module (IOM) is a direct replacement for the IOC shelf. The IOM provides all the functionality of the current IOC cards, with the exception of the NT6X91. The IOM with a digital audio tape (DAT) and a disk drive unit (DDU) replaces the IOC DDU and magnetic tape drive (MTD). The IOM occupies 3 shelf slots within the ISM shelf. If a DAT is not required, the IOM controller cards provide 9-track MTD support.

NTFX30 — IOM Controller Card (located in slot 3 of the ISM shelf)
NTFX31 — IOM Paddle Board (located in slot 3 in the back of ISM shelf)
NTFX32 — IOM Storage Media Card (located in slot 4 of the ISM shelf)
NTFX32BA — DDU Plug-in Unit
NTFX32CA — DAT Plug-in Unit
NTFX32DA — Storage Media Filler Plug-in Unit



ISM NTFX44 ILTA and NT2X90 IC/OG test trunk assignments to MLT and other test equipment

(*PLN-8991-103, Vol 1, Engineering Manual (No longer provided)*)

Note: The following is for assignments on the ISM shelf located at position 53 on the frame. The ISM shelf located at position 39 will not have NTFX44 and NT2X90 assignments in shelf slots 6 through 10. Each increment of four NT2X09s and associated NTFX44 is called an "External Loop Test Group."

FX43 or 0X50 POWER		0X50	0X50	0X50	FX44 CKT 28 & 29	2X90 CKT 26 & 27	2X90 CKT 24 & 25	2X90 CKT 22 & 23	2X90 CKT 20 & 21	FX44 CKT 18 & 19	2X90 CKT 16 & 17	2X90 CKT 14 & 15	2X90 CKT 12 & 13	2X90 CKT 10 & 11	FX44 CKT 8 & 9	2X90 CKT 6 & 7	2X90 CKT 4 & 5	2X90 CKT 2 & 3	2X90 CKT 0 & 1	FX42 PROC
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21
						Odd FX44 CKT		Even FX44 CKT			Odd FX44 CKT		Even FX44 CKT			Odd FX44 CKT		Even FX44 CKT		
						456	012	456	012		456	012	456	012		456	012	456	012	
NT2X90 SCAN POINT ASSIGNMENTS																				

Note: See the LTDSD, SDGRP and TRKMEM tables in NTP 297-YYYY-350, *Translation Guides* for signaling distribution assignments.

Note: For further description of the following packs, see the "Circuit Pack Description" within this QRG or see NTP 297-8991-805.

FX44 — Improved Loop Test Accessory (ILTA)

2X90 — IC/OG Test Trunk

Remote Interface & Maintenance (RIM) shelf (NT7X53)

2X09 POWER								6X74 CONT					6X73 LCC	6X73 LCC		2X70 POWER			2X70 POWER		
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22

Note: Each RIM module is paired with a digital line module (DLM) and serves as an interface between the DLM at a remote site and the DS1 links to a line group controller or line trunk controller at the host. The RIM module may be as far as 241 Km (150 miles) from the DMS network.

Note: For further description of the following RIM shelf packs, see the "Circuit Pack Description" within this QRG or see NTP 297-8991-805.

2X09 — Power Converter

2X70 — Power Converter

6X73 — Link Control

6X74 — Control

Global Peripheral Platform Common Peripheral Module (GPP CPM) Main and Extension shelves

(*NTP 297-8371-550, GPP Maintenance Manual*)

GPP CPM Main shelf (NTM85AA)

Unit 0																Unit 1										
MX72 POWER	EMI -> SHIELD	MX77 UPROC	BX01 ISDN	6X78 CMR	6X92 UTR/GTX	6X92 UTR/GTX	MX76 MSG	6X40 C-side IF	MX75 MATRIX	MX73 SP	MX87 P-side	0X50 FILLER	MX87 P-side	0X50 FILLER	MX87 P-side	MX73 SP	MX75 MATRIX	6X40 C-side IF	MX76 MSG	6X92 UTR/GTX	6X92 UTR/GTX	6X78 CMR	BX01 ISDN	MX77 UPROC	EMI <- SHIELD	MX72 POWER
01	02	03	04	05	06	07	08	09	10	11	12	15	14	15	16	17	18	19	20	21	22	23	24	25	26	27

Note: If the office has a JNET, the C-side IF uses a NT6X40AC or AD pack. If the office has an ENET, the C-side IF uses a NT6X40FA or FB pack with a NT6X40GA paddleboard.

Note: The NTMX87 P-side pack contains up to four NTMX82 PCM30 IF Packlets or NTMX83 Filler Packs. If more than 24 P-side links are required, then an extension shelf should be provided (see below).

Note: UTRs and CLASS modem resource cards are provisioned as needed.

GPP CPM Extension shelf (NTMX86AA)

CPM Left Extension													CPM Right Extension												
0X50 FILLER	MX79 DS60	0X50 FILLER	MX87 P-side	0X50 FILLER	MX87 P-side	0X50 FILLER	MX87 P-side	0X50 FILLER	0X50 FILLER	0X50 FILLER	0X50 FILLER	MX79 DS60	MX79 DS60	0X50 FILLER	0X50 FILLER	0X50 FILLER	0X50 FILLER	MX87 P-side	0X50 FILLER	MX87 P-side	0X50 FILLER	MX87 P-side	0X50 FILLER	MX79 DS60	0X50 FILLER
EXTERNAL 01	EXTERNAL 02	FILLER 03	04	FILLER 05	06	FILLER 07	08	FILLER 09	FILLER 10	FILLER 11	FILLER 12	EXTERNAL 13	EXTERNAL 02	FILLER 03	FILLER 03	FILLER 03	FILLER 03	04	FILLER 03	04	FILLER 03	04	FILLER 03	EXTERNAL 02	FILLER 03
Unit 0		P-side links								Unit 1						P-side links				Unit 0					

Note: For further description of the following GPP packs, see the "Circuit Pack Description" within this QRG or see NTP 297-8371-550.

0X50 — Filler Faceplate
6X40 — C-side Network Interface to JNET or ENET (see first note)
6X78 — CLASS Modem Resources (CMR)
6X92 — Universal Tone Receiver (UTR); NT6X92EA is the Global Tone Receiver (GTR)
MX76 — Message & CSM
MX79 —DS60 Extender and Power Supply
MX82 —Dual Pulse Code Modulation 30 (PCM30) Packlet Interface
MX87 —Quad PCM Frame Carrier for NTMX82 Packlets

GPP to Line and Line to GPP Commands

>**GPPTOLINE** translates the GPP and carrier numbers to equivalent SITE,FRAME, GROUP, and DRAWER numbers.

>**LNTOGPP** translates the SITE, FRAME, GROUP, and DRAWER numbers to the GPP and carrier numbers.

Service Trunk Module (STM) shelf (NT1X58)

2 X 70 or 0 X 50	P O W E R	4 X 65	CONT	SEE SERVICE CARDS BELOW	4 X 65	CONT	SEE SERV. CARDS BELOW	0 X 50	2 X 70	P O W E R			
01 02 03		04		05 06 07 08 09 10 11	12		13 14 15 16 17 18	19		20 21 22	23	24	25
STM-0					STM-1								

The STM accepts analog trunks, digital service circuits, or both, and processes the signals to a common Pulse Code Modulation (PCM) format. The NT1X58 version of the STM shelf is divided into two STM modules, each module being a separate STM. Slots 01-11 contain STM-0 (max. 7 test or service cards). and slots 12-22 contain STM-1 (max. 6 test or service cards). The NT7X30 version of the STM also contains two STM modules. Slots 01-08 contain STM-0 (max. 5 test or service circuits) and slot 09-22 contain STM-1 (max. 6 test or service circuits).

Note: For a chart showing service circuit slot assignments for the NT1X58 STM, see NTP 297-8991-805 (search on NT1X58 for CD-ROM).

Service Trunk Module (STM) shelf (NT7X30)

2 X 45 or 0 X 50	0 X 70 or 0 X 50	2 X 53 CONT	SEE SERV. CARDS BELOW	2 X 45 or 0 X 50	0 X 70 or 0 X 50	2 X 53 CONT	SEE SERV. CARDS BELOW	2 X 09	0 X 50	2 X 70 P O W E R			
01	02	03	04 05 06 07 08	09	10	11	12 13 14 15 16	17 18	19	20 21 22	23	24	25
STM-0				STM-1									

Note: For further description of the following STM packs, see the "Circuit Pack Description" within this QRG or see NTP 297-8991-805.

0X50 — Filler Faceplate
0X70 — STM Processor
2X09 — 5V 40Amp Power Converter
2X70 — +- 5/12V Power Converter
2X45 — STM Interface
2X53 — STM Control
4X65 — Combination STM Control

Optional Service Circuit Card Examples

1X00AB — 102 Milliwatt Test Trunk or Receiver-Off-Hook Tone
1X31AA — 3-port Conference Circuit
1X75BA — DRAM Controller card
1X76AA — DRAM Programmable Read-Only Memory card
1X77AA — DRAM Random Access Memory cards
1X79AA — DRAM Electronically erasable read-only memory cards
1X81AA — Conference Trunk Module (CTM) (Compact Conference)
The NT1X81AA CTM is a stand-alone peripheral module (PM), that offers the same functionality as a fully equipped conference shelf. See NTP 297-1001-530, *Conference Circuit Guide* for more details.
1X90AA — TTT Test Signal Generator
2X47AD — Transmission Test Unit (TTU) control and signal generator
2X48AB — Digital 4-channel DGT or MF Receiver
2X56AB — TTU Digital Filter
2X75AA — Looparound Test Line
3X02AA — TOPS Control Processor
3X03AA — TOPS Digital Signal Processor
3X67AA — North American Six-port Conference Circuit
3X67BB — International Six-port Conference Circuit
3X68(XX) — Tone Generator (PRMT/PST/CONF)
5X29AA — Digital Tone Detector and Sender

DRAM (modified MTM) shelf (NT2X58)

2X45 or 4X65	0X70 PROC	2X53	2X59	1X75	0	1	2	3	4	5	6	7	0X50	0X50	0X50	2X09		0X50	2X70	
					O	**P**	**T**	**I**	**O**	**N**	**A**	**L**					POWER			POWER
						M	**E**	**M**	**O**	**R**	**Y**									
							C	**A**	**R**	**D**	**S**									
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21 22

Note: For further description of the following packs, see the "Circuit Pack Description" within this QRG or see NTP 297-8991-805.

0X70 — Processor
1X75 — DRA Controller
2X09 — Multi-Power Output
2X45 — DRAM Interface
2X53 — DRAM Control
2X59 — CODEC
2X70 — Power Converter
4X65 — DRAM Control

Optional PROM and RAM Speech Memory Cards

1X76AA — 128K Bell Standard English PROM
1X76BA — 256K Bell Standard French PROM
1X76CA — 256K Mechanized Calling Card Announcement (MCCS)
1X76AB — 128K U.S. Bell Standard PROM
1X76AE — 256K Automatic Coin Telephone Service (ACTS)
1X76AF — Auxiliary Operator Services System (English)
1X76AG — Auxiliary Operator Services System (English)
1X76AH — Auxiliary Calling Card Services System (English)
1X76BF — Auxiliary Operator Services System (French)
1X76BG — Auxiliary Operator Services System (French)
1X76BH — Auxiliary Calling Card Services System (French)
1X77A — 128K RAM card (for on-site announcement recordings)
1X79AA — EEPROM card (for on-site announcement recordings)

DRAMREC Utility Commands

Commands	Description
>**DRAMREC**	accesses the DRAM recording utility subcommands
>**QUIT**	exits the DRAM recording utility
>**ABORT**	cancels the previous command
>**ASSIGN**	datafill the memory management tables for PROMS with SIT and speech data, but for RAMS with SIT data only
>**ASSIGNDUMP <function> {COMMANDS, ANNS}**	
>**COMMANDS**	creates a file containing all of the ASSIGN commands used in assigning DRAM phrases
>**ANNS**	displays the valid DRAM phrases
>**CONNECT**	connects a specified trunk to a DRAM for recording
>**DISCONNECT**	disconnects a previously connected trunk from DRAM
>**DISPLAY**	displays the phrase contents of speech memory
>**ERASE**	erases the given phrase from speech mem on DRAM
>**FIND**	lists all occurrences of a phrase name on all DRAMs
>**POSITION**	record a phrase at a given position in memory
>**PLAYBACK**	repeatedly plays back the desired phrase
>**RECORD**	define and record a phrase. Do not use optional parameters for normal recording
>**SITLOAD**	puts special info. tones in RAM
>**DEBUG <table> <dram/ann>**	displays the contents of DRAM tables
>**ANNSDEBUG**	prints contents of internal ANNS tables (could be large!)

References

Documentation: NTP 297-1001-527, *DRAM/EDRAM Maint. Ref. Man.*
NTP 297-YYYY-350, *Translations Guides*

Tables: DRAMS, ANNS, ANNMEMS, DRAMTRK, CLLI, DRMUSERS, EDRAMINV, TMINV

Logs: AUDT205 — CC message trouble
AUDT206 — Diagnose & check announcements
AUD207 — Power loss detection in RAM (action required)

OM's: (ANN Group) see registers — ANNATT, ANNMBU, ANNOVFL, ANNSBU, ANNTRU

Note: For the EDRAM location, see the MTM shelf.

Subscriber Carrier Module Shelves

Subscriber Carrier Module Urban (SMU) shelf (NT6X02)

6X85	6X85	6X85	6X85	6X85	0X50	0X50	0X50	0X50	0X50	0X50	MX77	0X50	6X44	0X50 or 6X92	0X78 or 6X92	0X50 or 6X92	6X43 or 6X69	6X80	6X42	6X41	6X40	6X40	0X50	2X70	
											U P		T S						C S M						P O W E R
<	D	S	1	>																					
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26 27

Subscriber Carrier Module Remote (SMR) shelf (NT6X02)

6X50	6X50	6X50	6X50	6X50	0X50	0X50	0X50	0X50	0X50	0X50	MX77	6X81	6X44	0X50 or 6X92	0X50 or 6X92	0X50 or 6X92	6X43 or 6X69	6X80	6X42	6X41	6X40	6X40	0X50	2X70	
											U P		T S						C S M						P O W E R
<	D	S	1	>																					
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26 27

Subscriber Carrier Module SLC96 (SMS) shelf (NT6X02)

6X85	6X85	6X85	6X85	6X85	0X50	0X50	0X50	0X50	0X50	0X50	MX77	6X86	6X44	0X50 or 6X92	0X50 or 6X92	0X50 or 6X92	6X43 or 6X69	6X80	6X42	6X41	6X40 AA or AB	6X40 AA or AB	0X50	2X70	
											U P		T S						C S M						P O W E R
<	D	S	1	>																					
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26 27

Subscriber Module Access (SMA) shelf (NT6X02)

6X50 or BX02	6X50 or BX02	6X50 or BX02	6X50 or BX02	6X50 or BX02	0X50 FILLER	0X50 FILLER	0X50 FILLER	0X50 FILLER	0X50 FILLER	0X50 FILLER	AX74 at NA06	0X50 FILLER	6X44 TS	6X92 UTR	BX01 EISP	6X78 CMR	6X69 MI	6X80 PAD	6X42 CSM	6X41 HLF	6X40 AC or FA	0X50 FILLER	0X50 FILLER	2X70	
																									P O W E R
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26 27

Note: Slot 19 in the rear shelf has an NTMX71 XPM Plus Terminator Paddle Board.

Note: Slot 22 in the rear shelf has an NT6X40GA DS512 Paddle Board that is used with the front shelf NT6X40FA DS512 Interface Card.

SMS-R (SMR-RCT) shelf (NT6X02)

6X85	6X85	6X85	6X85	6X85	0X50	0X50	0X50	0X50	0X50	0X50	MX77	6X86	6X44	0X50	0X50	0X50	6X69	6X80	6X42	6X41	6X40	8X18	0X50	2X70	
											U P								C S M			D S 30 A			P O W E R
<	D	S	1	>																					
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26 27

Notes: For further description of the following SMU, SMR, SMS, SMA, and SMS-R packs, see the "Circuit Pack Description" within this QRG or see NTP 297-8991-805. Also see TAS Bulletin 960231 (SMS-R & 6X69AD)

AX74 — Access Processor
BX01 — Enhanced ISDN SP
BX02 — Enhanced DCH for ISDN
MX77 —Unified Processor
2X70 — Power Converter
6X40 — DS30 Net. Interface
6X41 — Speech Bus Formatter
6X42 — Channel Supv. Message
6X43 — Msg. and Tone IF
6X44 — Time Switch
6X50 — DS1 Interface
6X69 — Msg & Tone Protocol
6X78 — CLASS Modem Res.
6X80 — SCM Ring/Pad
6X81 — A-bit/B-bit Word
6X85 — SLC-96 DS1 Interface
6X86 — A-bit/B-word Interface
6X92 — UTR; 6X92EA is GTR
8X18 — SMS-R DS30A Cside IF

Expanded Subscriber Carrier Module-100 Access 2 (SMA2)

The SMA2 provides a multi-vendor interface for up to 28 DS1 ports for one remote digital terminal (RDT), and up to 48 DS1 links for each SMA2.

SMA2 Main shelf

MX72 POWER	& EMI SHIELD	AX74 PROCESSOR	BX01 ESIP	6X78 CMR	6X92 UTR/GTR	6X92 UTR/GTR	MX76 MSG/CSM	6X40 C-SIDE IF	MX75 MATRIX	MX73 SIG PROC	MX87 P-SIDE IF	0X50 FILLER	MX87 or BX02 IF	0X50 FILLER	MX87 or BX02 IF	MX73 SIG PROC	MX75 MATRIX	6X40 C-SIDE IF	MX76 MSG/CSM	6X92 UTR/GTR	6X92 UTR/GTR	6X78 CMR	BX01 ESIP	AX74 PROCESSOR	MX72 POWER	& EMI SHIELD
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Unit 0																Unit 1										

SMA2 Extension shelf

	MX79 DS60 EXT0	BX02 EDCH	MX87 EDCH DS1	BX02 EDCH	MX87 EDCH DS1	BX02 EDCH	MX87 EDCH DS1	BX02 EDCH	BX02 EDCH	BX02 EDCH	BX02 EDCH	MX79 DS60 EXT1	MX79 DS60 EXT0	BX02 EDCH	BX02 EDCH	BX02 EDCH	MX87 EDCH DS1	BX02 EDCH	MX87 EDCH DS1	BX02 EDCH	MX87 EDCH DS1	BX02 EDCH	MX79 DS60 EXT1		
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Unit 0													Unit 1												

Note: When there is a special initial configuration requirement for 48 DS-1 ports, slot 8 in the left extension shelf and slot 19 in the right extension shelf support DS-1 cards. See NTP 297-8263-550.

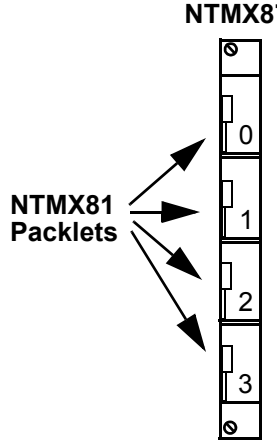
Note: When there is a special initial configuration requirement for 48 DS-1 ports and four EDCH cards, slots 3, 5, 7 and 11 in the left extension shelf and slots 24, 22, 20 and 16 in the right extension shelf support EDCH cards. See NTP 297-8263-550.

Note: For further description of the following SMA2 packs, see the "Circuit Pack Description" within this QRG or see NTP 297-8991-805 and NTP 297-8263-550, *ESMA Maintenance Manual*.

AX74 — Access Processor
BX01 — Enhanced ISDN Sig. Proc.
BX02 — Enhanced DCH
MX72 — Power Converter
MX73 — Signalling Processor
MX75 — Enhanced Matrix
MX76 — Message & CSM
MX79 — DS60 & Power Supply
MX87 — Quad PCM Carrier Fr
6X40 — C-Side DS30/DS512 IF
6X78 — CLASS Modem Res.
6X92 — UTR or GTR

NTMX87 and NTMX81 Packlet P-side Port Provisioning

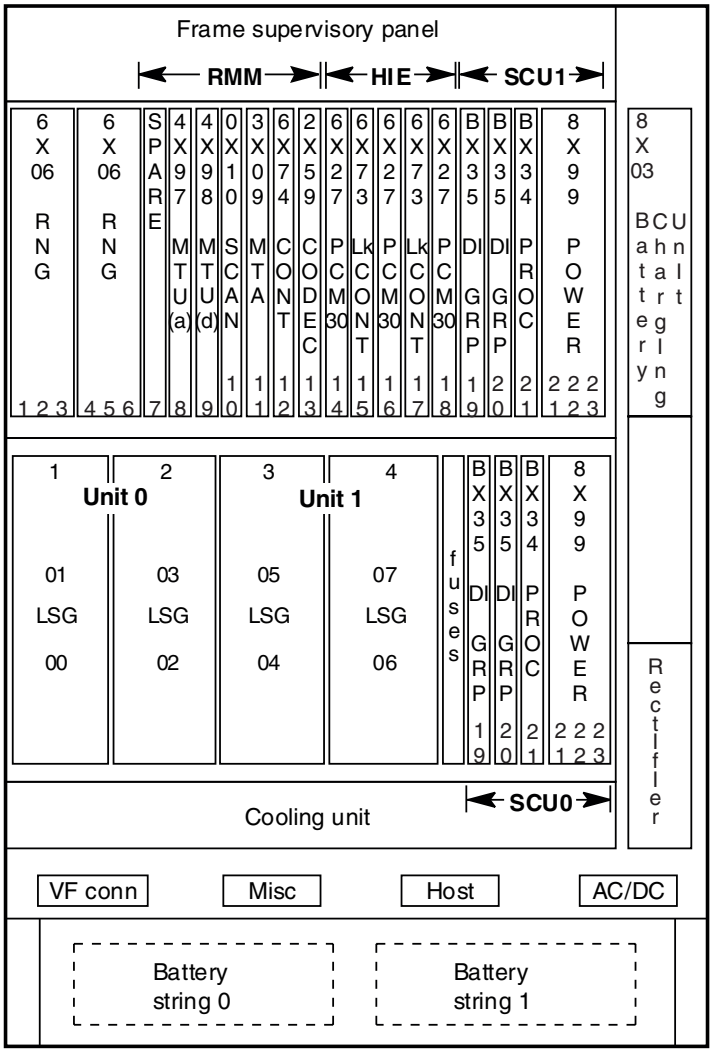
Note: Ports 9 and 17 in Packlet 0 are EDCH ports. See NTP 297-8263-550.



	Main Shelf NTMX87 P-side Ports		
	Slot 12	Slot 14	Slot 16
Packlet 0	0 1	16 **17**	8 **9**
Packlet 1	2 3	18 19	10 11
Packlet 2	4 5	20 21	12 13
Packlet 3	6 7	22 23	14 15
	DS1	DS1 EDCH	DS1 EDCH

Small Remote Unit (SRU) (NT8X95) (MD)

The international small remote unit (SRU) is a DMS-100 remote peripheral module (PM) that provides access for a maximum of 240 subscriber lines. It is located at a remote site up to 240 km (150 miles) from the host DMS-100. The SRU communicates with the host DMS-100 through pulse code modulation 30 (PCM30) links and provides a variety of services, including plain ordinary telephone service (POTS) and Centrex.



Notes: For further description of the following SRU packs, see the "Circuit Pack Description" within this QRG or see NTP 297-8361-550, *Outside Plant Module Maintenance Manual* or the NTP 297-8991-104 *Provisioning Manuals*.

0X10 — Scan Card
2X59 — Codec Group Card
3X09 — Metallic Test Access Card
4X97 — Metallic Test Unit (Analog)
4X98 — Metallic Test Unit (Digital)
6X27 — PCM30 Interface Card
6X60EA — Ringing Gen. (Australian)
6X60GA — Ringing Generator (U.K.)
6X73 — PCM30 Link Control
6X74 — RMM Controller
BX34 — SRU Processor
BX35 — Digroup Controller Card
8X03 — Battery Charging Unit (Located on back of unit)
8X99 — +5V Power Converter

Star Remote Hub Control shelf

(*NTP 297-8353-550, Star Remote System Maintenance Manual*)

Note: The Star Remote Hub Control shelf is located in the Star Remote Hub Equipment Frame (NT0825). The Star Remote Module located off the hub is now MD.

UNIT 0													UNIT 1											
TR 60 RINGING	GENERATOR	6X53 POWER	6X53 SUPPLY	TR 77 RCP	TR 87 C-Side PACKLETS	TR 87 P-Side PACKLETS	TR 87 P-Side PACKLETS	TR 73 UMP	TR 83 FILLER	TR 73 UMP	TR 87 P-Side PACKLETS	TR 87 P-Side PACKLETS	TR 87 C-Side PACKLETS	TR 77 RCP	6X53 POWER	6X53 SUPPLY	6X53 POWER	6X53 SUPPLY	TR 60 RINGING	GENERATOR
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		

EMI Shield --- ^ ^ --- EMI Shield

NTMX81 Packlet 0	0	<- Host Msg Links ->	1	NTMX81 Packlet 0	
	2		3		
NTMX81 Packlet 1	4	C-side Link Assignments to LGC, LTC, or RCC2	5	NTMX81 Packlet 1	
	6		7		
NTMX81 Packlet 2	8		9	NTMX81 Packlet 2	
	10		11		
NTMX81 Packlet 3	12		13	NTMX81 Packlet 3	
	14		15		

Note: For further description of the following Star Remote Hub Control shelf packs, see NTP 297-8353-550, Star Remote System Maintenance Manual.

6X53 — Power Converter supply +5 and +15V
TR60 — Ringing Generators
TR73 — Universal Maintenance Pack (UMP)
TR77 — Remote Controller Pack (RCP)
MX81 — DS1 Carrier Interface Packlet (Resides in TR87 pack)
MX83 — Filler Pack for open MX81 packlet slots
TR87 — Quad Carrier DS1 Pack (Supports up to 4 TR81 packlets)

NTMX81 DS1 Interface Card DIP Switch Settings

Feet	Meters	S3/6	S2/5	S1/4
0-133	0-41	ON	OFF	OFF
133-266	41-81	OFF	ON	ON
266-399	81-122	OFF	ON	OFF
399-533	122-163	OFF	OFF	ON
533-655	163-200	OFF	OFF	OFF
Note: S = switch numbers. On S1 DIP switch (6 positions): S1-S3 belong to even port and S4-S6 belong to odd port.				

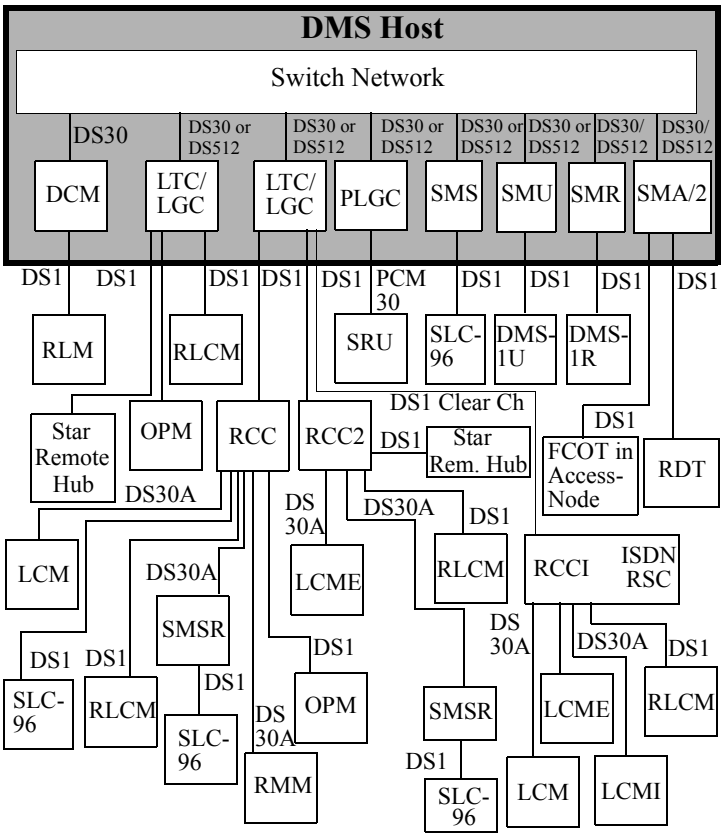
Note: Two dual inline package (DIP) switches are on the backplane of the Star Hub in slot positions slot 4 and 19. The position of these DIP switches determine the protocol used by the Star Hub. The following table identifies the backplane DIP switch settings for the ESF B8ZS protocol that is needed to support ISDN 64Kb/s clear channel.

Star Hub Backplane DIP Switch Settings

		Backplane DIP Switch Settings					
Configuration	**Code**	**1**	**2**	**3**	**4**	**5**	**6**
DS1 extended superframe (ESF) binary eight bit zero substitution (B8ZS) code suppression	ESF B8ZS	Off	Off	Off	On	On	On

Remotes Quick Reference

Note: The following block diagram is not an all inclusive view of the many possible remote applications. For more information, see the references listed below. Some remotes are now MD.



Notes:
1. The remotes supported by the DMS-100 are generally connected via DS1 facilities up to 200 miles (100 mi. for the OPM/RLCM) from the CO. Except for the pair-gain remotes that are connected directly to the CO, most remotes support intraswitching and the emergency stand-alone (ESA) mode.
2. The RCC and SMSR or RCC2 and SMSR are Remote Switching Centers (RSCs). RCCI is an RSC with ISDN services.
3. See the RCCMAP command under "DMS Commands."

Types of DMS-100 Remotes

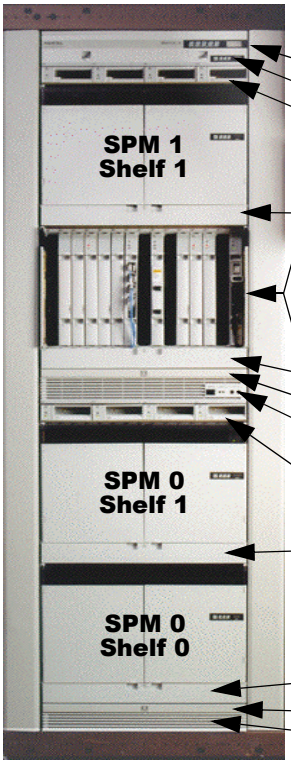
- Subscriber Carrier Module SLC-96 (SMS_SLC-96)
- Remote Concentrating SLC-96 (RCS)
- Subscriber Carrier Module Urban/DMS-1U (SMU_DMS-1U)
- Subscriber Carrier Module Rural/DMS-1R (SMR_DMS-1R)
- Subscriber Carrier Module Access (SMA)
- Fiber Central Office Terminal (FCOT)
- Remote Digital Terminal (RDT)
- Subscriber Module SLC-96 Remote (SMS-R)
- Remote Line Concentrating Module (RLCM)
- Outside Plant Module (OPM)
- Remote Line Module (RLM)
- Small Remote Unit (SRU) (MD)
- Remote Switching Center (RSC) (RCC + SMSR = RSC)
- Remote Switching Center - SONET (RSC-S) (RCC2 for RSC-S)
- Remote Switching Center - SONET Extended Distance Capability (RSC-S EDC)
- Remote Switching Center - SONET NI-1 (RSC-S NI-1)
- Star Remote System (**Note:** Star Module is MD; Start Hub is GA)

Remotes Maintenance and Product Guide References

Remote Line Concentrating Module (RLCM)	297-8351-550
Outside Plant Module (OPM)	297-8361-550
Small Remote Unit(SRU) (MD)	297-8361-550
Remote Switching Center (RSC)	297-8221-550
Subscriber Carrier Module-100 SLC-96(SMS-100S)	297-8231-550
Subscriber Carrier Module-100 Urban (SMS-100U)	297-8241-550
Subscriber Carrier Module-100 Access (SMS-100A)	297-8251-550
RSC-SONET Model A	297-8261-550
RSC-SONET Model B	297-8281-550
Subscriber Carrier Module-100 Remote (SMS-100R)	297-8301-550
Star Remote System Maintenance Manual	297-8353-550

SPM Quick References

SPM Frame Layout for a 4-slot High-Speed Backplane



The Power Cabling Interface Unit (PCIU) contains the:
Alarm Indicator Lamps
Fan Failure Lamp
Cooling Unit (Four fans per individual alarm) (Alm LED on left of each fan)

Shelf Trough and Cable Area

SPM 1 Shelf 0 equipped for two Common Equipment Modules (CEMs), two OC-3 Interface Modules, Shelf Interface Module (SIM), and Resource Modules (see layout below)

Shelf Trough and Cable Area
Air Filter (NTLX5015) Pt # A0665487
Upper Grill Shelf Assembly (Includes Test Lamp and Data and Tel Jacks)
Cooling Unit (Four fans per individual alarm) (Alm LED on left of each fan)

Shelf Trough and Cable Area

Shelf Trough and Cable Area
Air Filter (NTLX5015) Pt # A0665487
Lower Grill assembly

DMS-Spectrum Peripheral Module (SPM)

(*NTP 297-1771-550 Hardware Maintenance Reference Manual*)

Note: Configuration is for a NTLX51BA 4 high-speed slot (4HSS) SPM.

NTLX57XX Power Control Interface (PCI) Unit														
Cooling Unit (NTLX56XX Fan Units)														
		FAN 1		FAN 2			FAN 3			FAN 4				
RM 1-S DLC LX 72 for PRI 01	RM 1-S DLC LX 72 for PRI 02	RM 3-S VSP or DSP 03	RM 3-S VSP or DSP 04	RM 3-S VSP or DSP 05	RM 3-S VSP or DSP 06	RM 1-S DLC LX 72 for PRI 07	RM 1-S DLC LX 72 for PRI 08	RM 3-S VSP or DSP 09	RM 3-S VSP or DSP 10	RM 3-S VSP or DSP 11	RM 3-S VSP or DSP 12	RM 3-S VSP or DSP 13	RM 3-S VSP or DSP 14	SIM B LX 61 PWR 15
RMID Slot Numbers below for this shelf are:														
15	16	17	18	19	20	21	22	23	24	25	26	27	28	n/a
				SHELF 1 (Front View)										
Cable Area														
RM 9-S ATM LX 73 01	RM 9-S ATM LX 73 02	RM 3-S VSP or DSP 03	RM 3-S VSP or DSP 04	RM 3-S VSP or DSP 65	RM 3-S VSP or DSP 06	CEM #0 LX 82	CEM #1 LX 82	RM 9-S OC3 LX 71 09	RM 9-S OC3 LX 71 10	RM 3-S VSP or DSP 11	RM 3-S VSP or DSP 12	RM 3-S VSP or DSP 13	RM 3-S VSP or DSP 14	SIM A LX 61 PWR 15
Note: Physical and RMID Slot Numbers are the same on this shelf														
				SHELF 0 (Front View)										
Cable Area														
Air Filter Tray (NTLX5016) & Air Filter (NTLX5015)														

DMS-SPM Module continue on the next page.

Note: **9X40DA** ENET Paddle Board connects to front of CEMs.

Note: SPM Module with two shelves can provide up to 26 Resource Modules (RM) in addition to the required CEM and SIM circuit packs.

Note: Each serial link (SL) has 256 time slots. Where 3 SLs are assigned, there are 768 timeslots that can service the bandwidth equivalent to one STS-1 or DS-3 Resource Module. **Note: Serial links in diagram above are shown as 1-S, 3-S, and 9-S.**

Note: Slots 1 & 2 and 9 & 10 of shelf 0 have 9 S-links or 2304 timeslots that supports OC-3 or ATM RMs to provide 2016 circuits.

Note: Prior to SP14, if you plan on implementing ISUP trunking, you must have LIU7s datafilled and configured for external routing (See NTP 297-8991-030, LIU7 Ext. Routing Activation User Guide)

Note: For further description of the following SPM shelf packs, see "Circuit Pack Description" within this QRG or see NTP 297-1771-550.

LX57 — PCIU Card **LX56** — Fan Unit Card
LX58 — Alarm Card **LX59** — Fan Management Unit **LX60** — Filler
LX5015 - Air Filter (#0665487) **LX5016** - Air Filter Tray
LX61 — Shelf Interface Module (SIM) (Power Distribution & Alarms) is located in slot 15 of each shelf.
LX82 — Enhanced Common Equipment Module (CEM) with Ethernet is located in slots 7 and 8 of the bottom shelf. The LX82 CEMs are required for Crossover Messaging functionality and Succession Evolution of SPMs. See "Verifying Crossover Messaging" on the next page. **Note:** Use PRSM command ISTBAUDIT to confirm CEM patches. ex:
>**ISTBAUDIT <spm #><cem #>**

Resource Modules and Provisioning Information

Important Note: Only one type of ECAN RM can co-exist in the same SPM. You cannot mix LX66 with LX85 or LX86 RMs. You also cannot mix LX85 and LX86 RMs within the same SPM.

LX44 — Sync Resource Module for Building Int. Timing Source (BITS)
LX65 — Digital Signal Processor (DSP) (Resources - MF, COT, ABBIT, TONESYN) A DSP has 9 Islands. **Note:** You can mix LX65AA and LX65BA DSPs in the same SPM.
LX66 — Voice Signal Processor (VSP) (Echo Cancelling (ECAN)). A VSP has 10 Islands & 26 ECANs per Island, for 260 ECANs per VSP max. **Note:** LX65 DSP and LX66 VSP packs go in slots 3 thru 6 & 11 thru 14 of the bottom shelf and/or slots 3 thru 6 and 9 thru 14 of the top shelf (Need 3 S-links per shelf)
LX71 — OC-3 Interface Module (OC-3 Xmit & Rec. for Act/Prot) for TDM (traditional trunking) packs go in slots 9 & 10 of bottom shelf.
LX72 — Data Link Controller (DLC) packs for supporting ISDN PRI 'D' Channel should go in slots 1, 2, 7 and 8 of the top shelf since they only need 1 S-link per slot. **Note:** DLCs can go in other than slots with 1 S-link but it would be wasting S-links.
LX73 — Asynchronous Transfer Mode (ATM) Interface Module packs go in bottom shelf slots 1 & 2 for the "MG4K" (MG4000) SPM configuration, and 9 & 10 of the bottom shelf for the IW SPM (The ATM pack needs 9 S-links per slot)
LX74 — Synchronous Transport Signal-level one (STS-1) Interface Mod
LX84AA — PCM30 Low Speed Access (LSA) **LX84DA** — DS1 LSA
LX85 — Voice Signal Processor (VSP) (i.e. echo cancellation)(MD)
LX86 — Voice Signal Processor (VSP) (i.e. echo cancellation)
LX99 — Synchronous Transfer Mode 1 (STM-1) Interface Module

Determining SPM Trunk Terminal & Node Numbers

Note: Unless you know the SPM and the and circuit numbers, locate it in table TRKMEM.
TRKMEM Ex: `SRMPODNWDS0 255 0 SPM 1 98 5`

Note: In this example for trunk 255 in the SRMPODNWDS0 trunk group, 98 is the ckt # (span #) and 5 is the circuit (channel #) in SPM 1.

Note: Terminal Number (TN) = (Span X 24) + Channel (Channel = 1-24)

Note: SPM ckt #'s start at 95 which is span 0; therefore, circuit 98 in this example would be span 3. Since we now know the span is 3 and the channel is 5, we can figure the terminal number. Terminal Number is: (3 X 24 + 5) = 77

Note: To get node number (NODENO), you can use XPMIST. Ex:
>**XPMIST;NODENO SPM 1**

Note: Another way to get an SPM trunk TN and NODENO is to go into toss-up and turn PMIST on. Once in PMIST, use the command >**CONVERT TRK SRMPODNWS0 255**. The output will be in HEX so convert to decimal if needed

SPM Quick References continue on the next page.

DSP Island (DSPI) Resource Provisioning

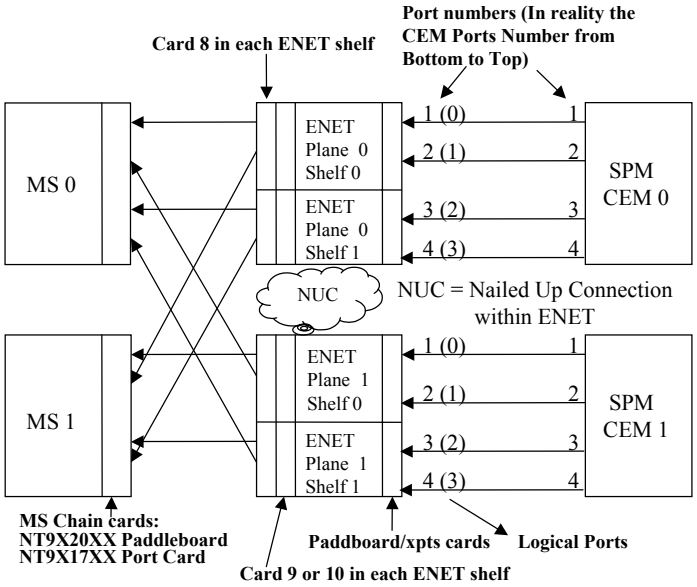
Note: Each DSP RM provides a total of 9 DSP Islands (DSPIs). The resources should be allocated across the RMs so that the DSP messaging load is evenly distributed. Only one type of resource can be provisioned per DSPI. The following table defines the capacity number for each resource:

*	* *	Notes and Descriptions
COT	80	COT = Continuity tone transceiver.
Tone-Syn	255	It is not recommended to have more than 14 ABBIT resources (one ABBIT DSPI) on an RM that also has 255 ToneSyn (Tone Synthesizers) resources allocated on it, since both of these resources are messaging intensive.
DTMF	64	DTMF = DigiTone/Multi-Frequency receiver with dial
ABBIT	14	It is not recommended to have more than 28 ABBIT (AB Bit) resources (two ABBIT DSPIs) on the same RM.
MF	40	MF = Multi-Frequency receiver

* Resources column

** Each of the values in this capacity column is equal to one DSPI.

SPM to ENET Connectivity Diagram



Note: Each SPM CEM card has 4 DS512 ports which are cabled via fiber straight from the front of the CEM cards to ENET planes using NT9X40DA Paddleboards; then from the ENET via existing DS512 fibers to the MS.

Verifying Crossover Messaging

Enter the SPMXMSG level at the CI: level of the MAP
>**SPMXMSG**
>**DISPLAY**
Example of response:

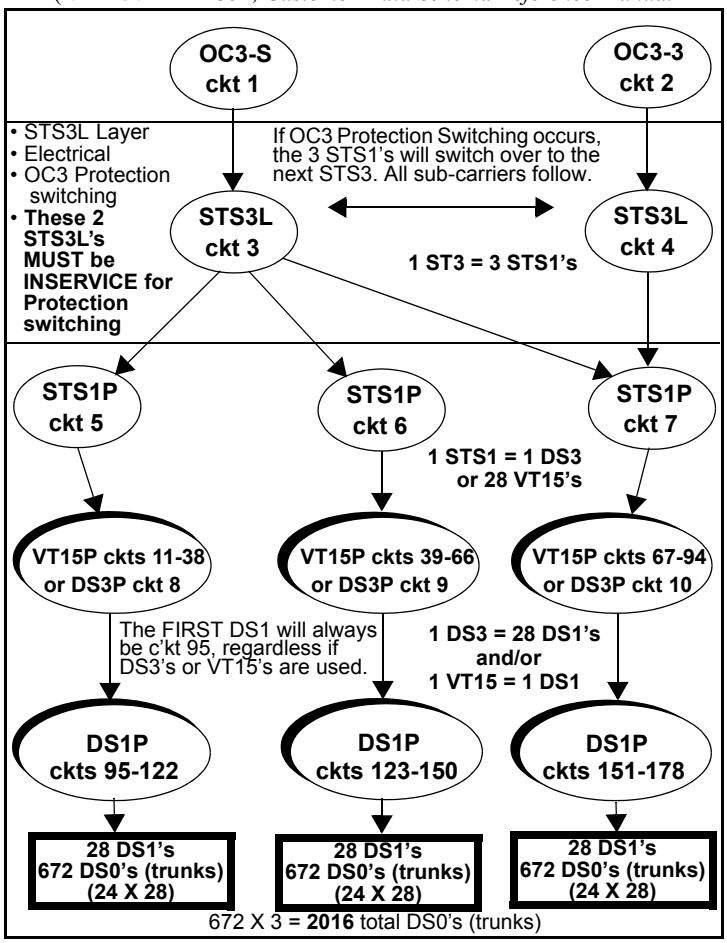
```
SPM_NO      XOVER_MSG       CEM0          CEM1
-------------------------------------------------
   0            N          NTLX63AA      NTLX63AA
   1            N          NTLX63AA      NTLX63AA
   2            Y          NTLX82xx      NTLX82xx
   3            Y          NTLX82xx      NTLX82xx
```

Note: SPM(s) with NTLX82(s) must have XOVER_MSG field set to "Y". Contact your Nortel Regional Customer Service Representative if Crossover criteria is met and Crossover has not been activated. Reference DMS-100 Technical Bulletin 20010043.

SPM Quick References continue on the next page.

Table MNHSCARR (Mgmnt Network High Speed Carrier)

(*NTP 297-YYYY-351, Customer Data Schema Reference Manual*



DS1P Line Encoding Parms in Table MNHSCARR

FRAMEFMT	DS1ZCS	Equivalent To
ESF	OFF	B8ZS / 64kbs
ESF	ON	Does not exist
SF	OFF	B8ZS / 56kbs
SF	ON	AMI / 56kbs

Note: The DS1ZCS parameter is available in NA011 and above. The DS1ZCS must match the far-end MUX.

SPM Primary Rate Interface (PRI)

PRI on SPM is available as of NA012/SP12. PRI on SPM requires 2 DLC (NTLX72xx) RMs. They provide 1 + 1 redundancy and are suggested to be assigned in slots 1, 2, 7, or 8 of SPM Shelf 1 to avoid wasting S-links.
Note: Use PRSM command ISTBAUDIT to confirm DLC patches. ex:
>**ISTBAUDIT <spm #><dlc #>**

SPM PRI Trunk Tables Datafill Sequence and Notes

Datafill in the following sequence for PRI on SPM: CLLI, TRKGRP, MNPRIIID, TRKSGRP, TRKMEM, LTDFEF, LTMAP, LTCALLS.

Note: In table TRKSGRP, the CRLENGTH field should always be set to 2 for SPM PRI. The IFCLSSS field must be the opposite of the far-end CPE and is generally set for NETWORK in the DMS-100.

Note: Table MNPRIIID maps the SPM and circuit number to the Interface Identifier used by the PRI circuit (DS1). Use the following conventions and ensure they correspond to the same value in the CPE provisioned spans:

Primary D-Channel = IID 0
Backup D-Channel = IID 1
24 B-Channel Span = IID $\geq$ 2

Note: In table LTDEF, the VARIANT must match the far-end CPE or problems may be experienced. The PROFNAME should be set to NIL, unless connecting to Meridian-1 CPE for which the PROFNAME should be set to SL1PROFL. The Profile Name is defined in table PRIPROF.

Notes continue on the next page.

Note: Even though some changes to tables MNPRIID and TRKSGRP are allowed while LTID is mapped in table LTMAP. To help prevent possible corruption, perform the following steps to complete PRI datafill:

1. BSY;BSY INB the D-Channel and B-Channels of the trunk.
2. Remove the associated LTID tipple from table LTMAP.
3. Make the desired table changes.
4. Add the associated LTID tipple back into table LTMAP.
5. BSY;RTS the D-Channel and B-Channels of the trunk.

SPM Trunk Provisioning Limits for pre-SP16

Note: The limits will be removed in the SP16 release, which will allow any combination of trunk types up to the full SPM port capacity.

Trunk Combination	ISUP T1s	PTS T1s	PRI T1s	Notes
ISUP	84	-	-	Full Capacity
PTS	-	56	-	Up to 56 PTS with the remaining T1s unused
PRI 23B + D	-	-	84	Full Capacity
ISUP/PTS	84-59	0-25	-	Up to 25 PTS with the remaining T1s ISUP
ISUP/PRI	84-0	-	0-84	Any combination of ISUP and PRI to equal 84 T1s
PTS/PRI	-	0-16	84-68	Up to 16 PTS with the remaining T1s PRI
ISUP/PTS/PRI	84-32	0-20	0-32	Up to 20 PTS and up to 32 PRI with the remaining ISUP
ISUP/PTS/PRI	84-0	0-16	0-84	Up to 16 PTS with any combination of ISUP and PRI

SPM EXECTAB lineup

The following is the basic execs datafill to allow PTS and PRI functionality. Datafilled in table MNNODE.

Appl:	DMS 100:	DMS 250:	DMS 500:
PTS:	ABTRK SPMEX	AB250 SPM250 ABSPMX PXSPMX** AB250 PXDTCX ***	AB250 SPM250 ABTRK SPMEX ABSPMX PXSPMX** AB250 PXDTCX ***
PRI:	PRAB SPMEX	PRAB SPM250*	PRAB500 SPM250 *

* The PRAB500 SPM250 exec is not available until SP15. Prior to SP15, you cannot have PRA (DMS100/200) and PRA250 (DMS250/500) PRI on the same physical SPM. Until the PRAB500 SPM250 exec is available, you must have the PRI trunks designated for either PRA (DMS100/200) or PRA250 (DMS250/500) and use the PRAB SPMEX (for PRA) or the PRAB SPM250 (for PRA250) applications. (This means in DMS500 offices the PRI trunks have to physically be in a SPM that is designated via the execs for the DMS100 or either the DMS250 side - at least until SP15 and the PRAB500 SPM250 exec is available anyway...)

** ABSPMX PXSPMX is not fully functional until SP16. (Even though it can be datafilled prior to SP16.) ABSPMX PXSPMX allows PX trunks that use FX signaling. This lineup also allows DAL and PX FX trunks to function on the same SPM.

*** AB250 PXDTCX is used for PX trunks with FX signaling pre-SP16. Remember: DAL and PX FX cannot be placed on the same SPM prior to SP16.

Example exec lineups in table MNNODE for DMS250/500:

Pre-SP16: (If you have standard PTS and nothing else, use: (ABTRK SPMEX) (AB250 SPM250) (If you have standard PTS and PRI for DMS250, use: (ABTRK SPMEX) (AB250 SPM250) (PRAB SPM250) (If you have standard PTS and PRI for DMS100 in a DMS500 office, use: (ABTRK SPMEX) (AB250 SPM250) (PRAB SPMEX) (If you have standard PTS, PX FX without any DAL trunks on this SPM, and PRI for DMS250, use: (ABTRK SPMEX) (AB250 SPM250) (AB250 PXDTCX) (PRAB SPM250) (If you have standard PTS, PX FX without any DAL trunks on this SPM, and PRI for DMS100 in a DMS500 office, use: (ABTRK SPMEX) (AB250 SPM250) (AB250 PXDTCX) (PRAB SPMEX)

SP16 and above: (The following execs should handle about ANY configuration...but *see below* if placing both DAL and PX FX trunks on same SPM...) (ABTRK SPMEX) (AB250 SPM250) (ABSPX PXSPMX) (PRAB500 SPM250)

Example exec lineups in table MNNODE for DMS100 offices:

Pre and post SP16: (This is all you need to cover standard PTS and PRI...) (ABTRK SPMEX) (PRAB SPMEX)

DAL prefix on the same SPM

Note: To allow DAL and PX FX trunks to function on the same SPM, the following must be performed:

Reference:

- PLN-8021-004 DMS-100F North American DMS-100 Release Doc. Volume 1 of 2
- LET0014 Preliminary 12.02 October 2000
  Pages 161 - 168, inclusive; Page 165 - 166, excerpt

7.6 Upgrade Procedure (Paraphrased and edited for clarity...)

This feature requires a special upgrade procedure to properly activate its functionality without causing a loss of service in an active switch. Activating the office parm for this feature without following the upgrade procedure below may cause loss of service in live switches. The following steps are necessary for this procedure:

1. SPMs must be at least SP16 load.

2. The core must be at least LLT00014 and have patch PJL26BHZ applied. (For LLT00015, core patch PJL26BHL)

Note: The office parm DAL_pxfx_on_same_spm SHOULD NOT be activated at this time.

3. Table MNNODE accessed and ABSPX PXSPMX added to each tuple in the EXECTAB optional field for each SPM that DAL and PX FX on same SPM is desired. (**NOTE:** ANY SPMs that currently have FX trunks on them will also have to have ABSPX PXSPMX added as an EXECTAB. Once the core parm DAL_pxfx_on_same_spm is activated, ABSPX PXSPMX will be the only exec being used for this functionality, regardless of if DAL is also on the SPM.)

4. All SPMs on the switch that were affected by the MNNODE changes in step 3 must be BSY/RTS'd to allow the new termtype and its corresponding execs (ABSPX PXSPMX) to be downloaded to all the SPMs.

Note: The BSY/ RTSing a SPM as mentioned here consists of the following steps:

i. BSY the inactive CEM.
ii. RTS the inactive CEM.
iii. Perform a SPM SWACT.
iv. BSY the newly inactive CEM (was the active)
v. RTS the newly inactive CEM

Note You will also be prompted by the DMS to perform this when adding the new termtype and execs in step 3.

5. The office parm DAL_pxfx_on_same_spm for this feature is now activated on the CM. To allow all PX FX trunks to be recognized as the new termtype, all SPMs on the switch affected by the MNNODE changes in step 3 must be BSY/RTS'd again, as in step 4 above. This is necessary for the smooth transition of PX FX trunks from the AB250 termtype to the new termtype ABSPX without causing call outages.

SPM Documentation References in Helmsman

- HLM-1771-CL1 04.02 Notice to Customers
- 297-1771-301P1 SPM Service Implem. Guide, Overview Section
- 297-1771-301P2 SPM Service Implem. Guide, Fault Mgm Section
- 297-1771-301P3 SPM Service Implem. Guide, Configuration Section
- 297-1771-301P4 SPM Service Implementation Guide, Upgrades Section
- 297-1771-301P5 SPM Service Implementation Guide, Perf. Section
- 297-1771-301P6 SPM Service Implem. Guide, Security & Adm Section
- HLM-1771-PMA Carrier Performance Archival for SPMs
- SEB 01-01-002; PLN-1001-016 TDM SPM Engineering Guide

SPM Table References

Several tables have been added for configuring SPMs. Except for the need to datafill table TRKMEM after SPM table MNHSCARR, and table TRKSGRP after SPM table MNRIIID for PRI, datafill the existing tables CLLI, PECINV, CLLIMTCE, PMLOAD, and TRKGRP for trunking, and table ENCDINV for hooking it up to the ENET, the following new SPM tables must be datafilled in the following order: MNPRTGRP, MNNODE, MNSHELF, MNCKTPAK, MNLINK, MNHSCARR, MNATMCON, MNPRIIID, SPMECAN, FEATCNTL.

SPM OM References

For SPM OM support, reference the following OM Groups: DSPRMAN, ECANRMAN, MNTCNODE, MNTCTYPE, MNTCUNIT, MNTCLINK.

SPM Quick References continue on the next page.

SPM Log References

Use SPM logs SPM300 thru SPM710 and other related logs: SPRF670 - 671; CARR300, 310, 500, 510, 511, 512, 800, 810, 811; ENET211, 308, 311; PRSM400.

SPM Alarms

Note: If your office is pre-NA011 and you have a non-node visible alarm, (such as a PROTFAIL), you must use logutil and/or dlog/scanlog to locate an SPM331 log indicating the source of the alarm. The only way to clear a "Non-Node Visual" SPM alarm is to perform a successful Protection Switch of the RM causing the alarm.

Note: In NA011 and above offices you can list all SPMs with alarms, INCLUDING the ones caused by protection switching alarms by entering >**MAPCI NODISP;MTC;MTC;POST SPM ALL** and then enter >**QUERYPM FLT ALL**.

Note: Tables MNPRTGRP, MNCKTPAK, MNNODE, and MNH-SCARR, contain alarm datafill.

LED Alarm Indicators

Note: For a detailed description of the alarm LED indicators for the frame and RMs, see NTP 297-1771-550, *SPM Hardware Maintenance Reference Manual.*

The following table provides a quick reference for RM LED status and what their indication means.

LED Status		Indication and Action
Green Off	Red Off	Green LEDs are in sleep mode (module can also be not powered or not seated). When all LEDs are off, there are no critical faults and an indicator test is not underway. Use an indicator test to check LED function. Also, see note below
Green On	Red On	A power on self test (POST) or an LED indicator test is underway. During a POST, the LEDs are controlled by the initial boot loader (IBL) software. If both LEDs remain on for an extended period after a POST, the module is defective. For detailed instructions for replacement, see the appropri-
Green On	Red Off	Normal operation—there are no critical faults and no action is required. Do not remove a module displaying this alarm indication or combination.
Green Off	Red On	Critical fault—replace the module. For detailed instructions for replacement, see the appropriate NTP for *Card Replacement Procedures*.
Amber Off		Normal operation—all external signal inputs to the module faceplate are valid.
Amber On		At least one external signal source entering the module faceplate is not carrying a valid signal.

Note: To prolong LED life, program the green LEDs so it can enter the sleep mode. LED sleep-mode timing is controlled by the entry in field LEDTIMER in data schema table MNNODE. Sleep mode does not apply to red LEDs.

PREPDATACHNG Command

Prior to BAS18 core offices, in order to perform SPM resource manipulation in table MNCKTPAK, the craft person needed to have an understanding of the concept of "Roving Spare Strategy", and may have to perform several sparing actions (prot switches) in order to align the RMID and PROTWHOMID and change the RM's Resource Datafill properly.

In BAS18 and above, the PREPDATACHNG command will reduce the complexity/difficulty of provisioning, configuring, and changing the Resource Datafill on RMs. The user will only need to issue a command (PrepDataChng) to align the RMID and PROTWHOMID of the RM in context. Depending on the result of this command, the customer will be notified if they can proceed to change the RM datafill and finally RTS the RM.

To invoke this command:

>**mapci;mtc;pm;post spm <#> ; select <DSP or VSP to be modified in MNCKTPAK>**

>**PrepDataChng**

Digital Trunk Controller (DTC) shelf (NT6X02)

6X50 DS1 or 0X50	6X50 DS1 or 0X50	6X50 DS1 or 0X50	6X50 DS1 or 0X50	6X50 DS1 or 0X50	0X50 FILLER	0X50 FILLER	0X50 FILLER	0X50 FILLER	0X50 FILLER	0X50 FILLER	MX77 or AX74 or SX05	0X50 or 6X92 or 6X62	6X44 or AX78	0X50 or 6X92	0X50 or 6X62	0X50 or 6X69 or MX76	0X50 or 6X79	6X42 CSM	6X41 FORMAT	6X40 DS30 NI	6X40 DS30 NI	0X50 FILLER	2X70 POWER
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25 26 27

Note: For PCM30, see the International DTC, LTC, and LGC shelves.

Line Trunk/Line Group Controller (LTC/LGC) shelf

6X50 DS1 or 0X50	6X50 DS1 or 0X50	6X50 DS1 or 0X50	6X50 DS1 or 0X50	6X50 DS1 or 0X50	6X48 or 0X50	6X48 or 0X50	0X50 FILLER	0X50 FILLER	0X50 FILLER	0X50 FILLER	MX77 or AX74 or SX05	0X50 or 6X70	6X44 or AX78	0X50 or 6X92	0X50 or 6X92 or 6X62	0X50 or 6X62	0X50 or 6X69	0X50 or 6X79	6X42 CSM	6X41 FORMAT	6X40 DS30 NI	6X40 DS30 NI	0X50 FILLER	2X70 POWER
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25 26 27

DS30A Links to LCMs

DS30A Links to LCMs

Unit 1 Ports

19	15	11	7	3
18	14	10	6	2

Unit 0 Ports

17	13	9	5	1
16	12	8	4	0

Unit 0 or 1 — Duplicated DS30A Links to LCMs

2	3
6	7
10	11
14	15
18	19

Unit 0 or 1 — Duplicated DS30A Links to LCMs

0	1
4	5
8	9
12	13
16	17

Unit #0 Pl #0

Unit #1 Pl #1

Note: See the "XPM Link Configuration" diagram within this QRG for more details on 6X50, 6X48, and 6X40 links & ports assignments.

Note: For PCM30, see the International DTC, LTC, and LGC shelves.

ISDN LTCI/LGCI/DTCI Common Peripheral Controller shelf

6X50 or BX02 or 0X50	6X50 or BX02 or 0X50	6X50 or BX02 or 0X50	6X50 or BX02 or 0X50	6X50 or BX02 or 0X50	6X48 or 0X50	6X48 or 0X50	0X50 FILLER	0X50 FILLER	0X50 FILLER	0X50 FILLER	SX05 at NA0 12	0X50 or 6X78	6X44 or AX78 TS	6X92 UTR	BX01 ISDN SP	0X50 FILLER	6X69 or MX76 MSG	0X50 FILLER	6X42 CSM	6X41 FORMAT	6X40 DS30 NI	6X40 DS30 NI	0X50 FILLER	2X70 POWER
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25 26 27

Note: For further description of the following DTC, LTC, LGC, and ISDN LTCI/DTCI shelf packs, see "Circuit Pack Description" within this QRG or see NTP 297-8991-805.

AX74 — Processor
AX78 — ISDN Enhanced Time Sw.
BX01 — Enhanced ISDN SP
BX02 — Enhanced DCH for ISDN
MX77 — Unified Processor
Receiver
MX76 — Enhanced Messaging
SX05 — XPM Processor
2X70 — Power Converter
6X40 — DS30 Network Interface
6X41 — Speech Bus Formatter
6X42 — Channel Supv. Message
6X43 — Message and Tone IF
6X44 — Time Switch
6X48 — DS30A LCM Interface
6X50 — DS1 Interface
6X62 — DMS-250 Tone
6X69 — Msg. & Tone Protocol
6X70 — Continuity Tone Det
6X78 — CLASS Modem Res
6X79 — Tone Generator
6X92 — UTR or GTR
0X50 — Filler Pack

Note: For 6X50, 6X48, and 6X40 port and link assignments, see the LTC/LGC hardware and the "XPM Pack Relationship Diagram" and the

"XPM Link Configuration Diagram" within this QRG.

International PLGC or PLTC shelf (NT6X0211)

6X27 PCM30 or 0X50 01	6X27 PCM30 or 0X50 02	6X27 PCM30 or 0X50 03	6X27 PCM30 or 0X50 04	6X48 DS30A or 0X50 05	6X48 DS30A or 0X50 06	6X44 TIME SW 07	6X92 UTR or 0X50 08	6X92 UTR or 0X50 09	6X69 MSG or 0X50 10	0X50 FILLER 11	MX77 or SX05 12	7X80 BUS or 0X50 13	0X50 FILLER 14	0X50 FILLER 15	0X50 FILLER 16	7X80 BUS or 0X50 17	0X50 FILLER 18	6X28 PCM30 or 0X50 19	0X50 FILLER 20	6X42 CSM 21	6X41 FORMATTER 22	6X40 DS30 NI 23	0X50 or 6X40 DS30 NI 24	2X70 POWER 25 26 27
6X27 PCM30 or 0X50 01	6X27 PCM30 or 0X50 02	6X27 PCM30 or 0X50 03	6X27 PCM30 or 0X50 04	0X50 or 6X27 PCM30 05	0X50 FILLER 06	6X44 TIME SW 07	6X92 or 6X70 or 0X50 08	6X92 or 6X69 or 0X50 09	6X43 or 6X69 or 0X50 10	0X50 11	MX77 or SX05 12	7X80 BUS or 0X50 13	0X50 FILLER 14	0X50 FILLER 15	0X50 FILLER 16	7X80 BUS or 0X50 17	0X50 FILLER 18	6X28 PCM30 or 0X50 19	0X50 FILLER 20	6X42 CSM 21	6X41 FORMATTER 22	6X40 DS30 NI 23	0X50 or 6X40 DS30 NI 24	2X70 POWER 25 26 27

Intelligent Cellular Peripheral (ICP) shelf

6X50 DS1 01	6X50 DS1 02	6X50 DS1 03	6X50 DS1 04	6X50 DS1 05	6X48 DS30A 06	6X48 DS30A 07	0X50 FILLER 08	0X50 FILLER 09	0X50 FILLER 10	0X50 FILLER 11	MX77 or SX05 12	0X50 FILLER 13	AX78 ISDN 14	6X92 UTR 15	BX01 EISP 16	0X50 FILLER 17	6X69 MSG 18	0X50 FILLER 19	6X42 CSM 20	6X41 21	6X40 NET IF 22	6X40 NET IF 23	0X50 FILLER 24	2X70 POWER 25 26 27

ICP Overseas (ICPO) shelf

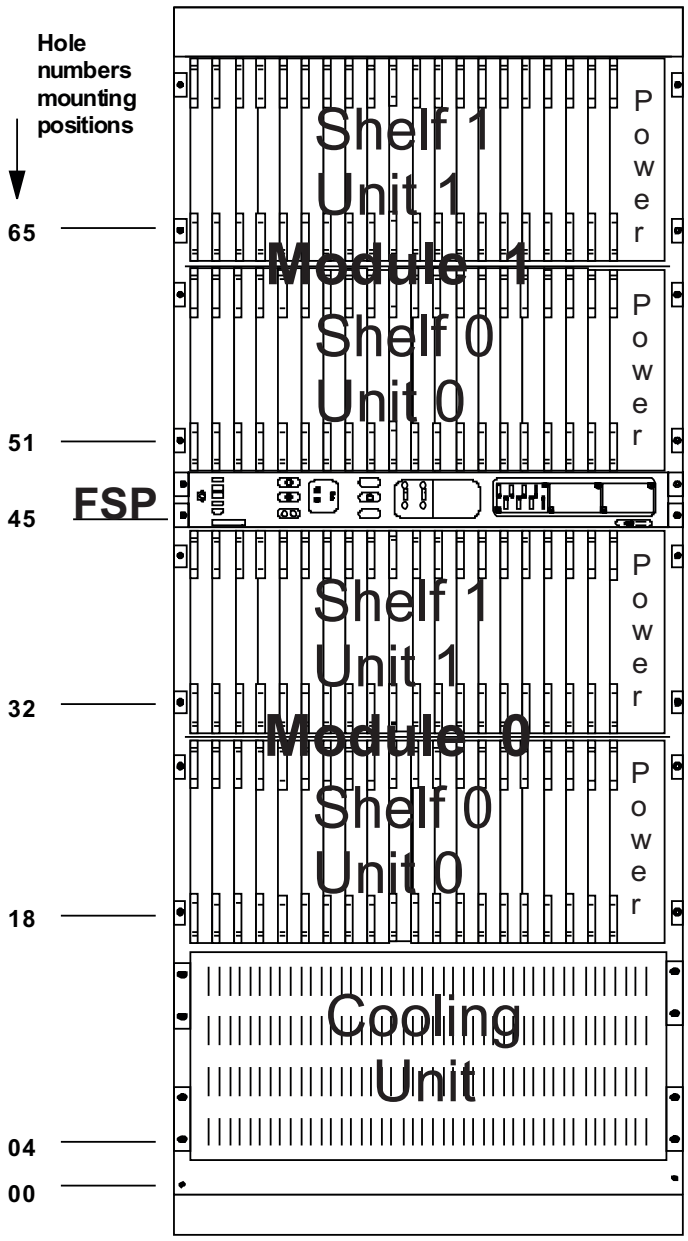
0X50 FILLER 01	6X27 PCM30 02	6X27 PCM30 03	6X27 PCM30 04	6X27 PCM30 05	6X48 DS30A 06	6X48 DS30A 07	0X50 FILLER 08	0X50 FILLER 09	0X50 FILLER 10	0X50 FILLER 11	MX77 or SX05 12	0X50 FILLER 13	AX78 TS 14	6X92 UTR 15	BX01 EISP 16	0X50 FILLER 17	6X69 MSG 18	6X28 SIG 19	6X42 CSM 20	6X41 21	6X40 NET IF 22	6X40 NET IF 23	0X50 FILLER 24	2X70 POWER 25 26 27

Note: For further description of the following International DTC, LTC, DTC and ICP/IPCO shelf packs, see "Circuit Pack Description" within this QRG or see NTP 297-8991-805.

AX78 — ISDN Enhanced Time Sw.
BX01 — Enhanced ISDN SP
MX77 — Unified Processor
SX05 — XPM Processor
2X70 — Power Converter
6X27 — International PCM30 IF
6X28 — International PCM30 Sig.
6X40 — DS30 Net. Interface
6X41 — Speech Bus Formatter
6X42 — Channel Supv. Message
6X43 — Message and Tone IF
6X44 — Time Switch
6X48 — DS30A LCM Interface
6X50 — DS1 Interface
6X62 — DMS-250 Tone Rec.
6X69 — Msg. & Tone Protocol
6X70 — Continuity Tone Det.
6X78 — CLASS Modem Res.
6X79 — Tone Generator
6X92 — UTR or GTR
7X80 — Bus Shorter (XPM+)
0X50 — Filler Pack

Note: For 6X50, 6X48, and 6X40 port and link assignments, see the LTC/LGC hardware and the "XPM PACK RELATIONSHIP DIAGRAM" and the "XPM Link Configuration Diagram" within this QRG.

Common Peripheral Controller Equipment Frame for LGC, DTC, DTCI, LTC, SMU, SMS.....



Line Concentrating Array (LCA) LCM Unit 0 shelf

Note: Unit 0 serves <u>even</u> line subgroups and unit 1 serves <u>odd</u> subgroups.

6X53 POWER 01 02 03	6X51 PROC 04	6X52 CNTL 05	6X05 LINE DRAWER 0 01 LSG 00	6X05 LINE DRAWER 1 03 LSG 02	6X05 LINE DRAWER 2 05 LSG 04	6X05 LINE DRAWER 3 07 LSG 06	6X05 LINE DRAWER 4 09 LSG 08

Line Concentrating Array ISDN (LCAI) LCME Unit 0 shelf (NTBX31BA)

Note: Unit 0 serves line subgroups 0-7 and unit 1 serves subgroups 8-15.

BX32 LINE DRAWER 0 01 LSG 00	BX32 LINE DRAWER 1 03 LSG 02	BX32 LINE DRAWER 2 05 LSG 04	BX32 LINE DRAWER 3 07 LSG 06	FUSE PANEL 18	BX35 DCC 1 19	BX35 DCC 0 20	BX34 PROC 21	6X53 POWER 22	BX72 BAT & RING 25

Note: The BX35 Digroup Controller Card 1 (DCC-1) is used by the LCME in a "takeover" state to address the mate unit subgroups.

Note: The NTBX31BA shelf is enhanced with respect to the NTBX31AC because each Line Dwr. can contain up to 12 additional line cards.

Note: Shelves NTBX31AA and AC have a NT6X53BA equipped in slot 25 and a NT6X53EA in slot 22.

Note: A Universal Edge IMAS can be installed in a vacant LCM drawer position. The assembly houses three card slots: Two interchangeable LC slots for a mix of: 40-port card for full-rate Discrete Multi-Tone (DMT) ADSL or G.Lite delivery; 64-port for SDSL.

Note: For further description of the following LCM and LCME Line Concentrating Array (LCA) packs, see the "Circuit Pack Description" within this QRG or see NTP 297-8991-805.

6X05 — Line Drawer
6X51 — LCM Processor
6X52 — Digroup Controller
6X53 — Power Converter
***6X54** —Bus Interface Card (BIC)
BX32 — LCME Line Drawer
BX34 — ISDN LCME Processor
BX35 — ISDN LCM Digroug Contr
BX36 — ISDN LCME BIC
BX72 — ISDN Bat. & Ring'g Router
****EX54** — Data BIC (1-Meg Modem)

***Note:** The 6X54 BIC is located within the Line Drawer. For a location, see the LCM and LCME Line Drawer diagrams within this QRG.

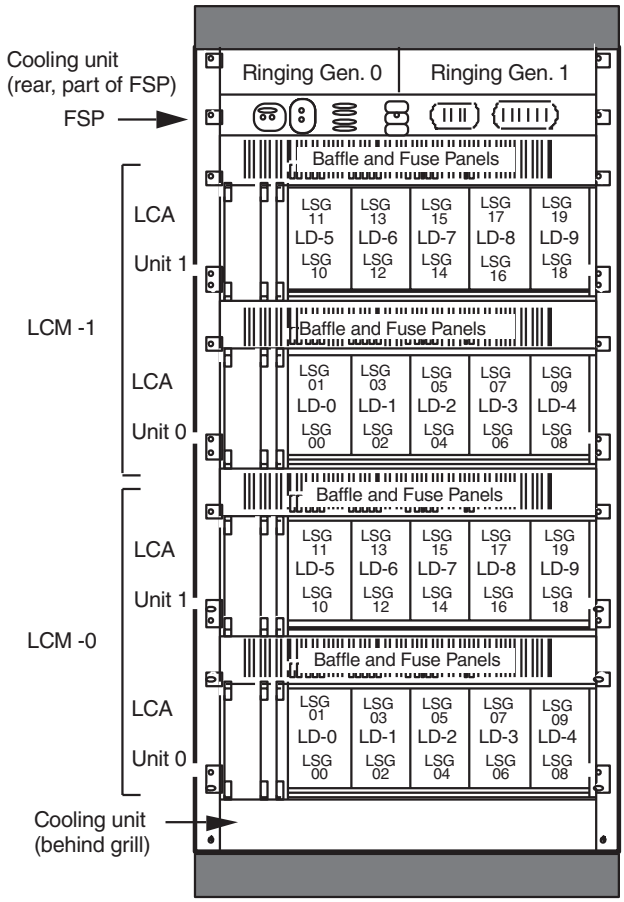
****Note:** The NTEX54 DBIC card replaces the NT6X54 BIC when 1-Meg Modem service is implemented. The NTEX54BAAB, BAAC, and BAAD cards are for Phase 2B. (see NTP 297-8063-200, *1-Meg Modem Service Implementation Guide*).

The following are <u>examples</u> of assignable cards within a Line Drawer:

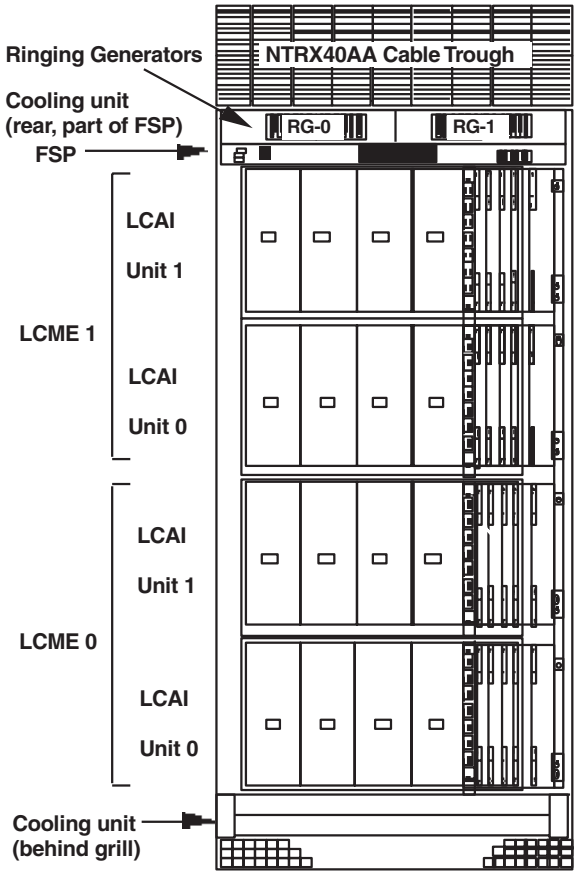
NT6X17AA — Standard Line Card Type A (MD'd)
NT6X17AB — Standard Line Card Type A (MD'd)
NT6X17AC/BA — World Line Card Type A
NT6X18AA — Standard Line Card Type B without +48V
NT6X18AB — Standard Line Card Type B with +48V
NT6X18BA — World Line Card Type B
NT6X19AA — Messaging Waiting Card Type E
NT6X20AA — Message Waiting Converter
NT6X21AA — EBS P-phone Line Card Type C
NT6X21AD — EBS P-phone Line Card
Note: See "DIP Switch Settings for the NT6X21AD Card" within this QRG or go to NTP 297-8991-805, *Hardware Reference Manual*
NT6X23AA — Power Converter (+48)
NTBX26AA — ISDN S/T Line Card
NTBX27AA — 2B1Q U-interface ISDN Line Card
NT6X71AA/AB — Standard Data Line Card Type D
NT6X76AA — Asynchronous Interface Line Card
NT6X99AA — IBERT (2-slot) Card
***NTEX17CA** — Hi density 2-slot xDSL 1-Meg Modem line card
***NTEX17DA** — DA card for RLCM/STAR; use with NTEX54CA DBIC card.

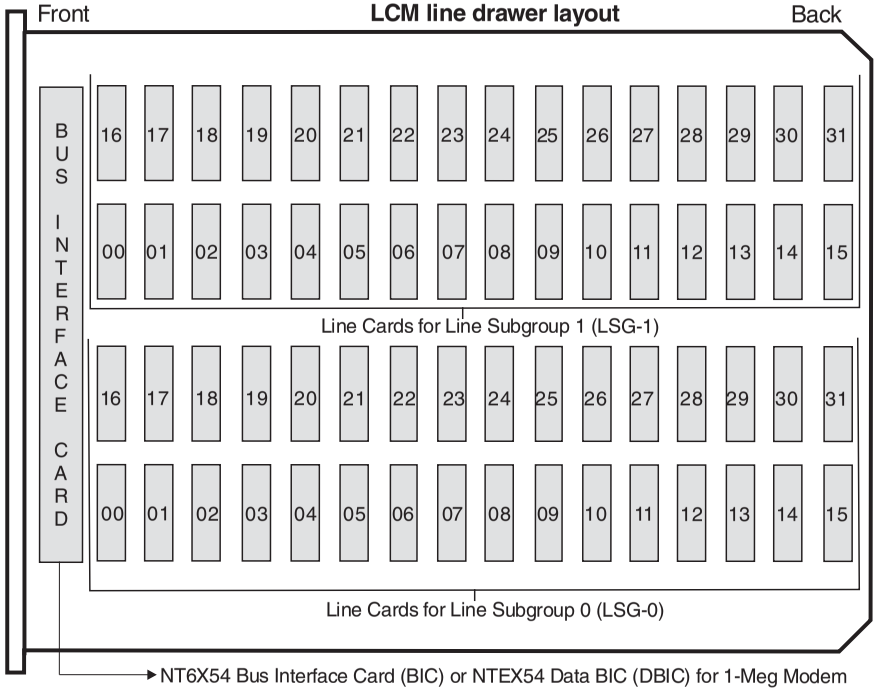
***Note:** See NTP 297-8063-200, *1-Meg Modem Service Implementation Guide*. The NTEX17AA and BA cards are MD as of 3/01.

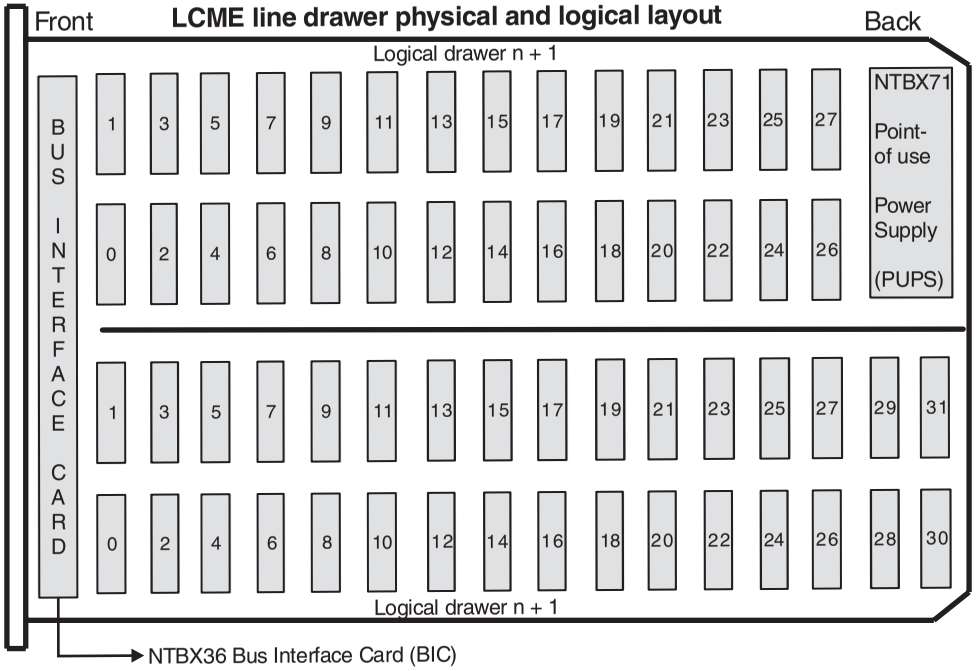
Line Concentrating Equipment (LCE) frame (NT6X03AA)



Cabinetized Line Module ISDN (CLMI) Frame (NTRX30DA)




Front
LCM line drawer layout
Back
BUS INTERFACE CARD
16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15
Line Cards for Line Subgroup 1 (LSG-1)
16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15
Line Cards for Line Subgroup 0 (LSG-0)
NT6X54 Bus Interface Card (BIC) or NTEX54 Data BIC (DBIC) for 1-Meg Modem


Front
LCME line drawer physical and logical layout
Back
Logical drawer n + 1
BUS INTERFACE CARD
1 3 5 7 9 11 13 15 17 19 21 23 25 27
0 2 4 6 8 10 12 14 16 18 20 22 24 26
NTBX71
Point-of use
Power Supply
(PUPS)
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30
Logical drawer n + 1
NTBX36 Bus Interface Card (BIC)

Digital Line Module (DLM) shelf

(*NTP 555-4001-101, DLM Reference Manual*)

DLM Unit 0													DLM Unit 1											
6X53	POWER	8X49	8X46	6X51	6X52	8X47 **P**0	8X47 **O**1	8X47 **R**2	8X47 **T**3	8X47 **S**4	0X50	8X55	0X50	8X47 **P**5	8X47 **O**6	8X47 **R**7	8X47 **T**8	8X47 **S**9	6X52	6X51	8X46	8X49	6X53	POWER
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25

6X51: LCM Peripheral Processors: controls the activity of the LCA and functions as the interface between the DS30A links and the digroup controller**;** preforms sanity checks, collects digits and messaging for up to 640 lines, monitors power and ringing functions, and recovers and generates clock signals
NT6X51AA = 64K Memory **NT6X51AB/AC** = 256K Memory

6X52: Digroup Controller Cards Digroup Controller: functions as an interface for up to threeDS30A links and up to ten LCM drawers; supplies time switching for both external and internal channel assignments and provides the digital looparound paths used for troubleshooting

8X46: Parallel Space Time Switches

8X49: Digital Set Interface Processor

8X47: Enhanced Digital Port Cards. **Note:** The Meridian 2000 and 3000 series sets can then be connected to (Enhanced) Digital Port Cards (DPC 8X47BA), with a maximum of 16 voice sets per card (each of which may optionally be equipped with a Meridian Asynchronous Data Option).

8X55: Optional Digital Port Maintenance Card. **Note:** In order to use the 8X55 Digital Maintenance Card (DPMC), the BA release of the DPC (8X47BA) must be used.

0X50: Filler Panels

6X53: Power Converter: supplies +5V and +15V DC

Intelligent Peripheral Equipment (IPE) shelf

(*NTP 555-4001-129, IPE Reference Manual*)

	6D40		6D42 or 7D05			**OPTICAL**							7D07		**OPTICAL**									
IPE		POWER				0	1	2	3	4	5	6	7		8	9	10	11	12	13	14	15		SPARE
			01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	

Note: The M5000 series (Electronic Business Sets) are not supported.

6D40: PE Power Supply (provides power to the IPE shelf and regulates all the voltages required by the cards on the shelf.

6D42: Ringing Generator DC (required with Analog and Message Line Card configurations)

7D05: Face Plate (use when Ringing Generator not required)

7D07: Controller Card (Consists of a mother board and a daughter board). Uses an MC68020 microprocessor that provides the primary interface for the IPE shelf, processing power for general control, maintenance functions, and signaling format conversion between the network and line cards. The controller card receives messages from the host XPM (Line Trunk Controller, Line Group Controller, or Remote Cluster Controller), peripheral line cards, and terminating devices (such as sets).

8D22: Extended system monitor (XSM) microprocessor located in the IPE pedestal base. It monitors the operation and status of the IPE power supplies, ringing gen., column thermal sensors, and blower units.

OPTIONAL LINE CARDS

5D11: Line Side T-1 Interface Line Card (LTI)

8D02: Digital Line Card (DLC)

8D03: Analog Line Card (ALC)

8D09: Analog Message Waiting Line Card (MLC)

8D31: Face Plate Line Card (for use where line cards are not equipped)

Remote Cluster Controller (RCC) shelf (NT6X12)

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
6X50 or 0X50	6X50 or 0X50	6X50 or 0X50	6X50 or 0X50	6X50 or 0X50	6X48 DS30A	6X48 DS30A	6X45 or 0X50	0X50 or 6X47	0X50 or 6X47	6X47 or 0X50	6X46 or 0X50	6X45 or MX77	0X50	6X44 TS	6X92 UTR	6X69 MSG	0X50 or 6X79	6X72 FOR	6X50 HDL	6X50 OSIN	6X50 S1K	6X50 TS	0X50	2X70 POWER		

DS30A Links to LCMs

DS30A Links to LCMs

Unit 1 Ports

19	15	11	7	3
18	14	10	6	2

Unit 0 Ports

17	13	9	5	1
16	12	8	4	0

Unit 0 or 1

Duplicated DS30A Links to LCMs.

2	3	0	1
6	7	4	5
10	11	8	9
14	15	12	13
18	19	16	17

Unit 1 Ports

3	7	11	15
2	6	10	14

Unit 0 Ports

1	5	9	13
0	4	8	12

To Host LGC or LTC

Note: RCCs and RCC2s connect to host switch via DS1 links to an LGC/LTC.

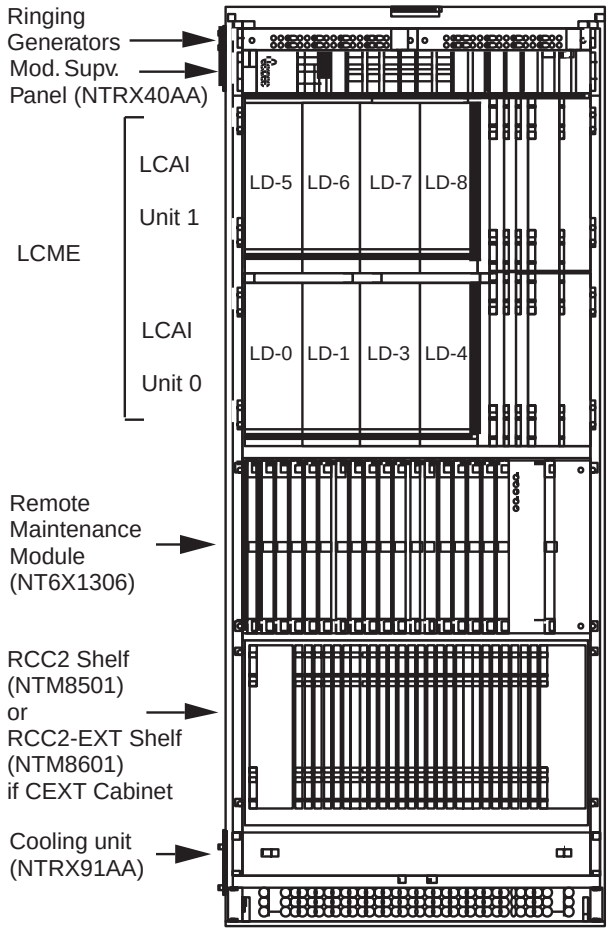
Note: See the "XPM Link Configuration" diagram within this QRG for more details on 6X50, 6X48, and 6X40 links & ports assignments.

Note: RCC packs listed on the next page.

Cabinetized Remote Switching Center/ISDN (CRSC/ISDN) (NTMX89FB)

Note: The RCC2 and RCC2-EXT shelves are on the following pages. The RMM shelf is located on the same page as the MTM within this QRG. The LCA shelf and LCME Line Drawer can also be found in this QRG. For further information on the RSC, see:

NTP 297-8221-550, *RSC Maintenance Manual*
NTP 297-8223-550, *RSC Multi-Access Maintenance Manual*
NTP 297-8261-550, *RSC-SONET A Maintenance Manual*
NTP 297-8281-550, *RSC-SONET B Maintenance Manual*



RCC2 shelf (NTMX8501)

MX72 POWER	AX74 at NA012	BX01AC or BA ISP	6X78 CMR	6X92 UTR	6X92 UTR or 0X50	6X69 or MX76	MX87 or MX81 or MX83	MX75 MATRIX	MX73 SIG	BX02 or MX87 or 81 or 83	MX74 DS30A	BX02 or MX87 or 81 or 83	MX74 DS30A	BX02 or MX87 or 81 or 83	MX73 SIG	MX75 MATRIX	MX87 or MX81 or MX83	6X69 or MX76	6X92 UTR or 0X50	6X92 UTR	6X78 CMR	BX01AC or BA ISP	AX74 at NA012	MX72 POWER
01 02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26 27
UNIT 0												UNIT 1												

Note: NTBX01AC or NTBX01BA ISDN Signaling Processor is required when the RCC2 is configured with the optional processor NTAX74AA.

RCC2 Port Provisioning

MX87 C-side	MX87 P-side	MX74 DS30A		MX87 P-side	MX74 DS30A	MX87 P-side	MX87 C-side
0 / 1	0 / 1	24 / 25		16 / 17	22 / 23	8 / 9	2 / 3
4 / 5	2 / 3	28 / 29		18 / 19	26 / 27	10 / 11	6 / 7
8 / 9	4 / 5	32 / 33		20 / 21	30 / 31	12 / 13	10 / 11
12 / 13	6 / 7	36 / 37		—	34 / 35	14 / 15	14 / 15
*16/17		40 / 41			38 / 39		*18/19
		44 / 45			42 / 43		
		48 / 49			46 / 47		
		52 / 53			50 / 51		
Slot 9	Slot 12	Slot 13		Slot 14	Slot 15	Slot 16	Slot 19
UNIT 0				UNIT 1			

* Upgrade from 16 to 20 C-side DS1 links (see IM 65-1125 for method).

Note: If DCHs are defined on ports 1, 9, and 17, then DS1s cannot be provisioned on ports 0-7, 8-15, and 16-21 respectively.

RCC2–EXT shelf (NTMX8601)

0X50 FILLER	MX79 DS60 EXT	BX02 DCH	BX02 or MX87 or 81 or 83	BX02 DCH	BX02 or MX87 or 81 or 83	BX02 DCH	BX02 or MX87 or 81 or 83	BX02 DCH	BX02 DCH	BX02 DCH	BX02 DCH	MX79 DS60 EXT	MX79 DS60 EXT	BX02 DCH	BX02 DCH	BX02 DCH	BX02 DCH	BX02 or MX87 or 81 or 83	BX02 DCH	BX02 or MX87 or 81 or 83	BX02 DCH	BX02 or MX87 or 81 or 83	BX02 DCH	MX79 DS60 EXT	0X50 FILLER
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
UNIT 0				UNIT 1				UNIT 1					UNIT 0												
Supports 1st RCC2													Supports 2d RCC2												

Note: For further description of most of the following packs, see the "Circuit Pack Description" within this QRG or see NTP 297-8991-805.

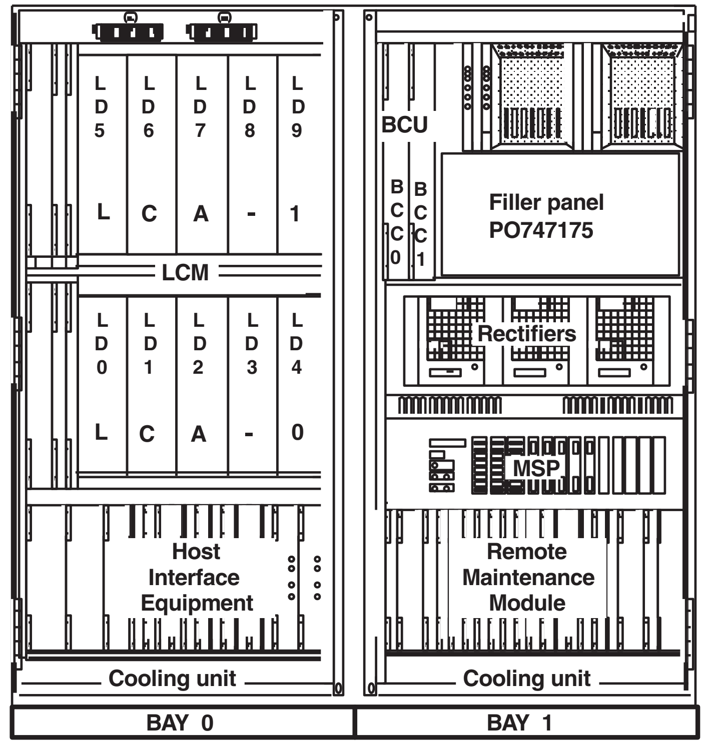
BX01 — ISDN Sig. Preproc. (EISP)
BX02 — ISDN DCH (P-Side IF)
MX72 — Power Converter
MX73 — Signaling Processor
MX74 — 32 DS30A Interface
MX75 — Enhanced Matrix
MX76 — Msg. & Tone Generator
MX77 — Unified Processor
MX79 — DS60 Extender
MX81 — Dual DS1 Packlet
MX83 — Filler Packlet
MX87 — Quad PCM Carrier Fr.
2X70 — Power Converter
6X44 — Time Switch
6X45 — Master/Signal Processor
6X46 — Signal Processor Mem.
6X47 — Master Processor Mem.
6X48 — DS30A LCM Interface
6X50 — DS1 Interface
6X69 — Enhanced Messaging
6X72 — Remote Formatter
6X79 — Tone Generator
6X92 — UTR or 6X92EA GTR
0X50 — Filler Pack

Optional Cards

AX74 — Access Processor with 16 MB Memory
6X78AB — CLASS Modem Resource (CMR) CP (NT6X78AA is MD'd)
6X92BB — UTR **6X92EA** — Global Tone Receiver (GTR)
BX02 — ISDN DCH (P-Side Interface)

Outside Plant Access Cabinet

(*NTP 297-8211-550, OPAC Maintenance Manual*)



Note: BCC0 & 1 are NT8X02XX Battery Charging Controller packs.

RLCM/OPM Host Interface Equipment (HIE) shelf

Slot	Pack
01	6X60 RINGING GENERATOR
05	6X60 RINGING GENERATOR
09	0X50
10	0X50
11	0X50
12	0X50
13	0X50 or 6X47 *
14	0X50 or 6X47 *
15	0X50 or 6X45 *
16	0X50 or 6X75 *
17	6X73
18	6X73
19	0X50 or 6X27
20	0X50 or 6X27
21	0X50 or 6X27
22 23 24	2X70 POWER
25 26 27	2X70 POWER

Note: * Provisioned for Emergency Stand-alone (ESA) Mode. Equipped with two 6X47AB 2MB cards or one 6X47AC 4MB memory card.

OPAC Remote Maintenance Module (RMM) shelf

Slot	Pack
01	2X59 GC
02	6X74 CNTL
03	2X10 MTU (a)
04	2X11 MTU (d)
05	3X09 MTA
06	3X09 RMTA
07	0X10 SCAN
08	0X10 SCAN
09	2X90 TEST
10	2X90 TEST
11	2X48 DGT
12	2X48 DGT
13	FILLER
14	FILLER
15	FILLER
16	FILLER
17 18	2X09 POWER
19	FILLER
20 21 22	2X06 POWER

Note: For further description of the following RMM and HIE packs, see the “Circuit Pack Description” within this QRG or see NTP 297-8991-805.

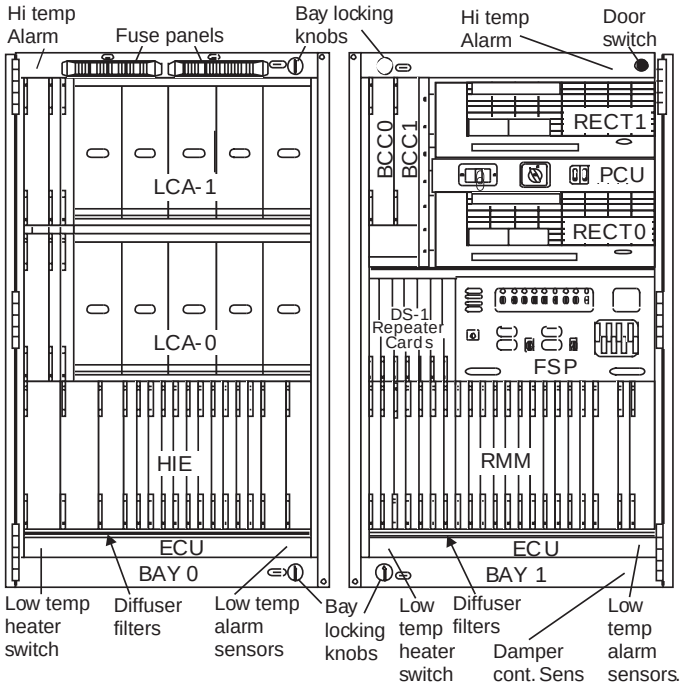
Note: For RMM circuit numbers for cards in slots 03 thru 16, see the RMM shelf located with the MTM shelf within this QRG.

0X10 — Scan Card
2X06 — Power Converter
2X09 — Power Converter
2X10 — MTU Analog card
2X11 — MTU Digital card
2X48 — Digitone Receiver
2X57 — Sig. Dist. (SD)
2X59 — Group CODEC
2X70 — Power Converter
2X90 — Test Trunk Card
3X09 — Metallic Test Access (MTA)
6X27 — PCM30 Interface
6X45 — ESA Processor
6X47 — ESA Memory
6X50 — DS1 Interface
6X57 — Signal Distribution Type 1
6X60 — RLCM/OPM Ringing Generator
6X73 — RIM Link Control
6X74 — RMM/RIM Control
6X75 — ESA Clock and Tone

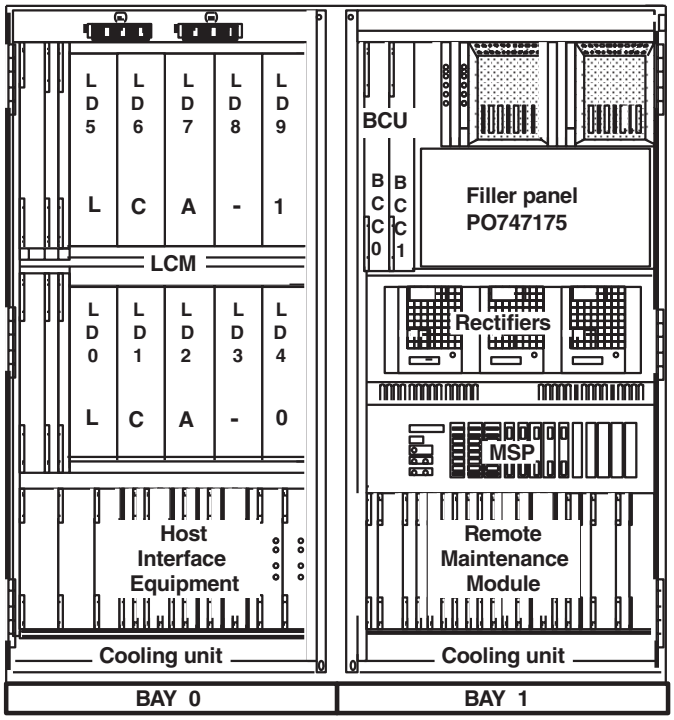
Outside Plant Module

(*NTP 297-8361-550, OPM Maintenance Manual*)

OPM-640 Bay Frame (NT8X01AA, AB)



OPM-256 Bay Frame Configuration (NT8X01BC)



OPM Remote Maintenance Module (RMM) shelf

2X59 GC 01	6X74 CNTL 02	2X90 TEST 03	2X90 TEST 04	3X09 MTA 05	0X10 SCAN 06	2X10 MTUA 07	2X11 MTUD 08	FILLER 09	FILLER 10	FILLER 11	3X09 RMTA 12	0X10 SCAN 13	2X90 TEST 14	2X57 SD 15	2X57 SD 16	2X09 POWER 17 18	FILLER 19	2X06 POWER 20 21 22

Note: For further description of the OPM RMM packs and the OPM HIE shelf and packs, see the previous page and the RMM and HIE packs. Also, see "Circuit Pack Description" within this QRG or NTP 297-8991-805.

Message Services Module (MSM) for DMS VoiceMail

(*NTP 297-7001-502, DMS VoiceMail Card Replacement Procedures*)

DMS VoiceMail is a voice processing system designed to provide call answering and voice messaging services for the central office (CO) environment. A DMS VoiceMail system uses a message services module (MSM) and voice processing software, and is administered from either a local or remote terminal.

Slot	Secondary Electronics ShelF (Front view only)	Primary Electronics Shelf (Front view only)	Secondary Disk Shelf (Front view only)	Primary Disk Shelf (Front view only)
1 2 3	9X91 POWER	9X91 POWER	9X91 POWER	9X91 POWER
4 5 6	9X91 POWER	9X91 POWER	9X91 POWER	9X91 POWER
7		M	GX 14 DISK 5 (slots 7–11)	GX 14 DISK 1 (slots 7–11)
8		GX05 S 1		
9		GX10 P		
10		GX10 M		
11		S 2		
12		GX05 P	GX 14 DISK 6 (slots 12–16)	GX 14 DISK 2 (slots 12–16)
13	GX12 S			
14	GX12 P 8	GX12 S		
15	GX05 N	GX12 P 4		
16		GX05 N		
17	GX12 S	GX12 S	GX 14 DISK 7 (slots 17–21)	GX 14 DISK 3 (slots 17–21)
18	GX12 P 7	GX12 P 3		
19	GX05 N	GX05 N		
20	GX05	GX05		
21	TFN 4	TFN 2		
22	GX08	GX08	GX 14 DISK 8 (slots 22–26)	GX 14 DISK 4 (slots 22–26)
23	GX08	GX08		
24	TFN 3	TFN 1		
25	GX05	GX05		
26				
27	GX12 S	GX12 S	GX 14 DISK 9 (slots 27–31)	GX 15 DISK/TAPE (slots 27–31)
28	GX12 P 6	GX12 P 2		
29	GX05 N	GX05 N		
30	GX05 S	GX05 S		
31	GX12 P 5	GX12 P 1		
32	GX12 N	GX12 N	9X19	9X19
33 34 35	9X91 POWER	9X91 POWER	9X91 POWER	9X91 POWER
36 37 38	9X91 POWER	9X91 POWER	9X91 POWER	9X91 POWER

MSP = multi-server processor
SPN = signal processing node
TIFN = telephony interface node

Note: For further description of the following MSM packs, see the "Circuit Pack Description" within this QRG or see NTP 297-8991-805.

GX05 — 68K Main CP
GX08 — T1 Main CP
GX10 — Bus Controller Main CP
GX12 — VP12 CP
GX14AA — 1200 MB Disk Module Assembly
GX14BA — Dual 1200 MB Disk Module Assembly
GX15 — Disk Tape Module Assembly
GX19 — Filler Packs
GX91 — +5V/+12V Power Converter CP

The following are Paddle Boards located in the back (**not shown above**):

GX04AA— Bus Term. Transition Mod. PB(Slot 32 in back of shelves)
GX04BA— Bus Extender Transition Module PB (Slot 7 in back of shelves)
GX06 — 68K Transition Module PB (Paddle Bd in back of shelves)
GX07 — Modem Transition PB (Slots 20 & 25 in back of shelves)
GX09 — T1 Transition Module PB (Slot 22 in back of shelves)
GX11 — Bus Cont Transition Mod PB (Slots 9 & 10 of Primary shelf)

Note: The transition PB provides connections to external devices.

TOPS Message Switch (TMS) shelf (NT6X0201)

6X50 or BX02	6X50 or BX02	6X50 or BX02	6X50 or BX02	6X50 or BX02	0X50 or 6X48	0X50 or 6X48	6X45 or 0X50	6X47 or 0X50	6X47 or 0X50	6X46 or 0X50	6X45 or MX77	0X50	6X44 TS	0X50 or 6X92	BX01 SP	0X50	6X69 MSG	0X50	6X42 CSM	6X41 SBF	6X40 NET IF	0X50	0X50	2X70 POWER	
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26 27

Note: For further description of the following TOPS TMS packs, see the "Circuit Pack Description" within this QRG or see NTP 297-8991-805.

2X70 — Power Converter
6X40 — DS30 Net. Interface
6X41 — Speech Bus Formatter
6X42 — Channel Supv. Message
6X44 — Time Switch
6X45 — Master/Signal Processor
6X46 — Signal Processor Memory
6X47 — Master Processor Memory
6X48 — DS30A LCM Interface
6X50 — DS1 Interface
6X69 — Msg. & Tone Protocol
6X92 — UTR or GTR
BX01 — Enhanced ISDN SP
BX02 — Enhan'd DCH for ISDN
MX77 —Unified Processor

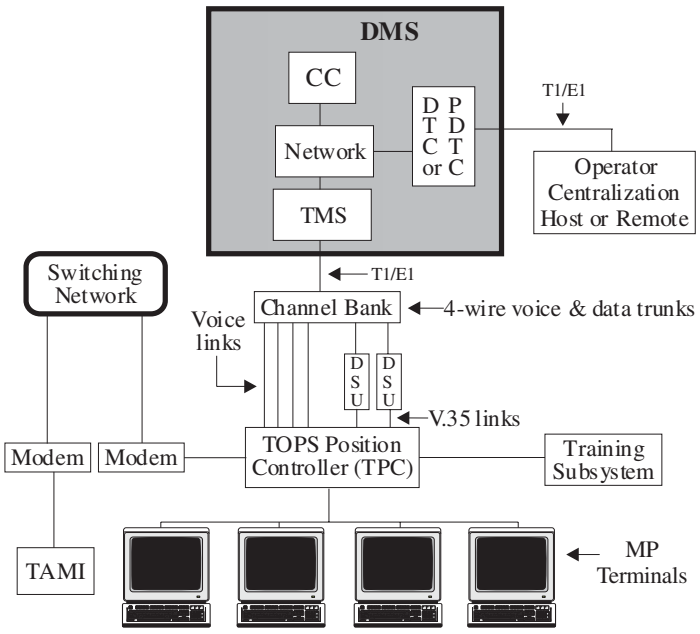
TOPS IP-XPM Gateway Peripheral

An Internet Protocol (IP) "gateway" device provides the bridge between the circuit-switched TDM and the packet based IP networks. An IP address, which takes numerical and alphanumeric forms, identifies each device on the network. See table IPINV for provisioning.

7X07 IPGW	7X07 IPGW	7X07 IPGW	7X07 IPGW	7X07 IPGW	0X50 F	0X50 I	0X50 L	0X50 L	0X50 E	0X50 R	SX05 PROC	0X50 FIL	6X44 TS	0X50 FIL	0X50 FIL	0X50 FIL	MX76 MSG	0X50 FIL	6X42 CSM	6X41 SBF	6X40 NET IF	0X50 FIL	0X50 FIL	2X70 POWER	
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26 27

2X70 — Power Converter
6X40 — DS30 Net. Interface
6X41 — Speech Bus Formatter
6X42 — Channel Supv. Message
6X44 — Time Switch
7X07 — Voice over IP Gateway (IPGW) CP
MX76 —Message and HDLC Signaling CP
SX05 — Enhanced Peripheral Processor with Ethernet backplane conn.

TOPS MP Configuration with TMS



SuperNode Data Manager (SDM) Quick References

SDM Main Chassis Front View

NTRX50FE or FF Fan Tray 0 (Domain 0)																
NTRX50FE or FF Fan Tray 1 (Domain 1)																
RX50* DS512	RX50** I/O	CONTROLLER	DUAL DISKS	OPTIONAL	RX50*** CPU	CONTROLLER	FILLER	FILLER	RX50*** CPU	CONTROLLER	RX50* DS512	RX50** I/O	CONTROLLER	DUAL DISKS	OPTIONAL
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
Domain 0					CPU Core						Domain 1				

Note: For further information on the following SDM packs, see NTP 297-5051-304 or NTP 297-5061-906.

***RX50GA** — DS512 Controller (MD)
***RX50GX** — Enhanced DS512 Controller
****RX50FU** — IO Controller — 4-Gig Disk (Dual 2 Gig Disks) (MD)
****RX50FQ** — IO Controller — 2-Gig Disk, DAT, & Ethernet Cont. (MD)
****RX50GN** — IO Controller — 4-Gig Disk, DAT, & Ethernet Cont. (MD)
****RX50GP** — IO Controller — 8-Gig Disk (Dual 4-Gig Disks) (MD)
****RX50ND** — IO Controller — 9-Gig Disk, DAT, & EthernetController (Not available for ordering)
****RX50NC** — IO Controller — 18-Gig Disk (Dual 9-Gig Disk) (Not available for ordering)
****RX50NM** — IO Controller — 36-Gig Disk, DAT, & Ethernet Cont.
****RX50NL** — IO Controller — 72-Gig Disk (Dual 36 Gig Disks)
*****RX50FK**; **RX50FL**; **RX50FM; RX50CF**; **RX50CG; RX50CH** CPUs are all MD'd and not available for ordering
*****RX50NB** — CPU 350Mhz, Arther 750 512 Mbyte DRAM

SDM Main Chassis Rear View

Interconnect Module 1 NTRX50FG/FH											Interconnect Module 0 NTRX50FG/FH				
FILLER	FILLER	FILLER	RX50* LAN PER	RX50 GH DS512 IF PER			FILLER				RX50 FD CPU PER	FILLER	FILLER	FILLER	RX50* LAN PER	RX50 GH DS512 PER
16	15	14	13	12	11	10	09	08	07		06	05	04	03	02	01
Domain 1					CPU Core							Domain 0				

Note: For further information on the following SDM packs, see NTP 297-5051-304 or NTP 297-5061-906.

RX50FG/FH — Interconnect Modules (FG = Domain 0)(FH = Domain 1)
***RX50FS** — LAN Personality Module (RJ45 / 10/100BaseT) for NTRX50GN/GP and NTRX50ND/NC
***RX50NK** — LAN Personality Module for NTRX50NM/NL
RX50GH — DS515 Fiber Interface
Note: The following are Link assignments for the NTRX50GH:
Link 0 — MS-0 Link-0 => Domain-0 Link-0
Link 1 — MS-0 Link-1 => Domain-1 Link-0
Link 2 — MS-1 Link-0 => Domain-0 Link-1
Link 3 — MS-1 Link-1 => Domain-1 Link-1

RX50FD — CPU Personality Module

SDM Cables:
NTRX5104 — 10 base-T (RJ45 connector)
NTRX5132 — 100 base-T (RJ45 connector)
NT0X26AZ — RS232 Cable (for initial Modem setup only)
NT0X97AE — DS512 Fiber Optic Cable

SDM Quick References continue on the next page.

SDM References

Logs: SDM, (See NTP 297-5051-840)
Note: Log files exist on the SDM in directory /var/adm. Use unix commmands: more, pg, or tail to view logs.

Tables: MSCDINV, IPNETWRK, IPHOST, SDMINV
(See NTP 297-5061-906 & NTP 297-8001-351)

Commands: QuerySDM, Platform, Locate (On SDM MAP level)
(See NTP 297-5061-906)

Documentation:
NTP 297-5061-906, *SuperNode Data Manager (SDM-FT)*
NTP 297-5051-300, *SDM SuperNode Billing Application Guide*
NTP 297-5051-304, *SuperNode Data Manager Upgrade Guide*
NTP 297-5051-543, *SDM Alarm Clearing & Perf Monitoring Procedures*
NTP 297-5051-908, *SDM DCE Troubleshooting Guide*

Helpful SDM and Other Unix Commands

Note: For some commands, like **ping** and **netstat**, you can use **Ctrl <C>** to stop activity and **Ctrl <Break>** to resume.

>**awk**	awk utility
>**billmtc**	starts the SDM Billing Maintenance Interface
>**copylogfile**	copies one log file to another
>**cut**	writes out selected columns from each line of a file
>**dellogfile**	removes log file(s)
>**df**	list space information for the file systems
>**entstat**	show ethernet device statistics
>**exit**	logs user out of the SDM
>**ftplogfile**	starts ftp session to transfer log files
>**grep**	search a file for a pattern
>**help**	displays generic help information
>**iostat**	list disk I/O status
>**ipcs**	list IPC status
>**listlogfile**	lists all log file(s)
>**locate**	queries hardware module information
>**logout**	logs user out of the SDM
>**logroute**	invokes the Log Delivery Commissioning Tool
>**lsattr**	list attributes for devices in the system
>**lscfg**	list the system configuration
>**lsdev**	displays devices and their characteristics
>**lsent**	list characteristics for a logical ethernet device
>**lsfs**	list all the file systems
>**lslpp**	lists installed software products
>**lsps**	list paging space characteristics
>**lspv**	list physical volumes on the system
>**lssrc**	show status of the SRC managed daemons
>**lsstate**	list device status on FX
>**netstat**	network debugging command
>**odmget**	retrieve objects from ODM
>**oslevel**	reports the latest installed maintenance level
>**ping**	sends ICMP ECHO_REQUEST packets to network hosts
>**ps**	reports process status
>**querysdm**	queries information about the SDM
>**sdmlv**	list the logical volumes on the SDM
>**sdmmtc**	starts the SDM Maintenance Interface
>**shmget**	show SDM shared memory status
>**sort**	sorts and merges files
>**traceroute**	IP packets route tracing in networks
>**viewlogfile**	views log file
>**vmstat**	list virtual memory status
>**who_is_on**	displays the users logged in to the SDM

Command base_mib_all

Some SuperNode Billing Application (SBA) Management Information Bases (MIBs) are not accessable via the BILLMTC mib tool. You can use the **base_mib_all** command in directory /sdm/sba/NA100/bin or directory /sdm/sba/DMS500/bin to get and set the following MIBs.

The command format:

To view an mib value: **./base_mib_all get -rx <mib_parameter>**

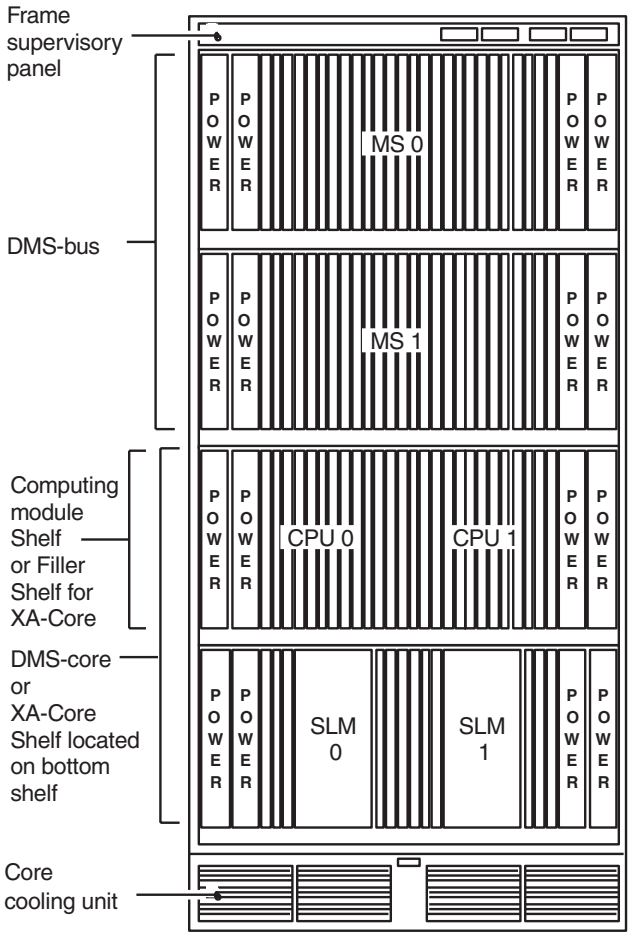
To set an mib value: **./base_mib_all set -rx <mib_parameter> y**

%%<mib_parameter> is the different mib parms (i.e. name, variables).

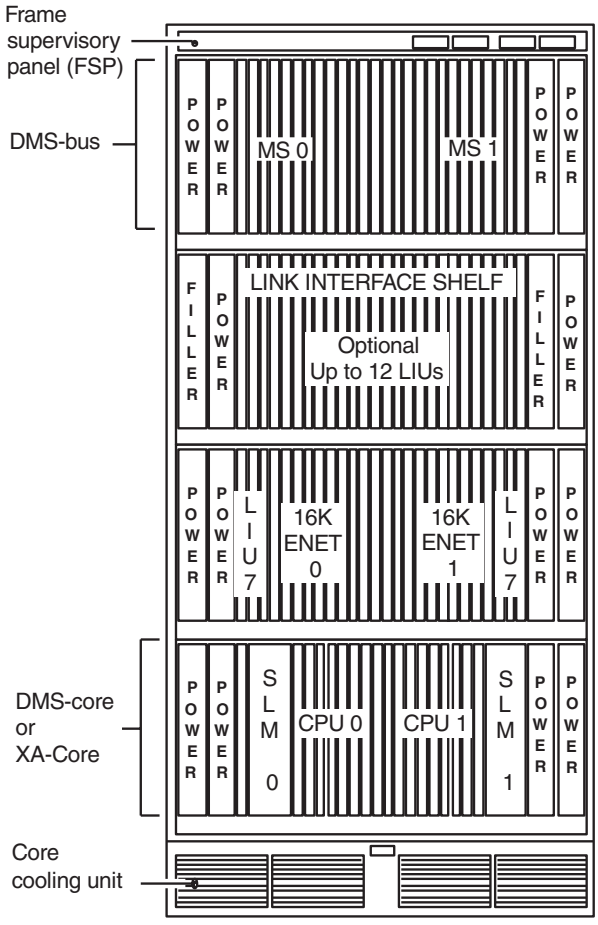
%%y is the new value you want to assign to that mib name.

schDestLoginPassword	(The password for the Login into the DPMS)
rcDNSSeqNumber	(The sequence # for the DNS Formatted streams)
rcDIRPSeqNumber	(The sequence # for the DIRP Formatted streams)
rcCloseFilesOnGetFiles	(If set to “1”, then all opern files are closed and sent when a sendfile occurs)

SuperNode Cabinet



SuperNode Switch Enhanced (SNSE) Cabinet



Message Switch (MS) shelf (NT9X04)

9X19 FIL 32	9X20 IFPB 31	9X20 IFPB or 9X23 30	9X32 or 9X23 29	9X32 or 9X23 28	< 27	S 26	E 25	E 24	N 23	O 22	T 21	E 20	B 19	A 18	SC 17	E 16	L 15	O 14	W 13	> 12	9X19 FIL 11	9X32 LOAD 10	9X26 RTIF 09	9X54 CLK 08	9X32 LOAD 07
						S	H	EF	LR	FO	M	A	SB		SC	EK	LE	N							

9X31 POWER 01	9X30 POWER 04	9X52 TBUS 07	9X53 CLK 08	9X13 CPU 09	9X14 MEM 10	9X15 MAP 11	< 12	S 13	E 14	E 15	16	17	N 18	O 19	T 20	E 21	22	23	B 24	E 25	L 26	O 27	W 28	> 29	9X17 4 Port 30	9X17 4 Port 31	9X49 TERM 32	9X31 POWER 33	9X30 POWER 36
										HF	LR		FO		AM	SF	R	SO	EN	ET	LN								

Note: For slots 12 through 27 on the back shelf, Paddle Board Cards NT9X20, NT9X23, NT9X32, or the NT9X25 MS Port Expander/Extender or Terminator Paddle Board Card can be provisioned. For slots 12 through 29 in the front, cards NT9X17AA, BA, CA, or the NT9X19AA Filler Pack can be provisioned. See *PLN-8991-104, Provisioning Guides* and *NTP 297-8991-805, DMS-100F Hardware Reference Manuals.*

Note: Use the QUERYMS command to check pack properties.

Computing Module (CM) Processor shelf (NT9X06)

CPU 1														CPU 0											
9X21 TERM 32	9X27 or 9X19 31	9X27 or 9X19 30	9X27 or 9X19 29	9X19 28	9X19 27	9X19 S 26	9X19 H 25	9X19 EF 24	9X22 LR 23	9X20 FO 22	9X20 M 21	9X26 A 20	9X26 SB 19	9X20 A 18	9X20 SC 17	9X22 EK 16	9X19 E 15	9X19 N 14	9X19 13	9X19 12	9X19 11	9X27 or 9X19 10	9X27 or 9X19 09	9X27 or 9X19 08	9X21 TERM 07

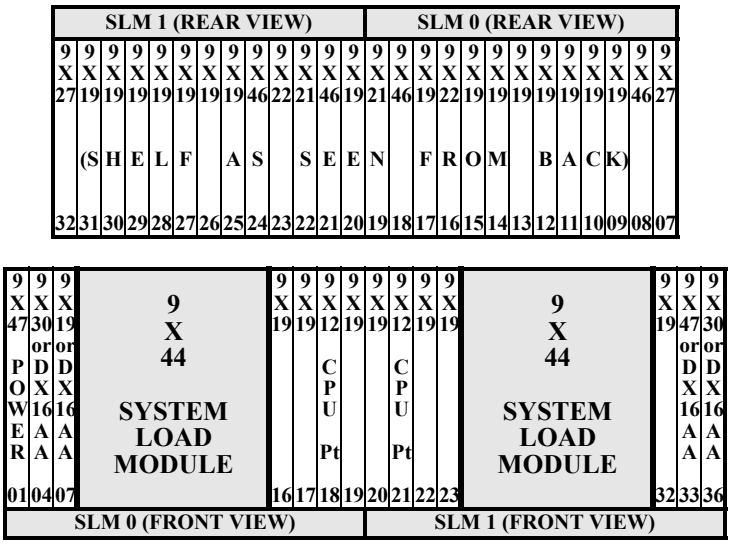
9X31 POWER 01	9X30 POWER (SH) 04	9X19 FILLER 07	9X19 FILLER 08	9X14 or 9X19 < LE 09	9X14 or 9X19 M FA 10	9X14 or 9X19 E 11	9X14 or 9X19 M A 12	9X14 or 9X19 O S 13	9X14 or 9X19 R 14	9X14 or 9X19 Y S 15	9X14 or 9X19 > E 16	9X12 CPU Pt E 17	9X12 CPU Pt N 18	9X13 or 9X10 CPU 19	9X13 or 9X10 CPU 20	9X12 CPU Pt F 21	9X12 CPU Pt R 22	9X14 or 9X19 < OM 23	9X14 or 9X19 - M 24	9X14 or 9X19 M 25	9X14 or 9X19 E F 26	9X14 or 9X19 M R 27	9X14 or 9X19 O O 28	9X14 or 9X19 R N 29	9X14 or 9X19 Y T) 30	9X14 or 9X19 - 31	9X14 or 9X19 > 32	9X31 POWER 33	9X30 POWER 36
CPU 0															CPU 1														

Note: For further description of the following MS and CM packs, see the "Circuit Pack Description" within this QRG or see NTP 297-8991-805.

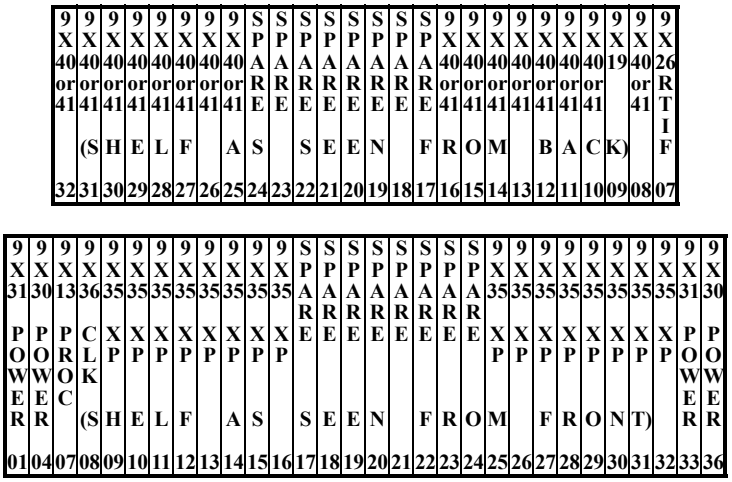
Note: Use the QUERYCM command at CM MAP level to check pack properties. Dependent upon table PECINVs datafill being current.

9X10 — BRISC CPU
9X10AB — BRISC CPU Series 60 SN
9X10BA — BRISC CPU Series 70 SN
9X12 — CPU Port
9X13 — CPU processor
9X14 — Memory
9X15 — Mapper
9X17AA — MS 4-port
9X17AD — MS 4-port
9X17BB — DMS-bus 32-port
9X17CA — DMS-bus 128-port
9X17DA — DMS-bus 64-port
9X20AA — DS512 IF CM-MS PB
9X20BB — DS512 IF EN-MS PB
9X21 — CM Bus Terminator PB
9X22 — CM Subsystem Clk PB
9X23 — DS30 4-Port PB
9X25 — MS Pt or Term PB
9X26 — RTIF PB
9X27 — CM Bus Extension PB
9X30 — Power Converter
9X31 — Power Converter
9X32 — DMS-bus Load PB
9X49 — MS P-bus Terminator
9X52 — T-bus Access
9X53 — MS Clock
9X54 — MS Ext. Clock IF PB
9X62 — Four-port Subrate PB

System Load Module (SLM) shelf (NT9X07)



Enhanced Network (ENET) shelf (NT9X08)



Note: For further description of the following SLM and ENET packs, see the "Circuit Pack Description" within this QRG or see NTP 297-8991-805.

9X12 — CPU Port
9X13 — ENET Processor
9X21 — CM Bus Term. PB
9X22 — CM Subsystem Clk PB
9X26 — RTIF
9X27 — CM Bus Ext. PB
9X30 — Power Converter
9X31 — -5V Power Converter
9X35 — 16K X 16K Crosspoint
9X36 — ENET Clock & Message
9X40 — DS512 Quad Fib. I/F PB
9X41BA —16 Port DS30 Link PB
9X44AD — SLM III Unit which replaces the MD'd 9X44AA, AB, and AC units. See Note below.
9X46 — Parallel CM Port I/F
9X47 — Power Converter
DX16 — Dual Power Converter

Note: The NT9X44AA, AB, and AC SLMs are at end-of-life (EOL) on 5/2002.

Link Peripheral Processor (LPP)

Local Message Switch (LMS) shelf (NT9X71)

LMS 1 (REAR VIEW)													LMS 0 (REAR VIEW)											
9X19	9X79	9X23	9X23	9X19	9X19	9X19	9X19	9X19	9X19	9X26	9X19	9X19	9X19	9X19	9X26	9X19	9X19	9X19	9X19	9X23	9X23	9X79	9X19
	(S	H	E	L	F		A	S		S	E	E	N		F	R	O	M		B	A	C	K)		
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	09	08	07

9X19 or DX16AA	9X30 or DX16AA	9X49	9X73	9X17	9X19	9X19	9X19	9X19	9X15	9X14	9X13	9X53	9X52	9X52	9X53	9X13	9X14	9X15	9X19	9X19	9X19	9X19	9X17	9X17	9X73	9X49	9X19 or DX16AA	9X30 or DX16AA
										MEM		CLK			CLK		MEM				F	R	O	N	T)			
01	04	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	36
LMS 0 (FRONT VIEW)															LMS 1 (FRONT VIEW)													

Link Interface Shelf (LIS) with LIUs (NT9X72)

(Example shown with eight 3-pack CCS7 Link Interface Units (LIU7s)

9X79 or 9X98	EXA20A or 9X19	9X78 or 9X77	9X19	9X19	9X78 or 9X77	9X19	9X19	9X78 or 9X77	9X19	9X19	9X19	9X78 or 9X77	9X19	9X19	9X78 or 9X77	9X19	9X19	9X78 or 9X77	9X19	9X19	9X78 or 9X77	EXA20B	9X78 or 9X77	EXB20A or 9X19	9X79 or 9X98
				A	S		S	E	E	SN	H	EF	LR	FO	M		B	A	C	K					
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	09	08	07

9X19 or DX16AA	9X30 or DX16AA	9X74	9X13 76 75	9X13 76 75	9X13 76 75	9X13 76 75	9X13 76 75	9X13 76 75	9X13 76 75	9X13 76 75	9X13 76 75	9X13 76 75	9X74	9X19 or DX16AA	9X30 or DX16AA
		or	LIU #1	LIU #2	LIU #3	LIU #4	LIU #5	LIU #6	LIU #7	LIU #8		or	
01	04	07	08 09 10	11 12 13	14 15 16	17 18 19	20 21 22	23 24 25	26 27 28	29 30 31	32	33	36
			(SHE	LF	AS	SEE	N F	ROM	F R	ON T)	9X96		

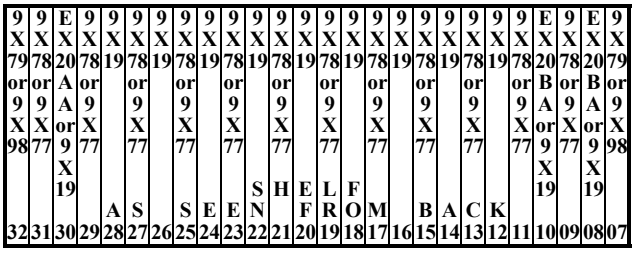
Note: The Paddle Boards shown above are provisioned for eight 3-pack LIU shelves. See NTP 297-8991-805 and the NT9X72AC shelf layout for other provisionable options such as: the NT9X77 V.35 Paddle Board (PB), the NT9X79 F-bus extender PB, the NT9X85 Ethernet AUI PB, the NTEX20 Intra F-bus 1 termination PB, and the NTEX30 Frame Relay T1 PB. Various NT9X19 filler packs for power, vacant slots, and paddle board slots are described within NTP 297-8991-805.

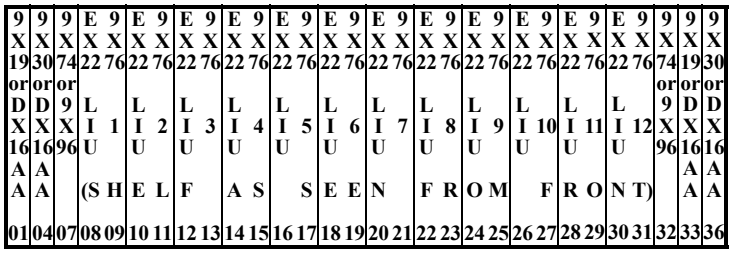
Note: For 12 two pack LIU shelves and other enhanced capacity EIU, FRIU, and NIU assignments, see the following pages or reference NTP 297-8991-805 and the NT9X72BA shelf layout located within the NT9X70BB cabinet.

Link interface shelf configurations continue on the next page.

Link Interface Shelf with LIUs (NT9X72BA)

(Example shown with twelve 2-pack CCS7 Link Interface Units (LIUs)

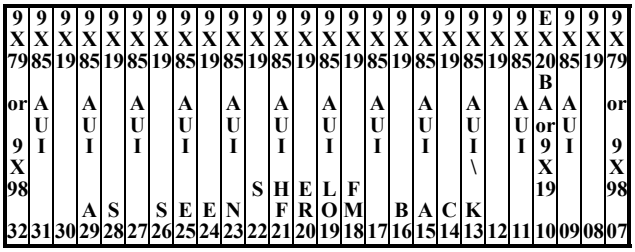


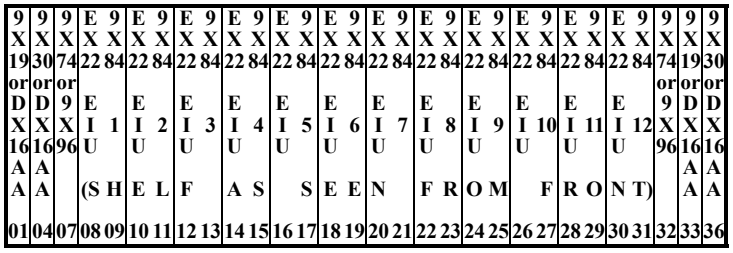


Link Interface Shelf with 12 EIUs

(*NTP 297-8991-910, Ethernet Unit Interface Guide*)

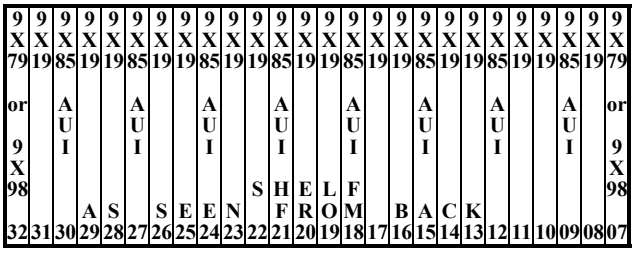
Note: Example shown equipped with 12 Ethernet Interface Units (EIUs) and 12 Attachment Unit Interfaces (AUIs).

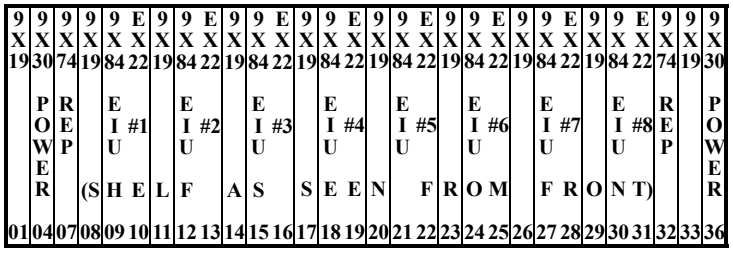




Link Interface Shelf with 8 EIUs

(Example shown equipped with 8 Ethernet Interface Units (EIUs) and 8 Attachment Unit Interfaces (AUIs)





Link interface shelf configurations continue on the next page.

Link Interface Shelf with XLIUs and NIUs

9X79 BA or 9X98	9X19	9X19	9X19	9X19	9X19	9X19	9X19	9X19	9X19	9X19	EX28 DS30 EF	9X19	EX28 DS30 LR	9X19	9X19	9X19	9X19	9X19	9X19	FX09 CBUS	9X19	FX09 CBUS	9X19	9X79 BA or 9X98
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	09	08	07

9X19 or DX16 AA	9X30 or DX16 AA	9X74 or 9X96	EX22 10 XLIU #1	FX22 10 XLIU #2	9X19	9X19	9X19	9X19	9X19	9X19	EX22 NIU	EX25 #0	EX22 NIU	EX25 #1	9X19	9X19	9X19	9X19	9X19	9X19	9X19	9X19	9X19	9X74 or 9X96	9X19 or DX16 AA	9X30 or DX16 AA
01	04	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	36

Link Interface Shelf with FRIUs (NT9X72BA)

(Example shown with 12 Frame Relay Interface Units (FRIUs) and 12 Frame Relay Service (FRS) Interface Units

9X79 AA or 9X98	EX30 FRS 12 (S	9X19 H	EX30 FRS 11 E	9X19 L	EX30 FRS 10 F	9X19	EX30 FRS 9 A	9X19 S	EX30 FRS 8	9X19 S	EX30 FRS 7 E	9X19	EX30 FRS 6 E	9X19 N	EX30 FRS 5 F	9X19	EX30 FRS 4 R	9X19 O	EX30 FRS 3 M	9X19	EX30 FRS 2 B	EX20 BA or 9X19 C A	EX30 FRS 1 K)	9X19	9X79 BA or 9X98
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	09	08	07

9X19 or DX16 AA	9X30 or DX16 AA	9X74 or 9X96	EX22 31 FRIU (S	EX31 1 H	EX22 31 FRIU 2 E	EX31 L	EX22 31 FRIU 3 F	EX31	EX22 31 FRIU 4 A	EX31 S	EX22 31 FRIU 5	EX31 S	EX22 31 FRIU 6 E	EX31 E	EX22 31 FRIU 7 N	EX31	EX22 31 FRIU 8 F	EX31 R	EX22 31 FRIU 9 O	EX31 M	EX22 31 FRIU 10	EX31 F	EX22 31 FRIU 11 R	EX31 O	EX22 31 FRIU 12 N	EX31 T)	9X74 or 9X96	9X19 or DX16 AA	9X30 or DX16 AA
01	04	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	36

Example of LIS equipped with 8 FRIUs (Front view only)

9X19	9X30 PWR	9X74 RE P	9X19	EX31 FIRU #1	EX22	9X19	EX31 FIRU #2	EX22	9X19	EX31 FIRU #3	EX22	9X19	EX31 FIRU #4	EX22	9X19	EX31 FIRU #5	EX22	9X19	EX31 FIRU #6	EX22	9X19	EX31 FIRU #7	EX22	9X19	EX31 FIRU #8	EX22	9X74 RE P	9X19	9X30 PWR
01	04	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	36

Note: For further description of the following LMS and LIS packs, see the "Circuit Pack Description" within this QRG or see NTP 297-8991-805.

9X13 — LMS Processor
9X14 — Memory
9X15 — Mapper
9X17 — T-bus to link I/F Ports
9X23 — DS30 4-Port PB
9X26 — RTIF
9X30 — Power Converter
9X49 — P-Bus Terminator
9X52 — T-Bus Access
9X53 — Clock
9X73 — F-Bus Rate Adaptor
9X74 — F-Bus Repeater
9X75 — P-Bus to F-Bus Interface
9X76 — Signaling Terminal
9X77 — V.35 Interface PB
9X78 — DSO Interface PB
9X79 — F-Bus Ext/Term PB
9X84 — Ethernet Interface Card
9X85 — Ethernet Access Unit IF
9X96 — LIS FBUS Controller
9X98 — LIS Fiber Interface PB
DX16 — Dual Power Converter
EX20AA —Intra F-bus "A" PB
EX20BA —Intra F-bus "B" PB
EX22 — Integrated Proc. & F-bus
EX26 — Channel Bus IF PB
EX28 — DS30 Link IF PB
EX30 — Frame Relay Service IF
EX31 — Frame Relay Access
FX09 — CBUS Interface PB
FX10 — HDLC Frame Processor

File Processor shelf (NT9X81AA)
Manufacture Discontinued (MD)

9X19	9X21 TERM (SHELF)	9X19	9X19	9X19	9X62 DS512 FACE	9X26 RTIF	9X26 RTIF A	9X62 DS512 SIDE	9X19	9X19	9X19	9X21 TERM END	9X19	9X19	9X88 PROC	9X88 PROC	9X62 DS512 MOTH	9X26 RTIF	9X26 RTIF	9X62 DS512 BACK	9X88 PROC	9X88 PROC	9X19	9X21 TERM	9X19
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	09	08	07

DX15 POWER	DX15 POWER	9X19	9X14 MEM (SHELF)	9X14 MEM HEL	9X14 MEM	9X87 MEM	9X86 CNTL FACE	9X13 CPU	9X13 CPU A	9X19 CNTL SIDE	9X87 MEM	9X14 MEM S	9X14 MEM END	9X14 MEM	9X14 MEM	9X14 MEM	9X14 MEM	9X14 MEM	9X14 MEM	9X86 CNTL MOTH	9X13 CPU	9X13 CPU	9X19 CNTL BACK	9X14 MEM	9X14 MEM	9X14 MEM	9X14 MEM	9X19	DX15 POWER	DX15 POWER
01	04	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	36

File Processor Storage Device shelf (NT9X83AA)
Manufacture Discontinued (MD)

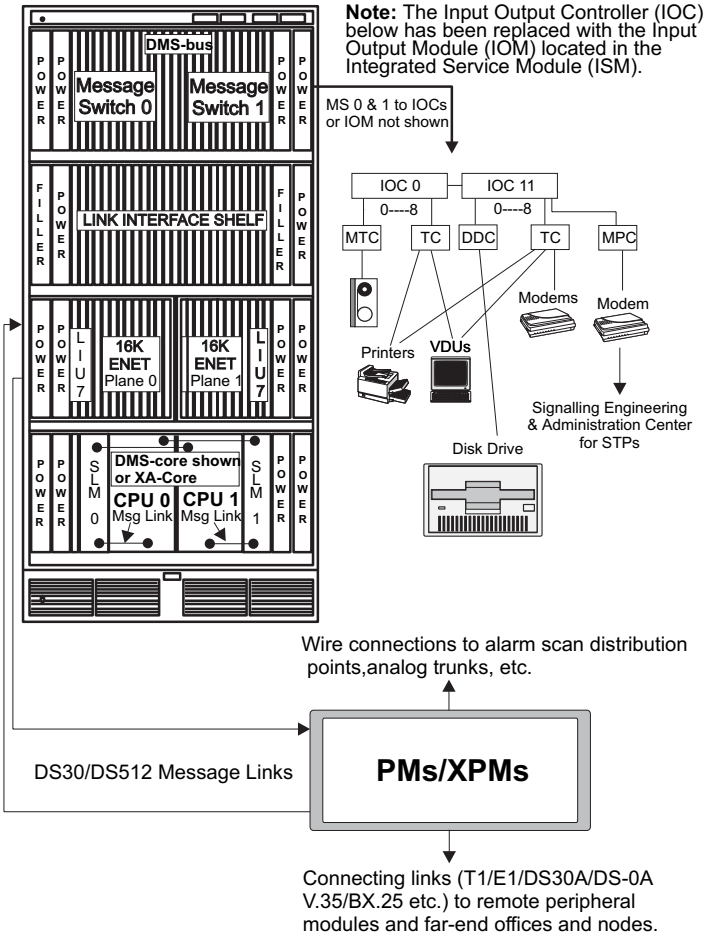
9X19	9X19	9X19	9X19	9X19	9X89 SCSI IF FACE	9X89 SCSI IF	9X19	9X19	9X19	9X19	9X89 SCSI IF END	9X89 SCSI IF	9X19	9X19	9X19	9X19	9X89 SCSI IF MOTH	9X89 SCSI IF	9X19	9X19	9X19	9X19	9X89 SCSI IF BACK	9X89 SCSI IF	9X19
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	09	08	07

DX91 POWER	DX91 POWER	9X19	STORAGE DEVICE ASSEMBLY (SHELF)	STORAGE DEVICE ASSEMBLY ----AS SEEN---	STORAGE DEVICE ASSEMBLY -----FROM-----	STORAGE DEVICE ASSEMBLY --FRONT)	9X19	DX91 POWER	DX91 POWER
01	04	07	08 09 10 11 12 13	14 15 16 17 18 19	20 21 22 23 24 25	26 27 28 29 30 31	32	33	36

Note: For further description of the following FP shelf and FP storage device shelf packs, see the "Circuit Pack Description" within this QRG or see NTP 297-8991-805.

9X13 — AP/FP 68030 High Performance Module (HPM)-based CPU
9X14 — 24-Mbyte Memory
9X21 — Bus Terminator
9X26 — Remote Terminal Interface (RTIF)
9X62 — 2-port Subrate DS512
9X86 — Dual-port Message Controller
9X87 — Dual-access Buffer Memory
9X88 — Small Computer Systems Interface (SCSI) I/F Processor
9X89 — SCSI Device IF Paddle Board
DX15 — Dual Power Converter
DX90AA — 600 Mbyte Storage Device Assembly
DX90AB — 2.1 Gbyte Storage Device Assembly
DX90BA — 1.2 Gbyte Storage Device Assembly
DX91 — Dual Power Converter

SuperNode SNSE Block Diagram



SuperNode SE Message Switch shelf (NT9X0470)

MESSAGE SWITCH 1																MESSAGE SWITCH 0															
9X19	9X79 (SHELF 32)	9X19	9X23 or 69	9X19 or 69 or 23	9X19 or 69 or 23	9X19 or 69 or 62 or 25	9X19 or 62		9X26 RTIF	9X54 CLKIF	9X19		9X19	9X54 CLKIF	9X26 RTIF	9X62	9X19 or 62	9X19 or 69 or 62 or 25	9X19 or 69 or 62	9X19 or 69 or 23	9X19 or 69 or 23	9X23 or 69	9X19	9X79	9X19
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	09	08	07

9X31 POWER 01	9X30 POWER 04	9X49	9X73 (SHELF 08)	9X15	9X17	9X19 or 9X17	9X19 or 9X17	9X19 or 9X17	9X19 or 9X17	9X19 or 9X17	9X17	9X13 CPU	9X53 CLKE	9X52	9X52	9X53 CLK	9X13 CPU	9X17	9X19 or 9X17	9X19 or 9X17	9X19 or 9X17	9X19 or 9X17	9X19 or 9X17	9X17	9X15	9X73	9X49	9X31 POWER	9X30 POWER
														20	21		22	23	24	25	26	27	28	29	30	31	32	33	36
MESSAGE SWITCH 0														MESSAGE SWITCH 1															

SuperNode SE CM/SLM shelf (NT9X0610)

CPU 1 & SLM 1																CPU 0 & SLM 0															
9X19	9X19 (SHELF 32)	9X19	9X46	9X21	9X19	9X19	9X19	9X19	9X46	9X62	9X26 RTIF	9X26 RTIF	9X62	9X46	9X19	9X19	9X19	9X21	9X19	9X19	9X19	9X19	9X46
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	09	08	07

9X91 POWER] 01	DX15 POWER 04	9X44AD SLM III SLM 0 (SHELF 07----------11)	9X14 MEMORY 12	9X14 MEMORY 13	9X14 MEMORY 14	9X14 MEMORY 15	9X14 MEMORY 16	9X12 CPU Pt 17	9X86 18	9X13 or 10 CPU #0 E 19	9X13 or 10 CPU #1 N 20	9X86 21	9X12 CPU Pt 22	9X14 MEMORY 23	9X14 MEMORY 24	9X14 MEMORY 25	9X14 MEMORY 26	9X14 MEMORY 27	9X44AD SLM III SLM 1 (FRONT 28----------32)	DX15 POWER 33	9X91 POWER 36
CPU 0 & SLM 0																				CPU 1 & SLM 1		

Note: For further description of the following SNSE MS, CM, and SLM packs, see the "Circuit Pack Description" within this QRG or see NTP 297-8991-805.

9X10 — BRISC CPU
9X10AB — BRISC CPU Series 60 SN
9X10BA — BRISC CPU Series 70 SN
9X12 — CPU Port
9X13 — CPU processor
9X14 — Memory
9X15 — Mapper
9X17AA — MS 4-port
9X17AD — MS 4-port
9X17BB — DMS-bus 32-port
9X17CA — DMS-bus 128-port
9X17DA — DMS-bus 64-port
9X19AA — Filler Pack
9X19BA — Paddle Board Filler
9X21 — CM Bus Term. PB
9X23 — DS30 4-Port PB
9X25 — MS Port Expander PB
9X26 — RTIF PB
9X30 — Power Converter
9X31 — Power Converter
9X44AD — SLM III
9X46 — Parallel CM Port I/F
9X49 — MS P-bus Terminator
9X52 — T-bus Access
9X53 — MS Clock
9X54 — MS Ext. Clock IF PB
9X62 — Four-port Subrate PB
9X69 — 16 Link DS30 PB
9X73 — T-bus/F-bus IF Rate Adapter
9X79 — F-bus Extension PB
9X86 — Dual Port Msg. Controller
9X91 — Power Converter
DX15 — Power Converter
DX16 — Dual Power Converter

SuperNode SE 16K ENET shelf

PLANE 1													PLANE 0												
9X79	9X77 or 9X78	EX20AA	9X40 or 41 or 45	9X40 or 41 or 45	9X19BA	9X40 or 41 or 45	9X40 or 41 or 45	9X40 or 41 or 45	9X40 or 41 or 45	9X40 or 41 or 45	9X40 or 41 or 45	9X40 or 41 or 45	9X26 RTIF	9X40 or 41 or 45	9X19BA	9X40 or 41 or 45	9X40 or 41 or 45	9X40 or 41 or 45	9X40 or 41 or 45	9X40 or 41 or 45 or 19B	9X40 or 41 or 45	9X26 RTIF	9X77 or 9X78	EX20BA	9X79 or 9X78
	(S	H	E	L	F		A	S		S	E	E	N		F	R	O	M		B	A	C	K)		
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	09	08	07

9X31	9X30	9X13 or 74 or 19	9X76 or EX22	9X75 or 76 or 19	9X13	9X36	9X35	9X35	9X35	9X35	9X35	9X35	9X35	9X35	9X13	9X36	9X35	9X35	9X35	9X35	9X35	9X35	9X35	9X35	9X13 or EX22	9X76	9X75 or 74 or 19	9X31	9X30
POWER	POWER				CPU	CLK	XPT	XPT	XPT	XPT	XPT	XPT	XPT	XPT	CPU	CLK	XPT	XPT	XPT	XPT	XPT	XPT	XPT	XPT				POWER	POWER
		L	I	U									S	H	E	L	F								L	I	U		
							A	S		S	E	E	N		F	R	O	M		F	R	O	N	T					
01	04	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	36
PLANE 0															PLANE 1														

Note: Slots 7,8,9 front and 30,31,32 front can be equipped with two LIUs. The various packs shown in these slots are for either a two or three pack LIU (the EX22 pack identifies a two pack LIU). If not equipped with LUIs, then these and the associated interface (IF) slots will have filler packs equipped.

Note: For further description of the following SNSE 16K ENET packs, see the "Circuit Pack Description" within this QRG or see NTP 297-8991-805.

9X13 — CPU Processor
9X13FA — ENET CPU Processor
9X19AA — Filler Pack
9X19BA — Paddle Board Filler
9X30 — Power Converter
9X31 — Power Converter
9X35 — 16K X 16K Crosspoint
9X36 — Clock & Message
9X40 — I/F Paddle Board (PB)
9X41 — Link Paddle Board
9X45 — DS-30/DS512 IF PB
9X74 — F-Bus Repeater
9X75 — P-Bus to F-Bus IF
9X76 — Signaling Terminal
9X77 — DS0A Interface PB
9X78 — DS0A Interface PB
9X79 — F-Bus Extension PB
EX22 — Integrated Proc. & F-bus

SuperNode SE LPP Link Interface shelf

9X79 or 9X98	9X78	EX20	9X78	9X19	9X78	9X19	9X78	9X19	9X78	9X19	9X78	9X19	9X78	9X19	9X78	9X19	9X78	9X19	9X78	9X19	9X78	9X19	9X78	EX20	9X79 or 9X98
	(S	H	E	L	F		A	S		S	E	E	N		F	R	O	M		B	A	C	K)		
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	09	08	07

9X19EA	9X30	9X74 or 9X96	EX22	9X76	EX22	9X76	EX22	9X76	EX22	9X76	EX22	9X76	EX22	9X76	EX22	9X76	EX22	9X76	EX22	9X76	EX22	9X76	EX22	9X76	EX22	9X76	9X74 or 9X96	9X19EA	9X30
	POWER		LIU	1	LIU	2	LIU	3	LIU	4	LIU	5	LIU	6	LIU	7	LIU	8	LIU	9	LIU	10	LIU	11	LIU	12			POWER
			(S	H	E	L	F		A	S		S	E	E	N		F	R	O	M		F	R	O	N	T)			
01	04	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	36

Note: For further description of the following SNSE LPP LIS packs, see the "Circuit Pack Description" within this QRG or see NTP 297-8991-805.

9X30 — Power Converter
9X74 — F-Bus Repeater
9X76 — Signaling Terminal
9X78 — DS-OA Interface PB
9X79 — F-Bus Extension PB
9X96 — LIS FBUS Controller
9X98 — LIS Fiber Interface PB
EX20 — Intra F-bus 0 Term. PB
EX22 — Integrated Processor

XA-Core shelf (NTLX0101)

(*NTP 297-8991-511, DMS SN & SNSE XA-Core Maintenance Guide)*

Note: Provisioning will vary depending upon configuration.

LX12 SIM — POWER — 16	LX03AA IOP or LX02CA PE 15	LX02PE / LX03IOP / LX20FIL 14	LX02PE / LX03IOP / LX20FIL 13	LX02PE / LX03IOP / LX20FIL 12	LX14SM / LX20 FILLER 11	LX14SM / LX20 FILLER 10	LX14SM / LX20 FILLER 09	LX14SM / LX20 FILLER 08	LX14SM / LX20 FILLER 07	LX02PE / LX03IOP / LX20FIL 06	LX02PE / LX03IOP / LX20FIL 05	LX03AA IOP or LX02CA PE 04	LX12 SIM — POWER — 03
********** Shelf As Seen From Back **********													

o	LX20 FILLER 01	LX03BA IOP TWO SLOT 02	DISK/TAPE 03	LX02PE / LX03IOP / LX20FIL 04	LX02PE / LX03IOP / LX20FIL 05	LX02PE / LX03IOP / LX20FIL 06	LX14SM or LX20 FILLER 07	LX14SM or LX20 FILLER 08	LX14SM or LX20 FILLER 09	LX14SM or LX20 FILLER 10	LX14SM or LX20 FILLER 11	LX02PE / LX03IOP / LX20FIL 12	LX02PE / LX03IOP / LX20FIL 13	LX02PE / LX03IOP / LX20FIL 14	LX20BA TERM FILLER 15	LX02PE / LX03IOP / LX20FIL 16	LX03BA IOP TWO SLOT 17	DISK/TAPE 18	o
********** Shelf As Seen From Front **********																			

Note: The XA-Core shelf replaces the CM and SLM shelves for the SuperNode and the combined CM/SLM shelf for the SNSE. Any SuperNode shelf left empty because of an XA-Core retrofit is replaced with a NT901FB Filler Shelf.

Note: For further description of the following XA-Core packs, see the "Circuit Pack Description" within this QRG or see NTP 297-8991-810 or NTP 297-8991-511.

LX02 — Processor Element (PE) CP

LX03AA — Input/Output Processor CP (One-slot for CMIC and RTIF)

LX03BA — Input/Output Processor CP (Two-slot for disk and tape)

LX05 — OC-3 Two-port Interface Packlet for CMIC

Note: The **NT9X63AA or BA** OC-3 interface paddle board is used to connect the CMIC links (OC-3) between MS & XA-core NTLX05 CMIC packlet.

LX06 — Disk Drive Packlet

LX07 — Digital Audio Tape (DAT) Tape Drive Packlet

LX08 — RS232/422 Serial Interface Packlet (Rem Term IF (RTIF))

LX12 — Shelf Interface Module (SIM) (Power supply)

LX14 — Shared Memory (SM) CP

LX20AA — Filler Pack

LX20BA — Terminating Filler Pack. The terminating filler pack is installed in any slot in the XA-Core shelf not occupied by a processor element (PE) pack, a input/output processor (IOP) pack, or a shared memory (SM) pack. **Note:** Slot 15F must contain a NTLX20BA pack.

Distributed Processing Peripheral (DPP)
(MD'd 4Q00; replaced with SBA on SDM)

A Chassis (Processor A)

6M71 Power Supply Assembly	**6M62**	**6M63**	**6M64**		**6M65**	**6M60**	**6M94**				**6M66**	**6M70**	**6M70**	**6M68**
6M72 Disk Drive		**F**	**R**	**O**	**N**	**T**		**V**	**I**	**E**	**W**			
	01	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**	**12**	**13**	**14**

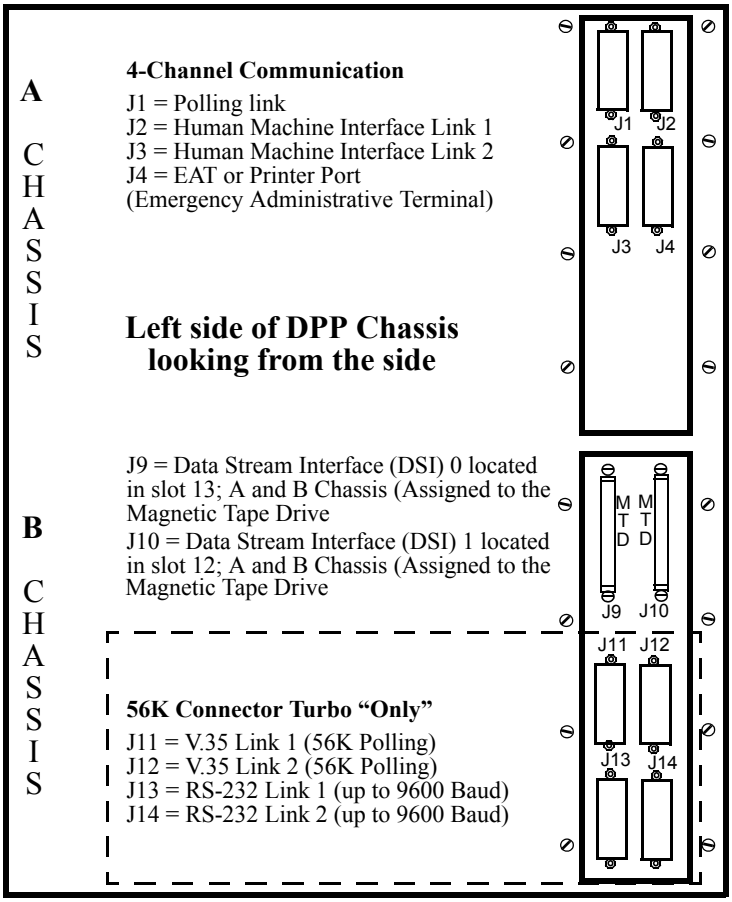
B Chassis (Processor B)

6M71 Power Supply Assembly	**6M62**	**6M63**	**6M64**		**M609**	**6M60**	**6M94**				**6M66**	**6M70**	**6M70**	**6M68**
6M72 Disk Drive		**F**	**R**	**O**	**N**	**T**		**V**	**I**	**E**	**W**			
	01	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**	**12**	**13**	**14**

6M60 — Quad SIO
6M62 — Central Processor Unit with Direct Memory Access (DMA)
6M63 — EPROM
6M64 — Extended Memory
6M65 — Error Control II
6M66 — Disk Drive Interface
6M68 — Bus Terminator (permanently mounted)
6M70 — Data Stream Interface (DSI)
6M71 — Power Supply Assembly
6M72 — Disk Drive; AA = 72MB; BA = 140MB; CA = 30MB; DA = 380MB; DD = 380 MB Turbo; EA = 760MB
6M94 — 56 Kbps Interface
M609 — Error Control Jumper
6M72 — Disk II Crossover CP
6M93 — Disk Crossover
6M84 — Power/Alarm Communication
6M48 — 56 Kbps Crossover
6M56 — Fan Filter
6M54 — 56 Kbps Mounting Panel
6M73 — 56 Kbps Crossover Interface Cable Assembly
6M85 — 56 Kbps Crossover Interface Cable Assembly

These packs are located in the back of the DPP

Note: DIP switch settings can be found in NTP 297-1001-539.



DPP Commands

Note: Use the following DPP commands with caution and refer to the following document for information on their use:

- NTP 297-1001-539, DPP Hardware Component Replacement Guide
- NTP 297-1001-544, DPP Quick Reference Guide
- NTP 297-1001-545, DPP Commands and Messages Guide

Alarm Operations:

>**ERRMAP ALARMS**	Displays a list of active alarms on active and standby processor.
>**ERRMAP e t l**	Change specified alarm parameters. **e** = Event #: **1-99** **t** = Alarm type: **INHIBIT, MINOR, MAJOR, CRITICAL**. **l** = level of alm: **0-3**.
>**RSERR s nn**	Reset alarms on a selected processor. **s** = **ACT** or **STDBY** **nn** = event #(1-99) or **00** for all active side alarms.

System Clock:

>**CLK s**	Display time of a selected processor. **s** = **ACT** or **STDBY**
>**SETCLK yy mm dd hh mm ss day**	Set or change time on the active processor. **yy** = year **mm** = month **dd** = date **hh** = hour (24 hour clk) **mm** = minutes **ss** = seconds **day** = **MON,TUE,WED,THU,FRI,SAT,SUN**

Boot File:

>**BOOT ADD xxxxxx yy**	Append a program name to boot list. **xxxxxx** = program name **yy** = program version on disk.
>**BOOT s**	Load program files listed in the boot file to a processor. **s** = **ACT** or **STDBY**
>**BOOT DELETE**	Deletes the Last file name in boot file.
>**BOOT LIST**	List the contents of the boot file.

NON-TURBO Disk Operations:

>**DISK DEFMAP x**	Enter the defective tracks for 30-140 mb disk drives only. (MAP INFORMATION PROVIDED WITH DISK) **x** = disk drive**: A** or **B**
>**DISK FORMAT x**	Format specified disk drive. Takes several minutes. **Note:Do not use for 380 mb non-turbo disk drives.** **CAUTION: This command will erase all data from specified disk drive. Should not be done during high traffic.**
>**DISK INIT 1x**	Short Init specified disk
>**DISK MODE**	Displays the current disk mode.
>**DISK MODE xy**	Change current disk mode. This can take several hrs. **CAUTION: This command can over write needed data.** **x** = Primary disk: **A** or **B** **y** = **O**: No standby disk online OR **y** = **P**: Standby disk online
>**DISK PARAM**	Displays choice of disktypes used for **Non-turbo** DPPs. Enter **1 - 9** depending on the disktype used.
>**DISK VS**	Displays the disk firmware version.
>**DISK USAGE**	Displays the number of tracks used / total tracks available.

TURBO & 3.5" Disk Operations:

>**DISK FORMAT x**	Format specified disk drive. Takes several minutes. **CAUTION: This command will erase all data from specfied disk drive.**
>**DISK MODE**	Displays the current disk mode.
>**DISK MODE xy**	Change current disk mode. This can take several hrs. **CAUTION: This command can over write needed data.** **x** = Primary disk: **A** or **B** **y** = **O**: No standby disk online OR **y** = **P**: Standby disk online
>**DISK RESTART**	Perform a reset on the DISK INTERFACE PCB.
>**DISK VS**	Displays the disk firmware version.
>**DISK USAGE**	Displays the number of tracks used / total tracks available.

Continues on the next page

Index Manipulation:

>**IDXMAINT CLOSE** Close file currently open for read.

>**IDXMAINT CHECK t** Check the index file.

>**IDXMAINT CREATE DIR t i** Creates a new index file with primary data only.

>**IDXMAINT CREATE DIR t i p** Creates a new index file with secondary and primary data.

>**IDXMAINT CREATE DIR t i p v2** Creates a new index file with secondary and primary data plus the version containing the requested primary sequence number (see IDXMAINT SUMMARY).

>**IDXMAINT CREATE FILE t** Closes open call record file and opens new file.

>**IDXMAINT DELETE t** Delete oldest secondary file from disk and updates the index.

>**IDXMAINT DIR CLOSED t v** Displays the closed files on the disk.

>**IDXMAINT DIR OPEN t** Displays the open file being written to on the disk.

>**IDXMAINT EXAMINE t f s** Displays a selected block from the DPP disk by sequence number.

>**IDXMAINT EXAMINE t f s d** Displays a selected block from the DPP disk by sequence number. 'd' = either NEW or OLD, depending on whether the sequence number is the first (OLD) or second (NEW) occurance of a duplicate sequence number in the index (see IDXMAINT SUMMARY).

>**IDXMAINT EXAMINE t NEXT r** To continue to display a selected range of blocks from the DPP disk.

>**IDXMAINT SUMMARY t** Displays a summary of indexed files.
d = is valid with DPP loads D1T008, D2T008 & DPT035
t = filetype: **AMA, LOG**, or **EXC**.
f = format: **ASCII**(LOGS only),**EBCDIC**, **HEX, PACKED**(AMA Blocks) , or **HDR**(header of AMA block only).
i = version # to begin index.
p = first sequence # to be primary.
r = # of blocks to view **1-100**.
s = selected sequence #: **0** to **999999.**
v = # of versions to be displayed **1 - 200**
v2 = is valid with DPP loads D1T008, D2T008 & DPT035.

File Manipulation:

>**CLSACT i** Closes open file.
i = file id # from LSTACT.

>**DELFILE f v** Deletes a particular file and version or a range of versions.
f = filename.
v = file version #. 0 is the latest version.
or
v = range of versions 1 255.

EXAMPLE:
>**DELFILE BMCCRD 3 150** Deletes filename BMCCRD versions 3 to 150.

>**DMPFILE f v b c** Used to output a specified number of blocks from a specified file for examination.
f = filename.
v = file version #. 0 is the latest version. (**0-255**) one version at a time.
b = Specifies starting block; range = **0** - **999,999**.
c = Specific number of block to dump; range = **0** - **9,999**.

>**LSTACT** Displays list of all currently open files.

>**LSTDIR ACT i** Lists the directory entry for the active file specified.
i = file id # from LSTACT.

>**LSTDIR ALL** Lists all files in disk directory.

>**LSTDIR FILE f v** Lists the directory entry of a specified file.
f = filename.
v = file version #. 0 is the latest version. (**0-255**) one version at a time, or:
v = range of versions **1 - 255**.

EXAMPLE:
>**LSTDIR FILE BMCCRD 3 150** Displays the directory entry for filename BMCCRD versions 3 to 150.

Polling Link:

>**LINIT** Aborts any active polling session and initializes the polling links.

>**LNKDSC** Aborts polling session in progress and, causes DTR to drop for 5 seconds.

POLLOLD This maintenance command toggles between the newest and oldest occurance of a sequence number for the next polling session only.

Note: Immediately follow command **LNKDSC** with the command **LINIT**.

Continues on the next page.

DPP Commands continue

Processor Activity:

>**SWACT o**	Change current active processor (A to B or B to A). **o** = **FORCE:** optional entry reset any alarms on the standby processor and then performs the SWACT.

Site Data Entry:

>**AMAHRS**	Displays hour boundaries currently assigned. >**AMAHRS s e** Set the time interval to verify that AMA records have been received from the Switching System. **s** = two digit start time(**00** - **23**). **e** = two digit end time (**00** - **23**).
>**AMATPSW**	Examine the AMAT Password.
>**AMATPSW t i**	Change AMAT password. **t** = 4 digit sensor type **i** = 6 digit sensor id
>**BX25PARM PRIHDR**	Displays the current AMATPS requirements.
>**BX25PARM p**	Change the AMATPS parameter. **P** = **PRIHRD1** = 1986 AMATPS requirement. **PRIHRD2** = 1990 AMATPS requirement.
>**BAUD**	Displays current polling baud rate for the link on NON-TURBO or Links 1 & 2 for TURBO DPPs.
>**BAUD r**	Change polling baud rate for the NON-TURBO link. **r** = baud rate: **1200/2400/4800/9600**. Polling link NON- TURBO is J1
>**BAUD l r**	Change polling baud rate for the TURBO links 1 & 2. **l** = link: **1** or **2**. **r** = baud rate: **1200/2400/4800/9600/56K**.

Link 1 = J11 for 56K polling, J13 for 1200 thru 9600 baud polling.
Link 2 = J12 for 56K polling, J14 for 1200 thru 9600 baud polling.

>**COLLPSW**	Displays current collector password.
>**COLLPSW # t i**	Change the collector password. **#** = Collector Password #:**1**, **2** **t** = 4 character office type. **i** =6 character office id.
>**SITDAT READ**	Reads (restores) the site data parameters from the DPP disk and over writes the main memory (RAM).
>**SITDAT WRITE**	Updates (Saves) the site data parameters from memory to disk.
>**VALPARM BLOCKS**	Displays the minimum number of blocks needed in the open write AMACRD file before the file is closed at the begining of a primary poll.
>**VALPARM BLOCKS x**	Change the minimum block number. **x** = **1-999** (default is 200).
>**VALPARM INVALID**	Displays invalid blk quantity threshold value currently assigned.
>**VALPARM INVALID b**	Change invalid blk quantity threshold. **b** = number of blocks:**0-65535**
>**VALPARM LOGHDR**	Displays current status of the log header either enabled or disabled.
>**VALPARM LOGHDR x**	Enables or Disables the display of the block header as they are written to disk. **x** = **ON/OFF**

Program Versions:

>**CP VS s**	Displays the selected 56K Comm processor software program version ID and firmware version ID. **s** = **ACT** or **STDBY**

Note: CP command is for TURBO DPPs only.

>**DISK VS**	Displays the disk firmware version ID.
>**DSIMAINT SHOW x VS**	Displays the active processor firmware verson ID for the selected DSI.
>**DOS S DSIMAINT SHOW x VS**	Displays the standby processor firmware verson ID for the selected DSI. **x** = DSI Port ID: **1** or **2**. = **1** = DSI in slot A13 = **2** = DSI in slot A12.
>**VS s**	Displays the selected processor software program version ID and firmware version ID. **s** = **ACT** or **STDBY**

Statistics:

>**AMATSTAT**	Displays a summarized status report of AMAT records on DPP disks.
>**CLRSTATS**	Clears today's statistics file reports.
>**REPORT t p**	Displays a compiled list from a selected statistcal file available on the DPP disk. **t** = type: **AMA**, **DISK** **p** = period: **TDAY** (Today), **YDAY** (Yesterday)
>**SESSION REPORT**	Displays last or current polling session report.
>**SESSION STATUS**	Displays current status of polling.

Continues on the next page.

DPP Commands continue.

Testing:

>**DPRTST**	Performs a Dual-Ported Random Access Memory test on standby processor.
>**TEST s**	Performs built-in-tests on selected processor. **s** = **ACT** or **STDBY**

DSI Functions:

>**DSIMAINT SHOW x a**	Displays the argument of the selected DSI port on the active processor.
>**DOS S DSIMAINT SHOW x a**	Displays the argument of the selected DSI port on the standby processor. **x** = DSI Port ID: **1** or **2**. = **1** = DSI in slot A13 = **2** = DSI in slot A12. **a** = argument: **ERROR**, **STATUS**, or **VS.** **ERROR**:Displays the error count since the last rewind. CRC = Cylclic Redundancy Check, PAR = Parity, COMM = DSIcommunication failures. **STATUS**:Displays the last command, status, and number of blocks received. **VS:**Displays the firmware version ID.

CP:

Note: All CP commands are for TURBO DPPs only.

>**CP BOOT s**	Loads the contents of the BOOTCP file to the active 56K Comm Processor.
>**CP BOOT ADD xxxxxx yy**	Append a new file name to the BOOTCP file.
>**CP BOOT DELETE**	Remove the last file name in the BOOTCPfile.
>**CP BOOT LIST**	Displays the contents of the BOOTCP file.
>**CP CLOCK**	Examine the 56K Comm processor clock source.
>**CP CLOCK l c**	Change the 56K Comm processor clock source.
>**CP INTERFACE**	Examine the CP interface used for polling.
>**CP INTERFACE l z**	To change CP interface.
>**CP LOOP s**	Performs loop test between main processor & 56K Comm processor on the selected side.
>**CP TEST s**	Performs a series of tests on the selected 56K Comm processor.
>**CP VS s**	Displays the selected 56K Comm processor software program version ID and firmware version ID. **c** = clock source: **INTERNAL** = DPP uses its own clock. **EXTERNAL** = DPP uses an external clock. **l** = LINK #: **1** or **2** **Note:** Link 1 = J11 for 56K polling, J13 for 1200thru 9600 baud polling. Link 2 = J12 for 56K polling, J14 for 1200 thru 9600 baud polling. **s** = **ACT** or **STDBY** **xxxxxx** = CP program name **yy** = program version on disk. **z** = **RS232:** for 1200 thru 9600 baud on J13 or J14 or; **z** = **V35**: for 56k baud on J11 or J12.

Monitor Level	**EQUIVALENT Software Command**

Note: These commands are used for certain tasks to be performed on the DPP, when the CPU software is not running. Certain commands will only work in the DIRECT mode.

>**BOOT s**	BOOT s
>**BOOT ADD xxxxxx yy**	BOOT ADD xxxxxx yy
>**BOOT DELETE**	BOOT DELETE
>**BOOT LIST**	BOOT LIST
***>DD FORMAT x**	DISK FORMAT x
***>DD MOD**	DISK MODE
***>DD MOD xy**	DISK MODE xy
***>DD INIT 1x**	DISK INIT 1x
***>DD PARAM**	DISK PARAM
***>DD VS**	DISK VS
>**DELETE f v**	DELFILE f v
>**DOS**	Displays the processor status. responce: **yz** **y** = processor currently being communicated with: **A** or **B**. **z** = status of processor being communicated with: **A** = active, **S** = standby, **O** = only, or **U** = unused.

*** This command is for NON-TURBO DPPs only. Use the Software commands for TURB0 DPPs.**

Billing Media Converter (BMC) (MD'd 4Q00)

(Bisync polling protocol)

A Chassis (Processor A)

6M71 Power Supply Assembly	6M62	6M63	6M64		6M65	6M60					6M66	6M70	6M70	6M68
6M72 Disk Drive		F	R	O	N	T	V	I	E	W				
	01	02	03	04	05	06	07	08	09	10	11	12	13	14

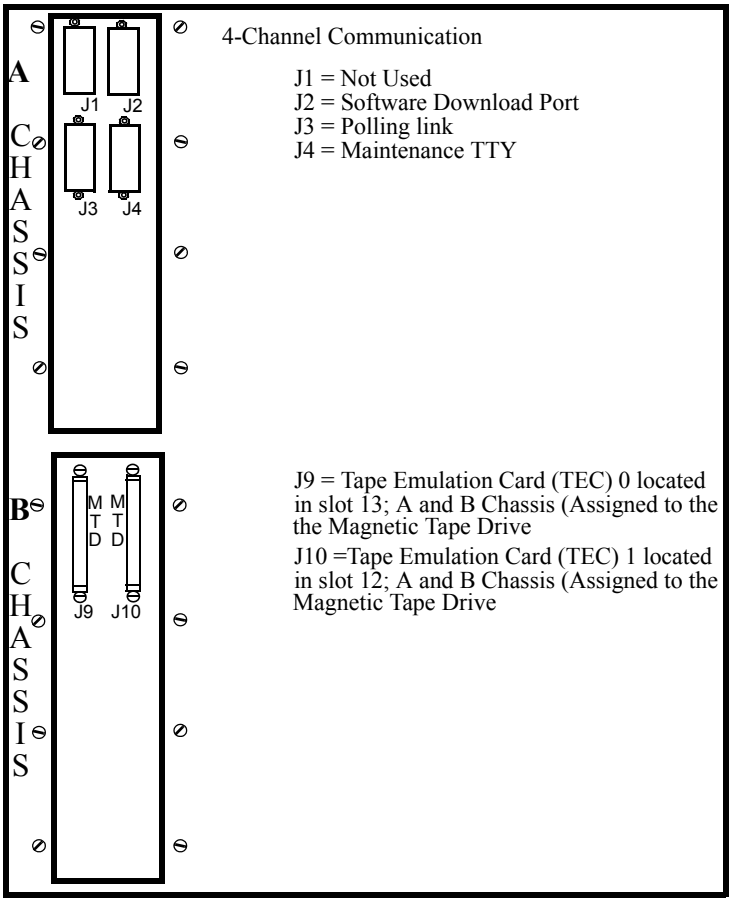
B Chassis (Processor B)

6M71 Power Supply Assembly	6M62	6M63	6M64		M609	6M60					6M66	6M70	6M70	6M68
6M72 Disk Drive		F	R	O	N	T	V	I	E	W				
	01	02	03	04	05	06	07	08	09	10	11	12	13	14

6M62 — Central Processor Unit with Direct Memory Access (DMA)
6M63 — EPROM
6M64 — Extended Memory
6M65 — Error Control II
M609 — Error Control Jumper
6M60 — Quad SIO
6M66 — Disk Drive Interface
6M70 — Data Stream Interface (DSI)
6M68 — Bus Terminator (permanently mounted)
6M71 — Power Supply Assembly
6M72 — Disk Drive; AA = 72MB; BA = 140MB; CA = 30MB;
6M72AD/AE — Disk II Crossover
6M93 — Disk Crossover
6M84 — Power/Alarm Communication
6M56 — Fan Filter

These packs are located in the back of the BMC

Left side of BMC Chassis — looking from the rear



4-Channel Communication

J1 = Not Used
J2 = Software Download Port
J3 = Polling link
J4 = Maintenance TTY

J9 = Tape Emulation Card (TEC) 0 located in slot 13; A and B Chassis (Assigned to the the Magnetic Tape Drive

J10 =Tape Emulation Card (TEC) 1 located in slot 12; A and B Chassis (Assigned to the Magnetic Tape Drive

INPUT/OUTPUT QUICK REFERENCE CABLE CHART (NTP 297-1001-590)

IOC		IOM	IO Cards			Data Set			Connector			Asy/Syn		Cable										Adapter				
NT 1X 61 AB or AD	NT 1X 61 AG	NT FX 31 AA	NT 1X 67 'IOC'	NT 1X 89 'IOC'	NT FX 30 'IOM'	Rixon 202T	GDC V.F V.32	GDC 500A 56Kb Sub-rate	RS 232	V .35 34 pin	V .35 25 pin	Asynch	Synch	NTNX 36 QA	NT0X 96 EH	NT0X 26 LY	NT0X 96 EF	NT0X 96 EG	NT0X 96 JY	NT0X 96 HJ	NT0X 96 GS	NT0X 96 HG	NT0X 96 HH	NT0X 96 LU	NTFX 34 AA	NTFX 35 AA	NTFX 35 05	NTFX 40 UC	NTFX 40 UD
X			X			X			X			X		X															
X				X			X	X	X			X			X														
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		X			X				X			X	X											X					
		X			X					X														X					
		X			X						X													X					

Note 1 One (1) Smart Connector Extension Cable, NTFX40UC, is required when connecting to J16 on the DS6 modem shelf.

Note 2 One (1) Smart Connector DB25 Gender Adapter Cable, NTFX40UD, is required when connecting to modems equipped with a 25 pin male connector.

XPMTRAK

(*TAM-1001-004 PMDEBUG Technical Assistance Manual*)

Note: Reference the TAM for a complete list of XPMTRAK commands and any **CAUTIONS** and **WARNINGS** about their use.

PMDEBUG XPMTRAK can gather a trmtrace, msgtrace, and pgmtrace all at once.

To set up XPMTRAK:

```
>PMDEBUG <xpm> <#> <unit>
>XPM
>TR ON                  %% trmtrace
>MS ON                  %% msgtrace
>PG ON                  %% pgmtrace
>SE <nn> <tn>           %% external node & terminal number
>STAT
>STAR
********** Make test call now **********
>STO
>ALL DISPLAY FULL
>A C                    %% clears all buffers
>R <nn> <tn>
>*                      %% exits out of XPMTRAK level
>QUIT
```

ACDDEBUG

(*TAM-1001-001 TAS Nonresident Tool Listing*)

Note: Reference the TAM for a complete list of ACDDEBUG commands and any **CAUTIONS** and **WARNINGS** about their use.

ACDDEBUG tool is used for debugging the ACD system. The ACDDEBUG CI provides facilities for examining and altering ACD data structures in both stationary and dynamic ACD environments. This tool can be used to display the real-time status of ACD/NACD agents, groups, and queues.

The utility can be found on the TASNONRES tape. Execute filename ACDNONRS$FC.

Available commands:

>**CPIDTOAGT**	Displays LEN and DN for entered cpid, and the CLLI and member # for entered trunk cpid.
>**QUERY**	Allows for the display of ACD structures.

Following is an example of a QUERY command and response:

```
>QUERY NETWORKDATA GROUP NACDD

    NACD Group NACDD Network Data
    QTHRESH:                    0
    WTHRESH:                    0
    SRCE_PWF:                   31
    SRCE_RI:                    0
    SRCE_DM:                    0
    BEST_GROUP:                 NO

        TRGT_GRP:               0
        NACD_SEL:               REM
            REM_GRP:            NACDP
            PWF:                31
        GRPS_TALKING:           YES
            SRCE_RI_LAST_SENT:  0
            DEST_RI_LAST_RECEIVED: 0
            DEST_DM:            0
```

XPMIST

(*TAM-1001-007 PMIST User Guide*)

Note: Reference the TAM for a complete list of XPMIST commands and any **CAUTIONS** and **WARNINGS** about their use.

To set up XPMIST:

>**XPMIST**
>**SELECT ON**
>**ASSOCIATE ENA**
>**ASSOCIATE ON**
>**INCLUDE <node #> <terminal #> <node #> <terminal #>** . . .*
>**INTERCEPT BOTH MON**
>**RECORD OPEN <device> <filename>**

***** Include up to eight node/terminal number combinations.

Place test calls. When finished:

>**RECORD CLOSE**
>**DISPLAY <filename>**

For longer files you can extract by time, callid, or terminal number:

>**EXTRACT OPEN <filename>**
>**EXTRACT FROM <hour> <min> <sec> TO <hour> <min> <sec>**
—or—
>**EXTRACT CALLID <callid>**
—or—
>**EXTRACT TID <node> <terminal #>**
>**EXTRACT CLOSE**

Note: You may need to type TERMINATE in XPMIST prior to setup if the file does not seem to be collecting data.

TERMTRACE Setup

1. Find the NN and TN.
2. >**PMDEBUG <pm type> <pm #>**
   Ex: >**PMDEBUG DTC 0** %% BY NOT SPECIFYING THE UNIT #, THE ACTIVE UNIT WILL AUTOMATICALLY BE SELECTED
3. >**CP**
4. >**E <nn> <tn>** %% NOTE DOWN THE INTERNAL TERMINAL #
5. >***** %% GO UP ONE LEVEL
6. >**TR** %% GO INTO TERMTRACE
7. >**I** %% Should terminals/event data survive restarts?
8. >**N**
9. Enter **<starting term> <ending term>** range %% INTERNAL TERMINAL #
10. **<cr>** for max physical buffers
11. >**A <starting term> <ending term>** %% ASSIGN THE INTERNAL TERMINAL #
12. >**L 3** %% Always use level 3
13. >**E** %% Enable termtrace

********** Make test call now **********

14. >**D** %% Disable the tracing
15. >**P** %% Go to printout level
16. >**D <starting term> <ending term>** %% Dump the termtrace data
17. >***** %% Go up one level
18. >**U** %% Unassign the internal number
19. >**K** %% De-allocates the buffers
20. >****** %% Up 2 levels
21. >**QUIT** %% Quit out of PMDEBUG

REMLOGIN Command

This allows users on the central node (CM node) to login to other SOS based nodes and execute CI commands there. While in REMLOGIN, other tools such as LOGUTIL, FOOTPRT, and DEBUG can be used. An SOS109 log is generated each time REMLOGIN is entered and exited.

Note: Read the WARNING notice after inputting the command.

>**REMLOGIN <QUERY or <node name>> [<infile>] [<outdev> <outfile>**]
>**QUERY** displays current remote CI session information.
>**QUERY ALL** displays all users with remlogin sessions currently active on any node.
>**STORE ALL USAGE** displays data and program store amounts.
>**SWNODE** used to switch between CI and remote sessions.
>**IMAGENAME** displays load image name information of node.
>**REMLOGOUT** used to logout of REMLOGIN.

XPMIST Call Processing Messages

(*TAM-1001-007 PMIST User Guide*)

ABANDON_MSG	Trunk exited during digit collection.
ANI_MSG	Reports results of ANI identification on party line.
ANSWER_MSG	Terminal answered the call.
ATD_RESULT_MSG	Reports results from an audio tone detector.
CALL_ABANDONED_MSG	Line exited during digit collection.
CALL_FAILURE_MSG	Terminal detected call failure.
CHANNEL_BLOCKING_ MESSAGE	Call blocked in XPM (no P-side channel).
CLEAR_BACK_MSG	Outgoing trunk exited.
CLEAR_FORWARD_MSG	Incoming trunk exited.
COIN_MSG	Reports results of a coin control function on a coin line.
CONF_AVAILABLE	Conference circuit now available (after queueing).
CONFUSION_MSG	Terminal detected a supervision error.
CPOS_AVAILABLE	CAMA position now available.
CPWAKEUPMSG	Reports time-out from the CP wakeup utility.
DGT_RECEPTION_ERR_MSG	Error detected during DTMF digit collection.
DIGITS_MSG	Reports dialed digits; collection continuing.
DIGITS_SENT_MSG	Outgoing trunk has finished outpulsing.
DM_REPORT_MSG	Reports key hits from TOPS, AOSS, IBN AC.
DP_RECEPTINO_ERR_MSG	Error detected during DP digit collection.
EXIT_MSG	Line exited.
FEATURE_MSG	Requests invocation of an FPE feature.
FLASH_MSG	Terminal flashed.
GLARE_MSG	Glare detected on a trunk.
INTEG_FOUND_MSG	Terminal found integrity.
INTEG_LOST_MSG	Terminal lost integrity.
INTRA_BLOCKING_MSG	XPM couldn't intraswitch; reroute through NMs.
LAST_DIGITS_MSG	Reports dialled digits; collection stopped.
LOCKOUT_MSG	Terminal failed to idle properly.
OPERATOR_CONTROL_MSG	Winks detected on an operator trunk.
ORIG_DIGITS_MSG	Trunk wishes to originate a call; digits collected.
ORIG_KEY_MSG	PPhone wishes to originate a call on non-DN key.
ORIGINATION_MSG	Terminal wishes to originate a call.
PREEMPT_CLEAR_MSG	Autovon trunk exited due to other-end preempt.
PREEMPT_INTERNAL_MSG	From preempting call to preempted call.
PREEMPT_REUSE_MSG	Release Autovon trunk for use by a new call.
RCVR_AVAILABLE	RCVR now available (after queueing).
RCVR_ERROR_MSG	Error detected during digit reception.
RELEASE_CALL_MSG	Terminal is to be force released.
REMOTE_BUSY_MSG	Line is to be force released.
REMOTE_DATABASE_ CP_NOTICE_MSG	Response received from DCP (US Sprint).
RINGING_TROUBLE_MSG	Error detected during ringing of line.
ROUTING_MSG	Causes setup processor to invoke router.
SA_MSG	Reports results to service analysis system.
SEIZED_MSG	Outgoing trunk seized successfully.
SVCT_AVAILABLE	Sender now available (after queueing).
TREATMENT_MSG	Causes setup processor to apply treatment.
UTR_DENIED	XPM could not obtain receiver for digit collection.
WINK_MSG	Wink detected on a CAMA trunk.
XPM1_CC_FEATURE_MSG	Feature message requested from XPM, 0-63.
XPM2_CC_FEATURE_MSG	Feature message requested from XPM, 64-127.

XPMIST Breakdown for Attendant Console

(*TAM-1001-007, PMIST User Guide*)

Note: The following examples contain abbreviations and may not appear exactly as a printout would.

XPMIST Example:

INCOMING 13:51:05.3 NODE TYPE= TM_NODE DM_REPORT_MSG
NN= 0031 TN= 0007 MSGTAG= 01 ROUTE= 4080 ERR= 00 LENGHT= 13
AGENT= DMODEM 22
5F 00 00 07 01 14 12 0F 15 6C 1C
CALLID= 925734

digits dialed: **5306**
key hit message
1 + 4 -> **5**
1 + 2 -> **3**
0 + F -> **0**
1 +5 -> **6**

XPMIST Example:

INCOMING 13:51:05.3 NODE TYPE= TM_NODE DM_REPORT_MSG
NN= 0046 TN= 000F MSGTAG= 01 ROUTE= 4000 ERR= 00 LENGTH= 0F
AGENT= DMODEM 10
5F 00 00 03 01 3C 1C
CALLID= 689675

key number from "Internal to Physical Key Mapping"
diagram: **3C** -> key **29** in Table FNMAP
key hit message

XPMIST Example:

00 38 CALLXEC C3 **A U T H : I N P U T**
02 42 CDTB 1D 30 90 97 07 41 55 54 48 3A 20 49 4E 50 55 54 20 20 20
20 20 87 00 00 C0 00 96 10 0C

display message — ASCII characters

XPMIST Example: lamp messages

00 38 CALLXEC C3
02 42 CDTB0B 30 90 82 02 82 7B 88 00 0C 00 00

02 -> 0000 0010: lamp 0 — 120 IPM
7B -> 0111 1011: lamp F — on

lamp states:
000 = off
001 = 60 IPM
010 = 120 IPM
011 = on
111 = 20 IPM

state
lamp

lamp numbers (from CI):
>**AC <console CLLI> DISPL LAMPS**

Decimal to HEX to Binary Chart

Decimal	HEX	Binary
0	0	0000
1	1	0001
2	2	0010
3	3	0011
4	4	0100
5	5	0101
6	6	0110
7	7	0111
8	8	1000
9	9	1001
10	A	1010
11	B	1011
12	C	1100
13	D	1101
14	E	1110
15	F	1111

ISDN BRI Troubleshooting PM180 and PM189 Logs

Scenario: The following PM180 has just occurred from LTC 3:

* PM180 JAN1 19:12:49 1300 TBL PM SW EXCEPTION REPORT
LTC 3 Unit 0 : Act
TASKID: 000E000E MPAUDTK, TIME: 19:12:48.99, COMID: FF NILCID
TEXT : transssb 00 01 1B 64 00 15 00 00

Additional information on PM180s and PM189s can be obtained from the PMDEBUG Swerr level. Use the following procedures:

STEP 1. Determine the SETTID of the SWERRing set:

SETTID information can sometimes be derived from the text of the PM180/189. In this case, the PM180 text is: 00 01 1B 64 00 15 00 00. ISDN BRI terminal numbers (settids) range from 6700 to 7055 (#1A2C to #1B8F). Using PMDEBUG, the decimal settid can be used to determine which ISDN line is responsible for the PM SWERR. In this case, our SETTID = #1B64.

STEP 2. Determine the DN of the SWERRing SETTID:

First convert #1B64 to decimal number 7012. Next go into PMDEBUG and go to the ISdncp (Bradntbl level) and do a ONEDUMP on 7012. This will give you the DN. Use the following commands:

>**PMDEBUG LTC 3 2**
>**ISDNCP**
>**BRADNTBL**
>**ONEDUMP 7012**

Pool idx: 7 Lidx: 0

Index	next	AF	AM	AS	Frmt	num_calls		Key digits
22	23	0	0	0	DN	3	1	4074844040

Index	next	AF	AM	AS	Frmt	vidtype	Key
23	0	1	0	0	VID	GIC	5
NIL	255						
NIL	255						
NIL	255						

SPM PRI Q931 Message Tracing Tool (MSGTRAC)

Warning: Anyone using the following tool messages should be familiar with use of REMLOGIN. The PRI message tracing tool is available at the root directory level in the DLC RM for the SPM.

Note: The active CEM and DLC will be needed for REMLOGIN. The can be obtained after POSTing the SPM at the MAPCI;MTC;PM level.

The following is an example for using the tool:

CI:> **remlogin spm <spm #><active CEM unit #>**
dSH8:> **remlogin -s<active dlc slot #>**
dSH12:> **cd msgtrc**
dSH12:> **ls** (use ls command if you want to see list of msgtrac commands)
dSH12:> **alloc [12/13]<nmblks>** (layer 2 = 12; layer 3 = 13; nmblks = 10 to 1000 buffers)
dSH12:> **enable [12, 13][in, out, both]**

For Q931 message monitoring on a specific D-Channel use commands:

dSH12:> **dchdump** (Mapping of the D-Channel ckt # timeslot to its logical Dchnl # and 13Suld is obtained)
dSH12:> **selectdch <LogDCHnum>** (Note: By default, ALL the PRI D-Channels on the SPM are selected for layer 2 and/or layer 3 message tracing. This is done so that the SPM message tracing tool behavior is similar to the one on the DTCI XPM.)

To dump out all the captured Q931 layer 2 or 3 or both messages to the screen use:

dSH12:> **display [12, 12, both]**

Note: When finished, use the **DISABLE** command to turn off tracing, the **DEALLOC** command to deallocate the buffers for layer 2 or layer 3, or both, and the **CLEAR** command to clear the D-Channel captured msgs.

ISDN Q931 Procedures for Traces on BRI and PRI

Note: For BRI Q931, see NTP 297-2401-501 *DMS-100F ISDN BRI Maintenance Guide* and the chapter on "Protocol Analysis" using PMDEBUG.

TABLE: TRKSGRP
>**pos pri2w 0**
PRI2W 0 DS1SIG ISDN 10 20 87Q931 2 N STAND USER
PT_PT USER N UNEQ 30 N DEFAULT DTCI 0 **11 24** 64K
HDLC $ **%%%% 11 is span number needed for pmdebug**
>**pmdebug dtci 0**
PMDEBUG MODE - CONNECTING TO DTCI 0 UNIT 0
WARNING: You now have access to PM monitor....proceed with caution
LTCUP>**isdncp**
UP:ISdncp>
<Isprottbl, Lterm,Trmtype,Sidx, Ccbcs, ISLT_unprot, ISCall_unpr, IS_c_te_unp, IS_T_te_unp, IS_Loop_unp, DUmp_smb, HEX_smb, ISOptns, SSb, FSBMon, Hsg, Bradntbl, LLmsim, ISLoop, FSB,Eventsim, CCSim, SCp_x_gen>

UP:ISdncp>**hsg**

Pridump,Dchdump.
UP:Hsg>**pridump**

	PSIDE		TIMESLOT	CSIDE			
HSG	SERVICE	PORT	CHNL	CHNL	PORT	CHNL	SIDX
31	PRA	0	24	31	2	30	3968
30	PRA	1	24	31	3	30	3840
29	PRA	** 11 **	24	31	11	30	**3712**
							%%% 3712 sidx needed
28	UNA	**%%% is span 11 %%%**					
27	UNA						
26	UNA						
25	UNA						
24	UNA						
23	UNA						
22	UNA						
21	UNA						

Continue Quit

UP:Dump>***** (**note: *asterisk = leave 1 level)**

UP:Hsg>*****

UP:ISdncp>
<Isprottbl, Lterm,Trmtype,Sidx, Ccbcs,ISLT_unprot, ISCall_unpr, IS_c_te_unp, IS_T_te_unp, IS_Loop_unp,DUmp_smb, HEX_smb,ISOptns, SSb,FSBMon, Hsg, Bradntbl, LLmsim,ISLoop, FSB, Eventsim, CCSim, SCp_x_gen>

UP:ISdncp>**sidx 3712**

Searching the TERM_PROT_TBL...

355 356 357 358 359 360 361 362 363 364
365 366 367 368 369 370 371 372 373 374
375 376 377 378 7052 **%%%% index for llsim option select tid**
Done searching.

UP:ISdncp>**llmsim**

<Mon, MOFf, Options_llm>

UP:LLmsim>**opt**

<ININT, INMon, INOff, OUTINT, OUTMon, OUTOff, Alloff, Hex, Verbose, SYNC, Stid, Ltid, Etid, Ramfile, SCreen, Jdm, JTd, OPtdump, SElect, REmove, Dlselect, DLRemove>

UP:Options_llm>**select 7052**

7052 has been added to the select list.

Enter Set TID to select:

UP:SElect>

The following Set TIDs are in the select list:

7052

UP:Options_llm>*****

Procedure continues on the next page.

ISDN Q931 procedure continues.

UP:LLmsim>

<Mon, MOFf, Options_llm>

UP:LLmsim>
>**disp off** (optional)
>**mon**

Incoming monitor is now on.

OUT=Off; IN=Mon; Options=[verbose,stid,ltid,etid,spa,ramfile,screen]

Outgoing monitor is now on.

<== Q931: SETUP: from S[7052] L[1,378,0] E[41,377,0] SPA[----]
CR: 0,01
BC: speech
64 kbit/s
circuit mode
mu-law speech
CID: 0
Channel Type: B - Channel Units (3).
Number Map: Channel is indicated by the number following.
Slot Map/CH#: 01
CGN: private_numbering_plan **%%%% calltype from ltcalls that needed datefilled %%%% as pvt. Only pub was datafilled**.
unknown
user_provided_not_screened
presentation_allowed
3103332
CDN: private_numbering_plan
unknown
2440063

==> Q931: REL COM: to S[7052] L[1,378,0] E[41,377,0] SPA[----]
CR: 1,00 01
CSE: user
incoming_calls_barred

<== Q931: SETUP: from S[7052] L[1,378,0] E[41,377,0] SPA[----]
CR: 0,01
BC: speech
64 kbit/s
circuit mode
mu-law speech
CID: 0
Channel Type: B - Channel Units (3).
Number Map: Channel is indicated by the number following.
Slot Map/CH#: 01
CGN: private_numbering_plan
unknown
user_provided_not_screened
presentation_allowed
3103332
CDN: private_numbering_plan
unknown
2440064

==> Q931: REL COM: to S[7052] L[1,378,0] E[41,377,0] SPA[----]
CR: 1,00 01
CSE: user
incoming_calls_barred

UP:LLmsim>
>**moff**
Incoming monitor is now off.

OUT=Mon; IN=Off; Options=[verbose,stid,ltid,etid,spa,ramfile,screen]

Outgoing monitor is now off.

UP:LLmsim>
>**disp on** (optional)
>**quit**

XPMIST Breakdown for EBS

Note: Some items are abbreviated and will not be exactly as the printout data would be.

XPMIST Example:

```
OUTGOING    15:49:34.5        NODE TYPE=  LCM_NODE
DS512:   ENCAPMS_CARD= 23    MS_PORT= 1   NODE=    10845
NN=  0091      TN=  0218         MSGTAG=  00          RTE=  2A5D     ERR=  00        LGTH=  33    LBYTE=  00
AGENT= LEN HOST 10 1 16 23              DN 5304918
D1  14  00  26  15  15  15  15  15  14  14  14  1B  03  0B  88  C0  FD  2B  17  14 14  14  14  1C  20
15  15  15  15  14  14  14  14  14  1E  14  14  01  0F  D0  FD  00
  CALLID=     0

00   D1    CPINTENT
           TYPE           = TERM SEND SET DATA%tell PM the key assignments on this set
           SELECTOR       = 0          key 2, key 3, ...........etc.
           LENGTH         = #26
           DATA           = 15  15  15  15  15  14  14  14  1B  03  0B  88  C0  FD  2B  17
                            14  14  14  14  1C  20  15  15  15  15  14  14  14  14  14  1E
        key 1               14  14  01  0F  D0  FD
      (DN Key)
```

XPMIST Example:

```
INCOMING    15:49:54.0        NODE TYPE=  LCM_NODE            FEATURE_MSG
NN=  0091 TN=  0218 MSGTAG=  01      RTE=  4000      ERR=  00         LENGTH=  0F      LBYTE=  00
AGENT= LEN HOST 10 1 16 23      DN 5304918
96  00  00  (0E) 00  00  00
  CALLID=     430738

          Hold Key
```

Key Codes

#0D	13	Release Key	#24	36	Malicious Call Hold
#0E	14	Hold Key	#25	37	Stored Number Redial
#14	20	Blank Key	#26	38	Call Park
#15	21	Directory Number	#27	39	Executive Busy Override
#16	22	Call Transfer	#28	40	Network Resource Selector
#17	23	3-way Conference	#29	41	Query Time & Date Key
#18	24	4- to 30-way Conference	#2A	42	Display Key
#19	25	Call Waiting	#2B	43	Group Intercom
#1A	26	Ring Again	#2C	44	Msg Wait Key
#1B	27	Privacy Release	#2D	45	Auto Answerback Key
#1C	28	Call Forwarding	#2E	46	Directed Call Park
#1D	29	Automatic Dialing	#2F	47	ACD Emergency Key
#1E	30	Call Pick-up	#30	48	ACD Not Ready Key
#1F	31	Speed Call, short	#31	49	ACD Agent Status Lamp
#20	32	Speed Call, long	#32	50	ACD Observe Agent Key
#21	33	Speed Call, user	#33	51	ACD Call Agent Key
#22	34	Intercom	#34	52	ACD Night Service Key
#23	35	Make Set Busy	#35	53	ACD Display Queue Status

Debug Verification of Line State

Verify the line state for BRISC/XA-Core: >di linezd:pr.#**XXX** d 29 (&<internal node #>).2 d 3 (&<terminal #-1>).0,0,4 line_state

NOTE: For **XXX** values, use the following: --->

PCL Loads	BRISC	XA-Core
NA015	**268**	**25C**
NA017	**268**	**25C**

Debug Verification of Trunk State

Verify the CLLI name for BRISC/XA-Core (trunk_group_prot_data)
>di trkdui:pr.**XXXX** d 4 (&<trunk_group_number_high>) d 128 (&<trunk_group_number_low>).**YY**,0,d common_language_name
Verify the TRUNK_STATE for BRISC/XA-Core:
>di trkdui:pr.**XXXX** d 4 (&<trunk_group_number_high>) d 128 (&<trunk_group_number_low>).2 d 4 (&<block>) d 7 (&<member>).6,8,4 trunk_state

NOTE: For **XXXX** use the following:--->

PCL Loads	BRISC	XA-Core
NA015	**2A78**	**2A30**
NA017	**2B38**	**2AF0**

NOTE: YY = 46 for NA015 (BRISC & XA-Core) **NOTE: YY** = 70 for NA017 (BRISC & XA-Core)

To calculate the trunk_group_number_high/low:
>table logical_table
>pos trkgrp
>keytest GROUP_KEY
>listkeys (To get the key_number)
key_number / 32 = trunk_group_number_high
key_number MOD 32 = trunk_group_number_low
Or use the following procedure:
>table trkgrp;pos <clli>
>0->x;while(prev) (x+1->x);print x

To calculate the BLOCK and MEMBER:
Determine the numerical position of the target trunk within total number of members in the group counting from 0. Then calculate:
trk_number / 8 = BLOCK
trk_number mod 8 = MEMBER
EXAMPLE: trkgrp has 50 members—EXTRKNM 401 to 450
The target trunk happens to be EXTRKNM 427; therefore:
26 / 8 = 3 BLOCKS
26 mod 8 = 2 MEMBER
(in the DMS, it's >**PRINT (26 modulo 8)**

A way to knock down a trunk if it is held up to another trunk is to use XPMIST and the following commands:
>INSERT OUT <NN> <TN> #38 #44 EOD
Note: This will place the trunk in the MB state.

Another way, at CI level, to knock a trunk down is: >CPAUDIT INVOKE 1

Supplemental Debug Calculations for Trunks

The following is a supplemental procedure for the calculation of low/high trunk group numbers and the trunk block and member as provided on the previous page for the "Debug Verification of Trunk State."

Calculation of trunk group high/low number and block and member:

To calculate Node and Terminal number use the CONVERT command in PMIST:

>**CONVERT TRK <CLLI> <Ckt.#>**

Verify the CP_ID for BRISC/XA-Core

>**di iocpdef:pr.#XX d 4 (&<Node>) d 2 (&<Terminal>) cp_id**

Note: For both NA015 and NA017:
BRISC XX = **68**
XA-Core XX = **34**

Display CP_ID as WORD format:

>**di iocpdef:pr.#XX d 4 (&<Node>) d 2 (&<Terminal>) --> WORD_1 WORD_2**

To Determine the Four Indices from WORD_1 and WORD_2 use the following:

Bits of WORD_1 and WORD_2 = fedc ba98 7654 3210,
Index_1 = bits c-5 of WORD_1 = <trunk_group_number_high>
Index_2 = bits 4-0 of WORD_1 = <trunk_group_number_low>
Index_3 = bits 7-0 of WORD_2 = <block>
Index_4 = bits f-d of WORD_1 = <member>

CMINFO Special System Query Commands

>**CMMEM**	read one or more long words.
>**CMDISP**	display the CM memory tables.
>**ERRCNT**	display the memory error counters and mismatch counters on a per module basis.
>**THRESHOLD**	query the different CM threshold values.
>**READTOD**	display time of one or more MC time-of-day clocks.
>**CMADDR**	translate memory address to module on card.
>**READPORT**	display the addresses for the port card and its error status register contents.
>**CMALARM**	query the CM top level alarms.
>**RMSAUDIT**	query the RMS audit interval.
>**SHOWINV**	read specified inventory table.
>**SHOWOMS**	read specified OM counts.
>**BASETOD**	query the BASE TOD.
>**DBGSSC**	invoke SSC Debugging Utility.
>**QCONTENT**	display contents of the Sparing queue supplied.
>**MEMINF**	display Memory Map Table information.
>**MEMSTAT**	display Memory Status Table information.
>**MEMSUMMARY**	display a summary of memory related variables.
>**MEMROTATE**	display a memory rotation algorithm offsets.
>**REXQUERY**	query REx tests.
>**REXRUN**	run one REx test stand-alone several times.
>**CORSTAT**	report status of Core Optimization Facilities.
>**PRTHIST**	display contents of mismatch history database.
>**GETHIST**	get specific information from mismatch history DB.
>**CPUHEALTH**	calculate CPU health indicators based on mismatch history.
>**MFCTHRESH**	determine whether any MFC thresholds have been exceeded.
>**QUIT**	exit program.

CALLTRAK

(*TAM -1001-012, CALLTRAK User Guide*)

Note: CALLTRAK has a significant REALTIME impact on the switch. It affects every call. Reference the TAM above and see the **CAUTIONS** and **WARNINGS** before using any commands**.**

TIER II SUPPORT TOOLS

Commands	Description
>**CALLTRAK**	accesses the CallTrak level (may require password).
>**ALLTOOLS**	use to enable or disable all available tools.
>**DISPLAY**	use to show the output.
>**MSGTRACE**	use to monitor incoming or outgoing messages.
>**PGMTRACE**	use to trace call processes thru portions of the program code.
>**QUIT**	use to leave CallTrak level and return to the CI level.
>**REMOVE**	use to remove command to deselect originating terminal(s) or agent(s).
>**SELECT**	use to set origination terminal(s) or agent(s).
>**SESSION**	use to control CallTrak's virtual session capability, that is, users may monitor, create, delete, and move between sessions.
>**START**	use to begin tracing activity originating from the selected terminals.
>**STATUS**	use to display list of selected terminals & tools.
>**STOP**	use to stop call tracing activity.
>**TIDTOVID**	use to map specified terminal identifier (TID) to one or more associated virtual terminal identifiers (VIDs)..
>**TIMECALL**	use to collect and output call timing information.
>**VIDTOTID**	use to map the specified VID to the corresponding TID and extension byte.

Note: Use the following to load from TASNONRES if not resident:

Loading CALLTRAK from TASNONRES

Execute the following files on TASNONRES:

>**EXECUTE TCALLSUB$FC**
>**EXECUTE CALLCBSB$FC**
>**EXECUTE TCMSGSUB$FC**
>**EXECUTE TCPGMSUB$FC**
>**EXECUTE TCALLLNS$FC**
>**EXECUTE CTTOPSSB$FC** (Needed for TOPS)
>**EXECUTE TCLLKLNS$FC** (Needed for PPhones and ISDN)

To run CALLTRAK

>**CALLTRAK**
>**PGMTRACE ON**
>**PGMTRACE BUFSIZE 10000**
>**PGMTRACE EXCLUDE PACKAGE SOSBILGE** (Becomes PACKAGE NUCLEUS in TL09)
>**PGMTRACE EXCLUDE MODULE JNETUI**
>**PGMTRACE EXCLUDE MODULE BCLAMAUI**
>**PGMTRACE DISPLAYOPTS SET RETADDR EDITION** (Only if return addresses and edition codes are needed)
>**MSGTRACE ON**
>**MSGTRACE BUFSIZE SHORT 230**
>**MSGTRACE BUFSIZE LONG 65**

You can select a terminal by one of the following:

>**SELECT LEN <the LEN (AA-B-CC-DD) of the agent>**
>**SELECT TID <node and terminal>**
>**SELECT LTID <LTID Grp> <Terminal> [<key>]**
>**SELECT TRK <CLLI and member>**
>**SELECT DN <the Directory Number>**

>**START**
"Make the test call"
>**STOP**
>**RECORD START ONTO <device>**
>**DISPLAY MERGE**
>**RECORD STOP ONTO <device>**

To capture another CALLTRAK without overwriting the first:

>**STATUS** (Note the session #)
>**SESSION NEW** (Note the new session #)
Note: At this point you can do the START command again.
>**SESSION CURRENT <session #>** (toggles to the session)

To send the display output to a file:

>**DISPLAY MERGE NOWAIT <device> FILE <filename>**

CCS7 Test Utility (C7TU)

(*TAM-1001-015, C7TU User Guide*)

Note: Before using the C7TU commands below, see the TAM above and review the **Danger**, **Warning**, and **Caution** messages.

C7TU Commands:

>**C7TULINK** access the C7TULINK test environment. Use Q or HELP C7TULINK to get list of optional commands.
>**C7TUREC** record unformatted C7TU reports to a file on the specified device. Use HELP C7TUREC for commands
>**C7TUPRT** formats and prints C7TU reports.
>**DPC {REPORT <on/off>, QUERY <routeset name>** turn on/off routeset status change report. Query a DPC status.
>**MSGCODE** list C7TU message codes and descriptions.
Note: See ISUP messages codes on the next page.
>**QUIT** exit C7TU.

Monitoring CCS7 Messages:

>**C7TUREC START <device name> <file name>**
>**C7TULINK**

Monitor all routes using specified linkset:

>**MON LINK <linkset name> <member in linkset> <direction {IN, OUT,+BOTH}> ANSI ALL <msg code> DATA**

Monitoring linkset specifying route:

>**MON LINK <linkset name> <member in linkset> <direction {IN, OUT,+BOTH}> ANSI LABEL ALL <network indicator {INTL, INTLSP,+NATL, NATLSP, ALL}> <priority {0 to 4}(4=all)> <DPC*>+<OPC*> <SLS {0 to 32}(32=all)> <msg code> DATA**
***Note:** DPC/OPC format is **<member> <cluster> <network>**

Selecting PM for monitor (sends MONITOR to PM):

>**SELECT <PM {MSB7 or LIU7}> <PM #> ON**

Restoring all monitor intercept/intercept request following a restart:

>**RESTORE**

Removing Monitors/Printing Results:

>**REMOVE MATCH <item {0 to 7 or ALL}>**
>**SELECT <PM {MSB7 or LIU7}> <PM #> OFF**
>**C7TUREC STOP**
List device (i.e., >**LISTVOL <volume>**), then print records —
>**C7TUPRT <filename>**

Match and Mask Commands:

Use the MATCH command to indicate which bytes of data to be matched during the monitor.
>**MATCH <item #> <byte offset> <match bytes>**
Ex: >**MATCH 0 14 01** **Note:** '01' is message code for an IAM

Note: Use the MASK command to mask out bytes during the monitor. The mask bytes are not used to compare for matching messages.
>**MASK <item #> <byte offset> <mask bytes>** Ex: >**MASK 0 14 FF**

Note: Concerned node can be assigned using the MATCH and MASK commands or by using "parms" option of the MONITOR command.

Table entry for ISUP messages

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Internal Use				SIO	DPC			OPC			SLS	CIC		H1/H0	Spare

5 - Member - 8 6 - Cluster - 9 7 - Network - 10

Note: CIC and spare (data) can be assigned using MATCH and MASK commands or using "parms" option in the MONITOR command.

Table entry for non-ISUP messages

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Internal Use				SIO	DPC			OPC			SLS	H1/H0	Spare		

5 - Member - 8 6 - Cluster - 9 7 - Network - 10

Note: Spare (data) can only be assigned using the MATCH and MASK commands.

Table entry for Signal Network Message (SNM) messages

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Internal Use				SIO	DPC			OPC			SLS	H1/H0	Concerned Node		

5 - Member - 8 6 - Cluster - 9 7 - Network - 10

ISUP MSG Codes as listed with C7TU Msgcode

MSG CODE	DESCRIPTION	‘	DI	SI	H1H0
MTC	ST Maintenance		01	X	XX
LDR	ST Loader		02	X	XX
MON	ST Monitor		03	X	XX
EXT	C7 External (NO MATCH ALLOWED)		04	X	XX
. ISUP	ISDN User Part		.	05	XX
. . . IAM	Initial Address Message		.	-	01
. . . SAM	Subsequent Address		.	-	02
. . . INR	Information Request		.	-	03
. . . INF	Information		.	-	04
. . . COT	Continuity		.	-	05
. . . ACM	Address Complete		.	-	06
. . . CON	Connect Message		.	-	07
. . . FOT	Forward Transfer		.	-	08
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