MITEL NETWORKS

SX-2000

TECHNICIAN'S HANDBOOK

LIGHTWARE 32, Release 1.0

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SX-2000 Technician's Handbook

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Chapter 1
About This Handbook

About This Handbook

Purpose

This handbook provides:

- quick reference to maintenance commands
- abbreviated instructions for frequently used procedures
- programming aids
- troubleshooting flowcharts
- installation information.

Audience

This handbook is for certified technicians.

Symbols

A stop symbol indicates a hazardous situation which, if not avoided, could result in injury or death.

A yield symbol with an exclamation mark indicates a situation which, if not avoided, could result in damage to the equipment.

A light bulb identifies an important note or a useful tip.

A clock indicates the amount of time that is required to perform the associated step.

A pointer symbol identifies an important cross reference.

A hand identifies a step where you must make an important command selection.

Important Safety Instructions

Failure to follow all instructions may result in improper equipment operation and/or risk of electrical shock.

See the SX-2000® *Safety Instructions*, included with every system, for general safety information.

RSD Drive or Cartridge Tape Unit?

This handbook describes how to perform software procedures on a system that has an RSD drive. If your system has a cartridge tape unit, substitute TAPE for RSD when you enter maintenance commands.

Additional Information

Technical Documentation CD-ROM

The Technical Documentation CD-ROM provides complete information about the SX-2000 system. The documentation has been enhanced with animated FRU procedures and a Troubleshooting Tool.

Mitel Online

Mitel Online provides free access to the latest technical documentation updates, Technical Service Bulletins (TSBs), compatibility considerations, and recognized support issues. You can also participate in Tech-to-Tech forums. Training course schedules are provided, and you can update your training certification online.

1. Launch your browser and access www.mitel.com.
2. From the OnLine Services menu, select Mitel Online.
3. Enter your login name and password.
4. Click Technical Support Highlights and then click Product Documentation (eDocs).

Field Change Instruction

Every software release is accompanied by a Field Change Instruction (FCI). The FCI describes software changes, bug fixes, outstanding issues, and hardware compatibility considerations for the new software release. ***Read the FCI before you begin any software upgrade.***

You can obtain the latest FCI from Mitel Online.

Technical Service Bulletins

Technical Service Bulletins (TSBs) are issued by Mitel Technical Support to address frequently asked questions regarding software and hardware problems.

You can obtain the latest TSBs from Mitel Online.

Known Bug List

Known bugs are tracked by Mitel Technical Support. Consult the Known Bug List if you see a problem on your system. The list offers work-arounds that may save you a Technical Support call.

You can obtain the latest Known Bug List from Mitel Online.

Chapter 2
Installation

Cabinet Card Layouts

Redundant Control Cabinet Card Layout

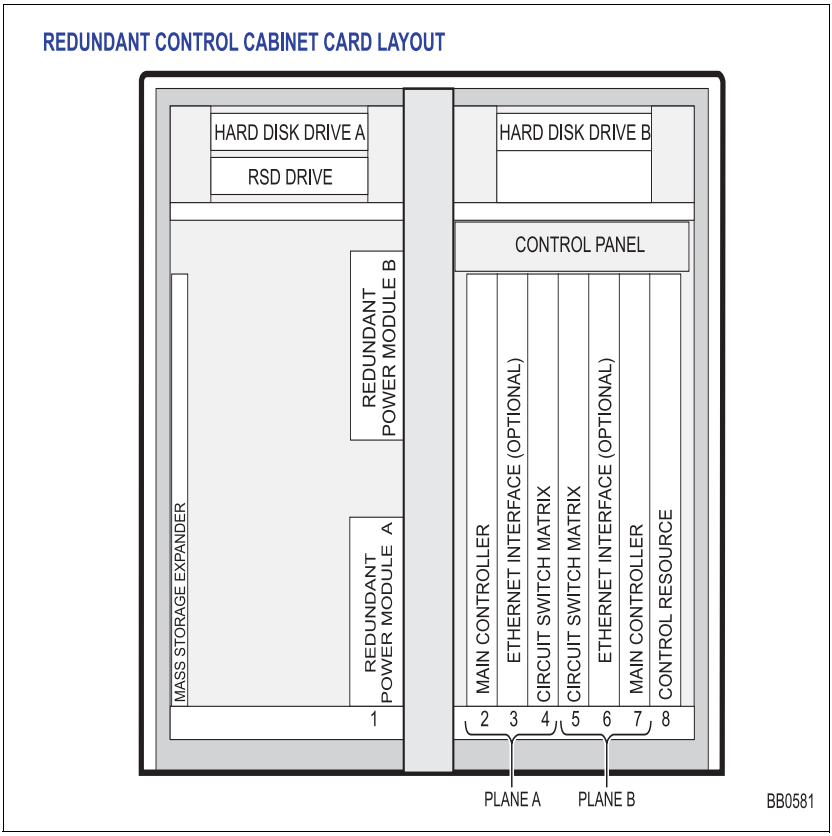

Figure 1: Redundant Control Cabinet Card Layout

Non-redundant Control Cabinet Card Layout

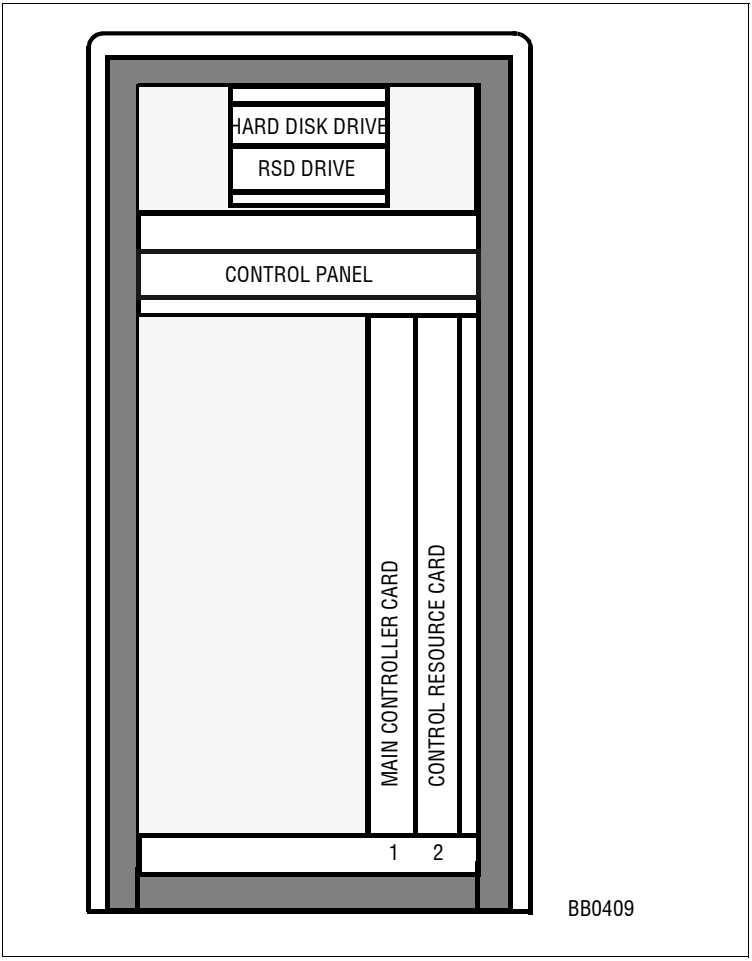

Figure 2: Non-redundant Control Cabinet Card Layout

MICRO LIGHT Cabinet Card Layout

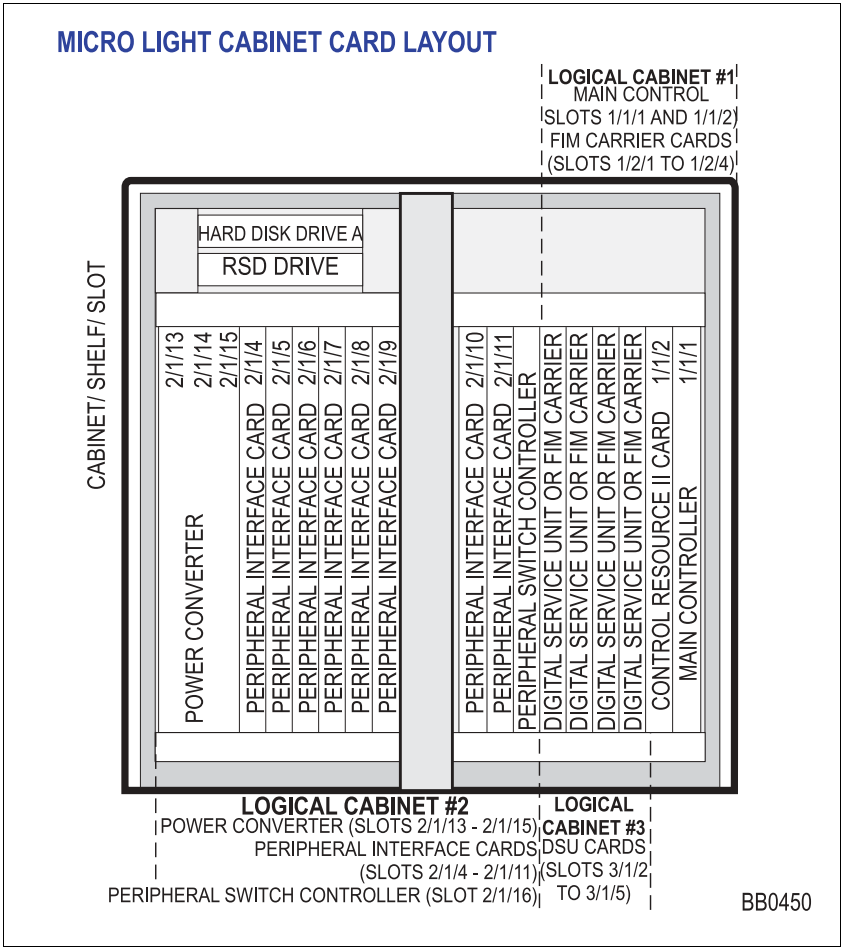

Figure 3: MICRO LIGHT Cabinet Card Layout

MICRO LIGHT Cabinet - Valid Card Combinations

		CONTROL CABINET #1 - FIM CARRIER CARDS			
SLOT →		1/2/1	1/2/2	1/2/3	1/2/4
	PSC	DSU CABINET #3 - DSU CARDS			
SLOT →	2/1/16	3/1/2	3/1/3	3/1/4	3/1/5
CONFIGURATION					
A	PSC	NO CARD	NO CARD	NO CARD	NO CARD
B	PSC	DSU	NO CARD	NO CARD	NO CARD
C	PSC	DSU	DSU	NO CARD	NO CARD
D	PSC	DSU	DSU	NO CARD	DSU
E	PSC	DSU	DSU	DSU	DSU
F	PSC	NO CARD	NO CARD	FIM	NO CARD
G	PSC	DSU	NO CARD	FIM	NO CARD
H	PSC	DSU	DSU	FIM	NO CARD
I	PSC	DSU	DSU	FIM	DSU
J	PSC	NO CARD	NO CARD	FIM	FIM
K	PSC	DSU	NO CARD	FIM	FIM
L	PSC	DSU	DSU	FIM	FIM
M	PSC	NO CARD	FIM	FIM	FIM
N	NO CARD	FIM	DSU	FIM	FIM
O	NO CARD	FIM	FIM	FIM	FIM

PSC = PERIPHERAL SWITCH CONTROLLER CARD
DSU = DIGITAL SERVICE UNIT CARD
FIM = FIBER INTERFACE MODULE CARRIER CARD

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Figure 4: MICRO LIGHT - Valid Card Combinations

Table 1: Completing the MICRO LIGHT Cabinet Assignment Form

CONFIGURATION 1 - CABINET ASSIGNMENT

	Main Control Fiber Interface			Peripheral/DSU Fiber Interface				
	Cabinet	Shelf	Slot	Type	Cabinet	Shelf	Slot	Comments
A	1	2	1	FD Per	2	1	17	internal peripheral
	1	2	2					
	1	2	3					
	1	2	4					
B & C	1	2	1	FD Per	2	1	17	internal peripheral
	1	2	2	FD DSU	3	1	1	internal DSU
	1	2	3					
	1	2	4					
D & E	1	2	1	FD Per	2	1	17	internal peripheral
	1	2	2	FD DSU	3	1	1	internal DSU
	1	2	3					
	1	2	4	FD DSU	3	1	6	internal DSU
F	1	2	1	FD Per	2	1	17	internal peripheral
	1	2	2					
	1	2	3	FD Per	4	1	17	external peripheral Note
	1	2	4					
G & H	1	2	1	FD Per	2	1	17	internal peripheral
	1	2	2	FD DSU	3	1	1	internal DSU
	1	2	3	FD Per	4	1	17	external peripheral Note
	1	2	4					
I	1	2	1	FD Per	2	1	17	internal peripheral
	1	2	2	FD DSU	3	1	1	internal DSU
	1	2	3	FD Per	4	1	17	external peripheral Note
	1	2	4	FD DSU	3	1	6	internal DSU
J	1	2	1	FD Per	2	1	17	internal peripheral
	1	2	2					
	1	2	3	FD Per	4	1	17	external peripheral Note
	1	2	4	FD Per	5	1	17	external peripheral Note

Table 1: Completing the MICRO LIGHT Cabinet Assignment Form (Cont'd)

CONFIGURATION 1 - CABINET ASSIGNMENT

	Main Control Fiber Interface			Peripheral/DSU Fiber Interface				
	Cabinet	Shelf	Slot	Type	Cabinet	Shelf	Slot	Comments	
	1	2	1	FD Per	2	1	17	internal peripheral	
K	1	2	2	FD DSU	3	1	1	internal DSU	
&	1	2	3	FD Per	4	1	17	external peripheral	Note
L	1	2	4	FD Per	5	1	17	external peripheral	Note
	1	2	1	FD Per	2	1	17	internal peripheral	
	1	2	2	FD Per	3	1	17	external peripheral	Note
M	1	2	3	FD Per	4	1	17	external peripheral	Note
	1	2	4	FD Per	5	1	17	external peripheral	Note
	1	2	1	FD Per	2	1	17	external peripheral	Note
	1	2	2	FD DSU	3	1	1	internal DSU	
N	1	2	3	FD Per	4	1	17	external peripheral	Note
	1	2	4	FD Per	5	1	17	external peripheral	Note
	1	2	1	FD Per	2	1	17	external peripheral	Note
	1	2	2	FD Per	3	1	17	external peripheral	Note
O	1	2	3	FD Per	4	1	17	external peripheral	Note
	1	2	4	FD Per	5	1	17	external peripheral	Note

Note: You can also connect the FIM in this slot to a FIM in a DSU cabinet. If you are connecting a DSU cabinet, enter the following data:

Type: **Enter "FD DSU".**

Slot: **Enter "1" if it is connected to a FIM in slot 1 of a DSU cabinet. Enter "6" if it is connected to a FIM in slot 6 of a DSU cabinet.**

Comments: Enter the location of the external DSU cabinet. This field accepts up to 14 alpha numeric characters.

Peripheral Cabinet Card Layout

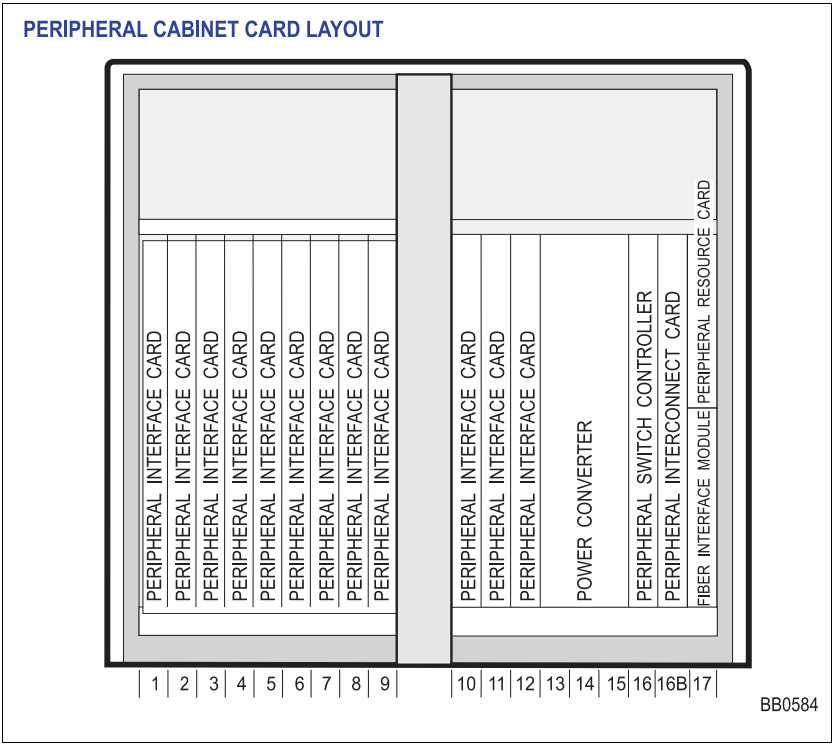


Figure 5: Peripheral Cabinet Card Layout

Note: Depending on the peripheral cabinet type, slots 16, 16B, and 17 may be used for different card configurations:

Type A - (9400-200-110-NA) - holds a PSC in slot 16, a PRC in the upper portion of slot 17, and a FIM in the lower portion of slot 17.

Type B - (9400-200-113-NA) - holds a PSC or PSC II in slot 16. A PSC works with a PRC in the upper portion of slot 17; a PSC II does not require a separate PRC. A FIM is held in the lower portion of slot 17. If used in an expanded peripheral node, it must be used as the slave cabinet and includes a Peripheral Interconnect card in slot 16.

Peripheral Cabinet II - (9400-200-118-NA) - holds a PSC II in slot 16, a FIM in slot 17, and if used in an expanded peripheral node as the master cabinet a Peripheral Interconnect card in slot 16B. If used as the slave cabinet, a Peripheral Interconnect card is installed in slot 16 (no PSC or FIM required).

DSU Cabinet Card Layout

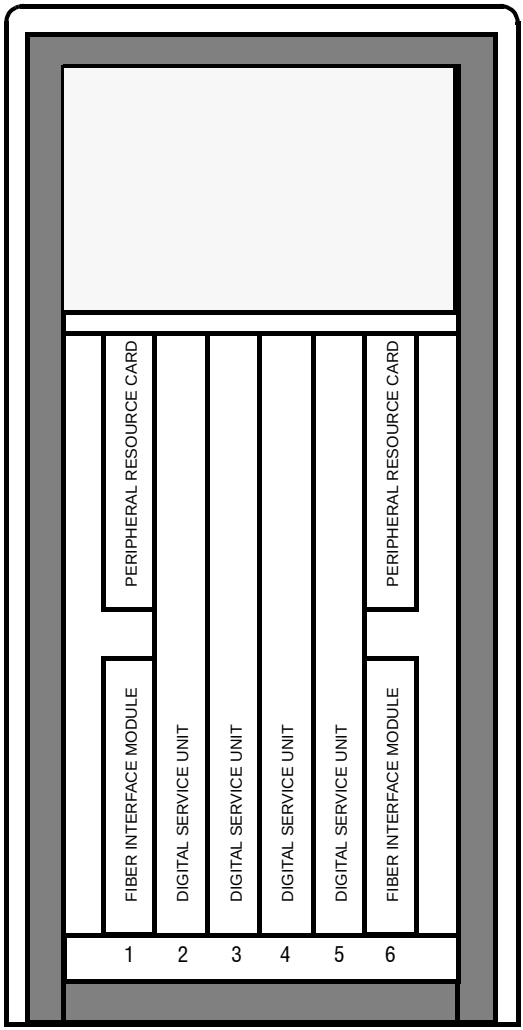


Figure 6: DSU Cabinet Card Layout

Adding a Peripheral or DSU Cabinet

Service will be lost during this procedure.

1. If your system is redundant, hold down PANEL ENABLE and press ACTIVITY FREEZE ON.
2. Install the peripheral or DSU cabinet.
3. Connect the fiber cable to the FIM in the control node.
4. Power up the cabinet.
5. Enter CDE mode on the maintenance terminal.
6. Select the Dimension and Feature Display form, and ensure the maximum number of cabinets is selected for your system configuration. For FD1 configurations (non-redundant and SX-2000 MICRO LIGHT systems) the number of cabinets should be set to 5. For FD2 configurations (redundant systems and 18" non-redundant cabinets) the number of cabinets should be set to 12.
7. If the maximum number of cabinets is selected, continue. If the maximum number of cabinets is not selected, proceed to page 18.

If the Maximum Number of Cabinets is Selected

1. Enter the Cabinet Assignment form.
2. For non-redundant and redundant LIGHT systems, complete the Cabinet Assignment form as follows:
   Type: Enter "FD Per" or "FD DSU".
   Cabinet: Assign cabinets with numbers 2 through 12.
   Shelf: Enter 1.
   Slot: Enter 17 for a peripheral cabinet. Enter 1 for DSU cabinets with DSU cards in slots 2 or 3. Enter 6 for DSU cabinets with DSU cards in slots 4 or 5.

Comments: Enter the location of the new cabinet.

For MICRO LIGHT systems, refer to Figure 4 (page 12) to determine the letter designation for your card configuration. From Table 1 (page 13), locate the cabinet assignment form that has the same letter designation as your card configuration. Enter the table data into the Cabinet Assignment form.

The following step takes the system out of service.

3. Commit the form. **The system goes out of service.**

4. After service is restored, enter the System Configuration form and program the peripheral interface cards into the new cabinet.

5. If your system is redundant, hold down PANEL ENABLE and press ACTIVITY FREEZE OFF.

If the Maximum Number of Cabinets is Not Selected

Non-redundant Systems

1. Save the database to RSD (see page 164).

2. Ensure that you have removed the RSD from the RSD drive.

3. Enable the options (see page 194).

   Enter 5 for the maximum number of cabinets in the Dimension and Feature Select form. Note that a new password is not required.

4. Complete the Cabinet Assignment form.

   For MICRO LIGHT systems, refer to Figure 4 (page 12) to determine the letter designation for your card configuration. From Table 1 (page 13), locate the cabinet assignment form that has the same letter designation as your card configuration. Enter the table data into the Cabinet Assignment form.

5. Restore the database (see page 174).

   After service is restored, enter the System Configuration form and program the Peripheral Interface cards into the new cabinet.

Redundant Systems

1. Save the database to RSD (see page 164).
2. Remove the RSD from the RSD drive.
3. Set ACTIVITY FREEZE to ON.
4. Enter PARTITION first from the active plane, then from the inactive plane.
5. Enable options on the inactive plane (see page 197).

   Enter 12 for the maximum number of cabinets in the Dimension and Feature Select form.
6. Complete the Cabinet Assignment form.
7. Restore the database from RSD to the inactive plane (see page 183).

   The following step will interrupt service.
8. Press and hold the PANEL ENABLE button and press the ACTIVITY SWITCH button.
9. Copy the software to the newly inactive plane and JOIN the system (see page 193).
10. After service is restored, enter the System Configuration form and program the Peripheral Interface cards into the new cabinet.
11. Hold down PANEL ENABLE and press ACTIVITY FREEZE OFF.

Circuit Cards

Peripheral Interface Cards

Table 2: Peripheral Interface Cards

Card	Devices Supported	Circuits	Maximum Loop Resistance/LoopLengths
AC15 Trunk Card	AC15 trunk	8	not applicable
COV Line Card	SUPERSET™ 3 and SUPERSET 4 telephones	12	Loop resistance: 280 ohms Loop length: 26 AWG (27 IWG) - 1000 m (3300 ft.) 24 AWG (25 IWG) - 1500 m (5000 ft.) 22 AWG (22 IWG) - 2000m (6000 ft.)
DID/Loop Tie Trunk Card, DID/2 Card	Direct Inward Dial (DID) trunks from CO	4	Loop resistance: 2450 ohms Loop length: 26 AWG (27 IWG) - 7986 m (25955 ft.) 22 AWG (22 IWG) - 19995 m (64984 ft.)
DNI Line card	SUPERSET digital telephones Datasets Attendant Consoles Programmable Key Modules DNIC MOH/Paging Unit	16	Loop length: 24 AWG (25 IWG) - 1000 m (3300 ft.) including up to 50 m (162.5 ft.) 22 AWG (22 IWG) quad wire and up to 3 m modular line cord without bridge taps.
DTMF Receiver Card	DTMF telephone keypads and end-to-end signaling equipment.	16	not applicable
E&M Trunk Card	E&M tie trunk Music on hold equipment Loudspeaker equipment Paging equipment	4	not applicable

(Sheet 1 of 2)

Table 2: Peripheral Interface Cards (Cont'd)

Card	Devices Supported	Circuits	Maximum Loop Resistance/LoopLengths
Fiber Interface Module	Interfaces control node with DSU and peripheral nodes.	1	Maximum Permitted Loss in Fiber: 6 dB, using 62.5/125 μm optical cable with a numerical aperture of 0.275 inches. Maximum Length: Approximately 1 km (0 to 5 km based on the sum of the cable loss and connector and/or splice losses. Total loss cannot exceed 6 dB.).
LS/GS trunk card	Ground start CO trunks Loop start CO trunks	8	not applicable
ONS and ONS CLASS/CLIP Line Card	DTMF (2500) telephones Rotary (500) telephones Night bells	16	External loop resistance: 600 ohms External wire resistance: 400 ohms External loop length: 22 AWG (23 IWG) - 3800 m (12350 ft.) 26 AWG (27 IWG) - 1500 m (4875 ft.)
OPS Line Card	DTMF (2500) telephones Rotary (500) telephones	8	External loop resistance: 1800 ohms External wire resistance: 1600 ohms External loop length: 22 AWG (22 IWG) - 15240 m (50000 ft.) 26 AWG (27 IWG) - 5853 m (19200 ft.)

(Sheet 2 of 2)

DSU Cards

Table 3: DSU Cards

Card	Devices Supported	# of Channels/Links
BRI Card	ISDN Basic Rate Interface card	6 or 15 BRI Circuits
CEPT Formatter Card (all variants)	CEPT digital trunk	60 channels (two 30-channel links and 2 D-channels)
Conference Card	Flexible assignment for up to 64 conference channels; up to eight conferees per conference call; up to 21 three-party conferences.	64 conference channels
DS1 Formatter Card (all variants)	T1/D4 digital trunk	2 x 24-channel links
PRI E1 Card	ISDN Primary Rate Interface card	2 x 30 B-channel and 2 D-channel links
PRI T1 Card	ISDN Primary Rate Interface card	2 x 23 B-channel and 1 D-channel link
R2 Card	Protocol Converter - converts incoming MF-R2 signals from the PSTN to DPNSS, and outgoing DPNSS to MF-R2 signals for the PSTN.	two E1 links (2 x 30-channel links)
Tone Detector Card	Tone level detection Auto-correlation tone detection Threshold crossing count tone detection Cadence tone detection	32 tone detection channels

Control Cards

Table 4: Control Cards

Card	Important Details
Main Controller II E	Provides 8 Mbytes of RAM if system is running software version M21.0 or earlier. If the system is running software version M21.1 or later, it provides 15 Mbytes of RAM, and therefore the control RAM II cards must be removed.
Main Controller III or Main Controller III R	Provides 16 Mbytes of RAM.
Main Controller III E	Provides 16 Mbytes of RAM if system is running a software version between P02.3.2 and Q10.7.14 (must be programmed as MCIIIr). If the system is running software version Q10.5 or later, it provides 32 Mbytes of RAM and built-in Ethernet connection.
Circuit Switch Matrix II	Increases main controller's circuit switch size from 24 x 24 circuit switch links to a 48 x 48 non-blocking link matrix. It is required in a redundant system.
Control Resource Card	Required in SX-2000 LIGHT non-redundant and redundant systems.
Control Resource Card II	This card is required in the SX-2000 MICRO LIGHT system but can be used as a replacement for the control resource card in SX-2000 LIGHT non-redundant and redundant systems.
Control Resource Card III	This card is required for systems that use the OPS Manager ETI interface.
Peripheral Switch Controller Card	This card performs all peripheral switch functions for up to 12 Peripheral Interface Cards.
Peripheral Resource Card	Peripheral nodes that use a PSCII have PRC functionality built in. One or two peripheral resource cards are installed in each DSU node.

Card Settings

Control Resource Card Switch Settings

These switches determine which maintenance terminal ports are active.

Table 5: Control Resource Card Switch Settings

Maintenance Data Output	Switch settings			
	S1	S2	S3	S4
Control (or SX-2000 MICRO LIGHT), peripheral, and DSU nodes (default)	closed	closed	not used	not used
Control (or SX-2000 MICRO LIGHT) node only	open	open	not used	not used
Peripheral and DSU nodes only	open	closed	not used	not used
Control (or SX-2000 MICRO LIGHT) node only	closed	open	not used	not used

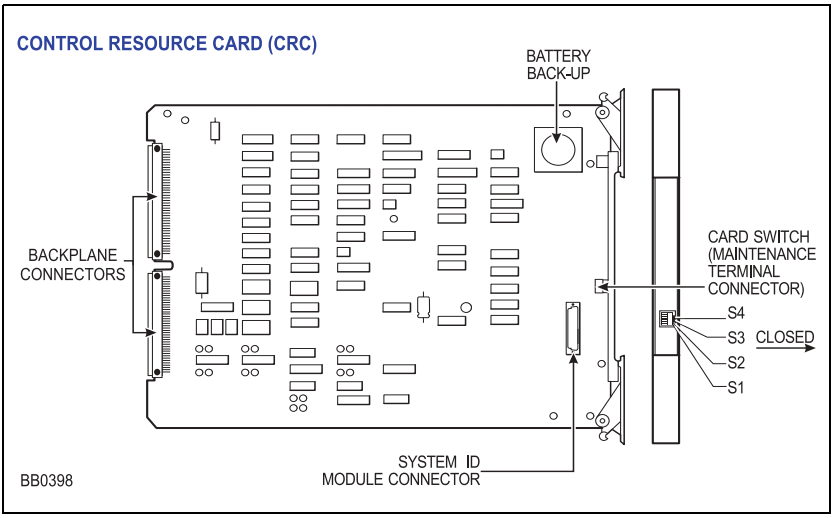


Figure 7: Control Resource Card

E&M Trunk Card Switch Settings

Set switch SN-1 and SN-2 on the E&M trunk cards.

Table 6: E&M Trunk Switch Settings

Types of Interface Circuits		Switch Positions	
Signal/Carrier Set Types	**Co-located Trunk Types**	**SN-1***	**SN-2***
TYPE I	NONE	A	B
TYPE II	TYPE II	B	A
TYPE IV	TYPE IV	B	A
TYPE V	TYPE I	B	B
TYPE V	TYPE III	B	B
TYPE V	TYPE V	B	B

*Positions are SN-1 and SN-2 where N is the particular trunk circuit number on the card (1 through 4).

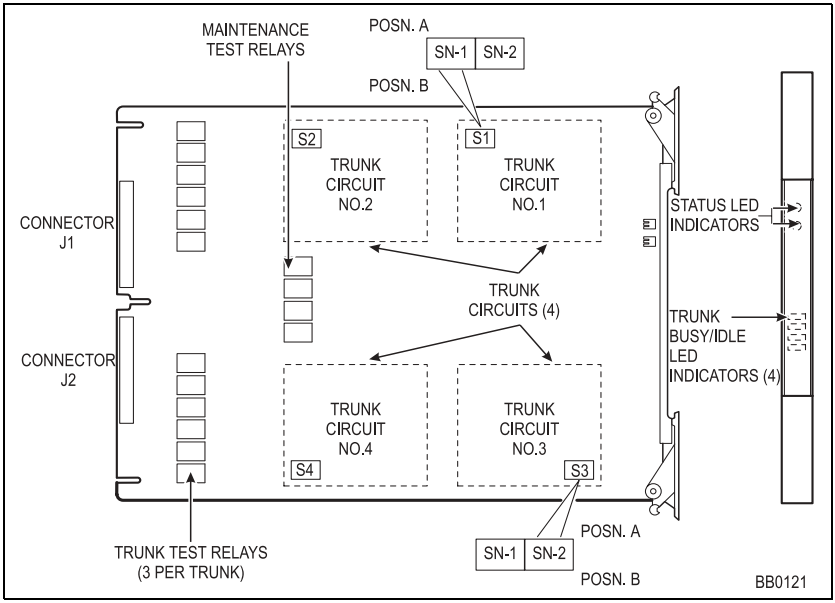


Figure 8: E&M Trunk Card

OPS Line Card Message Waiting Switches

Set message waiting switches for each circuit (S1 through S8) as follows:

Table 7: OPS Line Card Switch Settings

Setting	Description
A	Circuits are connected to Off-Premises (OPS) lines. Loop extended over the Message-Waiting Answer (MWA)/Message-Waiting Busy (MWB) pair to the called extension.
B	Circuits are connected to On-Premises (ONS) lines. Consists of a -140 Vdc source delivered at a variable rate to the Ring lead of the called extension. Rate is custom programmed during CDE to be continuously on through 80 Hz.

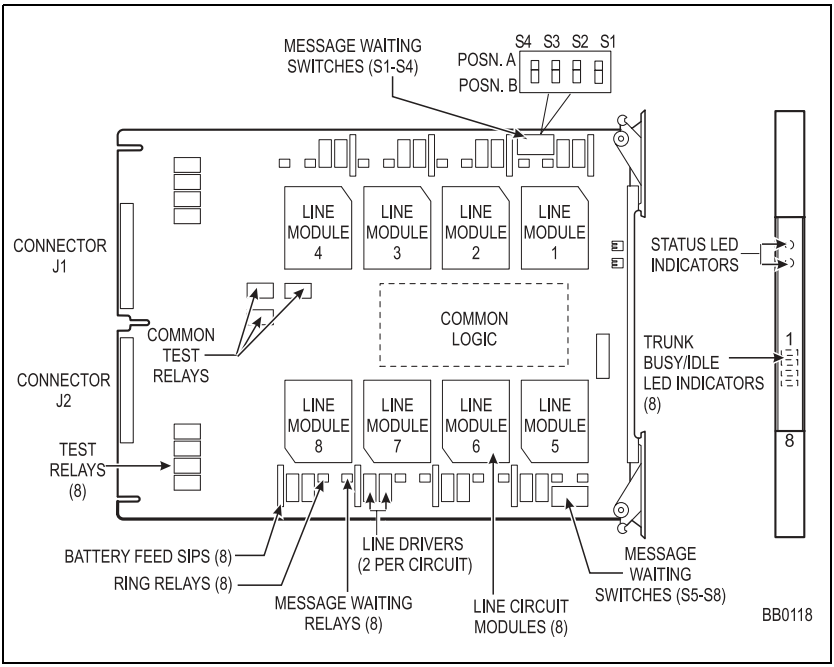


Figure 9: OPS Line Card

DS1 Formatter Card Line Equalizer Switches

Set the line equalizer switches S1 and S2 as follows:

Table 8: Line Equalizer Settings

Line Length		Switch Cells						
(feet)	(meters)	1	2	3	4	5	6	7
0 - 150	0 - 45.8	close	open	open	open	open	open	open
150 - 450	45.8 - 137.4	open	close	open	open	close	open	close
450 - 750	137.4 - 229	open	open	close	close	open	close	open

Note: The DS1 interface meets the AT&T DSX-1 specification for distances up to 655 feet (200 m) if 22 AWG (22 IWG) shielded cable is used. The interface can operate at up to 750 feet (229 m), but compliance with the AT&T DSX-1 specification is not guaranteed at this distance. For greater distances, a repeater must be used.

CEPT Interface Assembly Jumpers

Jumper positions J06 to J09 allow you to ground the shields of the coaxial cable connectors. Jumper positions J10 to J13 provide locations to affix the jumpers when they are not in grounding positions. Jumpers J06, J07, J09, J011, and J12 are located beneath the side of the CEPT interface assembly faceplate.

Table 9: CEPT Interface Assembly Connector Shield Grounding

Circuit 0		Circuit 1	
RX grounded	jumper across J06	RX grounded	jumper across J08
RX not grounded	**no jumper across J06**	**RX not grounded**	**no jumper across J08**
TX grounded	**jumper across J07**	**TX grounded**	**jumper across J09**
TX not grounded	no jumper across J07	TX not grounded	no jumper across J09

Note: Default settings are shown in bold.

E1/T1 (DS1) Formatter Card Switch Settings

Set E1/T1 mode using the E1/T1 switches on the card's side

Table 10: E1/T1 (DS1) Formatter Card Switch Settings

		E1/T1 Switches	
Mode	**Channel 24**	**Switch 1 (Link 1)**	**Switch 2 (Link 2)**
E1 mode (compatible for connection to MSDN DS1 trunks that have been externally converted from MSDN CEPT trunks)	data not inverted	open	open
T1 mode (normal DS1 formatter card operation)	data inverted	closed	closed
Note: If you set a link for E1 mode, the data on channel 24 is not inverted. The external carrier must map the channels to the CEPT link.			

PRI Cards and DS1/CEPT I and II Cards

To set the card for LT, remove the NT jumper blocks and place them on the LT jumpers.

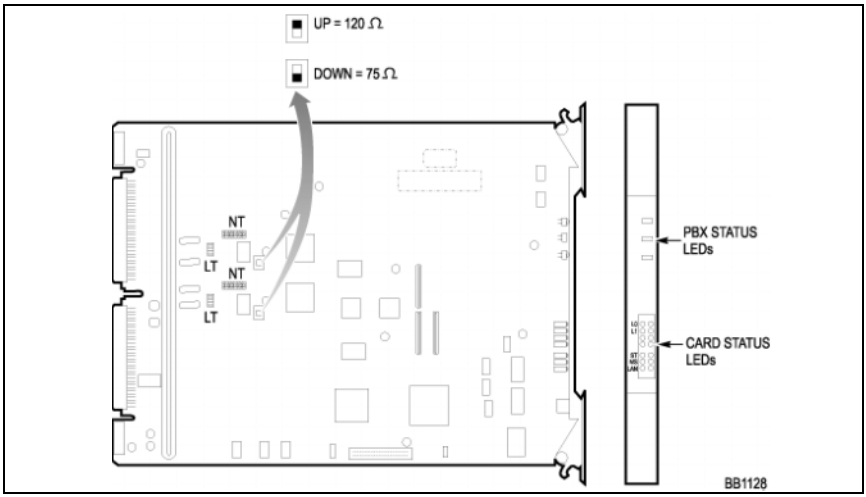


Figure 10: Dual E1 PRI Card

Peripheral Interface Cabling

Use the tables in this section to cable the peripheral node card connectors to the Main Distribution Frame (MDF). When cabling the SX-2000 MICRO LIGHT node connectors, use the cabling tables that correspond to the peripheral interface card slot in the MICRO LIGHT node.

Cable Connectors

Use AMP Champ or equivalent cable connectors

- 50-pin RS (receptacle - screw lock)
- female
- screw lock
- 90 tapered slide-on hood.

USCO Pin Designations

The USCO connector numbers are

- RJ21X for CO trunks
- RJ2EX for 2-wire E&M trunks
- RJ2FX for 4-wire E&M trunks
- RJ2GX for 4-wire E&M trunks
- RJ2HX for 4-wire E&M trunks.

Table 11: USCO Connector Pin Designations

Pin	Color Code	RJ2IX	RJ2EX	RJ2GX	RJ2FX	RJ2HX
26	W/BL	T	T	T	T	T
1	BL/W	R	R	R	R	R
27	W/O	T	E	T1	E	T1
2	O/W	R	M	R1	SG	R1
28	W/G	T	T	E	M	E
3	G/W	R	R	M	SB	SG
29	W/BR	T	E	T	T	M
4	BR/W	R	M	R	R	SB
30	W/S	T	T	T1	E	T
5	S/W	R	R	R1	SG	R
31	R/BL	T	E	E	M	T1
6	BL/R	R	M	M	SB	R1
32	R/O	T	T	T	T	E
7	O/R	R	R	R	R	SG
33	R/G	T	E	T1	E	M
8	G/R	R	M	R1	SG	SB
34	R/BR	T	T	E	M	T
9	BR/R	R	R	M	SB	R
35	R/S	T	E	T	T	T1
10	S/R	R	M	R	R	R1
36	BK/BL	T	T	T1	E	E
11	BL/BK	R	R	R1	SG	SG
37	BK/O	T	E	E	M	M
12	O/BK	R	M	M	SB	SB
38	BK/G	T	T	T	T	T
13	G/BK	R	R	R	R	R
39	BK/BR	T	E	T1	E	T1
14	BR/BK	R	M	R1	SG	R1

(Sheet 1 of 2)

Table 11: USCO Connector Pin Designations (Cont'd)

Pin	Color Code	RJ2IX	RJ2EX	RJ2GX	RJ2FX	RJ2HX
40	BK/S	T	T	E	M	E
15	S/BK	R	R	M	SB	SG
41	Y/BL	T	E	T	T	M
16	BL/Y	R	M	R	R	SB
42	Y/O	T	T	T1	E	T
17	O/Y	R	R	R1	SG	R
43	Y/G	T	E	E	M	T1
18	G/Y	R	M	M	SB	R1
44	Y/BR	T	T	T	T	E
19	BR/Y	R	R	R	R	SG
45	Y/S	T	E	T1	E	M
20	S/Y	R	M	R1	SG	SB
46	V/BL	T	T	E	M	T
21	BL/V	R	R	M	SB	R
47	V/O	T	E	T	T	T1
22	O/V	R	M	R	R	R1
48	V/G	T	T	T1	E	E
23	G/V	R	R	R1	SG	SG
49	V/BR	T	E	E	M	M
24	BR/V	R	M	M	SB	SB
50	V/S	--	--	SPARE	--	--
25	S/V	--	--	SPARE	--	--

(Sheet 2 of 2)

Card-slot Connections to Cross-connect Field

Table 12 (page 33) through Table 23 (page 44) show the pin-out signals of the interface cards as they appear on J1 through J8. The following abbreviations are used in the tables:

ONS L C	ONS line card & ONS CLASS/CLIP line card
OPS L C	OPS line card
LS/GS Trunk	Loop Start/Ground Start Trunk card
E&M Trunk	E&M trunk card
DID/LT Trunk	Direct Inward Dialing/Loop Tie Trunk card
DID/2	Direct Inward Dialing
COV L C	SUPERSET 3 and SUPERSET 4 line card
DNI L C	Digital Network Interface line card

Table 12: Card Slot 1 Connections to Cross-connect Field

Pin	Color Code	ONS L C	OPS L C	LS/GS Trunk	E&M Trunk	DID/LT Trunk	DID/2 Trunk	COV L C	DNI L C	Peripheral Backplane Plugs
26	W/BL	1T	1T	1T	1T	1T	1T	1T	1T	
1	BL/W	1R	1R	1R	1R	1R	1R	1R	1R	
27	W/O	2T	1MWB	1T(MR)	1T1			2T	2T	
2	O/W	2R	1MWA	1R(MR)	1R1			2R	2R	
28	W/G	3T	2T	2T	1E	2T	2T	3T	3T	
3	G/W	3R	2R	2R	1SG	2R	2R	3R	3R	
29	W/BR	4T	2MWB	2T(MR)	1M			4T	4T	
4	BR/W	4R	2MWA	2R(MR)	1SB			4R	4R	
30	W/S	5T	3T	3T	2T		3T	5T	5T	P1
5	S/W	5R	3R	3R	2R		3R	5R	5R	
31	R/BL	6T	3MWB	3T(MR)	2T1			6T	6T	
6	BL/R	6R	3MWA	3R(MR)	2R1			6R	6R	
32	R/O	7T	4T	4T	2E		4T		7T	
7	O/R	7R	4R	4R	2SG		4R		7R	
33	R/G	8T	4MWB	4T(MR)	2M				8T	
8	G/R	8R	4MWA	4R(MR)	2SB				8R	
26	W/BL	9T	5T	5T	3T	3T	5T	7T	9T	
1	BL/W	9R	5R	5R	3R	3R	5R	7R	9R	
27	W/O	10T	5MWB	5T(MR)	3T1			8T	10T	
2	O/W	10R	5MWA	5R(MR)	3R1			8R	10R	
28	W/G	11T	6T	6T	3E	4T	6T	9T	11T	
3	G/W	11R	6R	6R	3SG	4R	6R	9R	11R	
29	W/BR	12T	6MWB	6T(MR)	3M			10T	12T	
4	BR/W	12R	6MWA	6R(MR)	3SB			10R	12R	
30	W/S	13T	7T	7T	4T		7T	11T	13T	P2
5	S/W	13R	7R	7R	4R		7R	11R	13R	
31	R/BL	14T	7MWB	7T(MR)	4T1			12T	14T	
6	BL/R	14R	7MWA	7R(MR)	4R1			12R	14R	
32	R/O	15T	8T	8T	4E		8T		15T	
7	O/R	15R	8R	8R	4SG		8R		15R	
33	R/G	16T	8MWB	8T(MR)	4M				16T	
8	G/R	16R	8MWA	8R(MR)	4SB				16R	

Table 13: Card Slot 2 Connections to Cross-connect Field

Pin	Color Code	ONS L C	OPS L C	LS/GS Trunk	E&M Trunk	DID/LT Trunk	DID/2 Trunk	COV L C	DNI L C	Peripheral Backplane Plugs
34	R/BR	1T	1T	1T	1T	1T	1T	1T	1T	
9	BR/R	1R	1R	1R	1R	1R	1R	1R	1R	
35	R/S	2T	1MWB	1T(MR)	1T1			2T	2T	
10	S/R	2R	1MWA	1R(MR)	1R1			2R	2R	
36	BK/BL	3T	2T	2T	1E	2T	2T	3T	3T	
11	BL/BK	3R	2R	2R	1SG	2R	2R	3R	3R	
37	BK/O	4T	2MWB	2T(MR)	1M			4T	4T	
12	O/BK	4R	2MWA	2R(MR)	1SB			4R	4R	
38	BK/G	5T	3T	3T	2T		3T	5T	5T	P1
13	G/BK	5R	3R	3R	2R		3R	5R	5R	
39	BK/BR	6T	3MWB	3T(MR)	2T1			6T	6T	
14	BR/BK	6R	3MWA	3R(MR)	2R1			6R	6R	
40	BK/S	7T	4T	4T	2E		4T		7T	
15	S/BK	7R	4R	4R	2SG		4R		7R	
41	Y/BL	8T	4MWB	4T(MR)	2M				8T	
16	B/Y	8R	4MWA	4R(MR)	2SB				8R	
34	R/BR	9T	5T	5T	3T	3T	5T	7T	9T	
9	BR/R	9R	5R	5R	3R	3R	5R	7R	9R	
35	R/S	10T	5MWB	5T(MR)	3T1			8T	10T	
10	S/R	10R	5MWA	5R(MR)	3R1			8R	10R	
36	BK/BL	11T	6T	6T	3E	4T	6T	9T	11T	
11	BL/BK	11R	6R	6R	3SG	4R	6R	9R	11R	
37	BK/O	12T	6MWB	6T(MR)	3M			10T	12T	
12	O/BK	12R	6MWA	6R(MR)	3SB			10R	12R	
38	BK/G	13T	7T	7T	4T		7T	11T	13T	P2
13	G/BK	13R	7R	7R	4R		7R	11R	13R	
39	BK/BR	14T	7MWB	7T(MR)	4T1			12T	14T	
14	BR/BK	14R	7MWA	7R(MR)	4R1			12R	14R	
40	BK/S	15T	8T	8T	4E		8T		15T	
15	S/BK	15R	8R	8R	4SG		8R		15R	
41	Y/BL	16T	8MWB	8T(MR)	4M				16T	
16	BL/Y	16R	8MWA	8R(MR)	4SB				16R	

Table 14: Card Slot 3 Connections to Cross-connect Field

Pin	Color Code	ONS L C	OPS L C	LS/GS Trunk	E&M Trunk	DID/LT Trunk	DID/2 Trunk	COV L C	DNI L C	Peripheral Backplane Plugs
42	Y/O	1T	1T	1T	1T	1T	1T	1T	1T	
17	0/Y	1R	1R	1R	1R	1R	1R	1R	1R	
43	Y/G	2T	1MWB	1T(MR)	1T1			2T	2T	
18	G/Y	2R	1MWA	1R(MR)	1R1			2R	2R	
44	Y/BR	3T	2T	2T	1E	2T	2T	3T	3T	
19	BR/Y	3R	2R	2R	1SG	2R	2R	3R	3R	
45	Y/S	4T	2MWB	2T(MR)	1M			4T	4T	
20	S/Y	4R	2MWA	2R(MR)	1SB			4R	4R	
46	V/BL	5T	3T	3T	2T		3T	5T	5T	P1
21	BL/V	5R	3R	3R	2R		3R	5R	5R	
47	V/O	6T	3MWB	3T(MR)	2T1			6T	6T	
22	O/V	6R	3MWA	3R(MR)	2R1			6R	6R	
48	V/G	7T	4T	4T	2E		4T		7T	
23	G/V	7R	4R	4R	2SG		4R		7R	
49	V/BR	8T	4MWB	4T(MR)	2M				8T	
24	BR/V	8R	4MWA	4R(MR)	2SB				8R	
50	-----	-----	-----	-----	SPARE	-----	-----	-----	-----	
25	-----	-----	-----	-----	SPARE	-----	-----	-----	-----	
42	Y/O	9T	5T	5T	3T	3T	5T	7T	9T	
17	O/Y	9R	5R	5R	3R	3R	5R	7R	9R	
43	Y/G	10T	5MWB	5T(MR)	3T1			8T	10T	
18	G/Y	10R	5MWA	5R(MR)	3R1			8R	10R	
44	Y/BR	11T	6T	6T	3E	4T	6T	9T	11T	
19	BR/Y	11R	6R	6R	3SG	4R	6R	9R	11R	
45	Y/S	12T	6MWB	6T(MR)	3M			10T	12T	
20	S/Y	12R	6MWA	6R(MR)	3SB			10R	12R	
46	V/BL	13T	7T	7T	4T		7T	11T	13T	P2
21	BL/V	13R	7R	7R	4R		7R	11R	13R	
47	V/O	14T	7MWB	7T(MR)	4T1			12T	14T	
22	O/V	14R	7MWA	7R(MR)	4R1			12R	14R	
48	V/G	15T	8T	8T	4E		8T		15T	
23	G/V	15R	8R	8R	4SG		8R		15R	
49	V/BR	16T	8MWB	8T(MR)	4M				16T	
24	BR/V	16R	8MWA	8R(MR)	4SB				16R	
50	-----	-----	-----	-----	SPARE	-----	-----	-----	-----	
25	-----	-----	-----	-----	SPARE	-----	-----	-----	-----	

Table 15: Card Slot 4 Connections to Cross-connect Field

Pin	Color Code	ONS L C	OPS L C	LS/GS Trunk	E&M Trunk	DID/ LT Trunk	DID/2 Trunk	COV L C	DNI L C	Peripheral Backplane Plugs
26	W/BL	1T	1T	1T	1T	1T	1T	1T	1T	
1	BL/W	1R	1R	1R	1R	1R	1R	1R	1R	
27	W/O	2T	1MWB	1T(MR)	1T1			2T	2T	
2	O/W	2R	1MWA	1R(MR)	1R1			2R	2R	
28	W/G	3T	2T	2T	1E	2T	2T	3T	3T	
3	G/W	3R	2R	2R	1SG	2R	2R	3R	3R	
29	W/BR	4T	2MWB	2T(MR)	1M			4T	4T	
4	BR/W	4R	2MWA	2R(MR)	1SB			4R	4R	
30	W/S	5T	3T	3T	2T		3T	5T	5T	P3
5	S/W	5R	3R	3R	2R		3R	5R	5R	
31	R/BL	6T	3MWB	3T(MR)	2T1			6T	6T	
6	BL/R	6R	3MWA	3R(MR)	2R1			6R	6R	
32	R/O	7T	4T	4T	2E		4T		7T	
7	O/R	7R	4R	4R	2SG		4R		7R	
33	R/G	8T	4MWB	4T(MR)	2M				8T	
8	G/R	8R	4MWA	4R(MR)	2SB				8R	
26	W/BL	9T	5T	5T	3T	3T	5T	7T	9T	
1	BL/W	9R	5R	5R	3R	3R	5R	7R	9R	
27	W/O	10T	5MWB	5T(MR)	3T1			8T	10T	
2	O/W	10R	5MWA	5R(MR)	3R1			8R	10R	
28	W/G	11T	6T	6T	3E	4T	6T	9T	11T	
3	G/W	11R	6R	6R	3SG	4R	6R	9R	11R	
29	W/BR	12T	6MWB	6T(MR)	3M			10T	12T	
4	BR/W	12R	6MWA	6R(MR)	3SB			10R	12R	
30	W/S	13T	7T	7T	4T		7T	11T	13T	P4
5	S/W	13R	7R	7R	4R		7R	11R	13R	
31	R/BL	14T	7MWB	7T(MR)	4T1			12T	14T	
6	BL/R	14R	7MWA	7R(MR)	4R1			12R	14R	
32	R/O	15T	8T	8T	4E		8T		15T	
7	O/R	15R	8R	8R	4SG		8R		15R	
33	R/G	16T	8MWB	8T(MR)	4M				16T	
8	G/R	16R	8MWA	8R(MR)	4SB				16R	

Table 16: Card Slot 5 Connections to Cross-connect Field

Pin	Color Code	ONS L C	OPS L C	LS/GS Trunk	E&M Trunk	DID/LT Trunk	DID/2 Trunk	COV L C	DNI L C	Peripheral Backplane Plugs
34	R/BR	1T	1T	1T	1T	1T	1T	1T	1T	
9	BR/R	1R	1R	1R	1R	1R	1R	1R	1R	
35	R/S	2T	1MWB	1T(MR)	1T1			2T	2T	
10	S/R	2R	1MWA	1R(MR)	1R1			2R	2R	
36	BK/BL	3T	2T	2T	1E	2T	2T	3T	3T	
11	BL/BK	3R	2R	2R	1SG	2R	2R	3R	3R	
37	BK/O	4T	2MWB	2T(MR)	1M			4T	4T	
12	O/BK	4R	2MWA	2R(MR)	1SB			4R	4R	
38	BK/G	5T	3T	3T	2T		3T	5T	5T	P3
13	G/BK	5R	3R	3R	2R		3R	5R	5R	
39	BK/BR	6T	3MWB	3T(MR)	2T1			6T	6T	
14	BR/BK	6R	3MWA	3R(MR)	2R1			6R	6R	
40	BK/S	7T	4T	4T	2E		4T		7T	
15	S/BK	7R	4R	4R	2SG		4R		7R	
41	Y/BL	8T	4MWB	4T(MR)	2M				8T	
16	B/Y	8R	4MWA	4R(MR)	2SB				8R	
34	R/BR	9T	5T	5T	3T	3T	5T	7T	9T	
9	BR/R	9R	5R	5R	3R	3R	5R	7R	9R	
35	R/S	10T	5MWB	5T(MR)	3T1			8T	10T	
10	S/R	10R	5MWA	5R(MR)	3R1			8R	10R	
36	BK/BL	11T	6T	6T	3E	4T	6T	9T	11T	
11	BL/BK	11R	6R	6R	3SG	4R	6R	9R	11R	
37	BK/O	12T	6MWB	6T(MR)	3M			10T	12T	
12	O/BK	12R	6MWA	6R(MR)	3SB			10R	12R	
38	BK/G	13T	7T	7T	4T		7T	11T	13T	P4
13	G/BK	13R	7R	7R	4R		7R	11R	13R	
39	BK/BR	14T	7MWB	7T(MR)	4T1			12T	14T	
14	BR/BK	14R	7MWA	7R(MR)	4R1			12R	14R	
40	BK/S	15T	8T	8T	4E		8T		15T	
15	S/BK	15R	8R	8R	4SG		8R		15R	
41	Y/BL	16T	8MWB	8T(MR)	4M				16T	
16	BL/Y	16R	8MWA	8R(MR)	4SB				16R	

Table 17: Card Slot 6 Connections to Cross-connect Field

Pin	Color Code	ONS L C	OPS L C	LS/GS Trunk	E&M Trunk	DID/LT Trunk	DID/2 Trunk	COV L C	DNI L C	Peripheral Backplane Plugs
42	Y/O	1T	1T	1T	1T	1T	1T	1T	1T	
17	0/Y	1R	1R	1R	1R	1R	1R	1R	1R	
43	Y/G	2T	1MWB	1T(MR)	1T1			2T	2T	
18	G/Y	2R	1MWA	1R(MR)	1R1			2R	2R	
44	Y/BR	3T	2T	2T	1E	2T	2T	3T	3T	
19	BR/Y	3R	2R	2R	1SG	2R	2R	3R	3R	
45	Y/S	4T	2MWB	2T(MR)	1M			4T	4T	
20	S/Y	4R	2MWA	2R(MR)	1SB			4R	4R	
46	V/BL	5T	3T	3T	2T		3T	5T	5T	P3
21	BL/V	5R	3R	3R	2R		3R	5R	5R	
47	V/O	6T	3MWB	3T(MR)	2T1			6T	6T	
22	O/V	6R	3MWA	3R(MR)	2R1			6R	6R	
48	V/G	7T	4T	4T	2E		4T		7T	
23	G/V	7R	4R	4R	2SG		4R		7R	
49	V/BR	8T	4MWB	4T(MR)	2M				8T	
24	BR/V	8R	4MWA	4R(MR)	2SB				8R	
50	-----	-----	-----	-----	SPARE	-----	-----	-----	-----	
25	-----	-----	-----	-----	SPARE	-----	-----	-----	-----	
42	Y/O	9T	5T	5T	3T	3T	5T	7T	9T	
17	O/Y	9R	5R	5R	3R	3R	5R	7R	9R	
43	Y/G	10T	5MWB	5T(MR)	3T1			8T	10T	
18	G/Y	10R	5MWA	5R(MR)	3R1			8R	10R	
44	Y/BR	11T	6T	6T	3E	4T	6T	9T	11T	
19	BR/Y	11R	6R	6R	3SG	4R	6R	9R	11R	
45	Y/S	12T	6MWB	6T(MR)	3M			10T	12T	
20	S/Y	12R	6MWA	6R(MR)	3SB			10R	12R	
46	V/BL	13T	7T	7T	4T		7T	11T	13T	P4
21	BL/V	13R	7R	7R	4R		7R	11R	13R	
47	V/O	14T	7MWB	7T(MR)	4T1			12T	14T	
22	O/V	14R	7MWA	7R(MR)	4R1			12R	14R	
48	V/G	15T	8T	8T	4E		8T		15T	
23	G/V	15R	8R	8R	4SG		8R		15R	
49	V/BR	16T	8MWB	8T(MR)	4M				16T	
24	BR/V	16R	8MWA	8R(MR)	4SB				16R	
50	-----	-----	-----	-----	SPARE	-----	-----	-----	-----	
25	-----	-----	-----	-----	SPARE	-----	-----	-----	-----	

Table 18: Card Slot 7 Connections to Cross-connect Field

Pin	Color Code	ONS L C	OPS L C	LS/GS Trunk	E&M Trunk	DID/LT Trunk	DID/2 Trunk	COV L C	DNI L C	Peripheral Backplane Plugs
26	W/BL	1T	1T	1T	1T	1T	1T	1T	1T	
1	BL/W	1R	1R	1R	1R	1R	1R	1R	1R	
27	W/O	2T	1MWB	1T(MR)	1T1			2T	2T	
2	O/W	2R	1MWA	1R(MR)	1R1			2R	2R	
28	W/G	3T	2T	2T	1E	2T	2T	3T	3T	
3	G/W	3R	2R	2R	1SG	2R	2R	3R	3R	
29	W/BR	4T	2MWB	2T(MR)	1M			4T	4T	
4	BR/W	4R	2MWA	2R(MR)	1SB			4R	4R	
30	W/S	5T	3T	3T	2T		3T	5T	5T	P5
5	S/W	5R	3R	3R	2R		3R	5R	5R	
31	R/BL	6T	3MWB	3T(MR)	2T1			6T	6T	
6	BL/R	6R	3MWA	3R(MR)	2R1			6R	6R	
32	R/O	7T	4T	4T	2E		4T		7T	
7	O/R	7R	4R	4R	2SG		4R		7R	
33	R/G	8T	4MWB	4T(MR)	2M				8T	
8	G/R	8R	4MWA	4R(MR)	2SB				8R	
26	W/BL	9T	5T	5T	3T	3T	5T	7T	9T	
1	BL/W	9R	5R	5R	3R	3R	5R	7R	9R	
27	W/O	10T	5MWB	5T(MR)	3T1			8T	10T	
2	O/W	10R	5MWA	5R(MR)	3R1			8R	10R	
28	W/G	11T	6T	6T	3E	4T	6T	9T	11T	
3	G/W	11R	6R	6R	3SG	4R	6R	9R	11R	
29	W/BR	12T	6MWB	6T(MR)	3M			10T	12T	
4	BR/W	12R	6MWA	6R(MR)	3SB			10R	12R	
30	W/S	13T	7T	7T	4T		7T	11T	13T	P6
5	S/W	13R	7R	7R	4R		7R	11R	13R	
31	R/BL	14T	7MWB	7T(MR)	4T1			12T	14T	
6	BL/R	14R	7MWA	7R(MR)	4R1			12R	14R	
32	R/O	15T	8T	8T	4E		8T		15T	
7	O/R	15R	8R	8R	4SG		8R		15R	
33	R/G	16T	8MWB	8T(MR)	4M				16T	
8	G/R	16R	8MWA	8R(MR)	4SB				16R	

Table 19: Card Slot 8 Connections to Cross-connect Field

Pin	Color Code	ONS L C	OPS L C	LS/GS Trunk	E&M Trunk	DID/LT Trunk	DID/2 Trunk	COV L C	DNI L C	Peripheral Backplane Plugs
34	R/BR	1T	1T	1T	1T	1T	1T	1T	1T	
9	BR/R	1R	1R	1R	1R	1R	1R	1R	1R	
35	R/S	2T	1MWB	1T(MR)	1T1			2T	2T	
10	S/R	2R	1MWA	1R(MR)	1R1			2R	2R	
36	BK/BL	3T	2T	2T	1E	2T	2T	3T	3T	
11	BL/BK	3R	2R	2R	1SG	2R	2R	3R	3R	
37	BK/O	4T	2MWB	2T(MR)	1M			4T	4T	
12	O/BK	4R	2MWA	2R(MR)	1SB			4R	4R	
38	BK/G	5T	3T	3T	2T		3T	5T	5T	P5
13	G/BK	5R	3R	3R	2R		3R	5R	5R	
39	BK/BR	6T	3MWB	3T(MR)	2T1			6T	6T	
14	BR/BK	6R	3MWA	3R(MR)	2R1			6R	6R	
40	BK/S	7T	4T	4T	2E		4T		7T	
15	S/BK	7R	4R	4R	2SG		4R		7R	
41	Y/BL	8T	4MWB	4T(MR)	2M				8T	
16	B/Y	8R	4MWA	4R(MR)	2SB				8R	
34	R/BR	9T	5T	5T	3T	3T	5T	7T	9T	
9	BR/R	9R	5R	5R	3R	3R	5R	7R	9R	
35	R/S	10T	5MWB	5T(MR)	3T1			8T	10T	
10	S/R	10R	5MWA	5R(MR)	3R1			8R	10R	
36	BK/BL	11T	6T	6T	3E	4T	6T	9T	11T	
11	BL/BK	11R	6R	6R	3SG	4R	6R	9R	11R	
37	BK/O	12T	6MWB	6T(MR)	3M			10T	12T	
12	O/BK	12R	6MWA	6R(MR)	3SB			10R	12R	
38	BK/G	13T	7T	7T	4T		7T	11T	13T	P6
13	G/BK	13R	7R	7R	4R		7R	11R	13R	
39	BK/BR	14T	7MWB	7T(MR)	4T1			12T	14T	
14	BR/BK	14R	7MWA	7R(MR)	4R1			12R	14R	
40	BK/S	15T	8T	8T	4E		8T		15T	
15	S/BK	15R	8R	8R	4SG		8R		15R	
41	Y/BL	16T	8MWB	8T(MR)	4M				16T	
16	BL/Y	16R	8MWA	8R(MR)	4SB				16R	

Table 20: Card Slot 9 Connections to Cross-connect Field

Pin	Color Code	ONS L C	OPS L C	LS/GS Trunk	E&M Trunk	DID/LT Trunk	DID/2 Trunk	COV L C	DNI L C	Peripheral Backplane Plugs
42	Y/O	1T	1T	1T	1T	1T	1T	1T	1T	
17	O/Y	1R	1R	1R	1R	1R	1R	1R	1R	
43	Y/G	2T	1MWB	1T(MR)	1T1			2T	2T	
18	G/Y	2R	1MWA	1R(MR)	1R1			2R	2R	
44	Y/BR	3T	2T	2T	1E	2T	2T	3T	3T	
19	BR/Y	3R	2R	2R	1SG	2R	2R	3R	3R	
45	Y/S	4T	2MWB	2T(MR)	1M			4T	4T	
20	S/Y	4R	2MWA	2R(MR)	1SB			4R	4R	
46	V/BL	5T	3T	3T	2T		3T	5T	5T	P5
21	BL/V	5R	3R	3R	2R		3R	5R	5R	
47	V/O	6T	3MWB	3T(MR)	2T1			6T	6T	
22	O/V	6R	3MWA	3R(MR)	2R1			6R	6R	
48	V/G	7T	4T	4T	2E		4T		7T	
23	G/V	7R	4R	4R	2SG		4R		7R	
49	V/BR	8T	4MWB	4T(MR)	2M				8T	
24	BR/V	8R	4MWA	4R(MR)	2SB				8R	
50	-----	-----	-----	-----	SPARE	-----	-----	-----	-----	
25	-----	-----	-----	-----	SPARE	-----	-----	-----	-----	
42	Y/O	9T	5T	5T	3T	3T	5T	7T	9T	
17	O/Y	9R	5R	5R	3R	3R	5R	7R	9R	
43	Y/G	10T	5MWB	5T(MR)	3T1			8T	10T	
18	G/Y	10R	5MWA	5R(MR)	3R1			8R	10R	
44	Y/BR	11T	6T	6T	3E	4T	6T	9T	11T	
19	BR/Y	11R	6R	6R	3SG	4R	6R	9R	11R	
45	Y/S	12T	6MWB	6T(MR)	3M			10T	12T	
20	S/Y	12R	6MWA	6R(MR)	3SB			10R	12R	
46	V/BL	13T	7T	7T	4T		7T	11T	13T	P6
21	BL/V	13R	7R	7R	4R		7R	11R	13R	
47	V/O	14T	7MWB	7T(MR)	4T1			12T	14T	
22	O/V	14R	7MWA	7R(MR)	4R1			12R	14R	
48	V/G	15T	8T	8T	4E		8T		15T	
23	G/V	15R	8R	8R	4SG		8R		15R	
49	V/BR	16T	8MWB	8T(MR)	4M				16T	
24	BR/V	16R	8MWA	8R(MR)	4SB				16R	
50	-----	-----	-----	-----	SPARE	-----	-----	-----	-----	
25	-----	-----	-----	-----	SPARE	-----	-----	-----	-----	

Table 21: Card Slot 10 Connections to Cross-connect Field

Pin	Color Code	ONS L C	OPS L C	LS/GS Trunk	E&M Trunk	DID/LT Trunk	DID/2 Trunk	COV L C	DNI L C	Peripheral Backplane Plugs
26	W/BL	1T	1T	1T	1T	1T	1T	1T	1T	
1	BL/W	1R	1R	1R	1R	1R	1R	1R	1R	
27	W/O	2T	1MWB	1T(MR)	1T1			2T	2T	
2	O/W	2R	1MWA	1R(MR)	1R1			2R	2R	
28	W/G	3T	2T	2T	1E	2T	2T	3T	3T	
3	G/W	3R	2R	2R	1SG	2R	2R	3R	3R	
29	W/BR	4T	2MWB	2T(MR)	1M			4T	4T	
4	BR/W	4R	2MWA	2R(MR)	1SB			4R	4R	
30	W/S	5T	3T	3T	2T		3T	5T	5T	P7
5	S/W	5R	3R	3R	2R		3R	5R	5R	
31	R/BL	6T	3MWB	3T(MR)	2T1			6T	6T	
6	BL/R	6R	3MWA	3R(MR)	2R1			6R	6R	
32	R/O	7T	4T	4T	2E		4T		7T	
7	O/R	7R	4R	4R	2SG		4R		7R	
33	R/G	8T	4MWB	4T(MR)	2M				8T	
8	G/R	8R	4MWA	4R(MR)	2SB				8R	
26	W/BL	9T	5T	5T	3T	3T	5T	7T	9T	
1	BL/W	9R	5R	5R	3R	3R	5R	7R	9R	
27	W/O	10T	5MWB	5T(MR)	3T1			8T	10T	
2	O/W	10R	5MWA	5R(MR)	3R1			8R	10R	
28	W/G	11T	6T	6T	3E	4T	6T	9T	11T	
3	G/W	11R	6R	6R	3SG	4R	6R	9R	11R	
29	W/BR	12T	6MWB	6T(MR)	3M			10T	12T	
4	BR/W	12R	6MWA	6R(MR)	3SB			10R	12R	
30	W/S	13T	7T	7T	4T		7T	11T	13T	P8
5	S/W	13R	7R	7R	4R		7R	11R	13R	
31	R/BL	14T	7MWB	7T(MR)	4T1			12T	14T	
6	BL/R	14R	7MWA	7R(MR)	4R1			12R	14R	
32	R/O	15T	8T	8T	4E		8T		15T	
7	O/R	15R	8R	8R	4SG		8R		15R	
33	R/G	16T	8MWB	8T(MR)	4M				16T	
8	G/R	16R	8MWA	8R(MR)	4SB				16R	

Table 22: Card Slot 11 Connections to Cross-connect Field

Pin	Color Code	ONS L C	OPS L C	LS/GS Trunk	E&M Trunk	DID/LT Trunk	DID/2 Trunk	COV L C	DNI L C	Peripheral Backplane Plugs
34	R/BR	1T	1T	1T	1T	1T	1T	1T	1T	
9	BR/R	1R	1R	1R	1R	1R	1R	1R	1R	
35	R/S	2T	1MWB	1T(MR)	1T1			2T	2T	
10	S/R	2R	1MWA	1R(MR)	1R1			2R	2R	
36	BK/BL	3T	2T	2T	1E	2T	2T	3T	3T	
11	BL/BK	3R	2R	2R	1SG	2R	2R	3R	3R	
37	BK/O	4T	2MWB	2T(MR)	1M			4T	4T	
12	O/BK	4R	2MWA	2R(MR)	1SB			4R	4R	
38	BK/G	5T	3T	3T	2T		3T	5T	5T	P7
13	G/BK	5R	3R	3R	2R		3R	5R	5R	
39	BK/BR	6T	3MWB	3T(MR)	2T1			6T	6T	
14	BR/BK	6R	3MWA	3R(MR)	2R1			6R	6R	
40	BK/S	7T	4T	4T	2E		4T		7T	
15	S/BK	7R	4R	4R	2SG		4R		7R	
41	Y/BL	8T	4MWB	4T(MR)	2M				8T	
16	B/Y	8R	4MWA	4R(MR)	2SB				8R	
34	R/BR	9T	5T	5T	3T	3T	5T	7T	9T	
9	BR/R	9R	5R	5R	3R	3R	5R	7R	9R	
35	R/S	10T	5MWB	5T(MR)	3T1			8T	10T	
10	S/R	10R	5MWA	5R(MR)	3R1			8R	10R	
36	BK/BL	11T	6T	6T	3E	4T	6T	9T	11T	
11	BL/BK	11R	6R	6R	3SG	4R	6R	9R	11R	
37	BK/O	12T	6MWB	6T(MR)	3M			10T	12T	
12	O/BK	12R	6MWA	6R(MR)	3SB			10R	12R	
38	BK/G	13T	7T	7T	4T		7T	11T	13T	P8
13	G/BK	13R	7R	7R	4R		7R	11R	13R	
39	BK/BR	14T	7MWB	7T(MR)	4T1			12T	14T	
14	BR/BK	14R	7MWA	7R(MR)	4R1			12R	14R	
40	BK/S	15T	8T	8T	4E		8T		15T	
15	S/BK	15R	8R	8R	4SG		8R		15R	
41	Y/BL	16T	8MWB	8T(MR)	4M				16T	
16	BL/Y	16R	8MWA	8R(MR)	4SB				16R	

Table 23: Card Slot 12 Connections to Cross-connect Field

Pin	Color Code	ONS L C	OPS L C	LS/GS Trunk	E&M Trunk	DID/LT Trunk	DID/2 Trunk	COV L C	DNI L C	Peripheral Backplane Plugs
42	Y/O	1T	1T	1T	1T	1T	1T	1T	1T	
17	0/Y	1R	1R	1R	1R	1R	1R	1R	1R	
43	Y/G	2T	1MWB	1T(MR)	1T1			2T	2T	
18	G/Y	2R	1MWA	1R(MR)	1R1			2R	2R	
44	Y/BR	3T	2T	2T	1E	2T	2T	3T	3T	
19	BR/Y	3R	2R	2R	1SG	2R	2R	3R	3R	
45	Y/S	4T	2MWB	2T(MR)	1M			4T	4T	
20	S/Y	4R	2MWA	2R(MR)	1SB			4R	4R	
46	V/BL	5T	3T	3T	2T		3T	5T	5T	P7
21	BL/V	5R	3R	3R	2R		3R	5R	5R	
47	V/O	6T	3MWB	3T(MR)	2T1			6T	6T	
22	O/V	6R	3MWA	3R(MR)	2R1			6R	6R	
48	V/G	7T	4T	4T	2E		4T		7T	
23	G/V	7R	4R	4R	2SG		4R		7R	
49	V/BR	8T	4MWB	4T(MR)	2M				8T	
24	BR/V	8R	4MWA	4R(MR)	2SB				8R	
50	-----	-----	-----	-----	SPARE	-----	-----	-----	-----	
25	-----	-----	-----	-----	SPARE	-----	-----	-----	-----	
42	Y/O	9T	5T	5T	3T	3T	5T	7T	9T	
17	O/Y	9R	5R	5R	3R	3R	5R	7R	9R	
43	Y/G	10T	5MWB	5T(MR)	3T1			8T	10T	
18	G/Y	10R	5MWA	5R(MR)	3R1			8R	10R	
44	Y/BR	11T	6T	6T	3E	4T	6T	9T	11T	
19	BR/Y	11R	6R	6R	3SG	4R	6R	9R	11R	
45	Y/S	12T	6MWB	6T(MR)	3M			10T	12T	
20	S/Y	12R	6MWA	6R(MR)	3SB			10R	12R	
46	V/BL	13T	7T	7T	4T		7T	11T	13T	P8
21	BL/V	13R	7R	7R	4R		7R	11R	13R	
47	V/O	14T	7MWB	7T(MR)	4T1			12T	14T	
22	O/V	14R	7MWA	7R(MR)	4R1			12R	14R	
48	V/G	15T	8T	8T	4E		8T		15T	
23	G/V	15R	8R	8R	4SG		8R		15R	
49	V/BR	16T	8MWB	8T(MR)	4M				16T	
24	BR/V	16R	8MWA	8R(MR)	4SB				16R	
50	-----	-----	-----	-----	SPARE	-----	-----	-----	-----	
25	-----	-----	-----	-----	SPARE	-----	-----	-----	-----	

Chapter 3
Programming

Programming Class of Service, Interconnect Restriction, and Intercept Handling

1. Class of Service Options Assignment form
   - Create a unique class of service which defines privileges and timers and is assigned to a set or trunk to determine it's operation. The default for all sets and trunks is COS 1.

2. Interconnect Restriction Table
   - Set the interconnect restrictions to allow or deny device connection. The default for all devices, sets, and trunks is interconnect restriction 1(no restrictions).

3. Intercept Handling Assignment form
   - Program the system to take action when callers commit call violations. Callers are routed when predefined conditions are met. The default for all sets and trunks is intercept 1.

Programming Printer Ports

System Printer Port

1. System Port Assignment form
   - Assign a logical name to the system printer port (LPR1 appears automatically in this form).
2. Application Logical Port Assignment form
   - Assign the system printer port name (LPR1) to each application from which you would like to print reports.

SUPERSET 700 Printer Port

1. DNI Circuit Assignment form
   - Assign a SUPERSET 7 to channel #1 and channel #2 of the circuit.
2. System Port Assignment form
   - Assign a port name to the PLID of the console's output channel (channel #2).
3. Application Logical Port Assignment form
   - Assign the port name to each application from which you would like to print reports.

SUPERCONSOLE 1000® Printer Port

1. DNI Circuit Assignment form
   - Assign a SUPERCONSOLE 1000 (SC1000) to channel #1 and a SUPERCONSOLE 1000 port (SC1000 PORT) to channel #2.
2. Dataset Circuit Descriptor Assignment form
   - Create a circuit descriptor.
   - Set Device Class = SC1000Port
   - Set Defaults = Yes.
3. Dataset Assignment form
   - Assign Port = YES against the console's PLID.
   - Assign the circuit descriptor to the console.
   - Assign an interconnect number to the console.
4. System Port Assignment form
   - Assign a port name to the PLID of the console's output channel (channel #2).
5. Application Logical Port Assignment form
   - Assign the port name to each application from which you would like to print reports.

SUPERCONSOLE 2000™ Printer Port

1. Ensure the computer's COM 1 port is not assigned to other applications. See the Microsoft Windows documentation for more information.

2. DNI Circuit Assignment form

   - Assign a SUPERCONSOLE 2000 to channel #1 and channel #2 of the circuit.

3. System Port Assignment form

   - Assign a port name to the PLID of the console's output channel (channel #2).

4. Application Logical Port Assignment form

   - Assign the port name to each application from which you would like to print reports.

DATASET Printer Port

1. DNI Circuit Assignment form
   - Assign DS110x or DS210x against channel #2 of the required PLID.
2. Dataset Circuit Descriptor Assignment form
   - Create a circuit descriptor.
   - Set Device Class = DS1100s or DS2100s.
   - Set Defaults = Yes.
3. Dataset Assignment form
   - Assign Port = YES against the dataset's PLID.
   - Assign the circuit descriptor to the dataset.
   - Assign an interconnect number to the dataset.
4. System Port Assignment form
   - Assign a port name to the PLID of the DATASET's output channel (channel #2).
5. Application Logical Port Assignment form
   - Assign the port name to each application from which you would like to print reports.

Programming Peripheral Devices

Single Line Telephones

Before You Begin

Program Class of Service, Interconnect Restriction, and Intercept Handling (see page 47).

1. System Configuration form
   - For standard telephones, add an ONS, ONS CLASS/CLIP, or OPS line card.
   - For SUPERSET 401+ or SUPERSET 4001 telephones, add a DNI line card.

2. For SUPERSET 401+ and SUPERSET 4001 telephones:

   DNI Circuit Assignment form

   - Program the set type to channel #1 of the circuit.

   For standard telephones**:**

   ONS/OPS Circuit Descriptor form

   - Change the circuit descriptor contents (if required).
   - For OPS circuits, change the transmission parameter to LONG.
   - For ONS circuits, change the transmission parameter to SHORT.

   Note: The SUPERSET 401 telephone does not have a descriptor.

3. Single Line Set Assignment form
   - Assign a directory number, circuit descriptor number, and interconnect number to the circuit.
4. (Optional) Default Account Code Definition form
   - Create a default account code number that will appear in all SMDR records for the station.
5. Station Service Assignment form
   - Assign the telephone's directory number a class of service, class of restriction, and intercept number.
   - (Optional) Assign a default account code index number.

Analog Devices Connected to an AIM

Before You Begin

Program Class of Service, Interconnect Restriction, and Intercept Handling (see page 47).

To program analog devices connected to a Mitel Networks 5422 Analog Interface Module:

1. System Configuration form
   - Program a DNI line card.
2. DNI Circuit Assignment form
   - Program set type against channel #1 of the circuit.
   - Program the AIM against channel #2 of the circuit.
3. ONS/OPS Circuit Descriptor Assignment form
   - Change circuit descriptor contents (if required).
   - Change the transmission parameter to SHORT.
4. Single Line Set Assignment form
   - Assign a directory number, circuit descriptor number, and interconnect number to the circuit.
5. Default Account Code Definition form (Optional)
   - Create a default account code number that will appear in all SMDR records for the station.
6. Station Service Assignment form
   - Assign the telephone's directory number a Class of Service, Class of Restriction, and Intercept Number.
   - (Optional) Assign a Default Account Code Index Number.

Multiline Telephones

Before You Begin

Program Class of Service, Interconnect Restriction, and Intercept Handling (see page 47).

1. System Configuration form
   - Program a COV or DNI line card.

2. DNI Circuit Assignment form

   Note: This step does not apply to SUPERSET 4 telephones.

   - Program the set type to channel #1 of the circuit.
   - If the telephone connects to a PKM, program the PKM to channel #2. If the telephone connects to an analog device, program the AIM to channel #2.

If you program the AIM to channel #2, you must also program the connected analog devices. See Analog Devices Connected to an AIM on page 54.

3. Multiline Set Assignment form
   - Program a prime directory number and an interconnect number to a line circuit.

4. Multiline Set Key Assignment form (Optional)
   - Assign a directory number (line appearance) or feature to each key.
   - Assign each line appearance a ring type.

5. Multiline Set Group Assignment form (Optional)
   - Change the ring type at each telephone where the number appears.
   - Change the group type from “key system” to “multicall” or vice versa.

6. Default Account Code Definition form (Optional)
   - Create a default account code number that will appear in all SMDR records for the station.
7. Station Service Assignment form
   - Assign the telephone's directory number a class of service, class of restriction, and intercept number.
   - (Optional) Assign a default account code index number.

Programmable Key Module

The PKM12, PKM48, and Dual PKM are programmed in the same way. You can only program the first 12 keys on a PKM12.

1. DNI Circuit Assignment form
   - Locate the PLID of the device to which the PKM is connected.
   - Select "PKM12", "PKM48", or "Dual PKM" in the Channel #2 field.
2. Multiline Set Key Assignment form
   - Program the keys.

Upgrade a PKM

To change your PKM12 to PKM48, Dual PKM, or add a second PKM48 to a SUPERSET 4025 or SUPERSET 4150:

1. DNI Circuit Assignment form
   - Locate the PLID of the PKM-connected device.
   - Change the PKM type in the Channel #2 field.
2. Multiline Set Key Assignment form
   - Program the additional keys.

Attendant Consoles

Before You Begin

Program Class of Service, Interconnect Restriction, and Intercept Handling (see page 47).

1. System Configuration form
   - Add a DNI line card.
2. DNI Circuit Assignment form
   - For a SUPERCONSOLE 1000 or SUPERSET 7000, program the set type to channel #1 of a DNI circuit.
   - For a SUPERSET 700, program SUPERSET 7 to channels #1 and #2 of a DNI circuit.
   - For a SUPERCONSOLE 2000, program SC2000 to channels #1 and #2 of a DNI circuit.
3. Attendant Assignment form
   - Assign a prime directory number to the console circuit PLID and a key appearance.
4. Attendant Softkey Assignment form
   - Recall the prime directory number of the console.
   - Assign directory numbers to the console softkeys (key #1 is reserved for recall functions).
5. Telephone Directory form
   - Assign names to the console softkey directory numbers.
6. (Optional) Default Account Code Definition form
   - Create a default account code number that will appear in all SMDR records for the station.

7. Station Service Assignment form
   - Assign the console's directory number a class of service, class of restriction, and intercept number.
   - (Optional) Assign a default account code index number.

Programming the Telephone Directory

Telephone Directory form

- Assign a name to the telephone's directory number.
- If more than one name is assigned to the same telephone number, enter "Y" in the Prime Name field to indicate the prime name.
- If the telephone number is not to appear on the display of other telephones during a call, enter "Y" in the Prv # field.
- (Optional) Assign a department and location name to the telephone's directory number.

Changing a Telephone's Attributes

1. Change Attribute Assignment form
   - Enter the directory number of the device and recall the form.

2. Change any of the following database parameters:
   - Department name for the user
   - Location of the user
   - Default account code index number
   - Intercept number
   - Interconnect number
   - Circuit descriptor
   - Class of service and class of restriction
   - Maximum number of speedcalls available
   - Pickup group number
   - Station hotline number
   - Associated dataline number
   - 1st, 2nd, and Always call rerouting numbers

To move a user from one telephone to another, or to exchange telephones between two users, use the MOVE command, rather than the Change Attribute Assignment form. See Moving a Telephone User on page 61.

Moving a Telephone User

Use the MOVE USER command to move a user from one telephone to another. Enter the command in the following format:

MOVE USER <station A's extension #> TO <station B's extension #>

MOVE USER <Station A> TO <Station B>
Stn A = attribute of Station A before the move
Stn B = attribute of Station B before the move

Telephone Features	Station A	Station B
The following attributes change at both sets:		
Name	deleted	Stn A, Stn B
Department	deleted	Stn A, Stn B
Location	deleted	Stn A, Stn B
Default Account Code	deleted	Stn A
Personal Speedcalls Allocated	deleted	Stn A
Personal Speedcalls Used	deleted	Stn A
Personal Speedcall Numbers	deleted	Stn A
The following attributes change only at Station B:		
Intercept Number	same	Stn A
Interconnect Number	same	Stn A
Class of Service	same	Stn A
Class of Restriction	same	Stn A
The following attributes remain unchanged at both sets:		
Directory Number	same	same
Circuit Descriptor	same	same
Hunt Group Pilot Number	same	same
Pickup Group Number	same	same
Station Hotline Number	same	same
Associated Data Line Number	same	same
Call Announce Number	same	same
Call Rerouting	same	same
Button Speedcalls	same	same
Call Forward Settings	same	same
Message Waiting	same	same
Do Not Disturb	same	same
Auto Answer	same	same
Baud Rate / Parity	same	same

Swapping Users' Telephones

Use the MOVE SWAP command to swap two users' telephones. Enter the command in the following format:

MOVE SWAP <station A's extension #> WITH <station B's extension #>

MOVE SWAP <Station A> WITH <Station B>
Stn A = attribute of Station A before the move
Stn B = attribute of Station B before the move

Telephone Features	Station A	Station B
The following attributes are exchanged between the sets:		
Directory Number	Stn B	Stn A
Name	Stn B	Stn A
Department	Stn B	Stn A
Location	Stn B	Stn A
Default Account Code	Stn B	Stn A
Personal Speedcalls Allocated	Stn B	Stn A
Personal Speedcalls Used	Stn B	Stn A
Personal Speedcall Numbers	Stn B	Stn A
Intercept Number	Stn B	Stn A
Interconnect Number	Stn B	Stn A
Class of Service	Stn B	Stn A
Class of Restriction	Stn B	Stn A
Call Rerouting	Stn B	Stn A
Hunt Group Pilot Number	Stn B	Stn A
Button Speedcalls	Stn B	Stn A
Call Forward Settings	Stn B	Stn A
Message Waiting	Stn B	Stn A
The following attributes remain the same at both sets:		
Circuit Descriptor	same	same
Pickup Group Number	same	same
Station Hotline Number	same	same
Associated Data Line Number	same	same
Do Not Disturb	same	same
Auto Answer	same	same
Baud Rate / Parity	same	same

Programming Call Rerouting

1. Call Rerouting Always Alternative Assignment form
   - For First Always Alternative Number 1
     - Leave all values as “Normal”
   - For each Always Alternative Number
     - Change “No Reroute” to “Reroute” for the required originating device(s).
     - Enter the directory number to which calls should reroute.

2. Call Rerouting First Alternative Assignment form
   - For First Alternative Number 1
     - Leave all values as “Normal”.
   - For other First Alternative Numbers
     - If calls from an originating device type are to reroute to the First Alternative in Busy or Do Not Disturb conditions, set the value to “This”.
     - If calls from an originating device type are to reroute to the First Alternative in No Answer conditions, set the value to “This”.
     - If calls from an originating device type are to reroute directly to the Second Alternative in Busy or Do Not Disturb conditions, set the value to “Last”.
     - If calls from an originating device type are to reroute directly to the Second Alternative in No Answer conditions, set the value to “Last”.
     - Enter the directory number to which calls should reroute.

3. Call Rerouting Second Alternative Assignment
   - For Second Alternative Number 1
     - Leave all values as "Normal".
   - For other Second Alternative Numbers
     - If calls from an originating device type are to reroute directly to the Second Alternative in Busy, Do Not Disturb, or No Answer conditions, set the value to "This" or "Last".
     - Enter the directory number to which calls should reroute.

4. Call Rerouting Assignment form
   - For each directory number that is affected by Call Rerouting, enter the Always Alternative Number for Day Service, Night Service 1, and Night Service 2, as well as the First and Second Alternative Numbers.

Programming Trunks

Analog Dial-in Trunk

Before You Begin

Program Class of Service, Interconnect Restriction, and Intercept Handling (see page 47).

1. Trunk Circuit Descriptor Assignment form
   - There are several Trunk Circuit Descriptor Assignment forms. Use the specific form for the type of trunk that you are programming, to create a Trunk Circuit Descriptor.

2. Trunk Service Assignment form
   - Create a trunk service number:
     - Assign a class of service.
     - Assign a class of restriction.
     - Leave the Answer Points columns blank.
     - To absorb no incoming digits, set the Absorb column to 0. **Do not leave it blank.**
     - To absorb n digits, enter n (n =a whole number) in the Absorb column.
     - To insert no digits, leave the Insert column blank.
     - To insert digits, enter the actual digits to be inserted in the Insert column.
     - (Optional) Assign a trunk label to appear on display telephones and attendant consoles during incoming and outgoing calls.

3. Trunk Assignment form
   - Assign the trunk a trunk number, trunk service number, and trunk circuit descriptor number.
   - Assign the trunk an interconnect number.
4. Trunk Group Assignment form
   - For an outgoing trunk, enter the trunk number in the desired trunk group.

Analog Non-dial-in Trunk

Before You Begin

Program Class of Service, Interconnect Restriction, and Intercept Handling (see page 47).

1. Trunk Circuit Descriptor Assignment form
   - There are several Trunk Circuit Descriptor Assignment forms. Use the specific form for the type of trunk that you are programming, to create a Trunk Circuit Descriptor.
2. Trunk Service Assignment form
   - Create a trunk service number:
     - Assign a class of service.
     - Assign a class of restriction.
     - Specify the directory number that incoming calls will ring during Day Service, Night Service 1, and Night Service 2.
     - Leave the Digit Modification columns blank.
     - (Optional) Assign a trunk label to appear on display telephones and attendant consoles during incoming and outgoing calls.

3. Trunk Assignment form
   - Assign the trunk a trunk number, trunk service number, and trunk circuit descriptor number.
   - Assign the trunk an interconnect number.
4. Trunk Group Assignment form
   - For an outgoing trunk, enter the trunk number in the desired trunk group.

DISA Dial-in Trunk

1. Miscellaneous Assignment form
   - Create a DISA forced account code number
     - or -
   - Create a plain DISA number for the dial-in trunk.
2. Independent Account Code Assignment form
   - If you are using a DISA forced account code number for the trunk, create an independent account code number and assign it to the appropriate class of service and class of restriction.
3. Trunk Service Assignment form
   - If you are using a DISA number without a forced account code for the trunk, assign the appropriate class of restriction.
   - If you do not want to modify the incoming digits, set the Absorb column to 0 (**do not leave it blank**) and leave the Insert column blank.
4. Trunk Assignment form
   - Assign the trunk service number to the dial-in trunks.

DISA Non-dial-in Trunk

1. Miscellaneous Assignment form
   - Create a DISA forced account code number
     - or -
   - Create a plain DISA number for the non-dial-in trunk.
2. Independent Account Code Assignment form
   - If you are using a DISA forced account code number for the trunk, create an independent account code number and assign it to the appropriate class of service and class of restriction.
3. Trunk Service Assignment form
   - Select a trunk service number.
   - If you are using a DISA number without a forced account code for the trunk, assign the appropriate class of restriction.
   - Assign a DISA number, created in step 1, as an Answer Point (specify the DISA directory for Day, Night 1, and Night 2 service).
4. Trunk Assignment form
   - Assign the trunk service number to the desired trunks.

Digital Trunk

Two DSU cabinets may be programmed in a single DSU node. On the left side of the node, slots 1, 2, and 3 comprise one DSU cabinet. On the right side of the node, slots 4, 5, and 6 comprise another DSU cabinet. When you program cards in the left cabinet, program slot 3 before slot 2. When you program cards in the right cabinet, program slot 5 before slot 4. If you do not follow this order of programming, the DSU cards on the side of the node that you are programming will reset when you add the second card and the cabinet will go out of service for one or two minutes.

Before You Begin

Program Class of Service, Interconnect Restriction, and Intercept Handling (see page 47).

1. System Configuration form
   - Program a DS1 formatter, CEPT formatter, PRI, T1/E1, Universal T1/E1, or R2 card. Note that the system will not recognize the card until it is assigned a link descriptor in step 3.
2. Link Descriptor Assignment form
   - Create a link descriptor number.
3. Digital Link Assignment form
   - Assign the link descriptor number to the link. (Until you assign it, the link's trunks do not appear in the Trunk Assignment form.)
4. Digital Trunk Circuit Descriptor Assignment form
   - There are several Digital Trunk Circuit Descriptor Assignment forms. Use the specific form for the type of trunk that you are programming, to create a Trunk Circuit Descriptor.
5. Trunk Service Assignment form
   - Create a trunk service number to specify an answer point for incoming calls on non-dial-in trunks.
   - If the trunks are dial-in trunks, specify how the incoming digits should be handled.
6. Trunk Assignment form
   - Assign the trunk circuit descriptor and trunk service number to the trunks.

7. Trunk Group Assignment form
   - For an outgoing trunk, enter the trunk number in the desired trunk group.

8. Network Synchronization form
   - Enter the PLIDs of the links which will be synchronization sources for the system.

Programming Automatic Route Selection (ARS)

1. Trunk Group Assignment form
   - Create a trunk group number
   - Assign trunks to the trunk group.
2. (Optional) Call Progress Tone Detection Plan Assignment form
   - Create a call progress tone detection plan (An Advanced Tone Detector card is required).
3. Digit Modification Assignment form
   - For each digit modification number, specify the number of dialed digits to absorb and the digit(s) to be inserted.
4. Class of Restriction Group Assignment form
   - Specify the class(es) of restriction to include in each class of restriction group number.
5. Route Assignment form
   - For each route number, specify the trunk group number, class of restriction group number, and digit modification number.
   - (Optional) In the Digits Before Outpulsing field for each route number, specify the number of digits to process before overlap outpulsing begins.
   - (Optional) Assign emergency routes by entering “E” in the Route Type field. This must be a DPNSS route.
   - (Optional) Assign XNET routes by entering the appropriate trunk group number in the XNET Trunk Group Number field.

6. (Optional - Advanced ARS only) Day and Time Zone Assignment form
   - Create a day and time zone plan.
7. (Optional - Advanced ARS only) Route Plan Assignment form
   - Create a route plan.
8. (Optional) Route List Assignment form
   - For each route list number, specify routes in order from least expensive to most expensive.
   - (Optional) Apply warning tone to more expensive routes.
9. Automatic Route Selection Assignment form
   - In the Leading Digits field, specify which digits must be dialed to access the information in this form.
   - In the COR Group field, specify the class of restriction group number that does NOT have access to the ARS leading digits.
   - In the Digits Dialed field, specify the digits to dial to access routing information.
   - Complete the Number of Digits to Follow field.
   - In the Termination field, specify one of the following:
     - the type "Route" and a route number
     - the type "List" and a route list number
     - the type "Plan" and a route plan number (for Advanced ARS only).

Hint:

To bar a station from all outgoing trunks

1. Class of Restriction Group Assignment form
   - Assign the class of restriciton of the station to a COR Group.
2. Digit Modification Assignment form
   - Create an instance of the Digit Modification Assignment form that has the trunk access code (normally “9”) in the Leading Digits field.
   - Leave the remaining fields blank.
3. Route Assignment form
   - Enter the station's class of restriction Group number in the COR Group Number field.

Chapter 4
Maintenance Commands

Basic Commands

Accessing Desktop Mode

DESktop

Returns the screen to desktop mode.

Logging Out

DESktop [Return] [Esc] 1

Logs you out of the system.

Selecting a Different Language

LANguage Select <language> SETS DEFAULT FROM *.<catalog>

Changes the default language for SUPERSET display telephones and attendant consoles. The languages available are Dutch, English, French, German, Italian, LA_Spanish, Eu_Spanish, BR_Portuguese, PT_Portuguese, and Romanian. The status of the auxiliary languages is not changed.

Getting Help

HELp

Displays a list of maintenance commands. Press **[Esc] Q** or press **[PF4]** to exit.

HELp <command>

Provides an explanation of the specified maintenance command. Press **[Esc] Q** or press **[PF4]** to exit.

Changing the Password

CHange Password

Changes the password of the logged-in user.

Resetting the Password for a Lower Level

RESEt Password

Resets the password of a lower level (for example, from Installer level you can reset the Maint1 level password).

Resetting Usernames

RESEt Username <user>

(Introduced in P07.2.1)

Allows a System-level user to replace an existing System, Installer, Maint1, or Maint2-level username with a new username.

Displaying Usernames

DISPlay Usernames

(Introduced in P07.2.1)

Allows a System-level user to display a list of all valid usernames.

Switching from CDE or Desktop to Maintenance Mode

MAintenance

Changes from CDE mode or desktop mode to maintenance mode.

Stepping Back through Commands

[Esc] [Ctrl] J

Displays the previously issued command in the command line. You can display the last three commands.

Displaying the System Software Revision

WHere

Displays the software revision of the system.

Displaying the System Software Versions

VErsion

Displays the software version of each processor in the system. You can also apply this command to particular processors (for example, VE MAIN, VE PERIPH, etc.).

Changing or Reading the System Time

TIme <hh:mm:ss> AM/PM

Sets the system time. Example entry:
TI 11:30:45 AM

You can also enter the time in 24-hour format by omitting the AM or PM. You can read the system time by entering the TIME command without any qualifiers.

Changing or Reading the System Date

DATE <yyyy-mmm-dd>

Sets the system date. Example entry:
DATE 1999-AUG-04

You can also enter the time following the date. You can read the system date by entering the DATE command without any qualifiers.

Change Tenant Day/Night Service

CP Service <day>

CP Service <night1>

CP Service <night2>

To set the default (tenant group 1) to the specified day/night service.

Changing the Baud Rate

BAUd <NNNN>

Sets the baud rate of the maintenance port. Available baud rates are 300, 600, 1200, 2400, 3600, 4800, or 9600.

BAUd <NNNN> <port name>

Sets the baud rate of the specified port.

Change the baud rate of the system's maintenance port. Then, change the baud rate of the maintenance terminal. Press **[Ctrl] W** to refresh the terminal screen.

Changing the Parity of a Console Port or DNIC Port

PARIty <XYZ> <port name>

Changes the parity of a console port or DNIC system port. **X** = number of bits (**7** or **8**); **Y** = Parity (**O**dd, **E**ven or **N**one); **Z** = number of stop bits (**1** or **2**). Example entry:
PARI 8E1 SS7PRI

This command will not work on port LPR2.

Refreshing the Terminal Screen

[Ctrl] W

If the screen doesn't refresh, press **[Ctrl] Q** and **[Ctrl] C**. Then enter **[Ctrl] W** again.

Cancelling a Maintenance Command

[Ctrl] C

Terminates testing. It does not cancel all maintenance commands.

Printing to LPR3

1. FOrmprint <form name> /ALL /PORT LPR3
2. ENable PrInt /Nonqueued

Prints all instances of each specified form to the printer at port LPR3 (line 1 can be repeated using different form name parameters). Press **[Ctrl] C** to terminate printing.

1. PRInt <filename> /PORT LPR3
2. ENable PrInt /Nonqueued

Prints the specified file to the printer at port LPR3 (line 1 can be repeated using different filename parameters). Press **[Ctrl] C** to terminate printing.

Printing Log Files to a Local Printer

PRInt <filename> /PORT <port name>

Prints the session log file to the specified printer port.

Printing a CDE Form

FOrmprint <form name>

Prints a single instance form to the programmed system port.

FOrmprint <form name> /PORT <portname>

Prints a single instance form to the specified port.

FOrmprint <form name> /INSTANCE n /PORT <port name>

Prints instance n of the specified multiple instance form to the specified printer port.

FOrmprint <form name> /ALL /PORT <port name>

Prints all instances of the specified form to the specified printer.

Switching the Terminal from Screen Mode to Print Mode

ENable Print /Nonqueued

Switches the terminal from screen mode to print mode. Any print jobs queued to LPR3 will print from the maintenance terminal printer port. The terminal screen clears, and normal operation does not resume until all queued jobs are printed. To halt the printing and return to screen mode, press **[Ctrl] C**.

Checking the Print Queue

SHow Print ALL

Displays the print requests queued against the default printer.

SHow Print <printer port name>

Displays the print requests queued against the specified printer.

Cancelling a Print Job

CANcel Print ALL

Cancels all print jobs on the default printer.

CANcel Print <job number>

Cancels the specified print job on the default printer port.

CANcel Print <job number> /PORT <port name>

Cancels the specified print job on the specified printer port.

Assigning a New Default Printer

MYprinter <printer name>

Assigns a new default printer to the maintenance terminal.

Creating a Catalog

FILe CReate <pathname>.<catalog name> CATalog

Example entry: FIL CR *.DATASAVE.JAN1995 CAT

Displaying Catalogs

CATalog Info <pathname> FULL

Displays all catalogs for the specified pathname.

Troubleshooting Commands

Starting, Ending, and Printing a Session Log

SESsion Start

Begins a session log and stores it in ∗.maintenance.session_log

SESsion End

Ends a session log and stores it in ∗.maintenance.session_log.

PRInt ∗.MAINTENANCE.SESSION_LOG /PORT <printer port>

Prints the log session at the specified printer port.

Showing Alarms

ALarms

Shows alarm information for all alarm categories.

SHow STatus ALarms

Shows alarm categories with raised alarms.

Showing Faults

SHow FAults ALarms

Lists the faults causing the alarms in all alarm categories.

SHow FAults <alarm category>

Lists the faults causing the alarms in the specified alarm category.

Setting Alarm Thresholds

SET Threshold <alarm category> <x> <y> <z>

Defines the thresholds for a minor, major, or critical alarm where **x**, **y,** and **z** are the minor, major, and critical alarm thresholds.
Example entry: SET T atd channels 0 50 100

To blank an entry for x, y, or z, enter NIL.

Displaying the State of a Circuit

STate <plid>

Gives the state of the circuits at the specified PLID.

Displaying the State of Line Appearances

STate MLS <plid> <circuit> <line appearance number>

Gives the state of the specified line appearance on a multiline set.

Displaying the Total Number of System Resources

SYstem Totals

Displays the total numbers of programmed trunks, lines, stations, and attendants.

Busying Out a Card, Circuit, or Channel for Testing

BUsy <plid>

If the circuit is busy when you issue this command (indicated by "has an owner"), you have three options:

QUIT: leaves the circuit unbusied.

FORCE: cuts off the call in process and forces the circuit into manbusy.

COURTESY DOWN: waits for the call to end before placing the circuit into manbusy.

To return a busied circuit to service, enter **RTS <plid>**.

An extension parameter can also be used (**BU EX <extension number>**). System repsonse is the same whether an extension or a PLID is used.

Returning a Busy Circuit or Trunk to Service

RTS <plid>

or

RTS EX <extension number>

or

RTS TRUNK GROUP <group number> ALL

Removing a Courtesy Down Request

RCD <plid>

Removes a previous request to busy a peripheral circuit at the specified PLID. An extension parameter can also be used (**RCD EX <extension number>)**. System response is the same whether an extension or PLID is used.

Testing Circuits

TEst <plid>

Tests the circuit(s) at the specified PLID.

TEst EXT <extension number>

Tests the circuit(s) at the specified extension. System response is the same whether an extension or PLID is used.

TEst <plid> Continuous

Repeatedly tests the circuit(s) at the specified PLID. Enter **[Ctrl] c** to terminate testing.

TEst <plid> SEize

Tests whether the facility at the far end of a trunk is responding to a near-end attempt to seize the trunk.

TEst Trunk Group <group number>

Tests the trunks in the specified trunk group.

TEst <plid> Until Fail

Repeatedly tests the circuit(s) at the specified PLID until failure occurs. Enter **[Ctrl] C** to terminate testing.

SHow Seize TEst

Shows the status of seize testing for out-of-service trunks.

DISable Seize TEst

Disables seize testing for out-of-service trunks.

Displaying the Call Path of a Set

RESOurces <plid>

Indicates the call path and destination device of the set at the specified PLID.

RESOurces VIRTUAL <plid>

Used to specify MSDN/DPNSS virtual channels.

RESOurces XNET <trunk>

Used to display a device type of “XNET Trunk” representing a trunk, set, or console used in an XNET call.

Reading Maintenance Logs

Four logs are available: Maintenance, Software, SMDR, and Hotel/Motel.

LOGSys Read <log name> NEWest/OLDest <#>

Displays the specified number of newest or oldest entries in the specified log.

LOGSys Read <log name> NEW/OLD <#> MAtch "xxxx"

Searches the specified number of newest or oldest entries in the log for the string xxxx.

LOGSys Read <log name> ALL MAtch "xxxx"

Searches all log entries in the specified log for those containing the string xxxx.

LOGSys Read OTHER <log name> ALL MAtch "xxxx"

Searches all log entries in the specified log on the other plane for those containing the specified string.

Cancelling a Logs Read Command

LOGSys CAncel

Cancels the previously entered Logs Read command.

Printing Maintenance Logs

Four logs are available: Maintenance, Software, SMDR, and Hotel/Motel.

LOGSys PRInt <log name>

Prints all previously unprinted entries in the specified log.

LOGSys PRInt <log name> ALL

Prints all previously printed and unprinted entries in the specified log.

Deleting Log Entries

LOGSys PURge <log name>

Deletes all entries from the specified log. Once deleted, entries cannot be recovered.

Checking the Log Parameters

LOGSys Attributes <log name>

Displays the operating parameters of the system logs.

Setting the Size of the SMDR Log File

LOGSys Size <SMDR> FILE <entry count>

Sets the size of the SMDR buffer file. The default entry count is 20000. The maximum entry count is 75000.

Main Control Commands

Switching Activity (Redundant Systems Only)

ACTivity FREeze ON/OFF

(Introduced in P02.3.2)

Freezes activity switching between planes. You cannot use this command to disable Activity Freeze if it was enabled from the control panel. You also cannot use the control panel to disable Activity Freeze if it was enabled by this command.

ACTivity FREeze STATUS

(Introduced in P02.3.2)

Displays activity freeze status.

ACTivity Switch <plid>

Makes the redundant control card at the specified PLID active.

ACTivity Switch Force

Forces an activity switch on a partitioned system.

Scheduling an Activity Switch (Redundant Systems Only)

ACTivity Switch Schedule

<DAILY or day of week> <hh:mm:ss>

<MONTHLY> <week # [1-4]> <day> <hh:mm:ss>

<YEARLY>
<month> <week # [1-4]> <day> <hh:mm:ss>

Schedules an activity switch on the specified day at the specified time.

ACTivity Switch Display

Displays the activity switch schedule.

ACTivity Switch ON/OFF

Turns automatic activity switching on or off.

Turning Background Diagnostics On/Off

BACkground ON/OFF

Turns background diagnostics on or off.

BACkground ON/OFF <category>

Turns background diagnostics on or off for the specified category.

BACkground Status

Displays which diagnostics are off and which are on.

Displaying the Card Configuration

CONFiguration Long <plid>

Displays the programmed and installed cards at the specified PLID.

Identifying System Resource Shortages

CONGestion

Lists system resource shortages.

Identifying and Downloading Firmware

FIRmware ALL

Lists the firmware in all installed cards.

FIRmware ALLEprom

Lists the firmware in all cards that are equipped with EPROM software.

FIRmware PLID <plid>

Lists the firmware for the card at the specified PLID.

FIRmware Cardtype <card type>

Lists the firmware for all cards of the specified type.

FIRmware PAnel

Lists the firmware in the control panel and mass storage devices.

Using the FIRM KILL command:

- Use with caution. This command updates the firmware on all devices that support firmware download. The device will be out of service until the firmware update is complete.
- Issue the FIRM KILL command to fewer ports at a time to diminish process times and avoid the possibility of overlap.
- Before using the FIRM KILL command:
  - Set **ACTivity FREeze ON** to disable Activity Switch/Programmed Reboot
  - Issue the **BACkground OFF DNI** command to disable self diagnostics for the DNI ports only.
- Set **ACTivity FREeze OFF** and **BACkground ON DNI** after the firmware upgrade is complete.

FIRmware KILL ALL

Use with caution. This command updates the firmware on **all** devices that support firmware download. **All** devices will be out of service until the firmware update is complete.

FIRmware KILL PLID <plid>

Updates the firmware on all devices at the specified PLID (that support firmware download).

FIRmware KILL SET <set type>

Updates the firmware on all devices of a specific type (that support firmware download). For example, FIRmware KILL SET 4025.

Identifying Cards

PROM <plid>

Gives the card type, revision number, and time and place of manufacture for the card at the specified PLID.

Checking for Mass Storage Subsystem Errors

MSSstats

Lists the hard and soft errors against the mass storage devices.

Loading Software into a Card's Processor

LOAd <plid>

Loads software into the processor in the specified card slot.

LOAd Controllers

(Introduced in P17.6.4)

Loads software into all peripheral processors, digital service units, DNI cards, and attendant consoles.

Testing PCM Links

PCM STATUS <Tx or Rx> <link number>

Shows the status of a PCM circuit switch link.

PCM TEst Both <link>

Tests all channels on a PCM circuit switch link. The system should report zero faults.

PCM TOtals

Reports on all circuit switch links in the system. The system should report zero faults.

Scheduling a System Reboot (Non-redundant Systems)

PROGrammed Reboot SCHedule

<DAILY or day of week> <hh:mm:ss>

<MONTHLY> <week # [1-4]> <day> <hh:mm:ss>

<YEARLY>
<month> <week # [1-4]> <day> <hh:mm:ss>

Schedules a software controlled system reboot on the specified day at the specified time.

PROGrammed Reboot Memory Daily <hh:mm:ss>

A software controlled reboot takes place at the next occurrence of the specified time. This default setting will only reboot if there is memory fragmentation. To force a system reboot at a scheduled time, use the previous command.

PROGrammed Reboot Display

Displays the reboot schedule.

PROGrammed Reboot ON/OFF

Turns automatic system reboot on or off.

WARNING: A Non-redundant switch is never recommended for use where the need for constant telecommunications availability is required. Because of the time it takes to complete an SX-2000 Non-redundant system reboot, and the absence of 911 functionality during this time, Mitel does not recommend a non-redundant system for mission critical sites such as hospitals, prisons, and police and fire stations. Certain hospitality and university residence sites, where 24 hour operations are a requirement, should always be serviced by an SX-2000 redundant system. For sites that must be protected against system outages resulting from software, hardware or regularly scheduled maintenance activities, redundancy on the SX-2000 is recommended.

Displaying the Status of Communication Paths

MEssage MATE

Displays the status of message links between redundant processors.

MEssage SUB

Displays the status of message links between the main control, and peripheral and DSU processors. All links should be open.

MEssage R

Displays the status of remote message links.

Collecting Traffic Data

Traffic data collection is set up using the Traffic Options Assignment form.

TRAFfic STAtus

Gives the current status of traffic data collection.

TRAFfic Files

Lists the traffic files stored in the system.

TRAFfic Print <mmm-dd hh:mm:ss>

Prints the specified file(s) for the specified month, day, hour, minutes and seconds. The date and time qualifiers are optional.

TRAFfic Delete <mmm-dd hh:mm>

Deletes the traffic file(s) for the specified month, day, hour and minutes. The date and time qualifiers are optional.

TRAFfic STOp <mmm-dd hh:mm>

Ends the current traffic data collection period and generates a report.

Displaying Traffic Files

CATalog INFO *.traffic

Dispalys a list of the traffic files.
Example display:

*.TRAFFIC.2001JAN040631
*.TRAFFIC.2001JAN040701

To display the contents of a traffic file, enter the type command and the file name.
Example entry:

type *.TRAFFIC.2001JAN040631

Database Commands

Checking the Database

DBMs CHeck FULL

Gives the number of database errors. There should always be zero view errors and zero table errors. If errors are indicated, see Fixing Database Errors on page 128.

DBMs CHeck KILL

Terminates a DBMS CHECK in progress.

DBMs CHeck ON/OFF

Turns automatic database checking on or off. The default is 5:00 a.m. daily.

DBMs STATus

Gives the status of the DBMS Flag (indicated by "DBMS_INITIALIZED is on/off"). See also DBMs FLag OFF on page 99. The normal status is "DBMS_INITIALIZED is ON".

DBMs Query

Displays the dimension number, number of cabinets, and system features.

DBMs Check Time <hh>

Sets the automatic database checking to occur at the specified hour. Enter the hour in a 24-hour clock format.

Saving and Restoring the Database

DBMs SAve

Saves the database to ∗.REDUNDB catalog on the hard disk.

DBMs SAve ∗.<volume name of RSD>

Saves the database to RSD. First mount the RSD by entering VOlume Mount RSD.

DBMs FLag OFF

Use this command with caution. This command blanks the database on the next system reload. It must precede a DATA Restore. See also DBMs STATus on page 98.

DBMs Download ∗.<volume name>

Copies the database from the RSD into RAM. Mount the RSD by entering VOlume Mount RSD.

DATA SAve

Copies the entire database from system memory to the catalog ∗.DR.CONFIG on the hard drive.

DATA SAve ∗.<volume name>

Copies the entire database from system memory to a RSD. First mount the RSD by entering VOlume Mount RSD.

DATA Restore

Restores to memory the database that was saved to the catalog ∗.DR.CONFIG on the hard drive.

DATA Restore ∗.<volume name of RSD>

Restores to memory a database that was saved to an RSD by using the DATA Save command. Mount the RSD by entering VOlume Mount RSD.

DATA Query

Displays details about the database saved in the catalog *.DR.CONFIG on the hard drive.

DATA Query *.<volume name of RSD>

Displays information on the database that is saved on an RSD.

DATA CONVert *.<volume name of RSD>

Restores to memory a database that was saved to a catalog on an RSD by using the DATA SAVE command. This command is applicable if the system is running software earlier than P02.3.2. Mount the RSD by entering VOlume Mount RSD.

RSD Copy from Mitel Support Web Site

RSD COPY TO NET <filename>

To copy an RSD to a network computer.

RSD COPY FROM NET <filename>

To copy the file from the network computer onto the RSD.

RSD VERIFY NET <filename>

To confirm that no data errors were written.

RSD CANCEL

To terminate an RSD command.

Backing Up and Restoring Message Center Messages

MSGCtr Backup *.<volume name of RSD>

Saves message center information to RSD.

MSGCtr Restore *.<volume name of RSD>

Restores message center information from RSD to the hard disk.

Redundant File System Commands

Partitioning and Joining

PARTition

Isolates redundant processors and disables the redundant file system (use this command only when upgrading software). Enter this command first from the active plane, then from the inactive plane.

JOin

Re-establishes communication between partitioned redundant processors. Enter this command first from the inactive plane and then from the active plane.

Disabling and Enabling File Redundancy

FILe DISable REDundancy

Stops the active controller from controlling the database on the inactive plane's hard drive. Use this command only when loading system software.

FILe ENable REDundancy

Gives the active controller control of the databases on both hard drives. The active controller copies the entire database to the inactive plane.

FILe STatus REDundancy

Indicates whether databases on both drives are identical (in synch), being made identical (out of synch), or isolated and different (isolated).

Which Main Controller is Active?

WHere

Indicates which main controller the maintenance terminal is connected to, and whether the main controller is active or inactive. An asterisk at the end of the first line in the display response indicates that the controller is partitioned.

Displaying Information on a Volume

VOlume Info <volume name>

Displays the name and space allocation of the mounted volume.

Mounting and Dismounting a Volume

VOlume Mount <device>

Makes the volume on the RSD accessible to the file system and displays its name.

VOlume DISMount <volume name>

Use this command with caution. Takes the specified volume off-line. If you dismount SYSUSER, a restart or reload is necessary to mount the hard disk again. You should dismount SYSUSER when upgrading the system software or when powering down the system.

Backing Up and Restoring a Volume

VOlume Backup <volume name> ON <device>

Use this command with caution. Copies the contents of the specified volume (for example, SYSUSER) to the specified device (for example, RSD). If you specify SYSUSER as the volume name, you must reload the system to mount the hard disk again.

VOlume Restore <volume name> FROM <device>

Restores the contents of the volume (for example, SYSUSER) from the device (for example, RSD).

VOlume Set SYSUSER READ ONLY

Entering this command makes the plane's hard disk read-only. Use this command only on the active plane to protect the contents of the inactive plane's hard drive when copying it to the active plane's hard drive.

VOlume Restore SYSUSER FROM OTHER

Copies the contents of the mate plane's hard disk to this plane's hard disk. Enter the VOLUME SET SYSUSER READ ONLY command on the active plane before entering the VOLUME RESTORE SYSUSER FROM OTHER command on the inactive plane.

VOlume Set SYSUSER READ WRITE

Restores read and write access to the hard disk after a VOLUME SET SYSUSER READ ONLY.

Enabling and Disabling Access to a Volume

VOlume DISAble <volume name>

Use this command with caution. Stops the system from accessing the specified volume (for example, SYSUSER).

VOlume Enable <volume name>

Re-enables access to the volume after a VOLUME DISABLE.

Formatting a Volume

VOlume Format <RSD> <volume name> RES SCRatch

Erases, formats, and renames the device to the specified volume name. Use the SCRatch qualifier only when changing from a previously formatted older file system.

Always use the SCRatch qualifier when formatting the hard disk.

VOlume Format <RSD> <volume name> RES

Erases, formats, and renames the device to the specified volume name. Use this command to format an RSD to be used for backup purposes.

VOlume Format <RSD> <volume name>

Erases, formats, and renames the device to the specified volume name. Use this command to format an RSD to be used for a DATA SAVE.

VOlume Format DISK SYSUSER REDundancy ONLY

Erases and formats the redundant file system only.

Peripheral Devices Commands

Locating an Extension or Trunk

LOCate EXtension <extension number>

Gives the PLID of the set for the specified extension number.

LOCate Trunk <trunk number>

Gives the PLID of the specified trunk.

Locating Where a Number is Used

LOCate NUMber <number>

Indicates where a number is used (what purpose it serves).

Locating a Tenant

LOCATE TENANT <number>

Displays a specified tenant group.

LOCATE TENANT

Displays all tenant groups.

Listing the Active Features for an Extension or PLID

LOCate FEature EXtension <extension number>

Lists which features are active at the specified extension number.

LOCate FEature PLID <plid>

Lists which features are active on the set at the specified PLID.

Finding the Directory Number of a Set or Trunk

LOCate PLID <plid>

Gives the directory number of the set or trunk at the specified PLID.

Finding Free Directory Numbers or PLIDs

LOCate FIRST FREE PLID <card type> <plid start> TO <plid end>

(Introduced in P07.2.1)

Identifies the first available PLID in a range.

Note: Valid <*card type*> qualifiers are: ONSLINE, OPSLINE, CEPT, DS1, DNILINE, E_AND_M, SCDCTRUNK, COVLINE, DATASTATION, AC15, DIGITALLINE, LS/GS, DID2, LOOPDID, DID3, or ANYCARDTYPE.

LOCate ALL FREE PLID <card type> <plid start> TO <plid end>

(Introduced in P07.2.1)

Identifies all available PLIDs in a range.

LOCate FIRST FREE DN <dn start> TO <dn end> EXT

(Introduced in P07.2.1)

Identifies the first available unassigned directory number in a range.

Note: The *EXT* qualifier at the end of the command string will cause directory number searches to include those DNs containing * and/or # characters.

LOCate ALL FREE DN <dn start> TO <dn end> EXT

(Introduced in P07.2.1)

Identifies all available unassigned directory numbers in a range.

Moving, Adding, and Swapping Telephone Users

MOVe User <X> TO <Y>

Moves name and attributes from extension number X to extension number Y. Extension numbers (X and Y) remain with the sets. See Moving a Telephone User on page 61.

MOVe ADD <"lastname, firstname"> TO <extension number>

Adds a name to a number that exists in the telephone directory.

MOVe Swap <X> WITH <Y>

Swaps names, numbers, and attributes between the sets at the specified extension numbers X and Y. See Swapping Users' Telephones on page 62.

Deleting Telephone Users

MOVe DELete <"lastname, firstname"> FROM <extension number>

Deletes the name associated with the extension number from the telephone directory.

Changing an Extension Number

MOVe RENumber <old number> TO <new number>

Changes an existing extension number.

Digital Trunk Commands

Displaying the Status of a Digital Link

DTstat Read <plid>

Gives the status of a digital link that connects to a DS1 or CEPT Formatter card.
Note: <plid> = <cab> <shelf> <slot> <hybrid or link>.

DTstat Read APNss Group <number>

Gives the status of an APNSS link that is controlled by a DS1 or CEPT Formatter card.

DTstat Clear <plid>

Clears performance statistics for a specified digital link.
Note: <plid> = <cab> <shelf> <slot> <hybrid or link>.

Testing Digital Trunks

BUsy APNss Group <#> Traffic/Signalling/All

Places the circuits in the specified APNSS group into busy state.

BUsy <plid of CEPT or DS1 Formatter card> <hybrid>

Places the specified CEPT or DS1 hybrid into busy state.

TEst APNss Group <#> Traffic/Signalling/All

Tests the trunks in the specified APNSS group.

TEst <plid of CEPT or DS1 Formatter card> <hybrid or link>

Tests a single hybrid (link on a DS1 or CEPT Formatter card).

RTS <plid of CEPT or DS1 Formatter card> <hybrid or link>

Returns busied circuits to service in the specified trunk group.

RTS APNss Group <#> Traffic/Virtual/ALL

Returns busied APNSS group circuits to service.

Synchronizing the Active Clock Source

NEtsync SEtsource <source #>

Forces the system to synchronize its clock with the one supplied by the specified source number.

NEtsync SEtsource FREERUN

Stops the system from synchronizing to any of the external sources.

NEtsync SEtsource AUTO

Allows the system to choose the most reliable sync source.

Displaying Synchronization Information

NEtsync STate

Lists the state of the sync source.

NEtsync SUmmary <shelf # of synch source>

Gives a performance history of the sync sources that the system has used. Enter this command from the active plane. For the shelf # of synch source parameter, enter 1 if plane A is active and 2 if plane B is active.

NEtsync SUmmary <shelf> LAST <number of hours>

Gives a performance history of the sync source that the system has used over the last number of specified hours. For the shelf parameter, enter 1 if plane A is active and 2 if plane B is active.

DS1/CEPT Formatter I Card (MC263CA and MC264CA) Communications

Use the following VT100 terminal emulation settings and commands when communicating with a DS1/T1 Formatter I card (MC263CA) or CEPT Formatter I card (MC264CA).

Settings

Use the following VT100 terminal emulation settings:

Baud rate: 38,400 bps

Databits: 8

Parity: N

Stop bits: 1

No flow control.

Commands

Use the following commands:

`sig cas`

Sets the signaling to CAS (default T1).

`sig dpnss`

Sets the signaling to DPNSS (default CEPT).

`+dchan-inv` (T1 only)

Sets D-channel inversion to ON (default).

`-dchan-inv` (T1 only)

Sets D-channel inversion to OFF.

line len # (T1 only)

Sets the line length for T1 where "#" is replaced with the following: 1 = 0-133, 2 = 134-266, 3 = 267-399, 4 = 400-533, 5 = 534-655.

dis opt

Displays the DS1/CEPT options settings.

force dl

Deletes the datetag file and resets the card.

reset

Resets the card which enables changes in the parameter settings.

Chapter 5
Troubleshooting and Repair

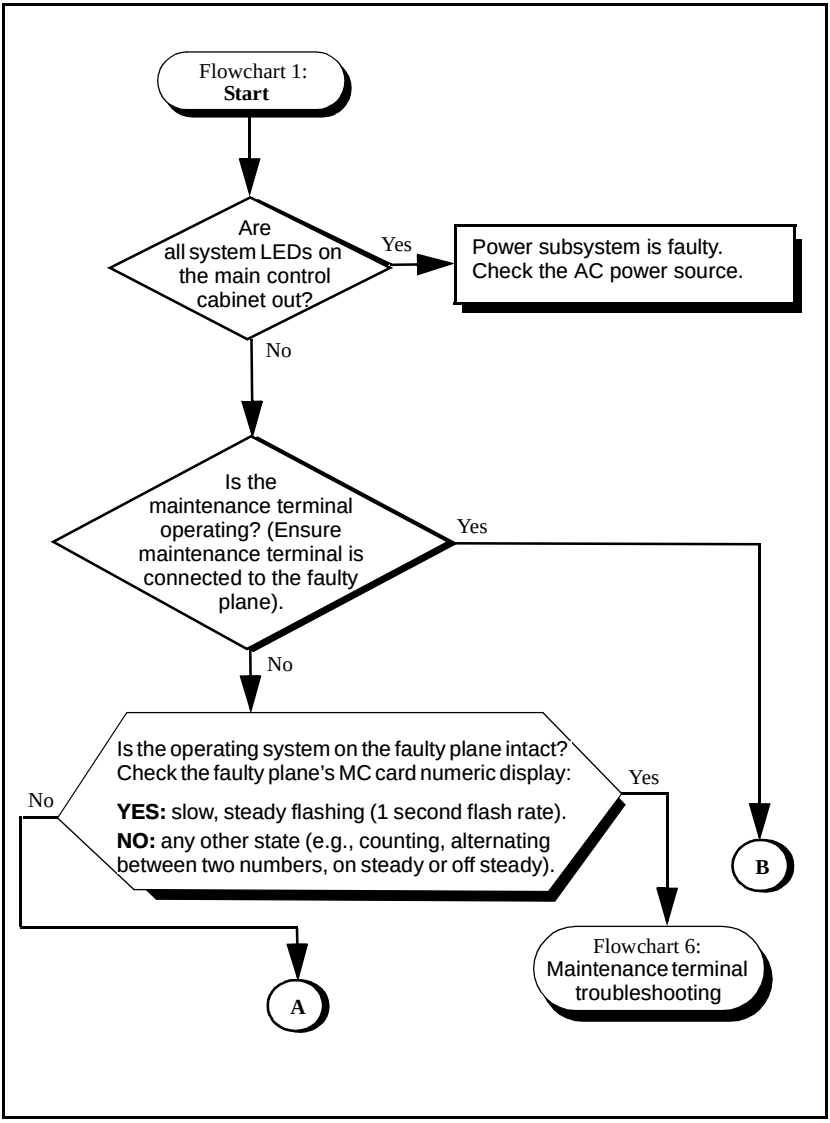
Identifying Faults

The Bootstrap Sequence

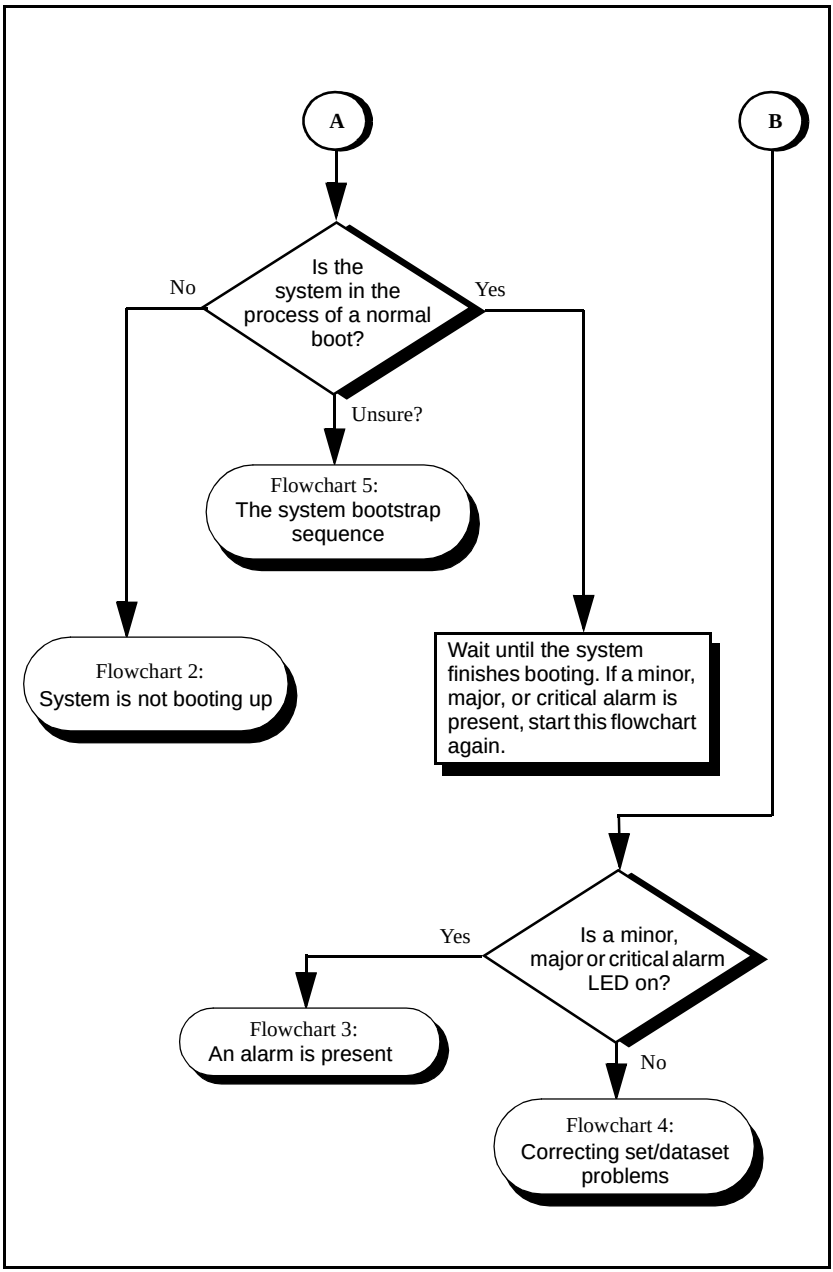
Table 24: System Bootstrap Sequence

Normal Numeric Display on Main Controller Card	Error Display on Main Controller Card	Sequence	Notes
Test code appears for each self test	The numeric display briefly flashes EE followed by the test code number.	Main Controller self test	These tests are run out of the EPROM on the main controller card.
B0 - RSD access B1 - disk access (These codes are displayed briefly as the system accesses the RSD drive, and the disk drives.)	Any Bx codes other than B0 or B1 indicate errors. OR If B1 and/or B0 are displayed for several minutes, an error condition exists.	Get MCINIT from disk or RSD	It takes the main controller only a few seconds to obtain the MCINIT test from the RSD or hard disk. It begins doing the tests as soon as it gets them. Check that the LEDs on the hard drives and RSD drive are flashing. If the LEDs are not flashing at this stage, the mass storage subsystem is faulty.
Test code appears for each test	The numeric display briefly flashes EE followed by an error code.	Test MCINT control section	Test results are displayed on the maintenance terminal screen. The main controller sends these results to the maintenance terminal at 9600 baud, 8N1.
Fast count	Same as above.	Load operating software	The main controller is transferring its operating system from hard disk to RAM.
Sporadic	Same as above.	Initialize operating system (OSInit)	The main controller sends these results to the maintenance terminal at 9600 baud, 8N1.
Slow steady flashing	Same as above.	Normal operation on main controller	The main controller begins communicating with the maintenance terminal at the last saved baud rate. The desktop display appears, allowing you to start a session. The flashing numbers on the processor indicate the number of messages passing between it and the other processors on the system.
Fast count on subsystem processor. High message numbers flashing on main processor.	Same as above.	Loading subsystem processors	The main controller transfers the subsystem processor software loads from the hard disk to the subsystem processors (Peripheral Switch Controller cards, DSU cards, DNI line cards, and attendant consoles).

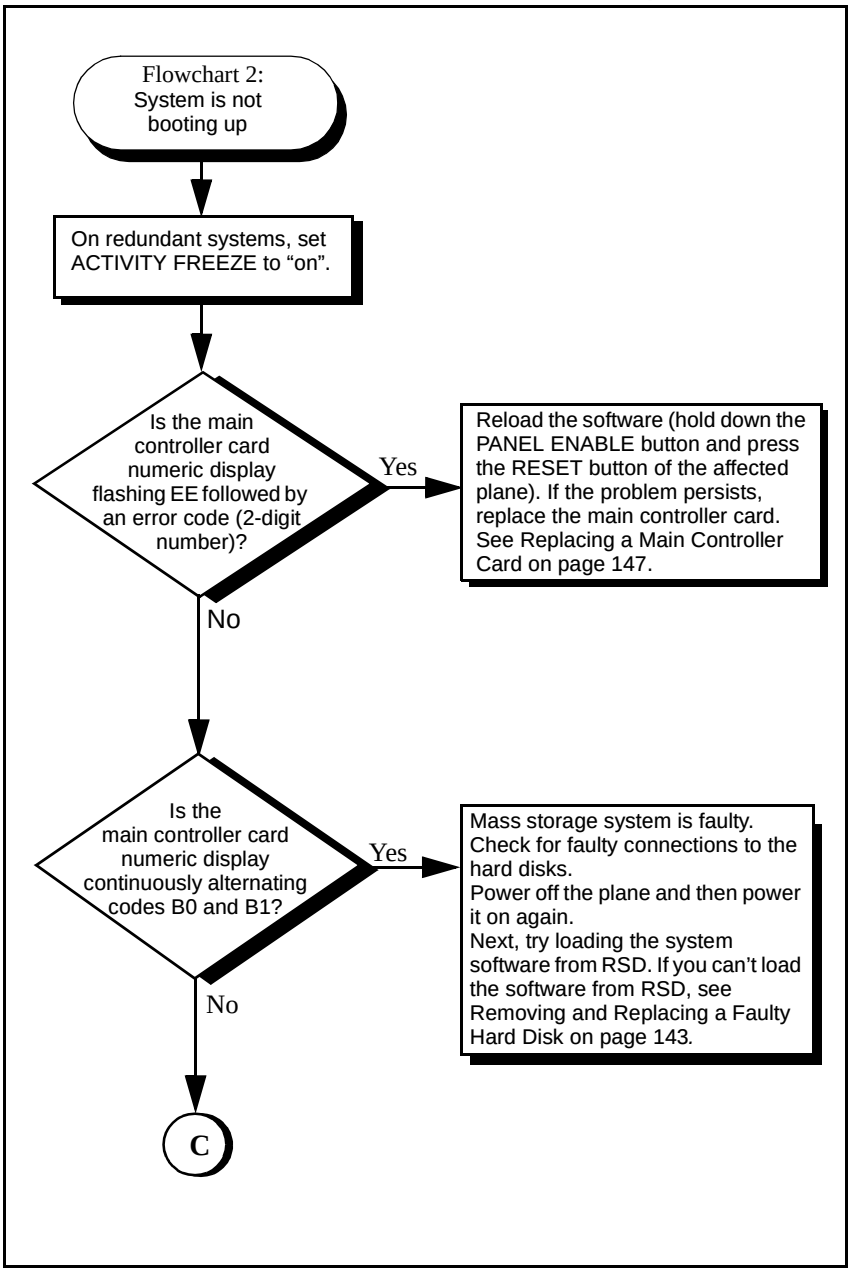
Flowchart 1: Getting Started



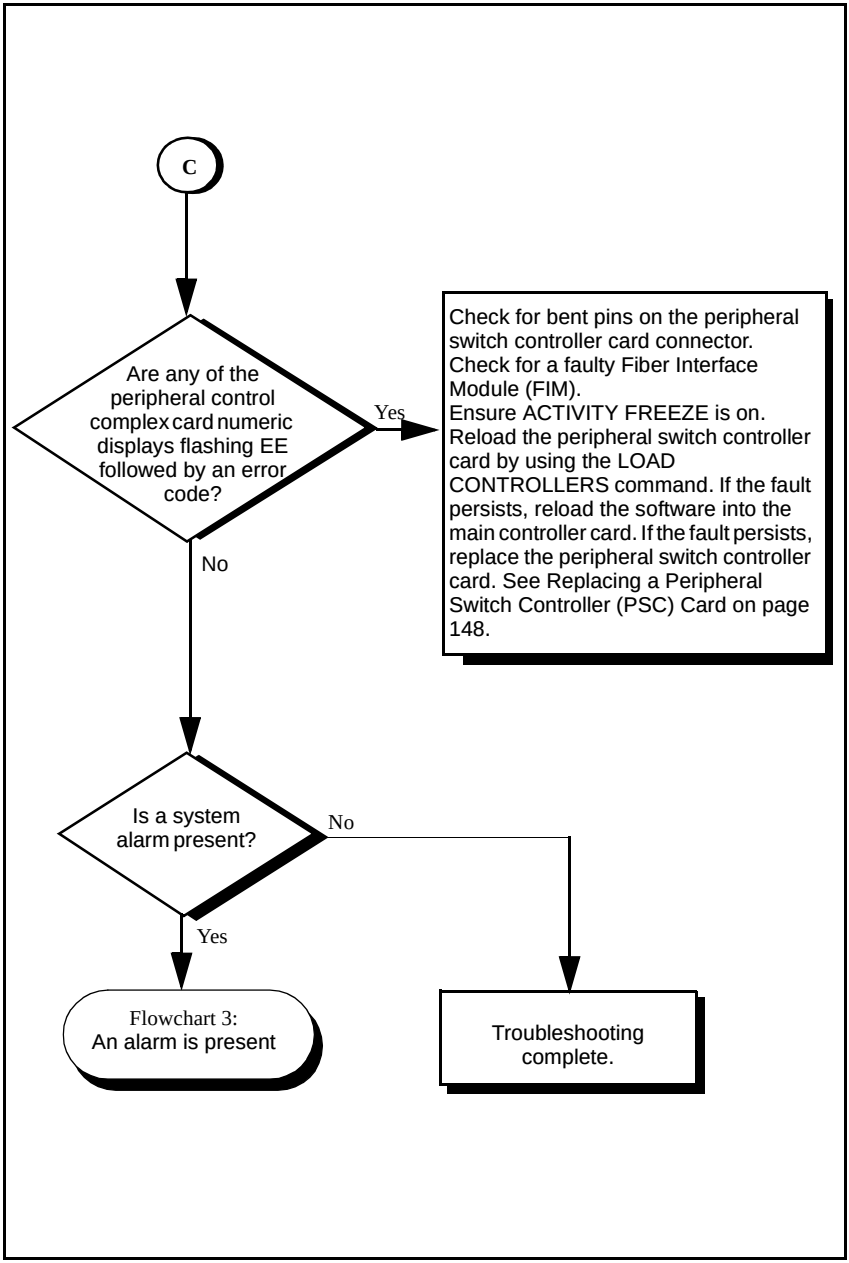
Flowchart 1: Continued



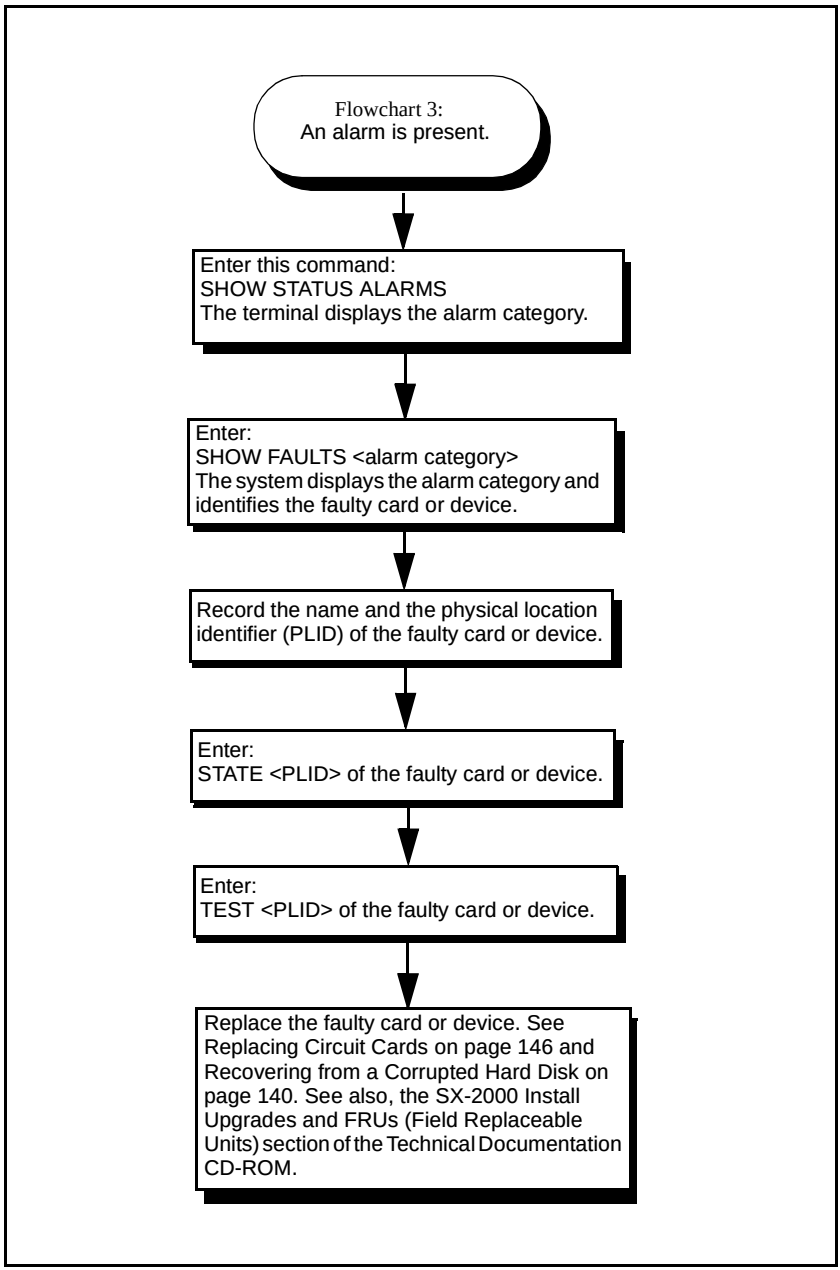
Flowchart 2: The System is Not Booting Up



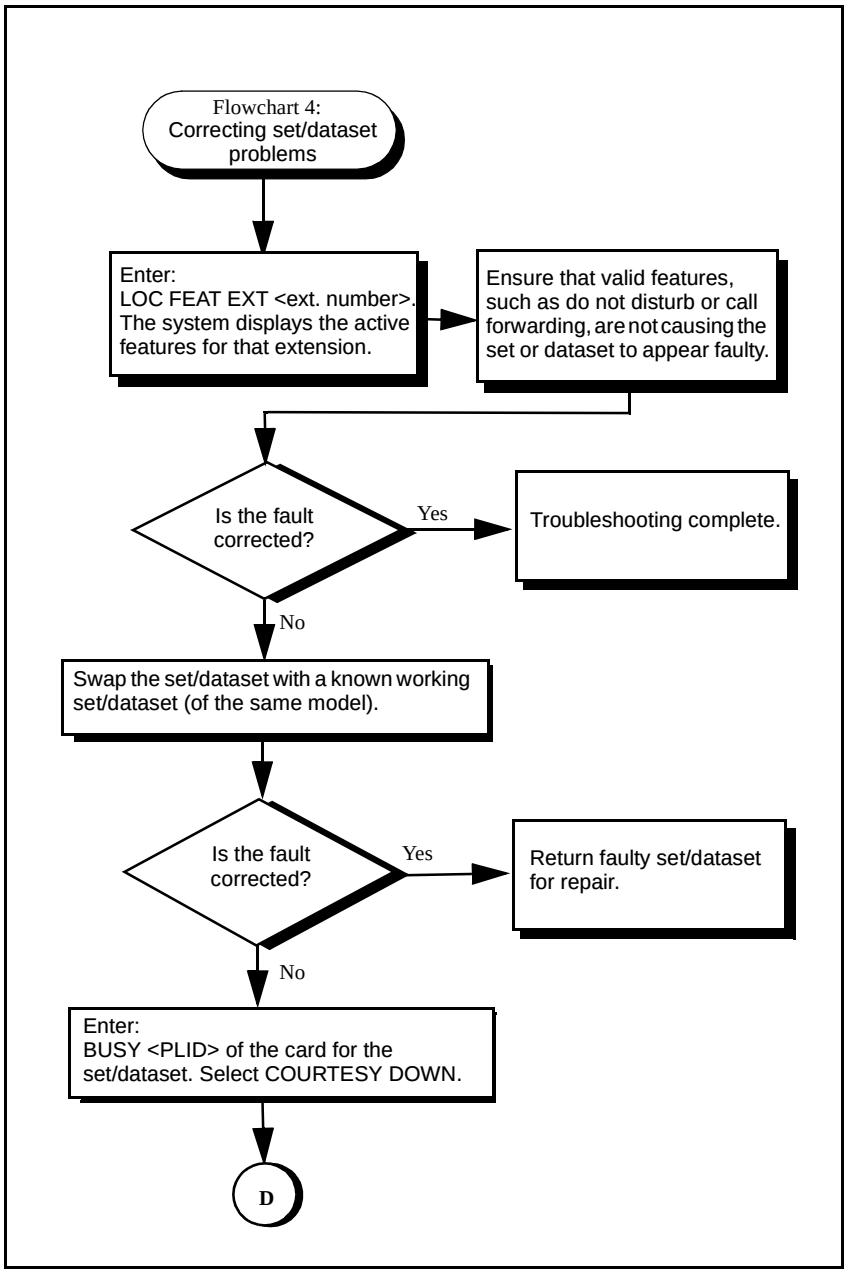
Flowchart 2: Continued



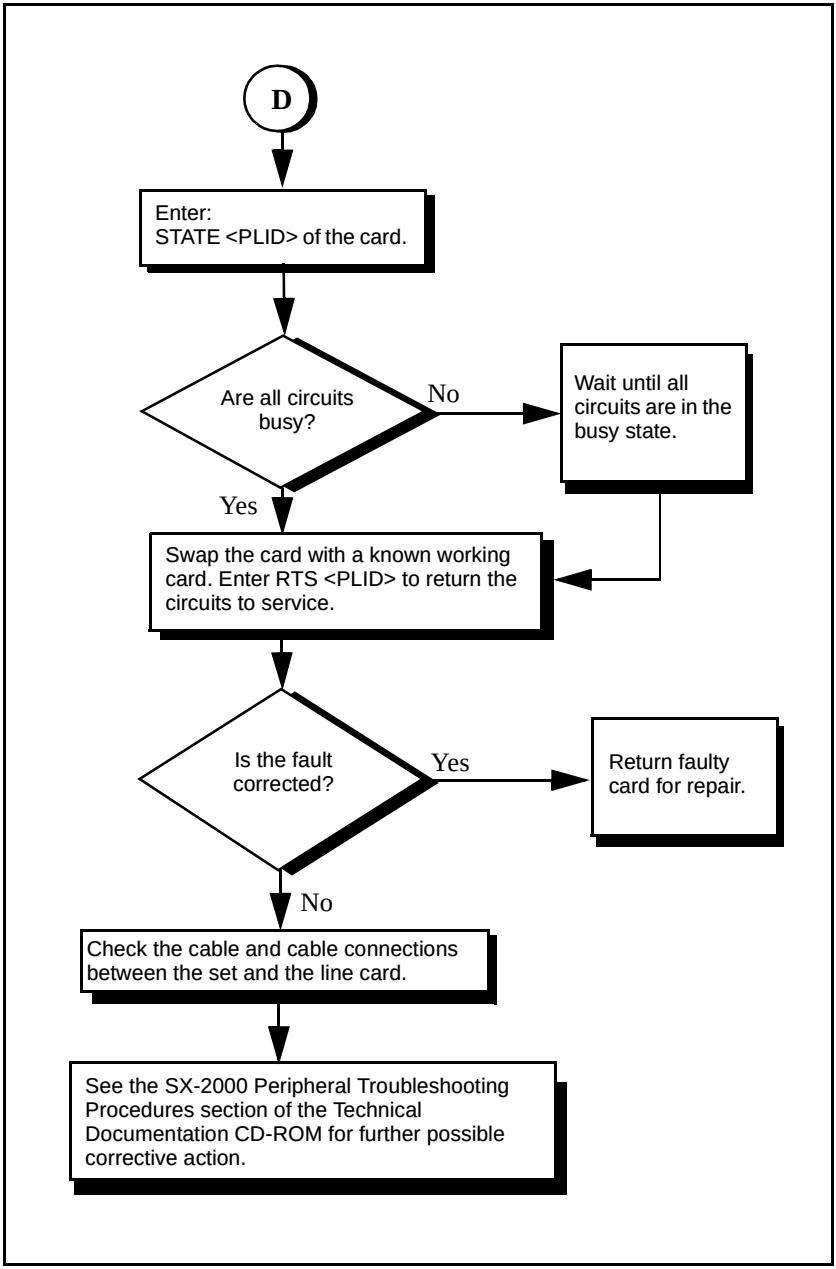
Flowchart 3: An Alarm is Present



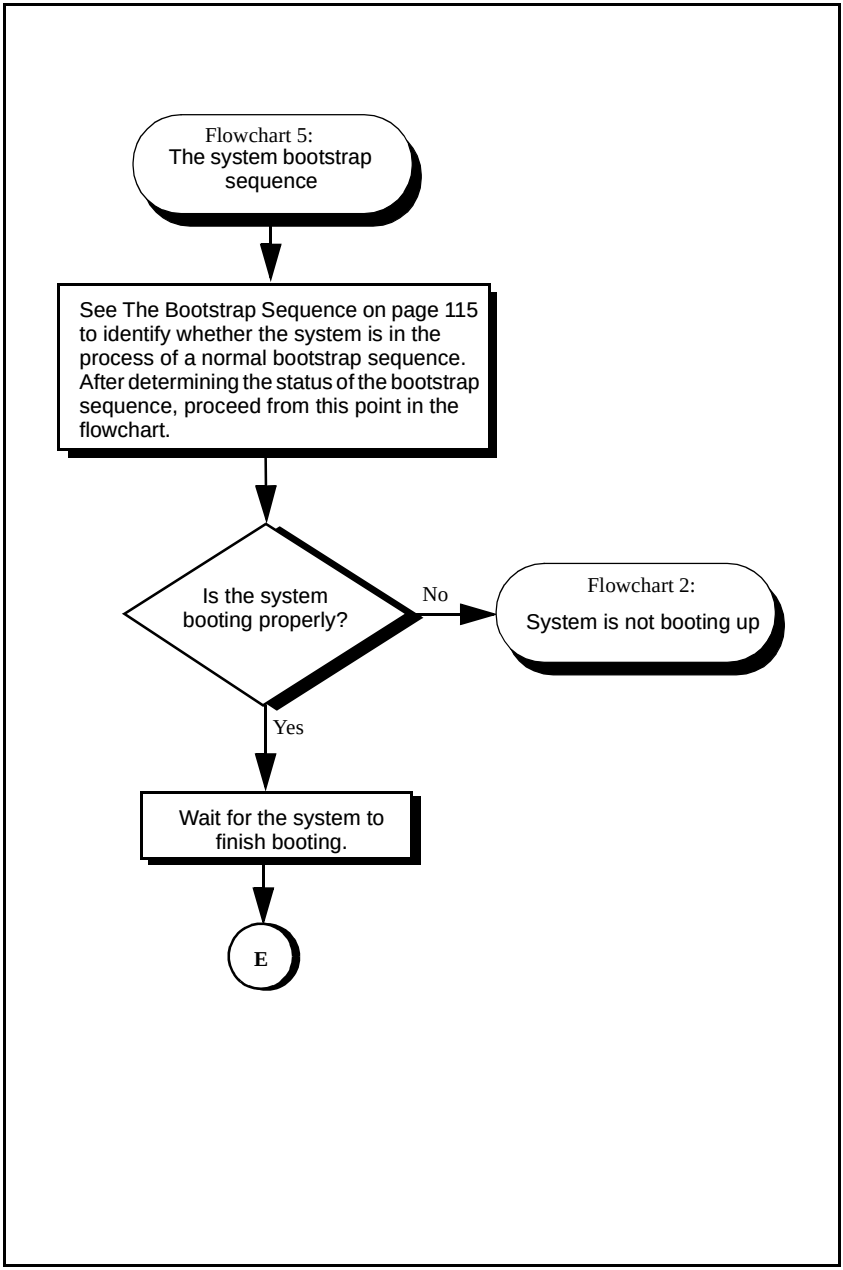
Flowchart 4: Correcting Set/Dataset Problems



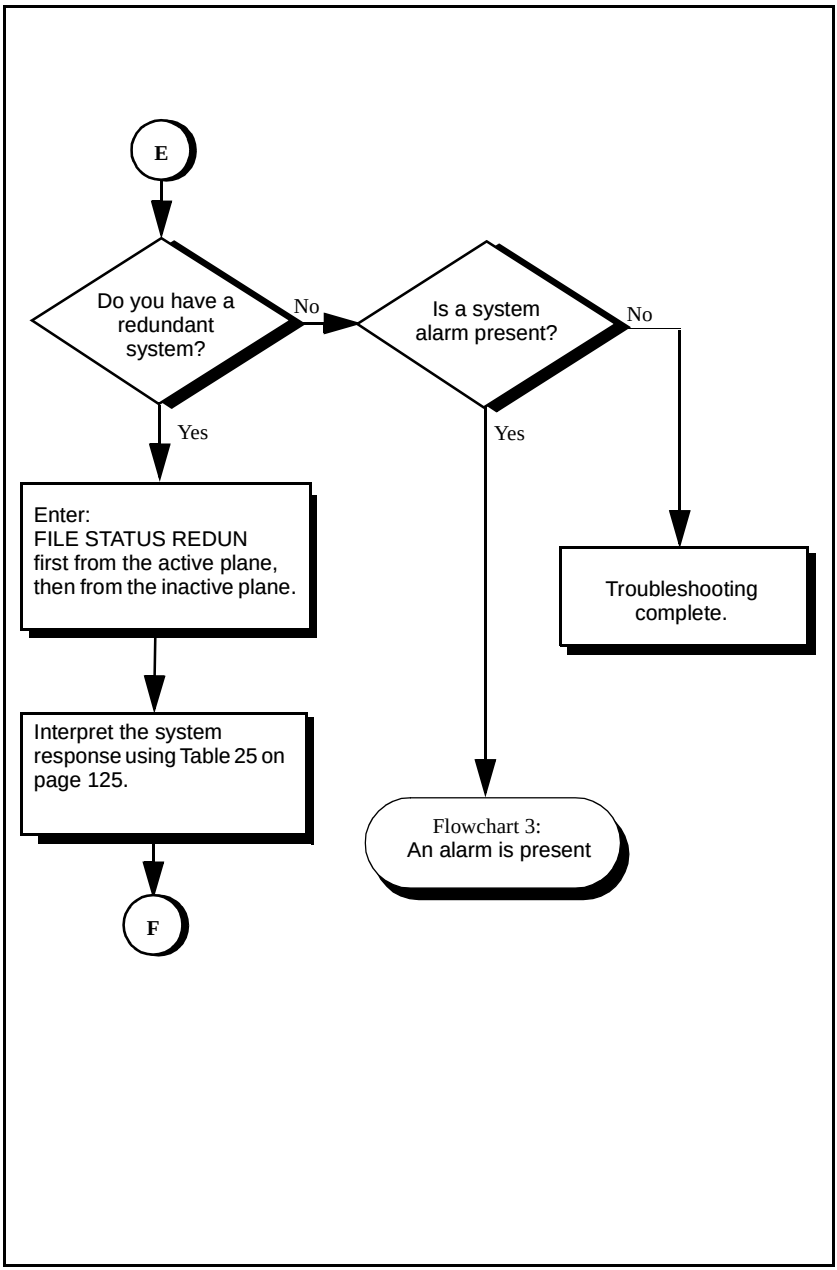
Flowchart 4: Continued



Flowchart 5: The Bootstrap Sequence



Flowchart 5: Continued



Flowchart 5: Continued

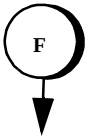
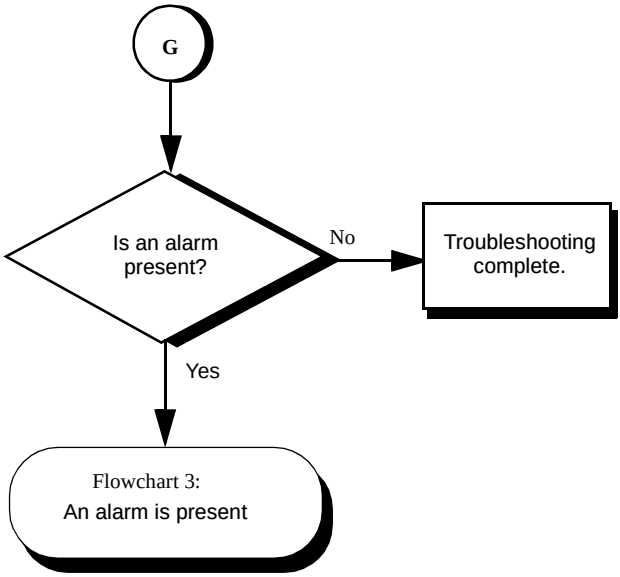


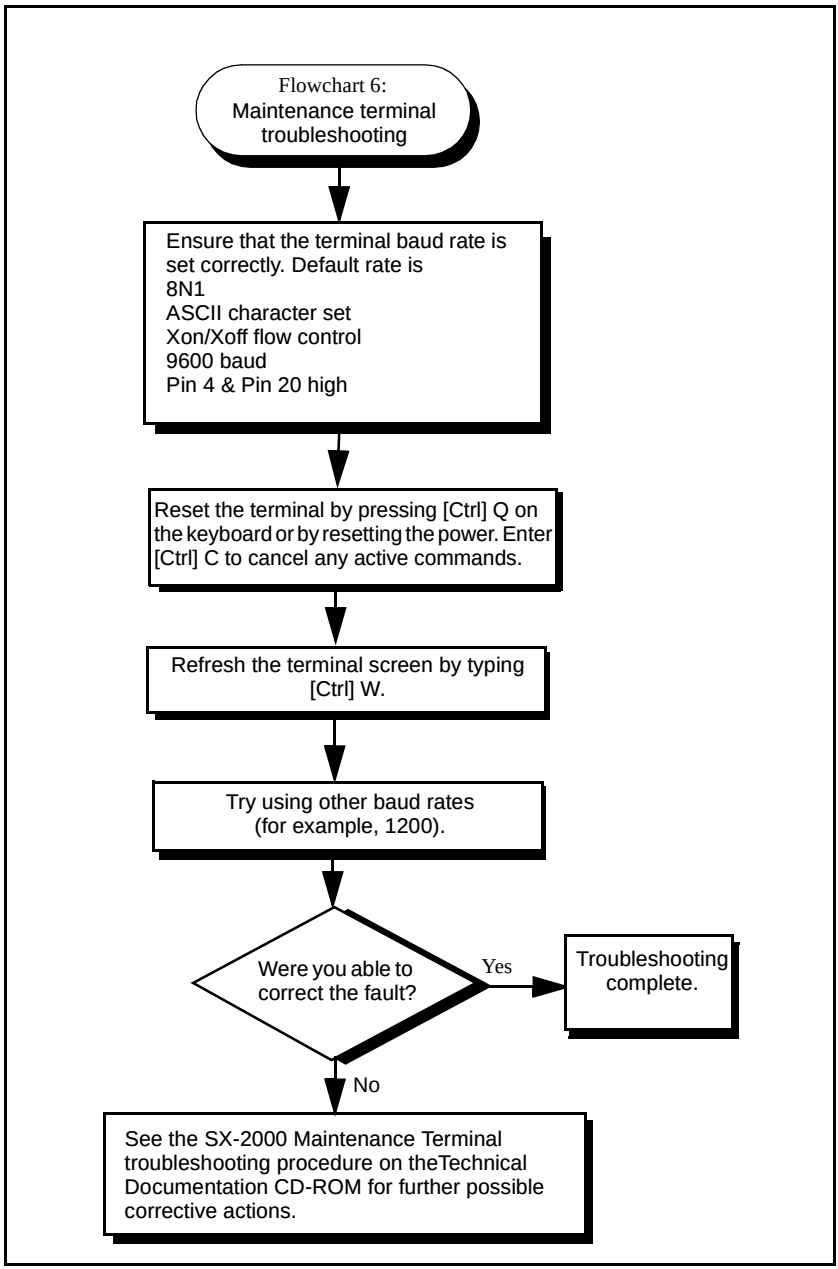
Table 25: Status of Redundant File System

FILE STAT REDUN on the active Plane	FILE STAT REDUN on the inactive Plane	Interpretation	Action to Take
ISOLATED	ISOLATED	The system is likely partitioned. You can check this status by entering the WHERE command on each plane. An asterisk at the end of the first line in the display indicates that the controller is partitioned. Systems are usually only partitioned during software upgrades when it is necessary to isolate the different software streams on the two main controllers. The redundant file system could be disabled because someone has previously entered the FILE DISABLE REDUN command, or because it is a new system and the redundant file system has never been enabled.	Enter the JOIN command first on the inactive side, then on the active side. Only enter this command if you are sure that the operating system software is identical on both planes. Use the WHERE command on both planes to verify that the software is identical. Enter the FILE ENABLE REDUN command on the active plane. (You can verify communication between the active controller and the inactive plane's HDM by entering the LOGS R OTHER <log name> MATCH xxxx command).
IN SYNCH	OUT OF SYNCH	The active controller is in the process of copying the database from its RAM to both hard disks. The inactive controller will not report "IN SYNCH" until the copying is complete. If the inactive controller remains OUT OF SYNCH for more than 20 minutes, the redundant file may be corrupted.	Wait for the active controller to finish the copying, and then check for an "IN SYNCH" on the inactive side. If you suspect redundant file corruption, see page 133
IN SYNCH	IN SYNCH	The databases on both the active and inactive planes are identical.	No action to take. This is how the system should be.

Flowchart 5: Continued



Flowchart 6: Maintenance Terminal Troubleshooting



Fixing Database Errors

If the DBMS CHECK command finds errors in the database, fix it by restoring an uncorrupted version from a DATA SAVE backup on RSD.

Note: If a Guest Service function is performed during a DBMS Check, a major alarm is raised because the database is not fully accessible. A subsequent DBMS Check command will clear the error.

Restoring the Database from a DATA SAVE Backup

If your latest DATA SAVE backup is on the hard drive, you can restore the database faster by using it. Use the DATA QUERY command to display details about the database on the hard drive.

Always ensure you have an up-to-date DATA SAVE backup on RSD in case of hard disk failure.

Non-redundant Systems

1. If you don't have an up-to-date DATA SAVE on RSD, perform a DATA SAVE to RSD (see page 164).
2. Enter:
   DBMS FLAG OFF
3. Hold down PANEL ENABLE and press A RESET.
   Service is lost until you complete this procedure.
4. Insert the datasave RSD into the RSD drive.
5. Enter:
   VOL MOUNT RSD
   Read the volume name of the RSD from the system response on the maintenance terminal.

RSD 15 min
Tape 60 min

6. Enter:
   DATA RESTORE *.<volume name of RSD>

This message appears:
Delete old log file? (Yes/No)
Enter YES.

This message appears:
Existing Data Save will be deleted from Harddisk. Continue? (Y/N)
Enter YES.

This message appears:
Restore system dimensions from saved data?
Enter NO.

7. If you have the Flexible Dimensioning option, this message may appear, if not skip to step 8:
   Custom Dimensions have been detected:
   Overwrite the current dimensions? (y/n)

   - Enter YES.
   - Remove the datasave RSD.
   - Hold down PANEL ENABLE and press A RESET.
   - Return to step 3 of this procedure and carry on from there.

8. Enter:
   VOL DISMOUNT <volume name of RSD>

9. Remove the RSD.

10 min

10. Enter:
    DBMS SAVE

    When the save is complete, this message appears:
    DBMS info: Save Completed

11. Perform the procedure Checking a Non-redundant System on page 157.

Redundant Systems

1. Hold down PANEL ENABLE and press ACTIVITY FREEZE ON.
2. Enter PARTITION first from the active plane and then from the inactive plane.
3. From the inactive plane, enter:
   DBMS FLAG OFF.
4. Hold down PANEL ENABLE and press the inactive plane's RESET button.
5 Log on to the inactive plane and select maintenance mode.
6. Insert the datasave RSD into the RSD drive.
7. Enter:
   VOL MOUNT RSD
   Read the volume name of the RSD from the system response on the maintenance terminal.

15 min

8. Enter:
   DATA RESTORE ∗.<volume name of RSD>

   If this message appears:
   Delete old log file? (Yes/No)
   Enter YES.

   This message appears:
   Existing Data Save will be deleted from Harddisk. Continue? (Y/N)
   Enter YES.

   This message appears:
   Restore system dimensions from saved data?
   Enter NO.
9. If you have the Flexible Dimensioning option, this message may appear, if not skip to step 10:
   Custom Dimensions have been detected:
   Overwrite the current dimensions? (y/n)

- Enter YES.
- Remove the datasave RSD.
- Hold down PANEL ENABLE and press the inactive plane's RESET button.
- Return to step 5 of this procedure and continue.

10. Enter:
    VOL DISMOUNT <volume name of RSD>

11. Remove the RSD.

10 min

12. Enter:
    DBMS SAVE.

    When the save is complete, the system delivers the following message:
    DBMS info: Save Completed

15 min

13. Switch activity. **Service is lost for 5 to 15 minutes**.

14. Enter JOIN first from the newly inactive plane, and then from the newly active plane.

    When the JOIN command is entered, the system delivers the following messages and prompts:

    ENTER: <YES> if both planes have the same S/W version, <NO> to cancel JOIN.

    Enter YES.

    After the operation is complete, this message appears:
    System JOIN completed.

15. Ensure the databases on both drives are in synch by entering FIL ST RED.

16. Hold down PANEL ENABLE and press ACTIVITY FREEZE OFF.

17. Perform the procedure Checking a Redundant System on page 158.

If the System Reports a Blank Database

If you set the DBMS FLAG off by issuing the DBMS FLAG OFF command, the database is blanked during the next system reload. If you entered the command on the active plane of a redundant system, both planes are loaded with the blank database after a reload.

If both planes have a blank database, restore the database from a DATA SAVE backup (see page 128).

If only the inactive plane is blank, the redundant file may be corrupted (see page 133*).*

If the System Reports that the System Dimensions Don't Match

If you change your system dimensions and reload the software, the system will not download the database. The system will report that the system dimensions don't match the saved database.

To recover, change the system dimensions back to the original settings (using your old SX-2000 Feature Options Record sheet and MITEL OPTIONS password) and reload the system to recover your original database. Then, follow the procedure in Performing an Option Upgrade on page 194 to change your system dimensions.

If the System Reports a SYSID Mismatch

If the system reports a SYSID mismatch, your SYSID module is faulty or the wrong SYSID module has been installed in your system. Contact MITEL Technical Support for assistance.

Fixing Redundant File Corruption

Both of the following symptoms indicate redundant file corruption

- if you enter DBMS SAVE and the system responds with DBMS SAVE COMPLETE **without** displaying the following messages:
  DBMS SAVE info: 10% complete.
  DBMS SAVE info: 20% complete.
  *
  *
  DBMS SAVE info: 90% complete.
  DBMS SAVE info: Save completed.
- if the active plane is IN SYNCH, but the inactive plane remains OUT OF SYNCH for longer than 20 minutes.

Note: Redundant File Corruption can ocurr on non-redundant systems. Recovery is the same, but eliminate partitioning and joining steps and perform all steps that refer to the inactive plane on the active plane of your non-redundant system.

To correct redundant file corruption

1. If you don't have an up-to-date DATA SAVE on RSD, make a DATA SAVE backup (see page 164).
2. Hold down PANEL ENABLE and press ACTIVITY FREEZE ON.
3. Log on to the active plane and select maintenance mode.
4. Enter:
   FILE DISABLE REDUNDANCY

   This message appears:
   FS error: File system redundancy could not be disabled.
   Reason: No such volume.
   FS warning: Local disable can be attempted (Note: can lead to FS corruption).

FS info: Continue? (yes/no)
Enter YES

OR

This message appears:
FS info: File system redundancy disabled.
DBMS warning: Unable to read/write state file. Reason: Node does not exist.
DBMS error: Download failed. Reason: Node does not exist.

5. Enter:
   PARTITION

   This message appears:
   Partition complete.

6. Log on to the inactive plane and select maintenance mode.

7. Enter
   FILE DISABLE REDUNDANCY

   This message appears:
   FS error: File system redundancy could not be disabled. Reason: No such volume.
   FS warning: Local disable can be attempted (Note: can lead to FS corruption).
   FS info: Continue? (yes/no)
   Enter YES

   OR

   This message appears:
   FS info: File system redundancy disabled.
   DBMS warning: Unable to read/write state file. Reason: Node does not exist.
   DBMS error: Download failed. Reason: Node does not exist.

8. Enter:
   PARTITION

   This message appears:
   Partition complete.

9. Enter
   VOL DISMOUNT SYSUSER

10. Enter:
    VOL FORMAT DISK SYSUSER REDUND ONLY

11. Hold down PANEL ENABLE and press the inactive plane's RESET button.

12. Restore the database to the inactive plane (see page 183).

    Before doing a DBMS SAVE, enter the following command: TYPE *.DR.LOGFILE_1 to display the log files. Check the logs. If there are no errors, the data restore was completed successfully.

13. Hold down PANEL ENABLE and press ACTIVITY SWITCH. **Service is lost for 5 to 15 minutes**.

14. Enter:
    DATE
    Verify that the date is set correctly.

15. Enter:
    TIME
    Verify that the time is set correctly.

16. Log on to the newly inactive plane and select maintenance mode.

17. Enter
    VOL DISMOUNT SYSUSER

18. Enter:
    VOL FORMAT DISK SYSUSER REDUND ONLY

19. Hold down PANEL ENABLE and press the inactive plane's RESET button.

20. Enter the JOIN command, first from the inactive plane and then from the active plane.

21. Perform the procedure Checking a Redundant System on page 158.

Power-down Procedures

Powering Down the Control Node

1. End any customer data entry sessions.
2. If you don't have an up-to-date DATA SAVE on RSD, perform a DATA SAVE to RSD (see page 164*).*
3. Hold down PANEL ENABLE and press ACTIVITY FREEZE ON.
4. (Redundant systems only) Enter the PARTITION command from the active plane and then from the inactive plane.
5. (Redundant systems only) Enter the FILE STAT REDUN command from the active plane and then from the inactive plane. Both planes should be ISOLATED (see Table 25 on page 125 if they are not).
6. Enter the DBMS STAT command. The DBMS initialized flag should be ON.
7. Enter the VOL DISMOUNT SYSUSER command (if your system is redundant, enter the command first from the inactive plane and then from the active plane).
8. When the system confirms that SYSUSER is dismounted, set the power switch on the power distribution units at the rear of the main control cabinet to "0" (OFF).
9. Disconnect the power cords from the power source.

Powering Down the Peripheral Nodes

1. Remove the front panels.
2. If your system is redundant, set ACTIVITY FREEZE (at the control node) to ON.
3. Switch off the power converter.
4. Set the power switch on the rear of the node to “0” (OFF).
5. Unplug the external power cord at the rear of the node.

Powering Down the DSU Nodes

1. If your system is redundant, set ACTIVITY FREEZE (at the control node) to ON.
2. Set the power switch on the rear of the node to “0” (OFF).
3. Unplug the external power cord at the rear of the node.

Power-up Procedures

Powering Up the Control Node

1. Ensure the control cards are installed before powering up. Control cards cannot be installed when the system is under power.
2. Connect the external power cord(s) at the rear of the node.
3. Set the power switch(es) on the rear of the node to "I" (ON).
4. (Redundant systems only) If your system is partitioned, enter the JOIN command from the inactive plane and then from the active plane

Powering Up the Peripheral Nodes

1. Ensure the voltage selector switch is set to the required setting for your country.
2. Connect the external power cord at the rear of the node.
3. Set the power switch on the rear of the node to "I" (ON).
4. Switch on the power converter.
5. Complete the procedure Checking a Non-redundant System on page 157 or Checking a Redundant System on page 158.
6. If your system is redundant, set ACTIVITY FREEZE (at the control node) to OFF.

Powering Up the DSU Nodes

1. Connect the external power cord at the rear of the node.
2. Set the power switch on the rear of the node to"I" (ON).
3. Complete the procedure Checking a Non-redundant System on page 157 or Checking a Redundant System on page 158.
4. If your system is redundant, set ACTIVITY FREEZE (at the control node) to OFF.

Recovering from a Corrupted Hard Disk

To determine whether your hard disk is corrupted, enter the following command from the maintenance terminal:
MSS
This command displays the number of soft and hard errors on the hard disk. If hard errors are reported your hard disk is probably corrupted. Often you can remove hard disk corruption by formatting the disk. If not, the hard disk is faulty, and you must replace it.

Formatting the Hard Disk

Non-redundant Systems

If you have an RSD copy of the hard disk (a VOL BACKUP)

1 Insert the RDS copy of the VOL BACKUP in the RSD drive.

2. Enter:
   VOL DISMOUNT SYSUSER

3. Enter:
   VOL FORMAT DISK SYSUSER LOAD $8000 REDUN $10000 SCRATCH.

4. Insert the RSD labelled "MAIN Backup <volume name, dd/mm/yyyy>" in the RSD drive. This RSD contains a copy of the hard disk. It was made during routine maintenance.

5. Enter:
   VOL RESTORE SYSUSER FROM RSD

6. Remove the RSD from the RSD drive.

7. Hold down PANEL ENABLE and press A RESET.

8. Enter:
   MSS
   If hard disk errors are reported, you must replace the hard disk. See Removing and Replacing a Faulty Hard Disk on page 143. If hard disk errors are not reported and if your RSD copy of the hard disk did not contain the latest database, restore the current database from your DATA SAVE RSD. See Restoring the Database from a DATA SAVE Backup on page 128 (note: you may need your Mitel Options Password).

If you don't have an RSD copy of the hard drive (a VOL BACKUP)

1. Perform a DATA SAVE to RSD. See Making a DATA SAVE Backup on page 164.

2. Load the operating system software from the RSD (see page 171).

3. Restore the database (see page 174).

4. Enter:
   MSS
   If hard errors are reported, you must replace the hard disk. See Removing and Replacing a Faulty Hard Disk on page 143. If hard disk errors are not reported and if your RSD copy of the hard disk did not contain the latest database, restore the current database from your DATA SAVE RSD. See Restoring the Database from a DATA SAVE Backup on page 128.

Redundant Systems

1. Perform a DATA SAVE to RSD. See Making a DATA SAVE Backup on page 164.

2. Switch activity to the plane with the healthy hard disk.

3. Hold down PANEL ENABLE and press ACTIVITY FREEZE ON.

4. Enter PARTITION first from the active plane then from the inactive plane.

5. Enter FILE STAT RED from both planes. Both planes should be isolated. But, you can continue with this procedure providing that the active plane is isolated.

6. From the active plane, enter:
   VOL SET SYSUSER READ ONLY

7. Log on to the inactive plane and select maintenance mode.

8. Enter:
   VOL DISMOUNT SYSUSER

9. Enter:
   VOL FORMAT DISK SYSUSER LOAD $8000 REDUN $10000 SCRATCH.

   If this message appears:
   FS info: Continue?
   Enter YES

   When formatting is complete, this message appears:
   FS info: Formatted volume on device DISK with name SYSUSER

10. Enter:
    VOL RESTORE SYSUSER FROM OTHER

    When restoration is complete, this message appears:
    FS Info: Restored volume from other with name sysuser.

11. From the active plane, enter:
    VOL SET SYSUSER READ WRITE

12. Hold down PANEL ENABLE and press the inactive plane's RESET button.

13. Log on to the inactive plane and select maintenance mode.

14. Enter:
    JOIN

    This message appears:
    JOIN COMPLETE

15. Log on to the active plane and select maintenance mode.

16. Enter:
    JOIN

    Note: If the system will not join, check for redundant file corruption, page 133.

    This message appears:
    JOIN COMPLETE

20 min

17. Wait 20 minutes, then, enter FILE STAT REDUN first from the active plane and then from the inactive plane to ensure that the redundant file system is synchronized.

18. From the plane with the suspect hard disk, enter:
    MSS
    If hard disk errors are reported, you must replace the hard disk. See Removing and Replacing a Faulty Hard Disk on page 143.

Removing and Replacing a Faulty Hard Disk

1. Perform a DATA SAVE to RSD. See Making a DATA SAVE Backup on page 164.

2. On redundant systems, switch activity to the plane with the healthy hard disk.

3. Enter:
   PARTITION

4. Hold down PANEL ENABLE and press ACTIVITY FREEZE ON.

5. Enter VOL DISABLE SYSUSER on the plane with the faulty hard disk (inactive plane).

6. Power down the control node (see page 136).

7. Remove the cabinet sleeve.

Wear an anti-static wrist strap.

8. Remove the power cable from rear of the hard drive. Disconnect the power cable from the rear of the RSD drive directly below the hard disk drive being replaced.

In a redundant control node, it isn't necessary to remove the power cable from the RSD drive if you are replacing disk drive B.

9. Disconnect the ribbon cable from the rear of the hard disk drive.

10. From the front of the node, remove the two screws that hold the drive carrier in place.

11. Gently slide the drive carrier from the node and remove the four screws (two on each side) that hold the disk drive in place.

12. Unpack the replacement disk drive. Ensure that the address straps (A0, A1, A2) are removed and remove the bus terminators from the drive.

13. Replace the hard disk drive.

14. Connect the power and ribbon cables.

15. Connect the external ac power cord(s) at the rear of the node.

16. Set the power switch(es) on the rear of the node to "I" (ON).

17. Enter VOL E SYSUSER to enable access to the sysuser volume.

18. If the operating system software was not installed on the replacement hard disk at the factory, you must load the operating system software. For non-redundant systems, see page 171; for redundant systems, see page 180.

Replacing Circuit Cards

Hazardous voltages can exist on installed peripheral cards even when power is removed from the system. Grasp cards by the lock latches only. Do not touch the sides of cards.

You can replace peripheral interface or DSU cards while the node is operating.

Removing a Card

1. Enter:
   BUSY <PLID of faulty card>
   Select the COURTESY DOWN option.

2. To confirm that all circuits are in the busy state, enter:
   STATE <PLID of faulty card>

Wear an anti-static wrist strap whenever you handle circuit cards.

3. Pull the upper and lower latches outward until they are both in the horizontal release position.

4. Draw the card toward you.

5. Immediately place the card in an anti-static bag.

Installing a Card

1. For cards that have switches, refer to the card's hardware description for information about switch settings.

Wear an anti-static wrist strap whenever you handle circuit cards.

2. Check the connector pins to be certain that they are straight.

3. Slide the card into the slot.

4. Push the upper and lower latches away from you until they are vertical and the card is locked in place.

5. To return the circuits to service, enter:
   RTS <PLID>

Replacing a Main Controller Card

When you replace a Main Controller (MC) card, ensure that the programmed MC card and the installed MC card match. If they do not match, no links are assigned.

1. Remove the front panels.

2. Perform a DATA SAVE to RSD. See Making a DATA SAVE Backup on page 164.

3. If you have a redundant system:

   - Switch activity to the plane with the healthy Main Controller card.
   - Hold down PANEL ENABLE and press ACTIVITY FREEZE ON.
   - Enter FILE STAT REDUN from the active plane and then from the inactive plane. Both planes should be IN SYNCH. If they are not, see Table 25 Status of Redundant File System (page 125)

4. Enter:
   DBMS STAT
   The DBMS initialized flag should be ON.

5. Enter VOL DISMOUNT SYSUSER (from the inactive plane).

Power down the control node before removing the MC card. Powering down the node takes the system out of service.

6. Set the power switch on the (inactive plane) power distribution unit at the rear of the cabinet to “0” (OFF).

7. Disconnect the (inactive plane) power cord from the power source.

Wear an anti-static wrist strap whenever you handle circuit cards.

8. Replace the old MC card with the new MC card.

Note: If you have an ETI card installed, disconnect and then reconnect the cables as required.

9. Power up the control node (see page 138).

10. If you have a redundant system:
    - From the inactive plane, enter FILE STAT REDUN.
    - When the system is IN SYNCH, hold down PANEL ENABLE and press ACTIVITY SWITCH OFF.

11. Replace the front panels.

Replacing a Peripheral Switch Controller (PSC) Card

1. If you have a redundant system, hold down PANEL ENABLE and press ACTIVITY FREEZE ON.

Step 2. takes the peripheral devices connected to the node out of service.

2. Power down the peripheral node (see page 136).

Wear an anti-static wrist strap whenever you handle circuit cards.

3. Replace the faulty PSC card with the new PSC card.

4. Power up the peripheral node (see page 138).

5. Hold down PANEL ENABLE and press ACTIVITY FREEZE OFF.

Replacing a Control Resource Card (CRC)

1. If you have a redundant system, hold down PANEL ENABLE and press ACTIVITY FREEZE ON.

Power down the control node before removing the Control Resource card. Powering down the node takes the system out of service.

2. Power down the main control node (see page 136).

Wear an anti-static wrist strap whenever you handle circuit cards.

3. If the system has a CRCIII, disconnect the two modular cables from the faceplate of the card.
4. Slide the CRC out of the cabinet.
5. Remove the system ID module from the connector J1 on the faulty card.
6. Plug the system ID module into connector J1 on the replacement CRC. The system ID module can be installed only one way. Ensure that you align the pins correctly.
7. Set the DIP switches on the replacement CRC faceplate to the same settings as those on the faulty CRC.
8. Insert the replacement CRC into its cabinet slot.
9. If the system uses a CRCIII, reconnect the modular cables to the same ports on the replacement CRC III faceplate.
10. Power up the main control node (see page 138).

Replacing CEPT or DS1 Formatter Cards with DS1/CEPT I or II Cards

If your system software is Lightware 31 R1.0 or higher, use the CEPT Formatter II (MC269CA) or DS1/T1 Formatter II (MC270CA) cards for replacement.

If your system software is Q10.7.14 or higher, use the CEPT Formatter I (MC264CA) or DS1/T1 Formatter I (MC263CA) cards for replacement.

1. Connect a laptop computer to the card by using a straight through serial cable or anull modem adapter.
2. If using a modem:
   - Set the modem DIP switches for initial setup according to the manufacturer's suggestions.
   - Connect a PC to the modem, launch a VT100 emulation session, and set the serial port settings to: Speed = 38400, Data bits = 8, Parity = none, and Stop bits =1.
   - Enter the modem command settings (according to your type of modem), then power down the modem.
   - Change the modem DIP switch settings to normal operation.
3. Connect the modem or straight through cable, from a laptop or PC, to the replacement card and access the maintenance window.
4. Run acommunications package for VT100 terminal emulation (dumb terminal) and set to 8 bits, no parity, 1 stop bit, and 38400 baud rate.
5. Enter the following information for each DS1/CEPT Formatter I card:
   - Signaling type (CAS or DPNSS)
   - D-channel inversion for T1 DPNSS
   - Main control version (either prior to, or after, Q10.7.8).
   - Line length for T1

Note: See "DS1/CEPT Formatter I Card (MC263CA and MC264CA) Communications" on page 111 for information on inputting the information.

6. Configure the customer data entry forms

   - If you are installing the CEPT or DS1/T1 Formatter II variants, deprogram the previous CEPT or DS1 card and reprogram the new card in the System Configuration form. The CEPT Formatter II card and the DS1/T1 Formatter II cards are identified as “Universal E1” and “Universal T1” respectively.
   - Program the CEPT or DS1/T1 Formatter II cards the same as for regular trunk programming.

   It is recommended that you leave the jumpers on the CEPT and DS1/T1 Formatter II cards at the default setting of Line Side Termination.

7. Install the Interface Assembly

   - Attach the anti-static strap to your wrist.
   - Unpack the Interface Assembly and ensure it is not damaged.
   - At the rear of the cabinet, locate the DSU slot that corresponds to the slot that you will use for the replacement CEPT or DS1/T1 Formatter card.
   - Mount the Interface Assembly extension bracket. The closed side of the extension bracket must be to the left when viewed from the rear of the cabinet.
   - Insert the Interface Assembly. Ensure the edge connector on the card aligns with the connector on the backplane of the system.
   - Secure the Interface Assembly to the extension bracket with the screws provided.

8. Install the CEPT or DS1/T1 Formatter I or II Card (see “Installing a Card” on page 146).

9. Test the card

   - Inspect the faceplate LEDs to verify that the card is functioning.

Note: The replacement cards may take longer to boot-up than older card versions.

   - Open a maintenance window and verify that the trunks associated with the corresponding channels are all in idle state.

10. Upgrade or re-install the software:

    Upgrades for the CEPT and DS1/T1 Formatter II cards are done from the main controller each time its software is upgraded. You can also use the force dl command option in the VT 100 emulation window.

    The CEPT and DS1/T1 Formatter I cards are not upgradeable in the field as they come with the software pre-loaded.

11. Reset the CEPT or DS1 Formatter I or II card using one of the following methods:

    - Entering the LOAD <PLID> command in the maintenance window of the system.
    - Unseat and reseat the card.
    - Type the reset option command in the VT 100 emulation window.

Chapter 6
Routine Maintenance

Is the System Healthy?

Non-redundant Healthy System Checklist

- ☑ No alarms present
- ☑ No database errors
- ☑ DBMS Check is scheduled
- ☑ DBMS Status initialized flag is ON
- ☑ Programmed Reboot is scheduled
- ☑ DATA SAVE backup is on RSD
- ☑ Hard drive backup is on RSD

Redundant Healthy System Checklist

- ☑ No alarms present
- ☑ No database errors
- ☑ DBMS Check is scheduled
- ☑ DBMS Status initialized flag for both planes is ON
- ☑ Redundant File System is enabled and in synch on both planes
- ☑ Activity Switch is scheduled
- ☑ Activity Freeze is OFF (assuming that both main controls are healthy)
- ☑ DATA SAVE backup is on RSD
- ☑ Hard drive backup is on RSD

Is the System Secure?

- ☑ No SECURITY alarms are present
- ☑ Passwords and usernames have been changed
- ☑ Passwords and usernames are recorded and stored securely
- ☑ Password expiry timer is set
- ☑ CDE Form Access Authorization is complete
- ☑ Account codes are programmed
- ☑ SMDR records have been checked for irregularities
- ☑ Auto Logout timer is set
- ☑ Class of Restriction (trunks) is programmed correctly
- ☑ Voice mail system is secure
- ☑ Auto attendant is secure
- ☑ DISA is secure
- ☑ Call forwarding is secure

Checking a Non-redundant System

1. Log on to the maintenance terminal and select maintenance mode.
2. Enter the following commands:

SH ST AL	Checks for system alarms. There should be no alarms. If alarms are present, see Flowchart 3: An Alarm is Present on page 120.
DBMS STAT	Checks the status of the initialized flag. The flag should be on if the system is in sync. If the flag is off, enter DBMS SAVE from the active plane.
PROG R DIS	Displays the scheduled system reset. By default, the system reboots at 2:15 a.m. daily ONLY IF there is memory fragmentation. To force a system reboot at the scheduled time, see Scheduling a System Reboot (Non-redundant Systems) on page 95.
ME S	Checks the status of the communication links. All communication links should be open.
PCM TO	Checks for circuit switch link faults. There should be no faults.
DBMS CH F	Checks the sanity and current status of the system. The number of detected errors should be zero. Otherwise, there is a problem with the database and immediate steps should be taken to begin recovery. **Note:** This step takes 60 seconds to complete.

Checking a Redundant System

1. Log on to the maintenance terminal and select maintenance mode.
2. Enter the following commands (first from the active plane, then from the inactive plane):

   FIL STAT RED Indicates whether the database on both drives are IN SYNCH, OUT OF SYNCH, or ISOLATED. The databases should be IN SYNCH. If both planes are not IN SYNCH, see Table 25: Status of Redundant File System on page 125.

   Note: It takes approximately 15 minutes for both planes to become synchronized.

   DBMS STAT Checks the status of the initialized flag. The flag should be on. If the flag is off, enter DBMS SAVE (first from the active plane and then from the inactive plane).

   DBMS CH F Checks the sanity and current status of the system. The number of detected errors should be zero. Otherwise, there is a problem with the database and immediate steps should be taken to begin recovery.

   Note: Check the active and inactive planes. This step takes 60 seconds to complete.

3. Enter the following commands from the active plane:

   SH ST AL Checks for system alarms. There should be no alarms. If alarms are present, see Flowchart 3: An Alarm is Present on page 120.

ACT SW SCHED	Displays the scheduled automatic activity switching. The default is 2:15 a.m. daily.
ME S	Checks the status of the communication links. All communication links should be open.
ME MATE	Checks the status of the mate communication links. All links should be open.
PCM TO	Checks for circuit switch link faults. There should be no faults.
ACT FRE STAT	Displays the Activity Freeze Status. Activity Freeze should be off.

Making Your System Secure

1. Log on to the maintenance terminal and select maintenance mode.
2. Change your username and password if either of these warnings appears:
   "Expired password in use!"
   "Default username and password in use!"
3. If someone with login privileges has left the company, change the usernames and passwords at ALL levels.

   Change the SYSTEM, INSTALLER, MAINT1, and MAINT2 usernames and passwords by using the DISPLAY USERNAMES, RESET USERNAMES, RESET PASSWORD, and CHANGE PASSWORD commands.

   Change the SUPERVISOR and ATTENDANT passwords by using the RESET PASSWORD command.
4. In the System Options Assignment form, set the password expiry time (number of days before password expires). The default is 60 days.
5. Change all account codes that are known by any user who has left the company. Use the Independent Account Code Definition form.
6. Record usernames, passwords, and account codes. Store them in a secure place.
7. In the Form Access Authorization form, provide access to only the required forms for each authorization level.
8. In the System Options Assignment form, set the Maintenance Terminal Lock-out Timer.
9. In the Trunk Service Assignment form, assign all trunks that require a Class of Restriction (COR) to prohibit external calls.

10. In the Station Service Assignment form, assign all voice mail ports, auto attendants, and RADs a COR that prohibits external calls.

11. If the system requires DISA trunks, program forced account codes in the Independent Account Code Definition form.

    If the system does not require DISA trunks, ensure that DISA trunks are not programmed in the Miscellaneous Assignment form.

12. If DISA is required, set the DISA failed attempts before lock-out parameter in the System Options Assignment form.

13. To ensure that a user cannot forward an incoming call to a route that provides central office dial tone, set the Call Forwarding (External Destination) option to “No” in the Class of Service for the user’s set.

RSD Copier Functionality

To download a software image from the Mitel support web site onto a laptop, connect the computer to the ethernet port of the SX-2000 MCIIIE card, and copy the image to the PBX RSD (removable storage device).

These commands are valid only on a switch with an MCIIIE card programmed with the IP CONFIG command and with an Ethernet (RJ45) connection to an ftp server (e.g. a laptop).

A valid IP address must be assigned to the SX-2000. The IP adress of the laptop must be assigned, as well as a user name and password for an FTP user on the laptop. The laptop must be configured with an FTP server.

To create and apply an upgrade or update software load:

1. Download the image file from the Mitel web site onto a laptop.
2. Take the laptop to an SX-2000 and attach it to the Ethernet port of the MCIIIE card.
3. Insert a formatted RSD into the RSD drive.
4. Enter the following command:

   RSD COPY FROM NET <filename>Copies the file from the network computer onto the RSD.

To copy a formatted RSD onto another RSD:

1. Issue the following command:

   RSD COPY TO NET <filename>Copies an RSD to a network computer. When the process is complete there will be a <filename> on the ftp server of 131032576 bytes.

   RSD COPY FROM NET <filename>Copies the image from the network PC to SX-2000 RSD.

Formatting a Removable Storage Device (RSD)

Never format an RSD with the volume name *SYSUSER*.

Never reset the system while you are formatting an RSD as it will be damaged.

Never format a used RSD unless you want to erase all of its contents.

Use the SCRATCH qualifier to re-format an RSD that was formatted prior to LIGHTWARE™ 29 Release 3.

1. Slide the tab on the RSD to the RECORD position.
2. Insert the RSD into the RSD drive.

15 min

3. If you are using the RSD to make a DATA SAVE, enter:
   VOL FORMAT RSD <volume name of RSD>

   If the RSD has been previously formatted, this message appears:
   FS info: Volume already formatted with volume name: <previous volume name>
   FS info: Continue?
   Enter YES

   OR

   If you are using the RSD to make a copy of the Hard Disk enter:
   VOL FORMAT RSD <volume name of RSD> RES

   This message appears:
   FS info: Volume already formatted with volume name: <previous volume name>
   FS info: Continue?
   Enter YES
4. Enter:
   VOL DISM <volume name of RSD>
5. Remove the RSD from the RSD drive.

Making a DATA SAVE Backup

The DATA SAVE command copies the database from RAM to an RSD and to the hard disk. Perform a DATA SAVE backup

- before and after a software or option upgrade
- before and after changes to the database
- to repair corruption of the database or redundant file system.

To protect your backups from being lost, we recommend that you keep two copies of the database. Keep a current version and one from your previous backup, each on a separate RSD.

To Make a DATA SAVE Backup

1. Insert a formatted RSD in the RSD drive (see page 163).
2. Log on to the active plane and select maintenance mode.
3. Enter:
   VOL MOUNT RSD
   Read the volume name of the RSD from the system response on the maintenance terminal.

RSD 10 min
Tape 60 min

4. Enter:
   DATA SAVE *.<volume name of RSD>
   Enter YES to all prompts.
   The database is copied to the RSD and to the *.DR.CONFIG catalog on the hard drive.

   When the DATA SAVE is complete, this message appears:
   Data Save completed.
5. The RSD is automatically dismounted. Remove it from the RSD drive.

Making a Message Center Backup

The MSGCTR BACKUP command copies Message Center messages from RAM to RSD.

To Make a Message Center Backup

1. Insert a formatted RSD in the RSD drive (see page 163).
2. Log on to the active plane and select maintenance mode.
3. Enter:
   VOL MOUNT RSD
   Read the volume name of the RSD from the system response on the maintenance terminal.
4. Enter:
   MSGC B ∗.<volume name of RSD>
5. Remove the RSD from the RSD drive.

Making an RSD Copy of the Hard Disk

The VOL BACKUP SYSUSER ON RSD command copies the operating software, updates, options, and database to the RSD. If a hard disk fails, you can restore the system software from the RSD to a replacement hard disk. See Recovering from a Corrupted Hard Disk on page 140.

The hard disk is dismounted by SYSUSER during this procedure. Loss of service results on non-redundant systems.

To Back Up the Hard Disk of a Non-redundant System

1. Insert a blank, formatted RSD in the RSD drive.
   See Formatting a Removable Storage Device (RSD) on page 163.
2. Enter:
   VOL BACKUP SYSUSER ON RSD

   When the copy is complete, this message appears:
   FSinfo: Backed up volume on device RSD with name: SYSUSER
3. Remove the RSD from the RSD drive.
4. Label the RSD "MAIN Backup <volume name, dd/mm/yyyy>".
5. Reset the system. **Service is lost**.
6. Store the RSD in a safe place.

To prevent loss of service on redundant systems, perform this procedure on the inactive plane.

To Back Up the Hard Disk of a Redundant System

1. Insert a blank, formatted RSD in the RSD drive (see page 163).
2. Set ACTIVITY FREEZE to ON.
3. Enter PARTITION from the active plane, then from the inactive plane.
4. From the inactive plane, enter:
   VOL BACKUP SYSUSER ON RSD

   After the copy is complete, this message appears:
   FSinfo: Backed up volume on device RSD with name: SYSUSER
5. Remove the RSD from the RSD drive.
6. Label the RSD "MAIN Backup <volume name, dd/mm/yyyy>".

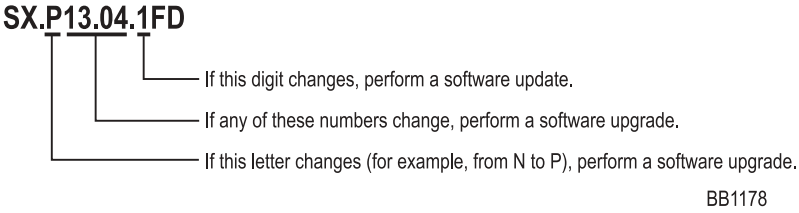
In the following step, reset ONLY the inactive plane, or service will be lost.

7. Press and hold PANEL ENABLE and press the RESET button for the inactive plane.
8. Enter JOIN from the inactive plane, then from the active plane.
9. Ensure the databases on both drives are in synch by entering FIL ST RED.
10. Set ACTIVITY FREEZE to OFF.
11. Store the RSD in a safe place.

Loading Software on Your System

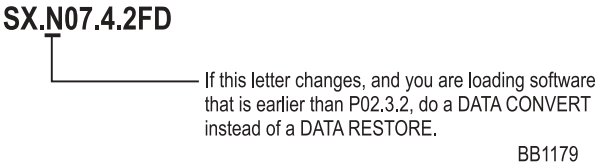
Software Upgrade or Software Update?

Compare the software code on the old RSD with the code on the new RSD.



Data Restore or Data Convert?

If your new software is load P02.3.2 or later, you do not have to do a DATA CONVERT during the software upgrade.



RSD or Tape?

This procedure refers to RSD only. If your system has a tape unit rather than an RSD drive, substitute TAPE for RSD when entering maintenance commands.

Before You Begin

Read the Field Change Instruction (FCI) for the new software.

- The FCI includes the latest information about your new software, including special upgrade notes. Read it now.

Check Your Options and Have Your Password Ready

(new passwords are not required for stream upgrades to a Lightware stream later than Lightware 30 .)

- Have your SX-2000 Feature Options Record sheet with you.
- Confirm that the options listed are the ones purchased for the system.
- Confirm whether the system has custom dimensions (Flexible Dimensioning).

Prevent Data Loss

- If you're upgrading from ANSWER PLUS™ - ACD to ACD 2000, see the ACD section on the MITEL Technical Documentation CD-ROM.
- Message Waiting lamps are turned off during a software upgrade.
  - Lamps for Message Center messages can be restored if you back up your Message Center messages before you begin this procedure and restore them when the upgrade is complete.
  - Lamps for voicemail messages can only be restored if your voicemail system can be refreshed after the upgrade is complete.

- Usernames, passwords, alarm thresholds, Do Not Disturb information, and SUPERCONSOLE 1000 firmkey assignments are not saved during a software upgrade. Record this information so it can be manually restored after the upgrade is complete.
- If you are upgrading from a software load older than N11, external numbers in the CDE Telephone Directory form that have the PRM NAM field set to "YES" will be deleted during the DATA RESTORE. Check the Telephone Directory form to ensure that all external numbers have the PRM NAM field set to "NO". If you are unsure which numbers are external, set the PRM NAM field for all numbers to NO.

Performing a Software Upgrade on a Non-redundant System

To Perform a Software Upgrade (Overview)

1. Save the database to RSD.
2. Load the new operating software from RSD.
3. If new feature options have been purchased, this is a new install, or you are loading software that is earlier than P02.3.2, enable the new options.
4. Restore the database from RSD.

Save the Database to RSD

1. Save the database to RSD. See Making a DATA SAVE Backup on page 164.
2. If you have the Message Center option, perform a Message Center backup see page 165.

Load the Operating System Software from RSD

1. Insert the software RSD in the RSD drive.
2. Hold down PANEL ENABLE and press A RESET. **Service is lost until you complete the DATA RESTORE**.
3. Log on to the system and select maintenance mode.
4. If you are upgrading from software previous to Q26.13.1, proceed to step 5; otherwise, proceed to step 6.
5. Enter:
   FILE DIS RED

   This message appears:
   FS error: File system redundancy could not be disabled.
   Reason: No such volume.
   FS warning: Local disable can be attempted (Note: can lead to FS corruption).
   FS info: Continue? (yes/no)
   Enter YES

   OR

   This message appears:
   FS info: File system redundancy disabled.
   DBMS warning: Unable to read/write state file. Reason: Node does not exist.
   DBMS error: Download failed. Reason: Node does not exist.
6. Enter:
   VOL DISMOUNT SYSUSER
7. This message appears:
   FS info: Dismounted volume from device DISK with name: SYSUSER

3 min

8. Enter:
   VOL FORMAT DISK SYSUSER LOAD $8000 REDUN $10000 SCRATCH

   This message appears:
   FS info: Continue?
   Enter YES

When formatting is complete, this message appears:
FS info: Formatted volume on device DISK with name: SYSUSER

RSD 5 min
Tape 60 min

Enter:
VOL RESTORE SYSUSER FROM RSD

This message appears:
FS info: Start of Restore.

When the system has copied the system software from the RSD to the hard disk, this message appears:
FS info: Restored volume from device RSD with name: SYSUSER

9. Remove the software RSD from the RSD drive.

10. Hold down PANEL ENABLE and press A RESET.

10 min

11. Log on to the system and select maintenance mode.
12. Re-insert the software RSD in the RSD drive.
13. Enter:
    VOL MOUNT RSD
    Read the volume name of the RSD from the system response on the maintenance terminal.
14. Enter:
    UPDATE APPLY <volume name of RSD> FROM ∗.<volume name of RSD>

    This message appears:
    Update started.

    Update applied successfully

    OR

    If there are no updates, this message appears:
    ERROR: No update files were found
    The update has NOT been applied
    Ignore this error and go to the next step.
15. Enter:
    VOL DISM <volume name of RSD>
16. Remove the software RSD from the RSD drive.

10 min

17. If no update files were applied in step 14, proceed to the next step.

    If updates were applied in step 14, hold down PANEL ENABLE and press A RESET.

18. Go to Enable New Options on page 173 if
    - new options are included with the software
    - this is a new install
    - you are loading software earlier than P02.3.2

    Otherwise, go to Restore the Database on page 174.

Enable New Options

1. Log on to the system and select customer data entry mode.
2. Select System Forms from the Forms Group Menu.
3. Select Dimension and Feature Select form from the System Forms menu. Press the <edit form> softkey.
4. Set all options to match those on the SX-2000 Feature Options Record sheet that was shipped with the software (X = YES).
5. Select the machine configuration FD1 (for a MICRO-LIGHT or 9" non-redundant system) and set the maximum number of cabinets to 5 OR FD2 (for all other SX-2000 systems) and set the maximum number of cabinets to 12.
6. Press the <generate> softkey then the <bottom> softkey.
7. Enter the MITEL options password (from the SX-2000 Feature Options Record sheet received with the software), press the <commit> softkey; then press the <confirm> softkey.
8. This message appears:
   Changes committed. ** Reload the system to make new values effective. **
9. Quit the form.

10 min

10. Hold down PANEL ENABLE and press A RESET.
11. Go to Restore the Database on page 174.

Restore the Database

1. Insert the datasave RSD in the RSD drive.
2. Log on to the system and select maintenance mode.
3. Enter:
   VOL MOUNT RSD
   Read the volume name of the RSD from the system response on the maintenance terminal.

RSD 15 min
Tape 60 min

4. If you are loading software P02.3.2 or later, enter:
   DATA RESTORE ∗.<volume name of RSD>

   If you are loading software earlier than P02.3.2, see Data Restore or Data Convert? on page 168 to determine which command to use in this step.This message appears:
   Delete old log file? (Yes/No)
   Enter YES

   This message appears:
   Existing Data Save will be deleted from Harddisk. Continue? (Y/N)
   Enter YES

   These messages appear:
   FS info: Deleting files from catalog ∗.DR.CONFIG
   FS info: Deleting file ∗.DR.CONFIG.TIMESTAMP

   •
   •

   If your software is load P02.3.2 or later, this message appears:
   Restore system dimensions from saved data?

   If you have NOT enabled new options

   • Enter YES and proceed to step 5

   If you HAVE enabled new options (or entered them manually)

- Enter NO

These messages appear:
Currently restoring: SMDR Options Assignment
Currently restoring: DTE Session Profile Assignment

•
•

Currently restoring: Traffic Options Assignment
Data Restore Complete

- Skip to step 12 if you are not using the Flexible Dimensions option.

5. Enter the MITEL OPTIONS PASSWORD (from the SX-2000 Feature Options Record sheet received with the software).

   If you have the Flexible Dimensions option, this message may appear:
   Custom Dimensions have been detected:
   Overwrite the current dimensions? (y/n)
   Enter YES

   This message appears:
   Restart the system to enable the RESTORED dimensions.
   DATA SAVE/RESTORE/CONVERT is terminated.

6. Remove the datasave RSD from the RSD drive.
7. Hold down PANEL ENABLE and press A RESET.

   This restores the dimensions from the saved data. The system is reset to enable the options on the system.

8. Re-insert the datasave RSD in the RSD drive.
9. Log on to the system and select maintenance mode.
10. Enter:
    VOL MOUNT RSD
    Read the volume name of the RSD from the system response on the maintenance terminal.
11. Enter:
    DATA RESTORE ∗.<volume name of RSD>

This message appears:
Delete old log file? (Yes/No)
Enter YES

This message appears:
Existing Data Save will be deleted from Harddisk. Continue? (Y/N)
Enter YES

These messages appear:
FS info: Deleting files from catalog *.DR.CONFIG
FS info: Deleting file *.DR.CONFIG.TIMESTAMP

•
•

Restore system dimensions from saved data?
Enter NO

Note: Dimenstions were input or restored in previous steps.

These messages appear:
Currently restoring: Form Access Authorization
Currently restoring: Cabinet Assignment

•
•

Currently restoring: Traffic Options Assignment
DATA RESTORE Completed.
Reminder: DBMS SAVE will save the database.

12. Enter:
    VOL DISMOUNT <volume name of RSD>

13. Remove the datasave RSD from the RSD drive.

10 min

Enter:
DBMS SAVE

These messages appear:
DBMS Info: Starting DBMS save
DBMS Save Info: 10% complete
DBMS Save Info: 20% complete

•
•

DBMS Info: Save Completed

14. If your software is earlier than P02.3.2 AND you have the Property Management System (PMS) option, hold down PANEL ENABLE and press A RESET.

15. Enter:
    TYPE ∗.DR.LOGFILE_1
    Review the log for data that has not been restored. Do not proceed to the next step until lost data has been re-entered. Lost data may have to be re-entered manually.

16. Reload the software into all peripheral processors, DSU cards, DNI line cards, and attendant consoles.

    For software loads P17.6.4 and later, enter:
    LOAD CONTROLLERS

    For software loads earlier than P17.6.4,

    - Turn power to SUPERSET 700 consoles off and then on again.
    - Load DNI line cards. Enter:
      LOAD <cabinet> <shelf> <slot>

17. Enter:
    DATE yyyy-mmm-dd hh:mm:ss
    For example: DATE 1999-sep-28 14:43:45.

18. Reprogram your login usernames, passwords, and alarm thresholds.

19. Enter:
    DBMS CH ON
    to turn on automatic datasave checking.

20. If you have the Message Center option:
    - Insert the RSD with your Message Center backup in the RSD drive
    - Enter:
      VOL MOUNT RSD
      Read the volume name of the RSD from the system response on the maintenance terminal.

- Enter:
  MSGC R ∗.<volume name of RSD>
- Enter:
  VOL DISMOUNT <volume name of RSD>

21. Enter:
    PROG R ON
    To turn on the automatic system reload. By default, the system reboots at 2:15 AM daily IF there is memory fragmentation.

22. Perform the procedure Checking a Non-redundant System on page 157.
23. The software upgrade is complete.

Performing a Software Update on a Non-redundant System

1. Insert the software RSD into the RSD drive.
2. Enter:
   VOL MOUNT RSD
   Read the volume name of the RSD from the system response on the maintenance terminal.
3. If an update already exists on the system enter:
   UPDATE REMOVE

   This message appears:
   The Update has been removed. Please reload the main controller from the Winchester. Also reload the slaves that were changed (if any).
   The reload is optional. Continue to the next step to save time.
4. Enter UPDATE APPLY <volume name of RSD> FROM ∗.<volume name of RSD>.

   This message appears:
   The update has been successfully applied. Please, reload the main controller from the Winchester. As well, reload the slaves that were changed (if any).
5. Enter VOL DISMOUNT <volume name of RSD>

6. Remove the RSD.
7. Enter:
   DBMS STAT
   The initialized flag should be on.

15 min

8. Hold down PANEL ENABLE and press A RESET.
   Service is lost for 5 to 15 minutes.
9. Log on to the system and select maintenance mode.
10. Reload the software into all peripheral processors, DSU cards, DNI line cards, and attendant consoles.

    For software loads P17.6.4 and later, enter:
    LOAD CONTROLLERS

    For software loads earlier than P17.6.4,

    - Turn power to SUPERSET 700 consoles off and then on again.
    - Load DNI line cards. Enter:
      LOAD <cabinet> <shelf> <slot>

11. Enter:
    VER
    To display the update version.

12. Perform the procedure Checking a Non-redundant System on page 157.
13. The software update is complete.

Performing a Software Upgrade on a Redundant System

To Perform a Software Upgrade (Overview)

1. Save the database to RSD.
2. Load the new operating software from RSD to the inactive plane.
3. If new feature options have been purchased, or this is a new install, or you are loading software that is earlier than P02.3.2, enable new options.

4. Restore the database from RSD to the inactive plane.
5. Copy the software to the other plane and JOIN the system.

Save the Database to RSD

1. Save the database to RSD. See Making a DATA SAVE Backup on page 164.
2. If you have the Message Center option, perform a Message Center backup on page 165.

Load the Operating System Software from RSD to the Inactive Plane

1. Hold down PANEL ENABLE and press ACTIVITY FREEZE ON.
2. Enter PARTITION first from the active plane, then from the inactive plane.
3. Insert the software RSD in the RSD drive.

10 min

4. Hold down PANEL ENABLE and press the inactive plane's RESET button.
5. Log on to the inactive plane and select maintenance mode.
6. If you are upgrading from software previous to Q26.13.1, proceed to step 7;otherwise, proceed to step 8.
7. Enter:
   FILE DIS RED

   This message appears:
   FS error: File system redundancy could not be disabled.
   Reason: No such volume.
   FS warning: Local disable can be attempted (Note: can lead to FS corruption).
   FS info: Continue? (yes/no)
   Enter YES

   OR

This message appears:
FS info: File system redundancy disabled.
DBMS warning: Unable to read/write state file. Reason: Node does not exist.
DBMS error: Download failed. Reason: Node does not exist.

8. Enter:
   VOL DISMOUNT SYSUSER

   This message appears:
   FS info: Dismounted volume from device DISK with name: SYSUSER

9. Enter:
   VOL FORMAT DISK SYSUSER LOAD $8000 REDUN $10000 SCRATCH

5 min

   If this message appears:
   FS info: Continue?
   Enter YES

   When formatting is complete, this message appears:
   FS info: Formatted volume on device DISK with name SYSUSER

RSD 20 min
Tape 60 min

10. Enter:
    VOL RESTORE SYSUSER FROM RSD

    When the system has copied the system software from the RSD to the hard disk, this message appears:
    FS info: Restored volume from device RSD with name: SYSUSER

11. Remove the software RSD from the RSD drive.

12. Hold down PANEL ENABLE and press the inactive plane's RESET button.

13. Log on to the inactive plane and select maintenance mode.

14. Re-insert the software RSD in the RSD drive.

15. Enter:
    VOL MOUNT RSD
    Read the volume name of the RSD from the system response on the maintenance terminal.

16. Enter:
    UPDATE APPLY <volume name of RSD> FROM *.<volume name of RSD>

    This message appears:
    Update started

    Update applied successfully.

    OR

    If there are no updates, this message appears:
    ERROR: No update files were found
    The update has not been applied
    Ignore this error and go to the next step.

17. Enter:
    VOL DISM <volume name of RSD>

18. Remove the software RSD from the RSD drive.

10 min

19. If no update files were applied in step 16, proceed to the next step.

    If updates were applied in step 16, hold down PANEL ENABLE and press the inactive plane's RESET button.

20. Go to Enable New Options on page 182 if
    - new options are included with the software
    - this is a new install
    - you are loading software earlier than P02.3.2.

    Otherwise, go to Restore the Database to the Inactive Plane on page 183.

Enable New Options

1. Log on to the inactive plane and select customer data entry mode.
2. Select System Forms from the Forms Group Menu.
3. Select the Dimension and Feature Select form from the System Forms menu. Press the <edit form> softkey.

4. Set all options to match those on the SX-2000 Feature Options Record sheet that was shipped with the software (X = YES).
5. Select the machine configuration FD2 and set the maximum number of cabinets to 12.
6. Press the <generate> softkey, then press the <bottom> softkey.
7. Enter the MITEL options password (from the SX-2000 Feature Options Record sheet received with the software); press the <commit> softkey, then press the <confirm> softkey.

   This message appears:
   Changes committed. ** Reload the system to make new values effective. **
8. Quit the form.

10 min

9. Hold down PANEL ENABLE and press the inactive plane's RESET button.
10. Log on to the inactive plane and enter:
    PARTITION.

11. Go to Restore the Database to the Inactive Plane on page 183.

Restore the Database to the Inactive Plane

1. Insert the datasave RSD in the RSD drive.
2. Log on to the inactive plane and select maintenance mode.
3. Enter:
   VOL MOUNT RSD
   Read the volume name of the RSD from the system response on the maintenance terminal.

If the Data Save was created before Q26.13.1, the RSD will be mounted as "read-only".

RSD 15 min
Tape 60 min

4. If you are loading software P02.3.2 or later, enter:
   DATA RESTORE ∗.<volume name of RSD>

   If you are loading software earlier than P02.3.2, see Data Restore or Data Convert? on page 168 to determine which command to use in this step.

   This message appears:
   Existing Data Save will be deleted from Harddisk. Continue? (Y/N)
   Enter YES

   The following messages appear:
   FS info: Deleting files from catalog ∗.DR.CONFIG
   FS info: Deleting file ∗.DR.CONFIG.TIMESTAMP

   •
   •

   If your software is load P02.3.2 or later, this message appears
   Restore system dimensions from saved data?

   If you have NOT enabled new options

   • Enter YES and proceed to step 5

   If you HAVE enabled new options or entered options manually

   • Enter NO

   These messages appear:
   Currently restoring: SMDR Options Assignment
   Currently restoring: DTE Session Profile Assignment

   •
   •

   Currently restoring: Traffic Options Assignment
   Data Restore Complete

   • If you are not using the Flexible Dimensions option, skip to step 13.

5. Enter the MITEL OPTIONS PASSWORD (from the SX-2000 Feature Options Record sheet received with the software).

   If you have the Flexible Dimensions option, this message may appear:

Custom Dimensions have been detected:
Overwrite the current dimensions? (y/n)
Enter YES

This message appears:
Restart the system to enable the RESTORED dimensions.
DATA SAVE/RESTORE/CONVERT is terminated.

6. Remove the datasave RSD from the RSD drive.
7. Hold down PANEL ENABLE and press the inactive plane's RESET button.
8. Log on to the inactive plane and select maintenance mode.
9. Enter:
   PARTITION
10. Re-insert the datasave RSD in the RSD drive.
11. Enter:
    VOL MOUNT RSD
    Read the volume name of the RSD from the system response on the maintenance terminal.

RSD 15 min
Tape 60 min

12. Enter:
    DATA RESTORE ∗.<volume name of RSD>

    This message appears:
    Delete old log file? (Yes/No)
    Enter YES

    This message appears:
    Existing Data Save will be deleted from Harddisk. Continue? (Y/N)
    Enter YES

    These messages appear:
    FS info: Deleting files from catalog ∗.DR.CONFIG
    FS info: Deleting file ∗.DR.CONFIG.TIMESTAMP

    •
    •

    Restore system dimensions from saved data?
    Enter NO

    These messages appear:

Currently restoring: Form Access Authorization
Currently restoring: Cabinet Assignment

•
•

Currently restoring: Traffic Options Assignment
DATA RESTORE Completed.
Reminder: DBMS SAVE will save the database.

13. Enter:
    VOL DISMOUNT <volume name of RSD>
14. Remove the datasave RSD from the RSD drive.
15. Enter:
    TYPE ∗.DR.LOGFILE_1
    Review the log for data that has not been restored. Do not proceed to the next step until lost data has been re-entered. Lost data may have to be re-entered manually.

10 min

16. Enter:
    DBMS SAVE

    These messages appear:
    DBMS Info: Starting DBMS save
    DBMS Save Info: 10% complete
    DBMS Save Info: 20% complete

    •
    •

    DBMS Info: Save Completed

    If progress messages do not appear and *Save Completed* appears almost immediately, your redundant file system is corrupted (see page 128).
17. If your software is earlier than P02.3.2 AND you have the Property Management System (PMS) option, hold down PANEL ENABLE and press the newly inactive plane's RESET button.

15 min

18. Hold down PANEL ENABLE and press ACTIVITY SWITCH. **Service is lost for 5 to 15 minutes**.
19. From the active plane reload the software into all peripheral processors, DSU cards, DNI line cards, and

attendant consoles.
For software loads P17.6.4 and later, enter:
LOAD CONTROLLERS

For software loads earlier than P17.6.4

- Turn power to SUPERSET 700 consoles off, then on again.
- Load DNI line cards. Enter:
  LOAD <cabinet> <shelf> <slot>

20. Enter:
    DATE yyyy-mmm-dd hh:mm:ss
    For example: DATE 1999-sep-28 14:43:45

21. Proceed to Copy Upgraded Software to the Other Plane and JOIN the System on page 187.

Copy Upgraded Software to the Other Plane and JOIN the System

1. From the active plane, enter:
   VOL SET SYSUSER READ ONLY
2. Insert the software RSD in the RSD drive.

10 min

3. Hold down PANEL ENABLE and press the inactive plane's RESET button.
4. Log on to the inactive plane and select maintenance mode.
5. If you are upgrading from software previous to Q26.13.1, proceed to step 7.; otherwise, proceed to step 6.
6. Enter:
   FILE DIS RED

   This message may appear:
   FS error: File system redundancy could not be disabled.
   Reason: No such volume.
   FS warning: Local disable can be attempted (Note: can lead to FS corruption).
   FS info: Continue? (yes/no)
   Enter YES

OR

This message may appear:
FS info: File system redundancy disabled.
DBMS warning: Unable to read/write state file. Reason: Node does not exist.
DBMS error: Download failed. Reason: Node does not exist.

7. Enter:
   VOL DISMOUNT SYSUSER

   This message appears:
   FS info: Dismounted volume from device DISK with name: SYSUSER

8. Enter:
   VOL FORMAT DISK SYSUSER LOAD $8000 REDUN $10000 SCRATCH

   If this message appears:
   FS info: Continue?
   Enter YES

   When formatting is complete, this message appears:
   FS info: Formatted volume on device DISK with name SYSUSER

20 min

9. Enter:
   VOL RESTORE SYSUSER FROM OTHER

   When the active plane's software has been copied to the inactive plane's hard disk, this message appears:
   FS info: Restored volume from OTHER with name SYSUSER.

10. Log on to the **active** plane and enter:
    VOL SET SYSUSER READ WRITE

11. Remove the software RSD from the RSD drive.

10 min

12. Hold down PANEL ENABLE and press the inactive plane's RESET button.

13. Log on to the inactive plane and enter:
    JOIN

    Wait for this message to appear:
    JOIN COMPLETE.

20 min

14. Log on to the active plane and enter:
    JOIN
    The inactive plane resets.
15. Wait 10 - 20 minutes, then enter FILE STAT REDUN first from the active plane and then from the inactive plane. The system should be IN SYNCH. Once the system is synchronized, the database is downloaded to the inactive plane.
16. Enter DBMS STAT first from the active plane and then from the inactive plane. The initialized flag should be ON.
17. Reprogram your login usernames, passwords, and alarm thresholds.
18. Enter:
    DBM CH ON
    To turn on automatic database checking.
19. If you have the Message Center option:
    - Insert the RSD with your Message Center backup in the RSD drive
    - Enter:
      VOL MOUNT RSD
      Read the volume name of the RSD from the system response on the maintenance terminal.
    - Enter:
      MSGC R ∗.<volume name of RSD>
    - Enter:
      VOL DISMOUNT <volume name of RSD>
20. Enter:
    DBMS CH FULL
    to check for database errors. If errors are found, see Fixing Database Errors on page 128.
21. Enter:
    ACT S S <day> <hh:mm>
    To turn on automatic activity switching.
22. Hold down PANEL ENABLE and press ACTIVITY FREEZE OFF.

23. Perform the procedure Checking a Redundant System on page 158.
24. The software upgrade is complete.

Performing a Software Update on a Redundant System

Copy the Software Updates from RSD to the Inactive Plane

1. Hold down PANEL ENABLE and press ACTIVITY FREEZE ON.
2. Enter PARTITION first from the active plane then from the inactive plane.
3. Enter FIL STAT REDUN first from the active plane then from the inactive plane. The system should be isolated.
4. Insert the software RSD in the RSD drive.
5. From the inactive plane, enter:
   VOL MOUNT RSD
   Read the volume name of the RSD from the system response on the maintenance terminal.
6. If an update already exists on the system enter:
   UPDATE REMOVE

   This message appears:
   The Update has been removed. Please reload the main controller from the Winchester. Also reload the slaves that were changed (if any).
   The reload is optional. Continue to the next step to save time.
7. Enter UPDATE APPLY <volume name of RSD> FROM *.<volume name of RSD>.

   This message appears:
   The update has been successfully applied. Please, reload the main controller from the Winchester. As well, reload the slaves that were changed (if any).
8. Enter:
   VOL DISMOUNT <volume name of RSD>
9. Remove the RSD from the RSD drive.

10. Hold down PANEL ENABLE and press the inactive plane's RESET button.
11. Log on to the inactive plane and select maintenance mode.
12. To check the update version, enter:
    VER

15 min

13. Hold down PANEL ENABLE and press ACTIVITY SWITCH. **Service is lost for 5 to 15 minutes**.
14. Log on to the newly active plane and select maintenance mode.
15. Reload the software into all peripheral processors, DSU cards, DNI line cards, and attendant consoles.

    For software loads P17.6.4 and later, enter:
    LOAD CONTROLLERS

    For software loads earlier than P17.6.4,

    - Turn power to SUPERSET 700 consoles off then on again.
    - Load DNI line cards. Enter:
      LOAD <cabinet> <shelf> <slot>

Copy the Software Updates from RSD to the Other Plane

1. Log on to the inactive plane and select maintenance mode.
2. Insert the software RSD in the RSD drive.
3. From the inactive plane, enter:
   VOL MOUNT RSD
   Read the volume name of the RSD from the system response on the maintenance terminal.
4. Enter UPDATE APPLY <volume name of RSD> FROM ∗.<volume name of RSD>

If this message appears:
Main Controller update applied successfully.
The update has been successfully applied.

- Updates have been applied. Proceed to the next step.

  If this message appears:
  ERROR: No update files were found

- There are no updates on the RSD. Proceed to the next step.

  If this message appears:
  ERROR: An update already exists on the system. UPDATE REMOVE must be executed.

- Enter:
  UPDATE REMOVE

  This message appears:
  The Update has been removed.
  Please, reload the main controller from the Winchester. As well, reload the slaves that were changed (if any).

- Enter:
  UPDATE APPLY <volume name of RSD> FROM *.<volume name of RSD>

  This message appears:
  The update has been successfully applied. Please, reload the main controller from the Winchester. As well, reload the slaves that were changed (if any).

- Proceed to the next step.

5. Enter:
   VOL DISMOUNT <volume name of RSD>
6. Remove the RSD from the RSD drive.
7. Hold down PANEL ENABLE and press the inactive plane's RESET button.
8. Log on to the inactive plane and select maintenance mode.

9. To check the update version, enter:
   VER

JOIN the Planes

1. Log on to the inactive plane and select maintenance mode.
2. Enter:
   JOIN
   Enter YES to the prompt.

   This message appears:
   Join Complete.
3. Log on to the active plane.
4. Enter
   JOIN
   Enter YES to the prompt.

   When the operation is complete, the following message appears:
   System JOIN completed.

20 min

5. Wait 20 minutes, then enter FILE STAT REDUN first from the active plane and then from the inactive plane. The system should be IN SYNCH.
6. Enter DBMS STAT first from the active plane and then from the inactive plane. The initialized flag should be on.
7. Hold down PANEL ENABLE and press ACTIVITY FREEZE OFF.
8. Perform the procedure Checking a Redundant System on page 158.
9. The software update is complete.

Performing an Option Upgrade

Options and MFRDs are Password Protected

Options and MFRDs are password protected. Call the MITEL order desk to purchase a new set of options. You will be given a new MITEL Options Password that will enable the options and MFRDs on the system.

Before You Begin

Read the instructions outlined on page 169.

Enabling Options and MFRDs on Non-redundant Systems

1. Make a DATA SAVE to RSD. See Making a DATA SAVE Backup on page 164.
2. If you have the Message Center option, save message center messages to RSD. See Making a Message Center Backup on page 165.
3. Record your login usernames, passwords, and alarm thresholds.
4. If required, record SUPERCONSOLE 1000 firmkey programming.
5. Log on to the system and select customer data entry mode.
6. Select System Forms from the Forms Group Menu.
7. Select the Dimension and Feature Select form from the System Forms menu. Press the <edit form> softkey.
8. Set all options to match those on the SX-2000 Feature Options Record sheet (X = YES).
9. Verify that the machine configuration is FD1 for a MICRO LIGHT, or 9" redundant system, and that the maximum

number of cabinets is 5. Otherwise select FD2 and a maximum number of 12 cabinets.

10. Press the <generate> softkey followed by the <bottom> softkey.
11. Enter the MITEL options password (from the SX-2000 Feature Options Record sheet received with the software); press the <commit> softkey, then the <confirm> softkey.

    This message appears:
    Changes committed. ** Reload the system to make new values effective. **
12. Quit the form.
13. Select maintenance mode and enter:
    DBMS FLAG OFF
14. Hold down PANEL ENABLE and press the plane A RESET button to enable the options. **Service is lost until you complete the DATA RESTORE.**
15. Log on to the system and select maintenance mode.
16. Insert the datasave RSD in the RSD drive.
17. Enter:
    VOL MOUNT RSD
    Read the volume name of the RSD from the system response on the maintenance terminal.

RSD 15 min
Tape 60 min

18. Enter:
    DATA RESTORE ∗.<volume name of RSD>

    This message appears:
    Delete old log file? (Yes/No)
    Enter YES

    This message appears:
    Existing Data Save will be deleted from Harddisk. Continue? (Y/N)
    Enter YES

    These messages appear:
    FS info: Deleting files from catalog ∗.DR.CONFIG
    FS info: Deleting file ∗.DR.CONFIG.TIMESTAMP

•
•

If your software is load P02.3.2 or later, this message appears:
Restore system dimensions from saved data?
Enter NO

Note: Dimensions have been input previously.

If you have enabled the Flexible Dimensioning option, this message appears:
Custom dimensions have been detected: overwrite the current dimensions?
Enter YES

If you have enabled Hotel options, this message appears:
Restore Hotel/Motel wake-up and room status data? (yes/no)
Enter YES

These messages appear:
Currently restoring: SMDR Options Assignment
Currently restoring: DTE Session Profile Assignment

•
•

Currently restoring: Traffic Options Assignment
Data Restore Complete

19. If you have the Message Center option, restore the Message Center messages. Enter:
    MSGC R ∗.<volume name of RSD>

20. Enter
    VOL DISMOUNT <volume name of RSD>

21. Remove the RSD from the RSD drive.

10 min

22. Enter
    DBMS SAVE

This message appears:
DBMS info: Request has been queued.
DBMS info: Starting DBMS Save

DBMS SAVE info: 10% complete.
DBMS SAVE info: 20% complete.

•
•

DBMS SAVE info: 90% complete.
DBMS info: Save Completed

23. Enter:
    DATE yyyy-mmm-dd hh:mm:ss
    For example: DATE 1999-sep-28 14:43:45

24. Turn on automatic database checking. Enter:
    DBM CH ON

25. Reprogram your login usernames, passwords, and alarm thresholds.

26. If required, re-program the SUPERCONSOLE 1000 firmkeys.

27. Perform the procedure Checking a Non-redundant System on page 157.

28. The options upgrade is complete.

Enabling Options and MFRDs on Redundant Systems

1. Hold down PANEL ENABLE and press ACTIVITY FREEZE ON.

2. Enter PARTITION from the active plane.

   This message appears:
   ENTER <YES> to proceed with PARTITION, <NO> to cancel request.
   Enter YES.

   This message appears:
   System PARTITION completed.

3. Enter PARTITION from the inactive plane.

   This message appears:
   ENTER <YES> to proceed with PARTITION, <NO> to cancel request.
   Enter YES.

   This message appears:
   System PARTITION completed.

4. Make a DATA SAVE to RSD from the inactive plane (see page 164).

5. If you have the Message Center option, save message center messages to RSD (see page 165).

6. Record your login usernames, passwords, and alarm thresholds.

7. If required, record SUPERCONSOLE 1000 firmkey programming.

8 Log on to the inactive plane and select customer data entry mode.

9. Select System Forms from the Forms Group Menu.

10. Select the Dimension and Feature Select form from the System Forms menu. Press the <edit form> softkey.

11. Ensure all options match those on the SX-2000 Feature Options Record sheet (X = YES).

12. Verify that the machine configuration is FD2 and that the maximum number of cabinets is set to 12.

13. Press the <generate> softkey, followed by the <bottom> softkey.

14. Enter the MITEL options password (from the SX-2000 Feature Options Record sheet received with the software; press the <commit> softkey, then the <confirm> softkey.

    This message appears:
    Changes committed. ** Reload the system to make new values effective. **

15. Quit the form.

16. Select maintenance mode and enter:
    DBMS FLAG OFF

17. Hold down PANEL ENABLE and press the inactive plane's RESET button.

18. Log on to the inactive plane and select maintenance mode.

19. Insert the datasave RSD in the RSD drive.

20. Enter:
    VOL MOUNT RSD
    Read the volume name of the RSD from the system response on the maintenance terminal.

RSD 15 min
Tape 60 min

21. Enter
    DATA RESTORE ∗.<volume name of RSD>

    This message appears:
    Delete old log file? (Yes/No)
    Enter YES

    This message appears:
    Existing Data Save will be deleted from Harddisk. Continue? (Y/N)
    Enter YES

    These messages appear:
    FS info: Deleting files from catalog ∗.DR.CONFIG
    FS info: Deleting file ∗.DR.CONFIG.TIMESTAMP

    •
    •

    If your software is load P02.3.2 or later, this message appears:
    Restore system dimensions from saved data?
    Enter NO (options have been input previously)

    If you have enabled Hotel options, this message appears:
    Restore Hotel/Motel wake-up and room status data? (yes/no)

Enter YES

These messages appear:
Currently restoring: SMDR Options Assignment
Currently restoring: DTE Session Profile Assignment

•
•

Currently restoring: Traffic Options Assignment
Data Restore Complete

22. If you have the Message Center option, restore the Message Center messages. Enter
MSGC R ∗.<volume name of RSD>
23. Enter
VOL DISMOUNT <volume name of RSD>
24. Remove the RSD from the RSD drive.

10 min

25. Enter DBMS SAVE

This message appears:
DBMS info: Request has been queued.
DBMS info: Starting DBMS Save

DBMS SAVE info: 10% complete.
DBMS SAVE info: 20% complete.

•
•

DBMS SAVE info: 90% complete.
DBMS info: Save Completed

15 min

26. Hold down PANEL ENABLE and press ACTIVITY SWITCH. **Service is lost for 5 to 15 minutes**.
27. Enter DATE yyyy-mmm-dd hh:mm:ss
For example: DATE 1999-sep-28 14:43:45
28. Turn on automatic database checking. Enter:
DBMS CH ON
29. Reprogram your login usernames, passwords, and alarm thresholds.
30. If required, re-program the SUPERCONSOLE 1000 firmkeys.

31. Enable the new options on the newly inactive plane.
32. Repeat steps 8 to 14.
33. Hold down PANEL ENABLE and press the inactive plane's RESET button.
34. Enter JOIN from the inactive plane.

    This message appears:
    ENTER <YES> if both planes have the same S/W version, <NO> to cancel JOIN.
    Enter YES

    This message appears:
    System JOIN completed.
35. Enter JOIN from the active plane.

    This message appears:
    ENTER <YES> if both planes have the same S/W version, <NO> to cancel JOIN.
    Enter YES

    This message appears:
    System JOIN completed.
36. Perform the procedure Checking a Redundant System on page 158.
37. Hold down PANEL ENABLE and press ACTIVITY FREEZE OFF.
38. Make a new DATA SAVE backup (see page 164).

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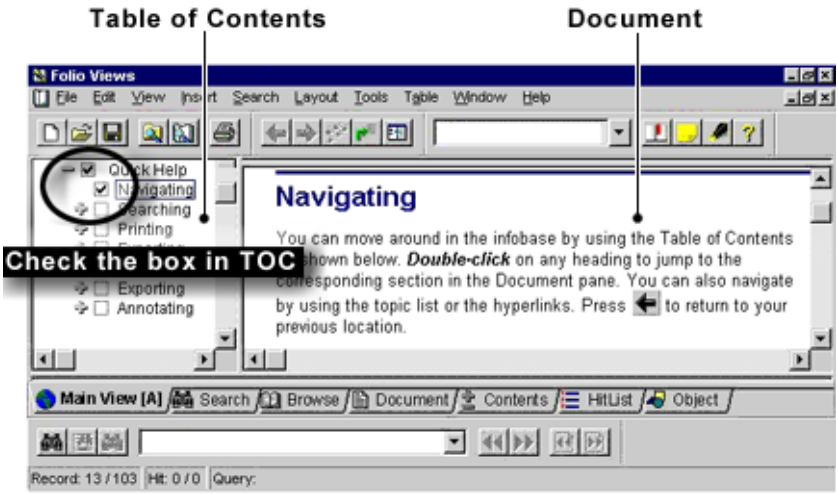

Advanced Graphical User Interface Example

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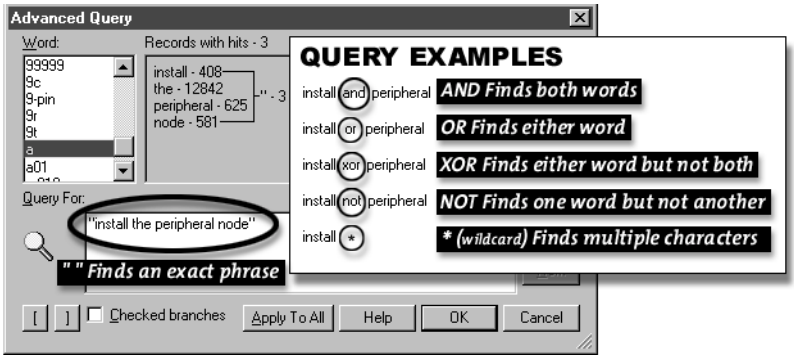

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