



MARCH NETWORKS™

3200

Integrated
Communications
Platform

Technician's Handbook

Release 2.3

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March Networks 3200 Integrated Communications Platform
Technician's Handbook

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Chapter 1

About This Handbook

Technician's Handbook

Purpose of This Handbook

This handbook provides

- installation instructions
- programming aids
- routine maintenance procedures
- troubleshooting and repair information
- quick reference to maintenance commands.

Who This Handbook is Written for

This handbook is for a certified technician.

Symbols Used in This Handbook



A yield symbol with an exclamation mark indicates a situation which, if you don't avoid, could result in damage to the equipment.



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



A pointer symbol identifies an important cross reference.

Important Safety Instructions



Failure to follow all instructions may result in improper equipment operation and/or risk of electrical shock. See the MITEL[®] Safety Instructions for general safety information. This document is packaged with each system and the information is included on the documentation CD-ROM disk.

Guidelines for Handling Fiber Optic Cable

- Never touch the tip of a fiber connector. Cleanliness of the connector ferrule (tip) is important for error free transmission.
- Always place the dust caps onto the connectors immediately after disconnecting.
- You can clean the ferrule tips on the connectors with ethyl-alcohol.
- Fiber optic cables are often more easily installed and pulled than copper because of their light weight and flexibility. However, take care not to exceed the minimum bend radius or maximum tensile strength.
- Procedures for the repairing, splicing, or assembling fiber optic cables are available from fiber component manufacturers (many offer training courses).



Fiber optic sources emit infrared light that is invisible to the human eye. Never look directly into a source or into the end of a fiber energized by a source because it can damage the retina.

When working with raw fiber optic cable, be careful of the fiber ends or slivers that can puncture the skin or cause irritation.

Where You Can Find More Information

See the Technical Documentation CD-ROM disk. It is shipped with the system.

Mitel Online

Through Mitel On-line you have access to the latest Technical Documentation updates, Technical Service Bulletins about Mitel product enhancements, 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 on-line.

Access to Mitel Online is free. Go to our web site at www.mitel.com.

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 FCI from Mitel On-line.

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 On-line.

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 known bug list from Mitel Online.

Chapter 2

Installation

Installing the March Networks™ 3200 ICP system



Follow standard static prevention procedures. Mitel recommends the installation of an Uninterruptible Power Supply (from the Microsoft® NT 4.0 Hardware Compatibility List).

To complete the installation, you must perform the following tasks. Refer to the Technical Documentation CD-ROM disk or Mitel Online at www.mitel.com for complete information.

1. Review LAN and WAN guidelines and plan the network (refer to CD-ROM or web documents for details).
2. Note usernames, passwords, IP addresses (page 10).
3. Install the server (page 12).
4. Install the peripheral node (page 26).
5. Power up the system (page 115).
6. Enable the optional feature packages.
7. Configure OPS Manager (page 69).
8. Program the PBX name (System Options Assignment).
9. Complete preliminary programming
 - Cabinet Assignment Form (page 73)
 - System Configuration Form
 - reload PBX software.
10. Complete system programming (refer to CD-ROM or web documents for details).
11. Make backups (page 148).

Worksheets

Default Username and Password

Application	Username	Password	Domain
Windows™ NT Server	administrator	rmx250	
OPS Manager	mnms	mx2000	
Ipera™ 2000 PBX login	installer	sx2000	

Username and Password

Application	Username	Password	Domain
Windows NT Server			
Client workstation			
OPS Manager			
Ipera 2000 PBX login			

Windows NT Server Checklist Example

Server Host Name: **ntpbxpc** Domain Name: **Kanata**

OPS Manager URL: **http://ntpbxpc/ops/mitel/topa.asp**

TCP/IP Configuration for 3200 ICP System Example

Item	Primary IP Address	Secondary IP Address
IP Address	134.199.56.90	
Subnet Mask	255.255.255.0	
Gateway	134.199.56.200	
DNS Server	134.199.56.150	
WINS Server	134.199.56.150	

E2T Card TCP/IP Configuration Example

		RTC	E2T
E2T to register with NT operating system	IP Address	192.168.19.180	192.168.19.181
	Subnet Mask	255.255.255.000	255.255.255.000
E2T through the Adapter Configurator to connect to the LAN	IP Address	134.199.56.199	134.199.56.198
	Subnet Mask	255.255.255.000	255.255.255.000
	Default Gateway	134.199.56.200	

Installation

Windows NT Server Checklist Worksheet

Server Host Name:_____ Domain Name:_____

OPS Manager URL:_____

TCP/IP Configuration for March Networks 3200 ICP Worksheet

Item	Primary IP Address	Secondary IP Address
IP Address		
Subnet Mask		
Gateway		
DNS Server		
WINS Server		

E2T Card TCP/IP Configuration Worksheet

		RTC	E2T
E2T to register with NT operating system	IP Address		
	Subnet Mask		
E2T through the Adapter Configurator to connect to the LAN	IP Address		
	Subnet Mask		
	Default Gateway		

DHCP Server (Scope Options)

Option	Start Address	End Address	Subnet Mask
IP Address Scope			
Lease Duration			
	Data Type	Identifier	Value
Router (Default Gateway)	IP Address	003	
IP Phone TFTP Server IP Address	IP Address	128	
Ipera 2000 RTC IP Address	IP Address	129	
Mitel IP Phone DHCP Server	String	130	MITEL IP PHONE

Install the Server

1. Unpack and position the server; ensure that all cards are firmly seated.
2. Check the card layout
3. Connect server components
4. Change the NIC IP address (factory-set to 192.168.19.2) (page 13)
5. Change the E2T Card IP addresses if required (page 17) (factory-set to 192.168.19.180 and 192.168.19.181)
6. Configure the DHCP server (page 20)
7. Connect the NIC to the LAN (page 13)
8. Connect the server and peripheral node to the MDF (page 25)
9. Connect the digital links (page 25)
10. Connect the fiber cable to the MFC (page 26).

Check the Card Layout

- The MITEL hardware consists of a Tone and Conference DSP Card, MFC card, Dual T1 or Dual E1 card (a second dual link card is optional), a Serial Port Expander (1500SR and 1400/1400SR only), and two E2T cards (for SUPERSET™ and March Networks IP telephones). See page 29 for server 1500SR, page 31 for the Applications Server 1400/1400SR or page 34 for server 800 configuration.

Connect Server Components

1. Connect the mouse, keyboard and monitor.
You will need a monitor to set up the server.
2. Install power and ground to the system (including UPS).
3. Connect the security access module (SAM) to the server parallel port. The SAM provides the system with an identification (ID) code that enables features and options.



If the SAM is not installed, the system will shut down after 10 days and you will not be able to upgrade software. If you remove the SAM, the system will generate error logs.

Change the NIC IP Address

To change the NIC IP address

1. On the **Start** menu, point to **Settings**, and click **Control Panel**.
2. Double click the **Network** icon, then click the **Protocols** tab.
3. Highlight **TCP/IP Protocol** and click **Properties**.
4. Change the factory-set IP Address to one provided by your LAN authority, and then click **Apply**.

5. Reboot the server.

Installing the E2T Drivers

To install the E2T drivers

1. On the **Start** menu, point to **Settings**, and then click **Control Panel**.
Install Adapter Software once for each card.
2. Double-click the **Network** icon.
3. From the Network window, click the **Adapters** tab, then click **Add**.

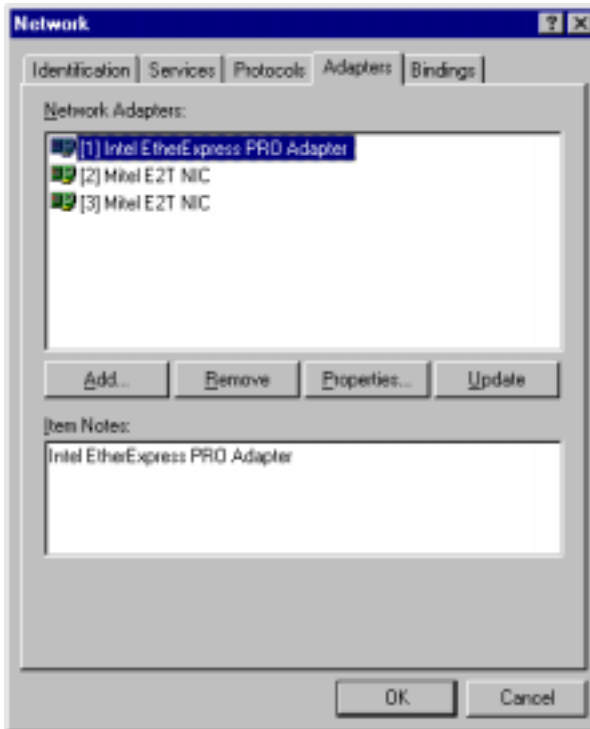


Figure 1: Network window -- Adapters



If the E2T NIC drivers are already installed, they must be removed before proceeding. Select the Mitel E2T NIC and click **Remove**. Reboot the server and begin the driver installation.

4. In the Select Network Adapter window, click **Have Disk**.
5. Insert the Mitel driver installation diskette and click **OK**.
6. In the Select OEM Option and Mitel E2T NIC Card Setup windows, click **OK**.
7. Click **Add** to install the second driver. A dialog box will open to inform you that a driver of this type is already installed. Click **OK** to continue. A window opens instructing you to configure the card after the reboot. Click **OK**.
8. Click **Close**. The **Microsoft TCP/IP Properties** window opens.

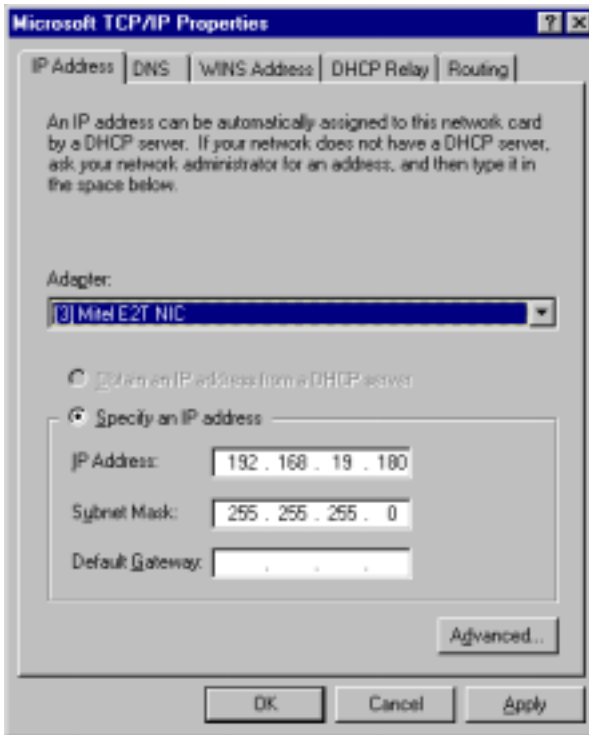


Figure 2: Microsoft TCP/IP Properties window

9. Select each E2T card and enter invalid IP Addresses.



The E2T cards need IP addresses to register with the NT operating system (assigned under the Adapters tab of NT Network). The NT E2T/RTC IP addresses exist only internally to the server and must not appear on the LAN connections. We recommend that the addresses not be in the range within the server and IP Phone subnets, not accessible within the corporate or enterprise network, and trapped within the LAN/WAN connections, e.g. at the NAT or firewall. The second, LAN IP (or the actual IP) addresses for the E2T cards must be assigned through the Mitel Adapter Configurator. These addresses are used to connect to the LAN.

10. Click **Apply**, and then click **OK**. Remove the diskette.
11. Reboot the server and configure the E2T card.

Configuring the E2T Cards

To configure the E2T cards

1. In Windows NT, click **Start**, point to **Programs**, then **Mitel Utilities**, and click **Mitel Adapter Configurator**.

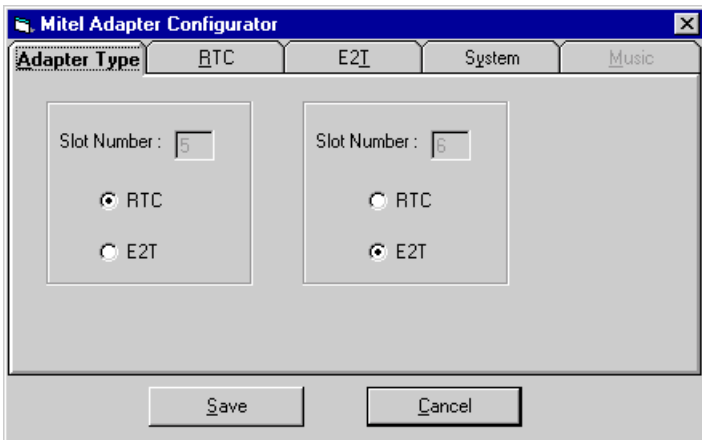
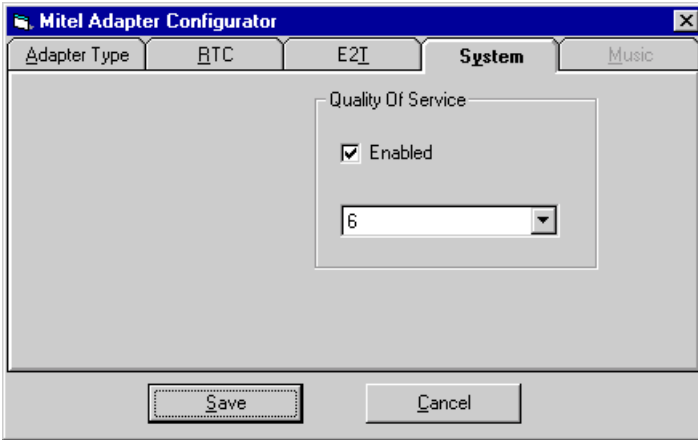


Figure 3: Mitel Adapter Configurator -- Adapter Type tab

2. On the **System** tab, ensure that **Quality of Service** is enabled and set at **6**. Click **Save**.



IP0144

Figure 4: Mitel Adapter Configurator -- System tab

3. On the **RTC** tab for the first card, assigned the Real Time Complex function, enter the static IP Address, the Subnet Mask, and the Default Gateway; confirm Full Duplex. Click **Save** and then **Reset Card**. Click **Yes** and **OK**.

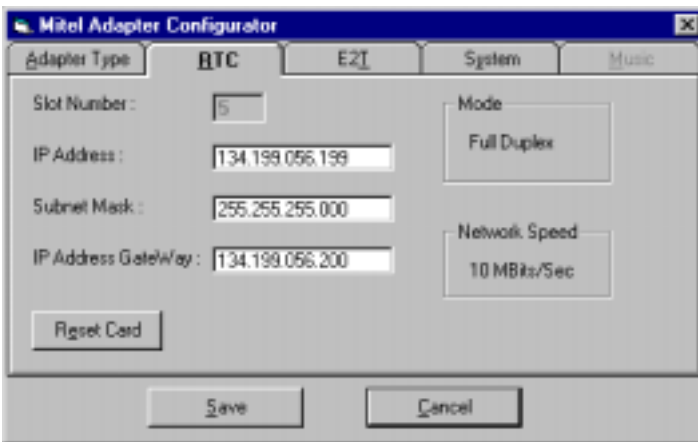


Figure 5: Mitel Adapter Configurator -- RTC tab

4. On the **E2T** tab for the second card, configured with the Ethernet to TDM function, enter the static IP Address, the

Subnet Mask, and the Default Gateway; confirm Full Duplex. Click **Save**, then **Reset Card**. Click **Yes** and **OK**.

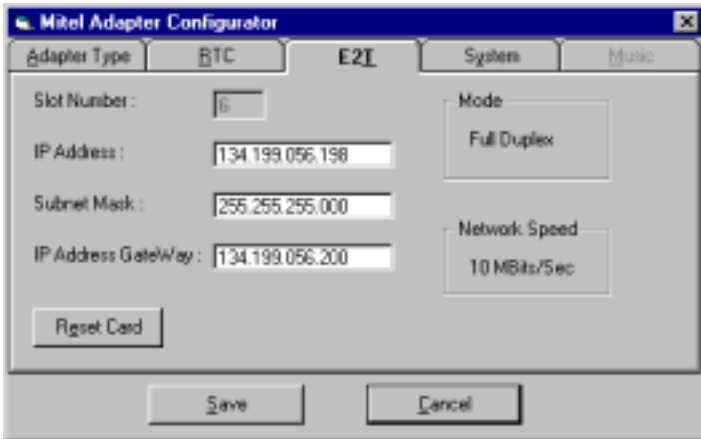


Figure 6: Mitel Adapter Configurator -- E2T tab

5. Click **Cancel** to close the window.



The RTC and E2T ports on the Layer 2 Switch must be set at 10 Mbps and Full Duplex mode. Do not configure the switch to Auto Configure. The port for the NIC is set to Auto Configure.



If the cards are moved to different slots the Configurator will have to be invoked to set the correct configuration parameters.



After the configuration has been received from the Host via PCI the E2T card completes its boot process by configuring the IP address, starting the Ethernet Driver, and downloading the remaining software.

Configuring the DHCP server

A range of IP addresses is required from your LAN authority. You will need an IP address for each IP telephone.

Note: With the 3800 Ericsson Mobile Advantage Gateway system, 3800 Ericsson Wireless Assistant Gateway system and 3200 ICP system with Ericsson Wireless Assistant you must disable the DHCP binding from the Adaptec 4-port NIC card.

To configure the DHCP server

1. On the **Start** menu, point to **Administrative Tools**, and click **DHCP Manager**.
2. Double-click **Local Machine**. Click **Create** on the **Scope** menu.
3. In the Create Scope (Local) window, enter the Start IP Address, the End IP Address, and the Subnet Mask.
4. Select a lease duration of **Unlimited** or **Limited** to your choice of time period. Click **OK**. Click **Yes**.
We recommend limited leasing, set to 30 minutes, if you anticipate movement of IP phones to other LAN segments.
5. Select the IP address of the local machine.
6. On the **DHCP Options** menu, click **Defaults**.
7. Click **New** to launch the Add Option Type window.
8. Type the Name: **IP Phone TFTP Server IP Address**.
9. Select **IP Address** from the **Data Type** drop-down list and enter Identifier **128**.
10. Click **OK** to complete the new option and return to the Default Values window.
11. Select **128** in the **Option Name** field.

12. Enter the server IP address. Click **OK**.
13. On the **DHCP Options** menu, click **Defaults**.
14. Click **New** to launch the Add Option Type window.
15. Type the Name: **IPERA 2000 RTC IP Address**.
16. Select **IP Address** from the **Data Type** drop-down list and enter Identifier **129**.
17. Click **OK** to complete the new option and return to the **Default Values** window.
18. Select **129** in the **Option Name** field.
19. Enter the IP address of the RTC card. Click **OK**.
20. On the **DHCP Options** menu, click **Defaults**.
21. Click **New** to launch the Add Option Type window.
22. Type the Name: **Mitel IP Phone DHCP Server**.
23. Select **String** from the **Data Type** drop-down list and enter Identifier **130**.
24. Click **OK** to complete the new option and return to the Default Values window.
25. Select **130** in the **Option Name** field.
26. Enter the String Value (upper case): **MITEL IP PHONE**. Click **OK**.
27. On the **DHCP Options** menu, click **Defaults**.
28. Click **New** to launch the Add Option Type window.
29. Type the Name: **VLAN ID**.
30. Select **Long** from the **Data Type** drop-down list and enter Identifier **132**.

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31. Click **OK** to complete the new option and return to the Default Values window.
32. Select **132** in the **Option Name** field.
33. Enter the hexadecimal Long Value: **0x2**. Click **OK**.
34. On the **DHCP Options** menu, click **Defaults**.
35. Click **New** to launch the Add Option Type window.
36. Type the Name: **Priority**.
37. Select **Long** from the **Data Type** drop-down list and enter Identifier **133**.
38. Click **OK** to complete the new option and return to the Default Values window.
39. Select **133** in the **Option Name** field.
40. Enter the hexadecimal Long Value: **0x6**.
Note: Valid values include 0x0 to 0x6; 0x6 is recommended.
41. Click **OK** twice.
42. On the **DHCP Options** menu click **Scope**.
43. Select **003 Router** in Unused Options and click **Add**.
44. Click **Value** and then **Edit Array**.
45. Type the IP Address of the default gateway. Click **Add**.
Click **OK**.
46. Select **128 IP Phone TFTP Server IP Address** in Unused Options and click **Add**.
47. Select **129 IPERA 2000 RTC IP Address** in Unused Options and click **Add**.
48. Select **130 Mitel IP Phone DHCP Server** in Unused Options and click **Add**.

49. Select **132 VLAN ID** in Unused Options and click **Add**.
50. Select **133 Priority** in Unused Options and click **Add**.
51. Click **Local Machine**.
52. Click **Properties** on the **Server** menu.
53. Set **Conflict Detection** to **2** attempts.
Use Conflict Detection to specify the number of times the DHCP server should test an IP address before offering the DHCP lease. Default is 0 attempts; we recommend 2.

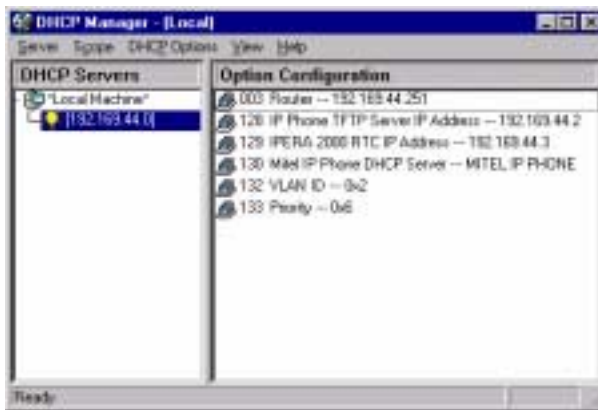


Figure 7: DHCP Manager - (Local) Configuration example

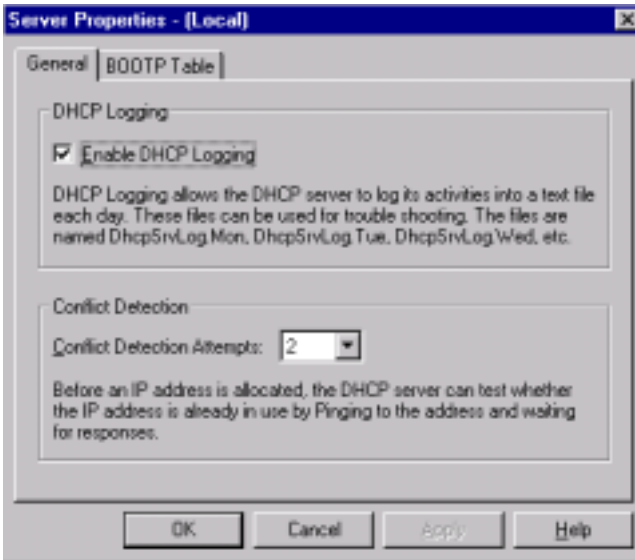


Figure 8: DHCP Server Properties

Disabling the DHCP bindings from the 4-port NIC card

For the 3800 Ericsson Mobile Advantage Gateway system, 3800 Ericsson Wireless Assistant Gateway system and 3200 ICP system with Ericsson Wireless Assistant you must disable the DHCP binding from the Adaptec 4-port NIC card.

To disable the DHCP bindings from the 4 port NIC card:

1. Click Start > Settings > Control Panel.
2. Double-click on the Network icon.
3. Click the Bindings tab.
4. Click on the plus (+) next to Microsoft DHCP Server to open it.
5. Click on the plus (+) next to TCP/IP Protocol to open it.

6. Select the first occurrence of Adaptec DuraLAN NIC and click the Disable button.
7. Repeat step 6. for the remaining three occurrences of Adaptec DuraLAN NIC.
8. Click Ok.
9. Click Yes in the Network Settings Change window for the new settings to take effect.

Connect the Server NIC to the LAN

1. Connect the Ethernet network connection (NIC) in the server rear panel to the TCP/IP Local Area Network by using an RJ-45 connector.
2. Connect the E2T cards to the TCP/IP LAN by using an RJ-45 connector.

Connect the Server and Peripheral Node to the MDF

To connect the server and peripheral node to the MDF

1. Cable the Dual T1/E1 to the Main Distribution Frame.
2. Cable the trunks and lines in the peripheral cabinet to the MDF.

Connect the Digital Links

Each Dual T1 or Dual E1 card can support up to two digital links. If your system requires more than two links, you must install an additional card.

To connect the digital links to the Dual T1 or Dual E1 card:

1. If you are using shielded cable, ground the cable shield at the demarcation point.
2. Plug the cable into the demarcation point.

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3. Plug the digital link cable(s) into the modular jack(s) on the dual T1/E1 card.

If your system uses only one digital link, plug the digital link cable into the jack labeled LINE 0.

Connect the Fiber Cable to the MFC

The fiber optic cable connects the main fiber controller (MFC) card in the server to the fiber interface module (FIM) in the peripheral node.



Fiber optic sources emit infrared light. Never look directly into a source or into the end of a fiber energized by a source because it can damage the retina (see page 4).

To connect the fiber optic cable to the MFC card:

1. Locate the MFC card on the server rear panel.
2. Remove the plastic dust caps from the fiber optic cable and the connector ferrules on the MFC faceplate.
3. Plug the fiber connectors into the connectors on the MFC faceplate. The fiber connectors have a small key that must be aligned with a slot on the MFC connectors. Lock each connector into position by pushing the metal collar forward and clipping it onto the MFC connector.

Install a Peripheral Node

Unpack, Position, and Ground the Peripheral Node

To unpack, position, and ground the node

1. Unpack the peripheral node. Check the contents against the packing list.
2. Inspect the node and attached equipment for damage.



Power must not be applied to the peripheral node until you have installed the ground cable.

3. Connect an external ground to the ground terminal on the rear panel of the peripheral cabinet. Refer to the Safety Instructions that are packaged with each system.

Check the Card Layout

A peripheral cabinet is shipped with the peripheral switch controller (PSC) card and fiber interface module (FIM) installed. If these cards were not shipped in the cabinet, install them. You must install and cable the FIM before you install the peripheral switch controller card and power converter. See the figure on page 36 for card layout.

Connect the Fiber Cable to the Node

The fiber optic cable connects the main fiber controller (MFC) card in the server to the fiber interface module (FIM) in the peripheral node.



Fiber optic sources emit infrared light that is invisible to the human eye. Never look directly into a source or into the end of a fiber energized by a source because it can damage the retina (see page 4).

To connect the fiber optic cable to the FIM

1. Route the fiber optic cable through the cable port at the rear of the peripheral cabinet into the cabinet. Extend the fiber cable approximately 30 cm (1 ft) beyond the front of the cabinet.
2. Install a short piece of nylon spiral wrap over the cable at the point where the cable exits the rear of the cabinet.
3. Close the sliding cable port door. Ensure that the door closes on the nylon spiral-wrapped section of fiber cable.
4. Remove the plastic dust caps from the fiber optic cable and the connector ferrules on the FIM faceplate.

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5. Plug the fiber connectors into the connectors on the FIM faceplate. The fiber connectors have a small key that must be aligned with a slot on the FIM connectors. Lock each connector into position by pushing the metal collar forward and clipping it onto the FIM connector.

Cable the Node to the MDF

- Cable the lines and trunks from the peripheral node to the main distribution frame (MDF) by using the Peripheral Interface Cabling Tables.

Cabinet Card Layouts

1500SR Hardware Configuration

SERVER 1500 REAR PANEL

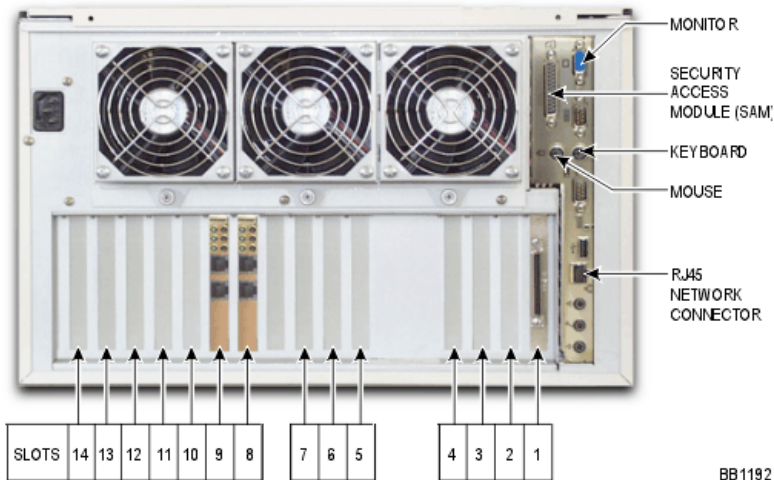


Figure 9: Server 1500SR Card Layout Example

Installation

Table 1: 1500SR Card positions/IRQs

Rear Slot	Riser Label	Used by	IRQ	MVIP connected	ISA /PCI
1	J8	SCSI RAID Controller	System*1		PCI (Main)
2	J9	Serial Port Expander	System*1		PCI (Main)
3	J10	Adaptec 4-port NIC *3	System*1		PCI (Main)
4	J11	IP Trunk Card *4	System*1		PCI (Main)
		Gap in Rear Slots			
5	J12	E2T card (RTC)	System*1	Yes *2	PCI (Secondary)
6	J13	E2T card	System*1	Yes	PCI (Secondary)
7	J14	Mitel Tone & Conference DSP	System*1	Yes *2	PCI (Secondary)
		Not available - Blank			
8	J1	Main Fiber Controller	10	Yes *2	ISA
9	J2	Dual T1/E1 Card #1	14	Yes	ISA
10	J3	Dual T1/E1 Card #2	14	Yes	ISA
11	J4	Spare			ISA
12	J5	Spare			ISA
13	J6	Spare			ISA
14	J7	Spare			ISA
Note *1: System means that the IRQ is assigned by the system BIOS.					
Note *2: Install the MVIP terminators on the E2T card closest to the end of the cable, on the MFC card, and on the Tone & Conference card. The MVIP bus terminator jumpers should be removed from both of the Dual T1/E1 cards.					
Note *3: The Adaptec 4-port NIC applies to the 3800 Ericsson Mobile Advantage Gateway system and 3200 ICP system with Ericsson Wireless Assistant.					
Note *4: The IP Trunk Card applies to the IP Trunking option only.					

Base Memory Address	I/O Address	Usage
System	System	Serial Port Expander
System	System	Mitel DSP
System	System	E2T Cards
System	System	Adaptec 4-port NIC or IP Trunk Card
E0000	2300	Mitel Dual T1 #2

Base Memory Address	I/O Address	Usage
E0000	0300	Mitel Dual T1 #1
D8000	A300	Mitel MFC

1400/1400SR Hardware Configuration

Installation



Figure 10: 1400/1400SR Card Layout Example

Table 2: 1400/1400SR Card positions/IRQs

Rear Slot	Riser Label	Used by	IRQ	MVIP connected	ISA /PCI
1	PPCI4	SCSI RAID Controller	System*1		PCI (Main)
2	PPCI3	Serial Port Expander	System*1		PCI (Main)
3	PPCI2	Adaptec 4-port NIC *4 (or Mitel Tone & Conference DSP *5)	System*1	*6 (*3)	PCI (Main)
4	SPCI4	Mitel Tone & Conference DSP (or IP Trunk Card *5)	System	Yes *3	PCI (Secondary)
5	SPCI3	E2T card (RTC)	System*1	Yes *3	PCI (Secondary)
6	SPCI2	E2T card	System*1	Yes	PCI (Secondary)
7	SPCI1	Not available			PCI (Secondary)
8	ISA1/ PCIA	Single Board Controller			ISA
9	ISA2	Dual T1/E1 Card #1	11	Yes	ISA
10	ISA3	Dual T1/E1 Card #2 (optional)	11	Yes	ISA
11	ISA4/ PCIB	Main Fiber Controller	10	Yes *3	ISA
12	ISA5	Spare			ISA
13	ISA6	Spare			ISA
14	ISA7	Spare			ISA
Note *1: System means that the IRQ is assigned by the system BIOS.					
Note *2: Verify and configure ISA card resources as necessary.					
Note *3: Install the MVIP terminators on the E2T card closest to the end of the cable, on the MFC card, and on the Tone & Conference card. The MVIP bus terminator jumpers should be removed from both of the Dual T1/E1 cards.					
Note *4: The Adaptec 4-port NIC applies to the 3800 Ericsson Mobile Advantage Gateway system.					
Note *5: The IP Trunk Card applies to the IP Trunking option only. With the IP Trunking option, the IP Trunk Card must be installed in slot 4 and the Mitel Tone & Conference DSP Card must be installed in Slot 3. If you system does not have the IP Trunking Option, the Mitel Tone & Conference Card must be installed in Slot 4.					
Note *6: The Adaptec 4-port NIC is not MVIP connected.					

Base Memory Address	I/O Address	Usage
System	System	Serial Port Expander
System	System	Mitel DSP
System	System	E2T Cards
System	System	Adaptec 4-port NIC or IP Trunk Card
E0000	2300	Mitel Dual T1 #2
E0000	0300	Mitel Dual T1 #1
D8000	A300	Mitel MFC

Installation



800 Hardware Configuration

SERVER 800 REAR PANEL

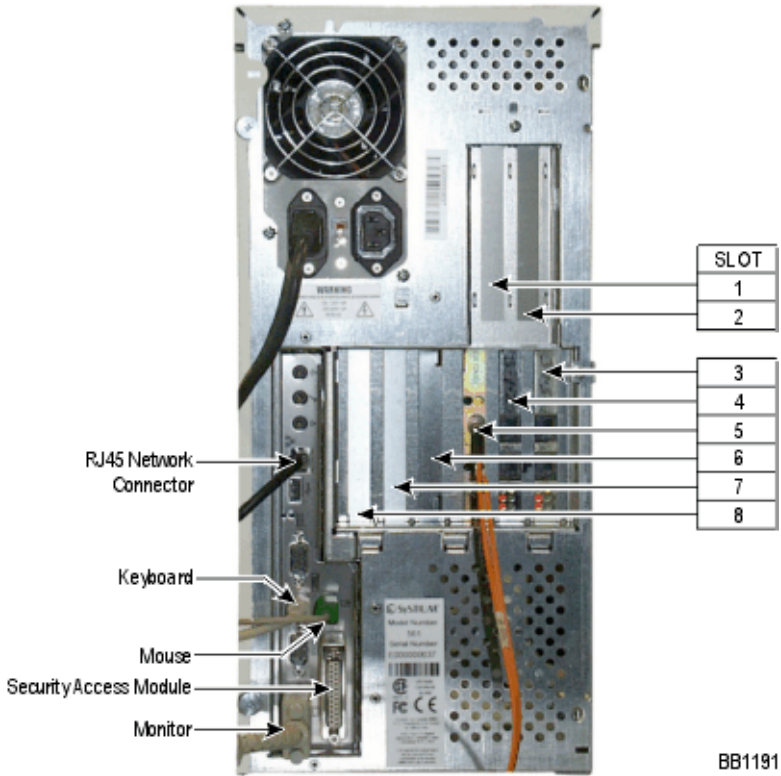


Figure 11: 800 Card Layout Example

Table 3: 800 Card positions/IRQs

Rear Slot	Riser Label	Used by	IRQ	MVIP connected	ISA /PCI
1	J9	E2T card (RTC)	System*1	Yes*2	PCI
2	J8	E2T card (or AudioCodes Card *3) (or Adaptec 4-port NIC *4)	System*1	Yes	PCI
3	J6	Dual T1/E1 Card #2	11	Yes	ISA
4	J5	Dual T1/E1 Card #1	11	Yes	ISA
5	J4	Main Fiber Controller	10	Yes*2	ISA
6	J7	Mitel Tone & Conference DSP	System*1	Yes*2	PCI
	J3	Unavailable (shared with J7)			ISA
7	J2	Spare	5		ISA
8	J1	Spare	5		ISA

Note *1: System means that the PCI card IRQ is assigned by the system BIOS.

Note *2: Install the MVIP terminators on the E2T card closest to the end of the cable, on the MFC card, and on the Tone & Conference card. The MVIP bus terminator jumpers should be removed from both of the Dual T1/E1 cards.

Note *3: This AudioCodes card applies to the 3800 Wireless Applications Gateway system only.

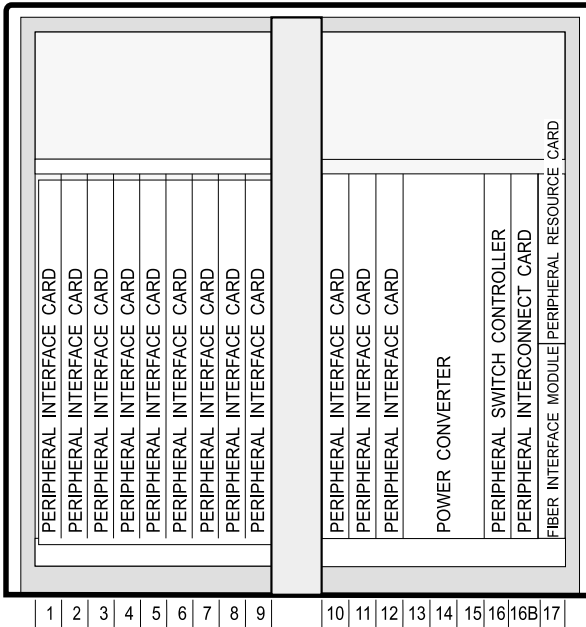
Note *4: The Adaptec 4-port NIC applies to the 3800 Ericsson Wireless Assistant Gateway system. It may also replace the E2T card slot 1 instead of slot 2.

Base Memory Address	I/O Address	Usage
System	System	Mitel DSP
System	System	E2T Cards
System	System	Adaptec 4-port NIC or Audiocodes Card
E0000	2300	Mitel Dual T1 #2
E0000	0300	Mitel Dual T1 #1
D8000	A300	Mitel MFC

Installation

Peripheral Cabinet Card Layout

PERIPHERAL CABINET CARD LAYOUT



BB0584

Figure 12: Peripheral Cabinet Card Layout

The cabinet 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).

Types of Cards

Server card	Devices supported	Important details
Main fiber control	Interfaces server with peripheral node.	Maximum Permitted Loss in Fiber: 6 dB, using 62.5/125 μ m 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).
Dual T1 trunk card	Provides either one or two digital trunk links (second link can be enabled or disabled through software).	The Dual T1 card supports the following protocols: <ul style="list-style-type: none"> • T1/D4, Extended Super Frame • ISDN, • QSIG, or • DPNSS.
Dual E1 trunk card	Provides either one or two digital trunk links (second link can be enabled or disabled through software).	The Dual E1 card supports the following protocols: <ul style="list-style-type: none"> • Euro ISDN, • QSIG, or • DPNSS/DASS.
Tone and conference card	A Digital Signal Processor (DSP) that generates tones and conferences.	DSP provides these functions: <ul style="list-style-type: none"> • 32 dual frequency tones • 12 call progress tone detection • maximum 5 conferences with a maximum of 5 conferees per conference up to a total of 24 conferees
E2T card (Ethernet to TDM)	IP telephone	The first E2T card is configured for RTC functionality and the second card is configured for E2T functionality. Both cards are assigned static, unique IP addresses.
IP Trunk Card	Provides channels for VoIP.	Must be installed in slot 3 1 3.

(Page 1 of 2)

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Server card	Devices supported	Important details
Adaptec 4-port NIC	Provides 4 10/100 Mbps fast Ethernet interfaces.	Supports 4 separate segments of the 3800 Ericsson Mobile Advan- tage Gateway system/Ericsson Wireless Assistant.
(Page 2 of 2)		

Peripheral interface card	Devices supported	Circuits	Maximum loop resistance/loop lengths
AC15 Trunk Card	AC15 trunk	8	not applicable
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	SUPERSEST and March Networks digital telephones; Datasets; Attendant Consoles DNIC Music On Hold / Pager 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 key-pads 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
Fiber Interface Module	Interfaces MFC card in server with peripheral node.	16	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

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Peripheral interface card	Devices supported	Circuits	Maximum loop resistance/loop lengths
On-Premises Line Card	DTMF (2500) telephone sets Rotary (500) telephone sets Night bells	16	External loop resistance: 600 ohms External wire resistance: 400 ohms External loop length: 24 AWG (25 IWG) - 1000 m (3300 ft.) 22 AWG (22 IWG) - 1500 (4875 ft.)
Off-Premises Line Card	DTMF (2500) telephone sets Rotary (500) telephone sets	8	External loop resistance: 1800 ohms External wire resistance: 1600 ohms External loop length: 26 AWG (27 IWG) - 5853 m (19022 ft.) 22 AWG (22 IWG) - 15240 m (49530 ft.)
COV Line Card	Voicemail	12	Loop resistance: 280 ohms Loop length: 26 AWG (27 IWG) - 1000 m (3300 ft.) 22 AWG (22 IWG) - 2000 m (6000 ft.)
			(Page 2 of 2)

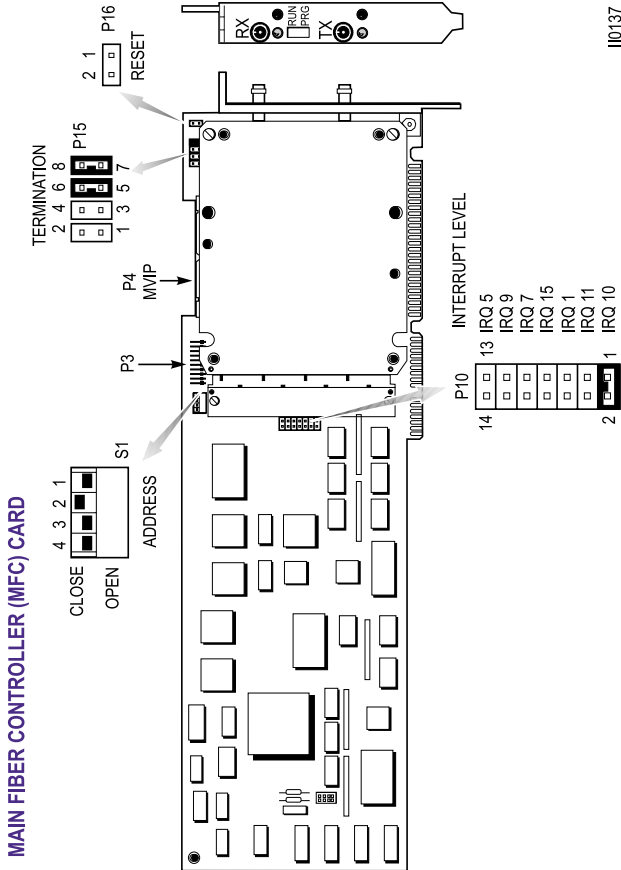
Card Settings



See page 29 for a summary of the default card settings for the server.

Main Fiber Control Card

The MFC has jumpers and DIP switches that let you to set the IRQ level and MVIP clock termination. Figure 13 shows the location of the jumpers and DIP switches, and default settings.



Installation

Table 4: MFC Default Settings

Server	Slot	IRQ Level	Base Address	I/O Address
1500SR	J 1	10	D8000	A300
1400/1400SR	ISA4/ PCIB	10	D8000	A300
800	J 4	10	D8000	A300

Dual T1 or Dual E1 Card

The Dual T1 and Dual E1 cards provide digital trunking for the PBX. The Dual T1 card supports T1/D4 (Digital E&M, CO and DID trunks), ISDN, T1 DPNSS, Extended Super Frame, and Q-Sig protocols; the Dual E1 card supports DPNSS/DASS, Euro ISDN, and Q-Sig protocols.

Dual T1/E1 DIP Switch and Default Card Settings											
Card	1500 Slot	1400 Slot	800 Slot	Logical PLID	DIP Switch S1	I/O Address	1500 IRQ	1400 IRQ	800 IRQ	Base Address	
# 1	J 2	ISA2	J 5	3 1 2	All switches closed	0300	14	11	11	E0000	
# 2	J 3	ISA3	J 6	3 1 3	Only switch 3 open	2300	14	11	11	E0000	

Setting the I/O Address

In the System Configuration Assignment Form (SY C), program Dual T1 cards as DS1 Formatter cards; program Dual E1 cards as CEPT Formatter cards. Set the DIP switches based on the logical PLID that each card is assigned to in the SY C Form.

Setting the Dual T1/E1 Card Interrupt Termination

All MVIP terminators are removed and the MVIP signals are terminated on the Tone and Conference card. The T1/E1 card is the clock source for the MVIP bus. The Link Descriptor Assignment form and the Digital Link Assignment form must be programmed and assigned before the Peripheral Switch Controller will load.

- If only one Dual T1 or E1 card is installed, the IRQ termination jumper, on block P16 is installed on the card across pins 6 and 7.
- If two Dual T1 or E1 cards are installed, the IRQ termination jumper on block P16 is only installed on the second card across pins 6 and 7.

Setting the Dual E1/T1Card IRQ

When a card is shipped independently from the factory, the IRQ setting must be changed from IRQ 7 to IRQ 11 or 14. To change the card to IRQ 14 for the 1500SR server, move the termination jumper from pins 2 and 11 on P17 to pins 5 and 8 on P16. To change the card to IRQ 11 for the 1400/1400SR or 800, move the termination jumper from pins 2 and 11 on P17 to pins 2 and 11 on P16.

Setting the Dual E1 Card Impedance

By default, the impedance is set to 75 ohms for connection to CEPT links (75 ohm BNC links). The following table gives the required jumper settings for blocks P30 through P33.

For connections to:	Impedance required:	Impedance jumper positions:
CEPT links	75 ohms	Install all 4 jumpers (P30 - P33)
PRI links	120 ohms	Remove all 4 jumpers

DUAL EL IMPEDANCE JUMPERS

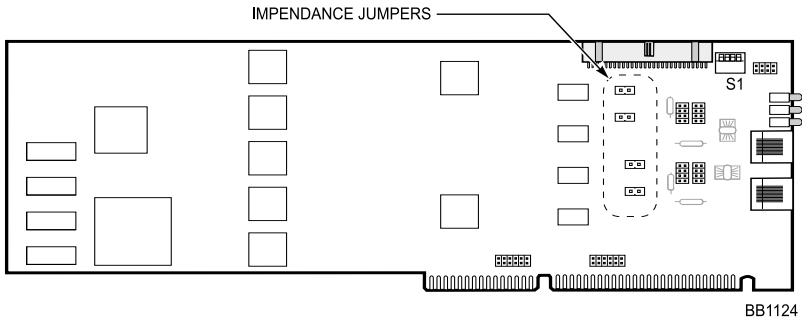
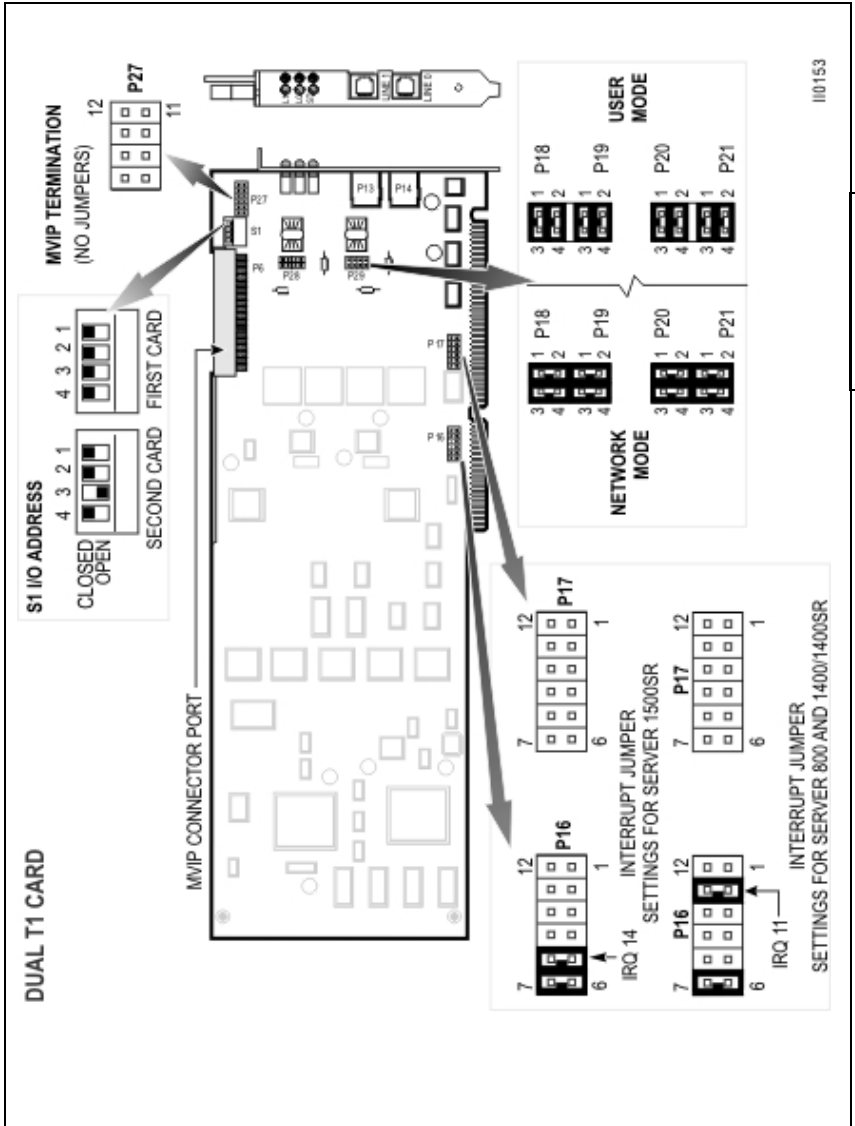


Figure 14: Dual E1 Impedance Jumpers (P30 to P33)

Setting the Digital Link Destination

Refer to Figure 15 for the Dual T1 card and Figure 16 for the Dual E1 card for settings.



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Installation

Figure 15: Dual T1 Card

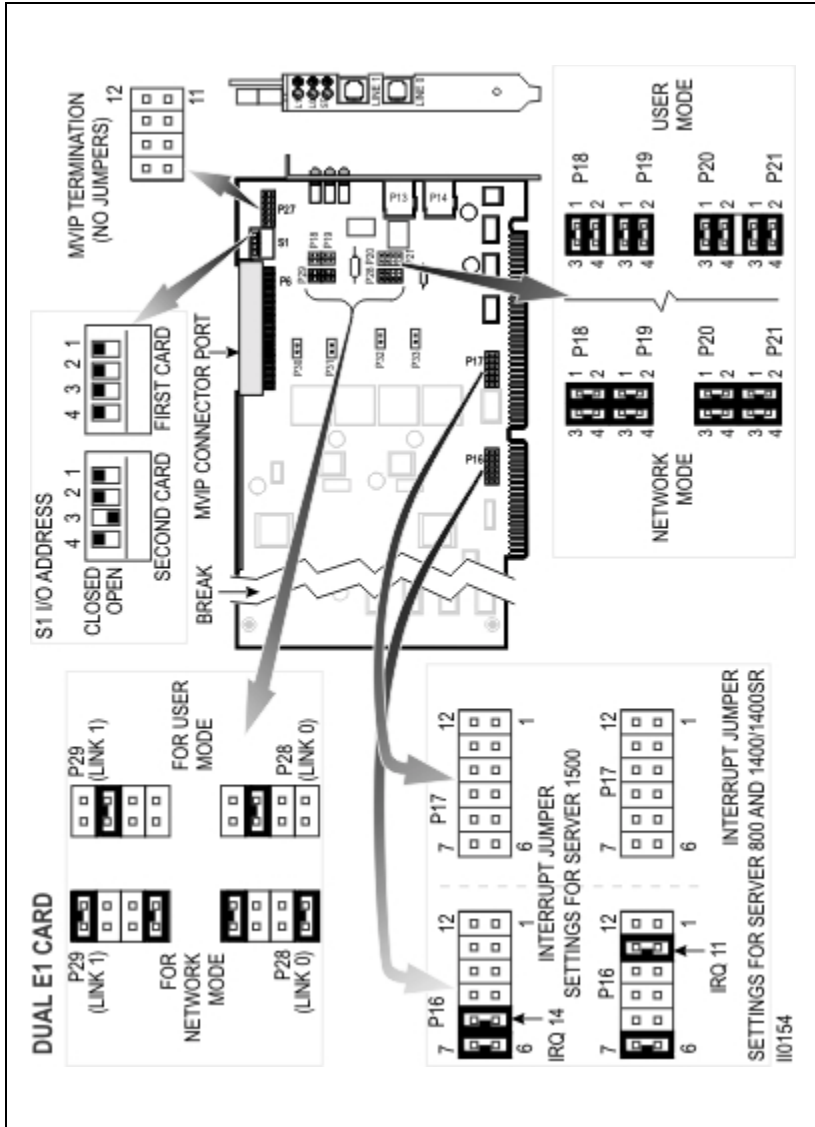


Figure 16: Dual E1 Card

Tone and Conference Card

The Tone and Conference card is a Digital Signal Processor (DSP) that generates the tones and conferences for the system. Specifically, it provides the following functions:

- 37 tone generators
- 12 tone detectors
- maximum 5 conferences with a maximum 5 conferees per conference up to a total of 24 conferees. For example, you could have three 4-party conferences and one 4-party conference at the same time.

The MVIP clock signals are terminated on the card. To terminate the MVIP signals, install jumper blocks across jumpers J3 and J4.

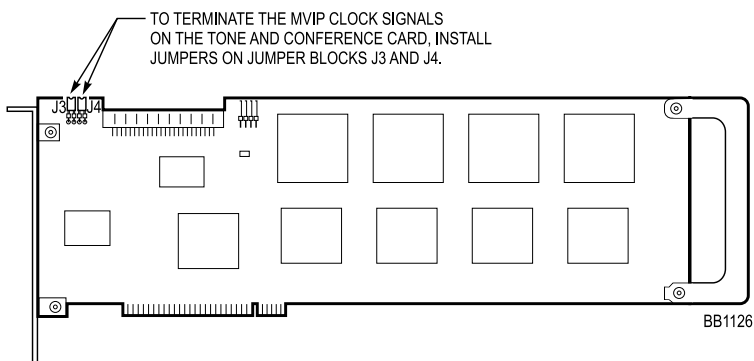


Figure 17: Tone and Conference Card

E2T Card (Ethernet to TDM)

The E2T card provides Real Time Complex (RTC) functionality and Ethernet to Time Division Multiplex (TDM) functionality complete with echo cancellers. Two E2T cards are required for SUPERSET and March Networks IP telephone functionality.

Configuration

The first E2T card is configured for RTC functionality and the second card is configured for E2T functionality. Both cards are assigned static, unique IP addresses. Refer to Server 1500SR Configuration (page 29), 1400/1400SR Configuration (page 31) or 800 Configuration (page 34) for slot and IRQ information.

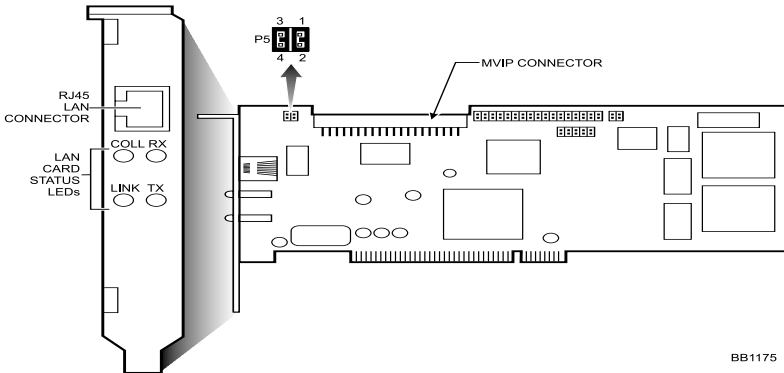


Figure 18: E2T Card

E&M Trunk Card Settings

CONFIGURATION SERIAL NO.	SWITCH POSITION (NOTE)		CIRCUIT CONFIGURATION	TYPES OF INTERFACE CIRCUITS	
	SN-1	SN-2		SIGNAL CARRIER SET TYPES	COLLOCATED TRUNK TYPES
1	A	B		TYPE I	NONE
2	B	A		TYPE II TYPE IV	TYPE II TYPE IV
3	B	B		TYPE V	TYPE I TYPE III TYPE V

NOTE: SWITCH SECTIONS ARE SN-1 AND SN-2, WHERE N IS THE PARTICULAR TRUNK CIRCUIT NUMBER ON THE CARD.

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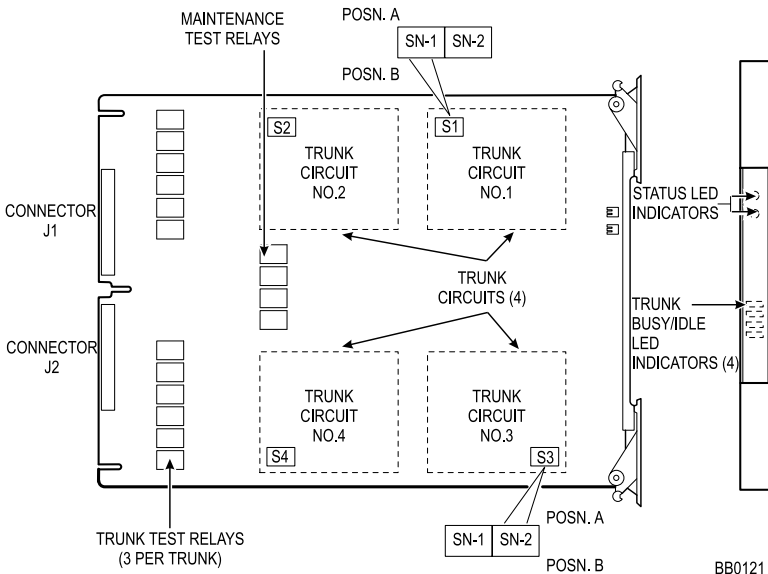


Figure 19: E&M Trunk Card

OPS Line Card Message Waiting Switches

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

- Position A for circuits connected to OPS lines (provides a contact closure via MWA-MWB to an interface).
- Position B for circuits connected to ONS lines (delivers -140 Vdc voltage at a variable rate to the ring lead of the called extension).

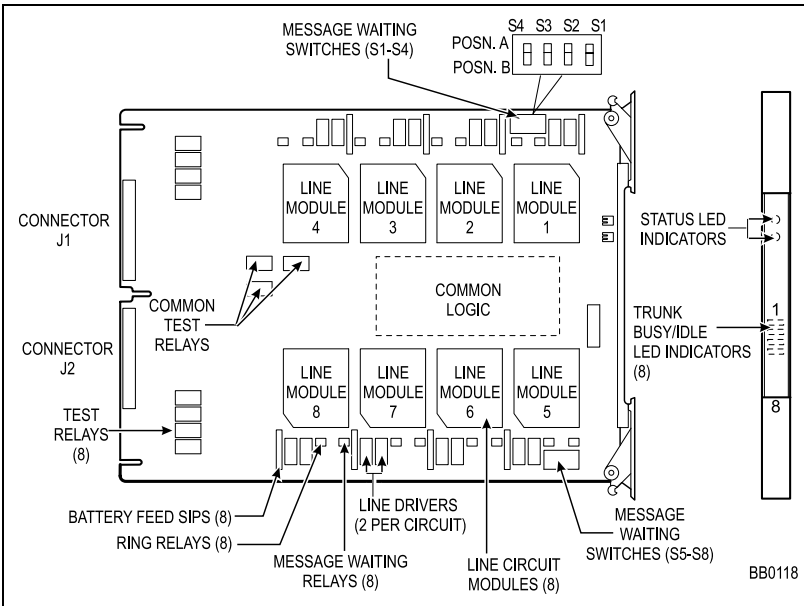


Figure 20: OPS Line Card

Card Pinouts

Dual T1 or Dual E1 Card Pinouts

The digital trunk cables that connect to the Dual T1 or Dual E1 card must have male, 8-position modular connectors. The two line jacks on the card are labeled L1 and L0. Table 5 lists the two possible pinouts for the line jack (depending on how the line pair jumpers are set). By default, the line pair jumpers (P28 and P29) are set to **user mode**. Figure 21 shows the connector pinout.

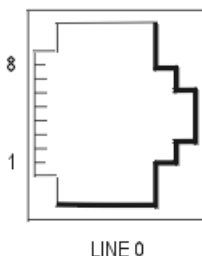


Figure 21: 8-Pin Modular Connector

Table 5: 8-Position Modular Connector Pinout

PIN #	Line Pair Jumpers (Network mode)	Line Pair Jumpers (User mode)
1	Tx Ring	Rx Ring
2	Tx Tip	Rx Tip
3	Unused	Unused
4	Rx Ring	Tx Ring
5	Rx Tip	Tx Tip
6	Unused	Unused
7	Unused	Unused
8	Unused	Unused

Peripheral Interface Cabling

Cable Connectors

Use AMP Champ or equivalent cable connectors:

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

USOC Pin Designations

The USOC 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.

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
40	BK/S	T	T	E	M	E
15	S/BK	R	R	M	SB	SG
41	Y/BL	T	E	T	T	M

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Pin	Color Code	RJ2IX	RJ2EX	RJ2GX	RJ2FX	RJ2HX
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	--	--

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Card-Slot Connections to Cross Connect Fields

The following 12 tables 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 LC	on-premises line card
OPS LC	off-premises 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 LC	SUPERSET 3 and SUPERSET 4 line card
DNI LC	digital network interface line card

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	P1
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	
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	P2
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	
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	

Installation

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	P1
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	
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	P2
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	
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	

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	P1	
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		
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		P2
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		
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	----	----	----	----		

Installation

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	P3
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	
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	P4
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	
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	

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	P3
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	
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	7T	
15	S/BK	7R	4R	4R	2SG		4R	7R	7R	
41	Y/BL	8T	4MWB	4T(MR)	2M			8T	8T	
16	B/Y	8R	4MWA	4R(MR)	2SB			8R	8R	
34	R/BR	9T	5T	5T	3T	3T	5T	7T	9T	P4
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	
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	15T	
15	S/BK	15R	8R	8R	4SG		8R	15R	15R	
41	Y/BL	16T	8MWB	8T(MR)	4M			16T	16T	
16	BL/Y	16R	8MWA	8R(MR)	4SB			16R	16R	

Installation

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	P3	
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		
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		P4
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		
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	-----	-----	-----	-----		

Card Slot 7 Connections to Cross-Connect Field

Pin	Color Code	ONS L C	OPS L C	LS/GS Trunk	E&M Trunk	DID/L T Trunk	DID/2 Trunk	COV L C	DNI L C	Peripheral Backplane Plugs
26	W/BL	1T	1T	1T	1T	1T	1T	1T	1T	P5
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	
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	P6
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	
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	

Installation

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	P5
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	
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	P6
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	
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	

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	P5	
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		
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		P6
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		
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	----	----	----	----		

Installation

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	P7
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	
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	7T	
7	O/R	7R	4R	4R	2SG		4R	7R	7R	
33	R/G	8T	4MWB	4T(MR)	2M			8T	8T	
8	G/R	8R	4MWA	4R(MR)	2SB			8R	8R	
26	W/BL	9T	5T	5T	3T	3T	5T	7T	9T	P8
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	
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	15T	
7	O/R	15R	8R	8R	4SG		8R	15R	15R	
33	R/G	16T	8MWB	8T(MR)	4M			16T	16T	
8	G/R	16R	8MWA	8R(MR)	4SB			16R	16R	

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	P7
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	
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	P8
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	
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	

Installation

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	P7	
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		
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	7T		
23	G/V	7R	4R	4R	2SG		4R	7R	7R		
49	V/BR	8T	4MWB	4T(MR)	2M			8T	8T		
24	BR/V	8R	4MWA	4R(MR)	2SB			8R	8R		
50	----	----	----	----	SPARE	----	----	----	----		
25	----	----	----	----	SPARE	----	----	----	----		
42	Y/O	9T	5T	5T	3T	3T	5T	7T	9T		P8
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		
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	15T		
23	G/V	15R	8R	8R	4SG		8R	15R	15R		
49	V/BR	16T	8MWB	8T(MR)	4M			16T	16T		
24	BR/V	16R	8MWA	8R(MR)	4SB			16R	16R		
50	----	----	----	----	SPARE	----	----	----	----		
25	----	----	----	----	SPARE	----	----	----	----		

Chapter 3

Programming

Configure OPS Manager

1. Configure the server and create user accounts. Refer to OPS Manager On-Line help for details.
2. Set up the OPS Manager stations.
3. Assign serial ports.
4. Start the OPS Manager application (see page 71).
5. Program the server as an OPS Manager element.
6. Access a PBX maintenance session (see page 72).
7. Program internet security.

Security Access Privileges

There are six security levels using Windows™ NT Local Groups on the OPS Manager Server. Local users, Domain users and Domain GLOBAL groups from trusted domains can be included in the Local groups. Local group membership determines the security level of a user.



Assign each OPS Manager user only one level of security access. If you assign more than one level, the system applies the lower (more restrictive) level.

Function	OPSMGR					
	1	2	3	4	5	6
CONFIGURATION						
Directory Management						
Moves, Adds, & Changes	yes	no	yes	no	no	yes
Detained User Updates	yes	no	yes	no	no	yes
Telephone Directory Editor	yes	yes	yes	no	yes	yes
Telephone Directory Utilities	yes	no	yes	no	no	yes
Telephone Directory Export	yes	no	yes	no	no	yes
Synchronize With						
Network Elements	yes	no	yes	no	no	yes
Directory Server	yes	no	yes	no	no	yes

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Function	OPSMGR					
	1	2	3	4	5	6
Full Propagate To						
Network Elements	no	no	yes	no	no	yes
Directory Server	no	no	yes	no	no	yes
Full Collect From						
Network Elements	no	no	yes	no	no	yes
Directory Server	no	no	yes	no	no	yes
Portable Directory Group Setup	yes	no	yes	no	no	yes
Distribution List Setup	yes	no	yes	no	no	yes
Export Setup	yes	yes	yes	no	yes	yes
Network Elements						
Collect Unused DNS/Circuits	yes	yes	yes	no	yes	yes
View Unused Circuits	yes	yes	yes	no	yes	yes
View Unused Directory Numbers	yes	yes	yes	no	yes	yes
Automated Software Distribution	yes	no	no	no	no	yes
Time Synchronization	yes	no	no	no	no	yes
Editor	yes	no	no	no	no	yes
Directory Server Setup	yes	no	yes	no	no	yes
FAULT						
Alarms Viewing						
Network	yes	yes	no	yes	no	yes
History	yes	yes	no	yes	no	yes
Configuration	yes	yes	no	yes	no	yes
Alarms Audit	yes	yes	no	yes	no	yes
Alarms Paging						
Demand Paging	yes	no	no	yes	no	yes
Device Configuration	yes	no	no	yes	no	yes
Service Configuration	yes	no	no	yes	no	yes
UTILITIES						
Maintenance Terminal Access	yes	yes	yes	yes	yes	yes
Maintenance Task Scheduler	yes	no	no	no	no	yes
Scheduled Events Viewer	yes	yes	yes	yes	yes	yes
Backup						
OPS Manager Data	yes	no	no	no	no	yes
SX-2000® Data	yes	no	no	no	no	yes
Restore						
OPS Manager Data	yes	no	no	no	no	yes
SX-2000 Data	yes	no	no	no	no	yes

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Accessing Customer Data Entry

To access a customer data entry session for programming

1. Access the OPS Manager application.
2. Access a maintenance session. See page 72.
3. Select customer data entry mode. See page 72.

Accessing the OPS Manager Application

Perform CDE programming and maintenance functions from an OPS Manager station.

To access the OPS Manager application

1. Launch the browser.
2. In the Go to: field enter the Uniform Resource Locator (URL) of the http server and press Enter.
For example: `http://<servername>/ops/mitel/topa.asp` where `servername` is the netbios name of the OPS Manager server.
3. Set a bookmark in your browser to the OPS Manager application.
4. If you are not authorized to access the OPS Manager application, the User Name and Password dialog box appears after several seconds. Enter your **NT domain\user name** in the User Name field or, if your user account is local to the OPS Manager server, enter your **user name** only. Enter your password and click **OK**.



The first time you start OPS Manager from a client station it can take several minutes for the top-level menu to appear. To reduce the time on subsequent start-ups, set your browser cache to a minimum of 7000 Kilobytes. If OPS Manager software is upgraded, clear the OPS Manager application from the browser cache on the client station.

Accessing a PBX Maintenance Terminal

Access a PBX maintenance terminal to enter maintenance commands and CDE programming.

To access a maintenance session through OPS Manager

1. Access the OPS Manager application (see page 71).
2. On the **Utilities** menu, click **Maintenance Terminal Access**.
3. Select the system name of the server from the Element list.
4. Click **Connect**.

A maintenance session for the server appears on your screen.

5. Enter your username (default is INSTALLER); enter the password (default is SX2000).
6. Press **<Esc> 6** on the keyboard or **6** on the numeric keypad to access maintenance;
Press **<Esc> 7** on the keyboard or **7** on the numeric keypad to access Customer Data Entry (CDE).

DESktop returns the maintenance terminal to desktop mode from maintenance mode.

MAintenance changes CDE or desktop mode to maintenance mode.

cu changes maintenance mode to CDE mode.

<Esc> q aborts the current function, e.g. quit a form or return to maintenance from CDE.



For instructions on how to access a maintenance terminal through telnet, see *page 175*. Refer to *page 87* for keyboard functions.

Programming the Cabinet Assignment

The following settings must be used. Refer to the CD-ROM documentation for details.



The Link Descriptor Assignment form and the Digital Link Assignment form must be programmed and assigned before the Peripheral Switch Controller will load.

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	Peripheral Cabinet
1	2	2	FD_DSU	3	1	1	Internal DSU (T1)
1	2	3	IP_PER	4	1	17	Virtual Cabinet (IP phones)
1	2	4	FD_DSU	5	1	1	Applications Gateway

Programming Consoles and Sets

Note: The only consoles supported on the 3200 ICP system are the SUPERCONSOLE 1000® and the SUPERSET 7000 Attendant Console.

Attendant Console

1. In the System Configuration form add the DNI line card.
2. In the DNI Circuit Assignment form Assign SUPERCONSOLE 1000® or SUPERSET 7000 to the required DNI circuit.
3. In the Attendant Assignment form assign a prime directory number to the console circuit plid.

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4. In the Attendant Softkey Assignment form assign directory numbers to the console softkeys as required.
5. In the Telephone Directory form assign names to the console softkey directory numbers.

Single Line Telephone

1. In the System Configuration form program an ONS or OPS line card.
2. In the ONS/OPS Circuit Descriptor form (optional):
Change circuit descriptor contents if required.
For OPS circuits, set transmission parameter to LONG.
For ONS circuits, set transmission parameter to SHORT.
3. In the Single Line Assignment form assign a directory number, a circuit descriptor number, and an interconnect number to the circuit.
4. In the Interconnect Restriction Table form (optional) set the required interconnect restrictions (for example, to restrict connections between voice and data devices).
5. In the Intercept Handling Assignment form (optional) program the action that the system will take to handle the caller's call violations.
6. In the Class of Service Assignment form (optional) create a unique class of service if required.
7. In the Class of Restriction Group Assignment form create a COR group that includes the COR number which you will assign to the station (optional).
This COR group restricts the external calls that the station user can dial.
8. In the Default Account Code Definition form (optional) create a default account code number that will appear in all SMDR records for the station.

9. In the Station Service Assignment form (optional) assign the intercept number, COS number, COR number, and Default Account Code Index to the station's directory number.

Multiline Telephone

1. In the System Configuration form program a DNI line card.
2. In the DNI Circuit Assignment form, for DNI sets, program the set type against channel #1 of the PLID.
3. In the Multiline Set Assignment form program a prime Directory Number and an Interconnect Number against a line circuit.
4. In the Multiline Key Assignment form
 Use a multiline set directory number to recall an instance of the form.
 Program the directory number or function you wish to appear on each key of the set.
 Assign each line appearance with a ring type of RING, DELAY RING, or NO RING. SUPERSET 410, SUPERSET 420, and SUPERSET 4000 series telephones support two additional ring types — RING CONTINUOUS and DELAY RING CONTINUOUS.
5. In the Multiline Set Group Assignment form
 Use any multiline set line appearance directory number to recall an instance of this form.
 This form displays all the phones where the directory number appears.
 You can change the ring type of the number at each phone where the number appears.
 You can change the group type from "key system" to "multicall" or vice versa.

IP Telephones

The installation and programming of a SUPERSET or a March Networks IP telephone consists of several steps:

- CDE programming
- physical connection of the telephone
- configure DHCP server (see page 130)
- registering the IP telephone (see page 78)

Note that the March Networks 5010 IP Phone and 5020 IP Phone are programmed as SUPERSET 4015 IP and 4025 IP telephones respectively.

To program SUPERSET 4015IP, SUPERSET 4025IP, March Networks 5010 IP Phone and March Networks 5020 IP Phone

1. Dimension and Feature Select form
Enabling options for SUPERSET IP telephones and licenses (quantity of 16, 32, or 48) will automatically:
 - program an IP Per cabinet in the Cabinet Assignment form and
 - program the IP Controller and one DNI Line card for each 16 licenses in the System Configuration form.A new virtual cabinet type, the IP Per is cabinet 4. The IP Controller is at 4/1/17. The three DNI cards are programmed at 4/1/1, 4/1/2, and 4/1/3 (if required).
2. System Options Assignment form
Set the SUPERSET IP telephone Registration and Replacement Access Codes and Registration Security. These access codes are required when configuring the directory number for the SUPERSET IP telephone.
3. DNI Circuit Assignment form
Program the set type against Channel #1 of the PLID.

4. **Multiline Set Assignment form**
Program a prime Directory Number and an Interconnect Number against a line circuit.
5. **MAC Address Assignment form**
The DNI Circuit Assignment and Multiline Set Assignment programming is automatically entered in this form.
 - Set Registration - Station Initiated does not require completion of the MAC Address Assignment form; instead, when the set is plugged in the display will request a PIN number (see page 78).
 - Set Registration - Central requires that the MAC Address Assignment form be modified before the set is plugged in. The MAC address must be inserted in the Set ID for the associated PLID (see page 78).
6. **Multiline Set Key Assignment form (Optional)**
Use a multiline set directory number to recall an instance of the form.
Assign a directory number (line appearance) or feature to each key.
Assign each line appearance a ring type.
7. **Multiline Set Group Assignment form (Optional)**
Change the ring type at each telephone where this number appears.
Change the group type from “key system” to “multicall” or vice versa.
8. **Default Account Code Definition form (Optional)**
Create a default account code number that will appear in all SMDR records for the station.
9. **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.

Registering the IP telephone

This procedure will unite the SUPERSET telephone or March Networks IP Phone with CDE programming. When the telephone is installed (connected to the LAN), it must be configured with a directory number.



Before registering the telephone exit CDE and ensure that there is no datasave in progress.

To complete Set Registration - Station Initiated

1. Plug in the set the display will request PIN ? Superkey to send.
Enter the Set Registration access code followed by the directory number.
2. The set completes initialization.

To complete Set Registration - Central

1. MAC Address Assignment form
The DNI Circuit Assignment and Multiline Set Assignment programming is automatically entered in this form.
2. Plug in the set and it will boot up.

Programming the Telephone Directory

1. The Department Assignment form (optional) lists the department names. Refer to Telephone Directory Management in the OPS Manager online help.
2. The Location Assignment form (optional) lists the location names.
3. In the Telephone Directory form
Assign a directory number to the telephone. Assign a name to a phone's directory number. Assign a department and location name (optional).

4. Perform a directory synchronization.

Programming a Call Rerouting Always

1. In the Call Rerouting Always Alternative form
Decide which types of calling devices should always reroute from a given phone to another device.
Change their values from No Reroute to Reroute.
In the last column, enter the directory number of the alternative device to which the calls should always reroute.
Remember the index number (Always Alternative Number).
2. In the Call Rerouting Assignment form
Assign the Always Alternative Number to the directory number of the device whose received calls you wish to always reroute.
You may assign a different Always Alternative Number for each of Day Service, Night Service 1, and Night Service 2.
The attendant changes the system's service mode depending on the company's business hours.

Programming Printer Ports

System Printer Port

1. In the System Port Assignment form assign a logical name to the system port (LPR1 appears automatically in this form).
2. In the Application Logical Port Assignment form assign LPR1 to the type of printable information.
3. Configure the LPR1 port on the PBX server. See *Configuring the LPR1 Printer Port (page 167)*.



There is no LPR3.

Local Printer Port

1. Application Logical Port Assignment form.
Assign LPR1 to each application you want to print reports for.
2. On the Start menu, point to Programs.
3. Point to Mitel Utilities and click Log Output Manager to add a local, serial port printer.
4. Click the LPR1 tab.
5. Direct the output to the selected Serial (COM) port.

Console Printer Ports

1. In the DNI Assignment form assign a SUPERCONSOLE 1000 (SC1000) against channel #1 and a SUPERCONSOLE 1000 port (SC1000 PORT) against channel #2. Then assign a dataset printer port. See *Dataset Printer Ports (page 81)*.
2. In the Dataset Circuit Descriptor Assignment form
Create a Circuit Descriptor.
Set Device Class = SC1000.Port
Set Defaults = Yes.
3. In the 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. In the System Port Assignment form assign a printer port name to the PLID of the printer port.
5. In the Application Logical Port Assignment form assign the name of the printer port to the type of printable information.

Dataset Printer Ports

1. In the DNI Circuit Assignment form assign DS110x or DS210x against channel #2 of the required plid.
2. In the Dataset Circuit Descriptor Assignment form
Create a Circuit Descriptor.
Set Device Class = DS1100s or DS2100s.
Set Defaults = Yes.
3. In the Dataset Assignment form
Assign Port = YES against the dataset's PLID.
Assign an interconnect number to the dataset.
Assign a default Dataset Circuit Descriptor to the dataset.
4. In the System Port Assignment form
The dataset PLID now appears in this form.
Assign a name to the printer port.
5. In the Application Logical Port Assignment form assign the printer port name to the type of printable information.

Programming Trunks

Non-Dial-In Trunk

1. In the Trunk Circuit Descriptor form
Create a trunk circuit descriptor that corresponds to the type of trunk that you are programming.
Remember the index number (Trunk Circuit Descriptor Number).

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2. In the Trunk Service Assignment form
Assign the directory number which incoming calls will ring for Day Service, Night Service 1, and Night Service 2 modes.
Leave the Digit Modification columns blank.
Assign a Trunk Label if desired. This label appears on the consoles and on the set displays for incoming and outgoing calls.
Remember the index number (Trunk Service Number).
3. In the Trunk Assignment form
Assign the trunk a Trunk Number.
Assign the Trunk Service Number and the Trunk Circuit Descriptor number that you used for the trunk in the previous two forms.
4. In the Trunk Group Assignment form, if it is an outgoing trunk, enter the Trunk Number in the desired trunk group.

Dial-In Trunk

1. In the Trunk Circuit Descriptor form
Create a trunk circuit descriptor that corresponds to the type of trunk that you are programming.
Remember the index number (Trunk Circuit Descriptor Number).
2. In the Trunk Service Assignment form
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 (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.
Assign a Trunk Label if desired. This label appears on the consoles and on the set displays for incoming and outgoing calls.
Remember the index number (Trunk Service Number).

3. In the Trunk Assignment form
Assign the trunk a Trunk Number.
Assign the Trunk Service Number and the Trunk Circuit Descriptor number that you used for the trunk in the previous two forms.
4. In the Trunk Group Assignment form, if it is an outgoing trunk, enter the Trunk Number in the desired trunk group.

DISA Dial-In Trunk

1. In the Miscellaneous Assignment form create a DISA Forced Account Code Number or create a plain DISA number for the dial-in trunk.
2. In the 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 COS and COR.
3. In the 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 and leave the Insert column blank.
4. In the Trunk Assignment form assign the trunk service number to the dial-in trunks.



See Technical Service Bulletin, MD4058-NA-0x for information on how to protect against toll fraud.



Mitel recommends that all DISA trunks be account code protected.

DISA Non-Dial-In Trunk

1. In the Miscellaneous Assignment form create a DISA Forced Account Code Number, or create a plain DISA number for the non-dial-in trunk.
2. In the 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 COS and COR.
3. In the Trunk Service Assignment form
Select a Trunk Service Number.
If the DISA number does not use a forced account code, assign an appropriate Class of Restriction.
Assign a DISA number as an answer point; specify the DISA directory during Day, Night 1, and Night 2 service.
4. In the Trunk Assignment form assign the trunk service number to the desired trunks.



Mitel recommends that all DISA trunks be account code protected.

Digital Trunk

1. In the System Configuration form

Note that the Dual T1 card is programmed as a DS1 Formatter card; the Dual E1 card is programmed as a CEPT Formatter card. See page 42 for card placement and settings.

T1 or E1 can be programmed as a PRI card.



The Dual T1 card is a STRATUM 4 clock, not a STRATUM 3 as on the DS1 Formatter.

2. In the Link Descriptor Assignment form Create a Link Descriptor Number. The form defines the protocol characteristics of; T1/D4, ISDN, T1 DPNSS, DPNSS/DASS, Euro ISDN, and Q.SIG.

The following parameters in the Digital Link Assignment form apply specifically to a 3200 ICP system:

- Extended Super Frame: This is the preferred framing format for DS1 rate terminals but systems may still use the T1D4 framing format. The Integrated Digital Access must be T1D4. Enabling this field will enable CRC 6 on the card.
- Operation Mode (CSU/DSX-1): The Dual T1/E1 card supports Channel Service Unit (CSU) mode and Digital Signal Cross-Connect Level 1 (DSX-1) mode. If the links connect to an external CSU set the operation mode to DSX-1. If the links do not connect to an external CSU, set the operation mode to CSU. The default is DSX-1.
- CSU Tx Line Build-Out (0, 7.5, 15, 22.5 dB): This parameter ensures reliable operation of the network, both for you and for other users. Your carrier can advise you of the correct setting. The default is 0 dB.
- DSX-1 line length (0-133, 134-266, 267-399, 400-533, 534-655 feet): This parameter set the DSX-1 line length. The default is 0 to 133 feet.

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- Invert D-channel: this parameter allows you to invert the D channel (signaling channel) on the Dual T1 card links. Changing the setting to Yes, allows communication with other PBXs.
 - CRC-4 enabled (Yes, No): This parameter allows you to enable Cyclic Redundancy Check 4 (CRC-4) checking on an E1 link. The default is No.
3. In the Digital Link Assignment form assign the descriptor to the links.
The descriptor identifies the type of software that the system should load into the card. The system will not load the card if you don't assign the descriptor.
The descriptor also makes the link's trunks appear in the Trunk Assignment form.
 4. In the Digital Trunk Circuit Descriptor Assignment form create a digital trunk circuit descriptor.
 5. In the Trunk Service Assignment form create a trunk service number to:
 - assign an incoming trunk to a dedicated answer point (attendant-handled) for non-dial-in trunksor
 - provide digit modification for dial-in trunks. (Note that absorb 0 digits is the minimum).
 6. In the Trunk Assignment form assign the trunk descriptor and trunk service number to the trunks.
 7. In the Network Synchronization form enter the PLIDs of those links which will be synchronization sources for the system.
By default, the links for the first Dual E1/T1 card are programmed into the form (3 1 2).

Table 6: PC Keyboard Functions

Functions	PC Keyboard Key
Note: Enter keys and commands sequentially.	
Softkeys	
[Softkey 1]	<ESC> 1
[Softkey 2]	<ESC> 2
[Softkey 3]	<ESC> 3
[Softkey 4]	<ESC> 4
[Softkey 5]	<ESC> 5
[Softkey 6]	<ESC> 6
[Softkey 7]	<ESC> 7
Commands	
Abort current function	<ESC> q or <F4>
Double abort	“quit” (see Note 1) or <F1> <F4>
Execute a command	<ENTER>
Move to the command line	<CTRL> j
Recall the last command	<ESC> <CTRL> j (Note: hold down the Ctrl and j keys)
Editing Functions	
Insert a blank line	<INSERT>
Delete a field	<DELETE>
Open a search window	<.> (on numeric keypad)
Initiate the search	<ESC> 4
Clear a command	<ESC> <DELETE>
Skip lines in a form	“go down ##” or “go up ##” (see Notes 1 and 2)
Cursor Functions (see Note 3)	
Move cursor to the first field	←
Move cursor to the next field	→ or <TAB>
Move cursor back one field	<F1> <TAB>
Move cursor up to next line	↑
Move cursor down to next line	↓
Change cursor direction	<*> or +
(Page 1 of 2)	

Table 6: PC Keyboard Functions (Continued)

Functions	PC Keyboard Key
Special Functions	
Invoke online help	"help" (see Note 1)
Start a CDE session	"desktop" (see Note 1)
Undelete	"undelete" (see Note 1)
Field Cycling Keys	
Cycle options forward	<F2>
Cycle options backward	<F3>
Standard Keyboard Keys	
Move forward one field	<TAB>
Move back one field	<F1> <TAB>
(Page 2 of 2)	

Note 1. Commands in quotes must be entered from the command line and followed by <Return>.

Note 2. This command causes the cursor to move the specified number of lines up or down in large forms; not applicable to the Class of Service form.

Note 3. Do not hold down the cursor keys; you could fill up the keyboard buffer and lock up the maintenance session.

Chapter 4

Troubleshooting

Identifying Faults

The Bootstrap Sequence

The bootstrap sequence for the system

1. The Microsoft Windows NT operating system loads the boot-time device drivers (the MFC, T1/E1 and DSP).
2. Automatic start services load: OPS Manager, Tone and Conference, Service Recovery Manager, and the PBX followed by OPS UDT Client.
3. The software in the folder:
Program Files\Mitel\SX-2000 for Windows NT\Run Files starts the PBX software and performs the main control self test. The last portion of the NT initialization is to load the run files into memory and execute them.
4. The system loads the following files:
 - MCINIT (main control initialization)
 - OSINIT (operating system initialization)
 - Database (if one exists)
 - T1/E1 card(s)
 - MFC (main fiber control)

The load of the T1/E1 card triggers the load of the MFC and the reset of the Peripheral. The link is opened with the main control and the T1/E1 will provide clock on the MVIP bus. Then the DSP card will initialize. If ISDN is Enabled, the data base then triggers the ISDN Command server to start, when complete the Command server Starts the ISDN APPLICATION
5. The main control begins normal operation. If you have a maintenance session running, the desktop display appears and you can log into maintenance or CDE mode. The maintenance session may be started by a telnet connection to the server when the netlogin process has started and the login is done through the telnet client.

- The main controller transfers the subsystem processor software from the hard disk to the peripheral switch controller card, DNI line cards, and attendant console. The E2t cards load using FTP via the Layer 2 Ethernet Switched ports.



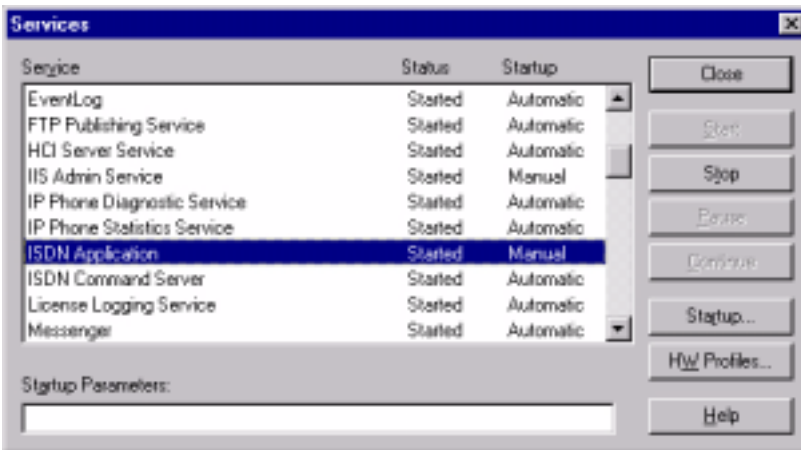
The Layer 2 Switch must be configured properly to support the E2r cards loading requirements. Failure to configure the layer 2 Switch will result in the V-Per message links to remain in scan.

Checking the 3200 ICP System Services

To check the status of the Windows NT Services:

- From the **Start** menu, click **Settings**, then click **Control Panel**. The Control Panel window opens.
- Double-click the **Services** icon.

The Services window opens. It lists all the services that are loaded on the Windows NT system including the Mitel third-party services.



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- Check for third-party services such as pcANYWHERE. They should be present if your system has the related option loaded.

4. Restart any third-party service that should be running but has stopped. Refer to the online help for instructions on how to start a service. If the service fails to start, check the Mitel Log Viewer and the Windows NT Event Viewer for error logs.
5. Ensure the Startup parameter is set correctly. Refer to the online help for instructions on how to set the Startup parameter.



ISDN Command Server must be set to AUTO;
 ISDN Application must be set to MANUAL;
 DHCP Client must be set to DISABLED;
 If HCI® and MiTAI™ are enabled then they must be manually set to AUTO START; check after any upgrade or reinstallation of 3200 ICP system software.

To check the status of the Mitel services:

1. Open Mitel Service Recovery Manager (see *page 169*).
2. Ensure that the state and start mode of each MITEL Service matches the 3200 ICP system Services list.

Service	State	Pri	Failures	Start Mode	Mode	Dependencies
OracleServiceMNMMS	Active		0	Automatic		
HCI Server Service	Active		0	Automatic		
MiTAI Server Service	Active		0	Automatic		
ISDN Command Server	Active		0	Automatic		
Schedule	Active		0	Automatic		
Wired Solutions TFTP Turbo	Active		0	Automatic		
Tone and Conference	Active		0	Automatic		
TAD NT Naming Service	Active		0	Automatic	Dependent	Pcp5a
Data Services Manager	Active		0	Automatic	Dependent	TAD_NT_Naming_Service
SH 2000 for Windows NT	Active	247	0	Automatic	Dependent	ToneCtrl
OPS Alarms Paging Message Que...	Active		0	Automatic	Dependent	OracleStartMNMMS
OPS Alarms Server	Active		0	Automatic	Dependent	OracleStartMNMMS
OPS DBA Server	Active		0	Automatic	Dependent	OracleStartMNMMS
OPS JAVA Virtual Machine	Active		0	Automatic	Dependent	OracleStartMNMMS
OPS UDT Handler	Active		0	Automatic	Dependent	OracleStartMNMMS
IP Phone Diagnostic Service	Active		0	Automatic	Dependent	Orcl5vc
IP Phone Statistics Service	Active		0	Automatic	Dependent	Orcl5vc
NT Mitel System Settings Service	Active		0	Automatic	Dependent	Orcl5vc
GTP Logs Client Service	Active		0	Automatic	Dependent	Orcl5vc
ISDN Application	Active		0	Manual	Dependent	CallServer
OPS UDT Client	Active		2	Automatic	Dependent	CallServer
OPS Alarms Notification for Pager	Active		0	Automatic	Dependent	OPS_AALMSGQUEUEServer OPS_AMServer

3. Restart any Mitel service that should be running but has stopped. See , *Starting and Stopping Services (p. 170)*.

If the service fails to start, check the Mitel Log Viewer and the Windows NT Event Viewer for error logs.

4. Ensure the Start Mode is set correctly. See , *Changing the Service Start Mode* (p. 171).
5. Note the number of failures associated with each service. A high number of failures can indicate a problem with the service (the counter resets to 0 on a reboot).



ISDN Command Server must be set to AUTO;
ISDN Application must be set to MANUAL;
DHCP Client must be set to DISABLED;
If HCI and MiTAI are enabled then they must be manually set to AUTO START; check after any upgrade or reinstallation of 3200 ICP system software.



The Mitel Service Recovery Manager will ensure that you start any dependent services in the correct order. If you must start a dependent service first, you will receive a message.

Checking the Device Drivers

The system used the following drivers:

- Mitel Digital Signal Processor - for the DSP on the Tone and Conference card
- Mitel Enhance Dual T1 - for the Dual T1 card
- Mitel Main Fiber Control - for the MFC card
- Sentinel - for the Security Access Module (SAM) that contains the Mitel system identification code. If this driver is not running, your system will have a system ID alarm. After the next reload, your database will be blank.

Check the device drivers that are loaded on the system from the Windows NT Devices application. To open the Devices application

1. On the **Start** menu, click **Settings**, then click **Control Panel**.

The Control Panel window opens.

2. Double-click the **Devices** icon.

The Devices window lists all the device drivers that are loaded on the system including the Mitel device drivers.

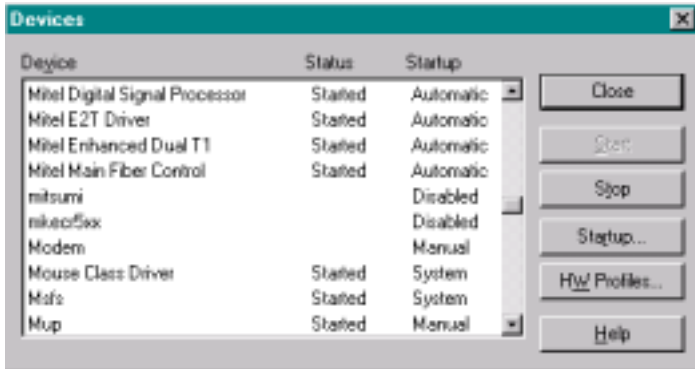


Figure 22: Devices window

3. If a device driver does not appear in the devices window, it is not loaded. You must load the associated software.
4. Ensure that the device drivers have the Status and Startup parameters that are listed in the following table.

Device	Status	Startup
bh	Start ed	Autom atic
Mitel Digital Signal Processor	Start ed	Autom atic
Mitel Enhanced Dual T1	Start ed	Autom atic
Mitel Fiber Control	Start ed	Autom atic

Device	Status	Startup
Sentinel	Start ed	Autom atic

5. Restart any Mitel device that should be running but has stopped. Refer to the online help for instructions. If the service fails to start, check the Mitel Log Viewer and the Windows NT Event Viewer for error logs.
6. Ensure the Startup mode is set correctly. Refer to the online help for instructions on how to set the Startup mode.

Checking the File System

The 3200 ICP system includes program files for the PBX, OPS Manager application, Computer Telephony Integration services, and E1/T1 services.

Check the Windows Explorer file system to ensure that files have not been accidentally deleted or moved.

Checking the MFC Card

To check the MFC card

1. Check the LEDs on the MFC card. See , *Identifying FIM Faults* (p. 107).
2. Ensure that the RUN/PRG switch is set to RUN.
3. From a maintenance session, enter the PCM TEST BOTH <link> command and the PCM TOTALS command. The system should report zero faults.
4. If the system reports faults, ensure that the driver has started and that the MFC is visible using IRQ 10 in the Windows NT Diagnostics.

Checking the Dual T1/E1 Card

1. Check the Dual T1/E1 card LEDs (see Figure 23). Table 7 provides information on how to interpret the LEDs.
2. If the system reports faults, ensure that the driver has started and that it uses IRQ 14 for server 1500 and IRQ 11 for server 1400/1400SR and server 800 in the Windows NT Diagnostics.
3. From a maintenance session, check the status of the digital links by entering the following command DTSTAT READ <plid> for each Dual E1 or Dual T1 card.
The plid for card #1 is 3 1 2; card #2 is 3 1 3.

FACEPLATE LEADS

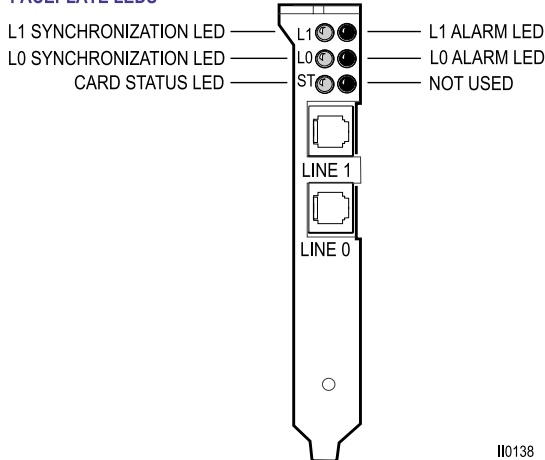


Figure 23: Dual T1/E1 LEDs

Table 7: Dual T1/E1 Card LED States

LED	LED State	Color	Meaning
L1 or L0 Synchronization	Solid	Green	Card application is loaded; Frame synchronization has been achieved with the CO and layer 1 is up.
	Off	None	Out-of-frame synchronization with the CO. Layer 1 is down.
L1 or L0 Alarm	Solid	Red	Loss of frame (LOF) and/or frame alignment loss (FAL) with the CO.
	Solid	Yellow	Remote frame alignment loss (FAL) with the CO. If red and yellow alarm conditions exist simultaneously on the same interface, the red alarm is displayed.
Card Status	Solid	Green	Application not completely loaded or card is locked up
	Flashing at a 500 ms flash rate	Green	NORMAL operating condition

Checking the IP Telephone

If the SUPERSET or March Networks IP telephone fails to boot:

- Verify the Network connection:
 - check wiring;
 - check LED on the IP telephone for network activity.

A green LED on the bottom of the telephone indicates a proper connection.

A flashing yellow LED indicates activity (data flow) on the network.

- Use the PING utility on the IP telephone to determine whether the server's (3200 ICP, DHCP, and/or TFTP) IP address is accessible.
- Ensure that the DHCP server has been programmed with the correct network information (i.e. TFTP IP address).
- If the IP telephone displays "TFTP LOAD FAILURE", verify that the TFTP Firmware, DSP, and Main software loads are available and not corrupted.

IP Phone Diagnostics

The IP Phone Diagnostic Application is a Web-based application that is accessed from OPS Manager or from the Start menu on the 3200 ICP system server. The diagnostic application display includes several frames that provide information about the status of the IP telephones.

Initialization Sequence

During a normal IP telephone initialization the process occurs automatically when the IP Phone is connected to the network. There is no user input required unless the process is unsuccessful.

1. IP telephone MAC and the current boot load version.
2. The IP address and the message DOWNLOADING.
3. The MAIN file downloaded by TFTP, the BOOT in the set, and the message DOWNLOAD COMPLETE.
4. MAIN and BOOT, and the message Waiting For COMM.

View IP Settings from the IP Phone

1. Press Hold while connecting power to the IP Phone until the set displays IP SETTING MENU.

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2. Use the and keys to scroll through the list of settings:
MAC ADDRESS
DEVICE IP ADDRESS
SUBNET MASK
DEFAULT GATEWAY
TFTP SERVER ADDRESS
MITEL IP PBX ADDRESS
3. Press SuperKey to exit the settings menu or disconnect and reconnect the power to reboot the IP Phone.

PING from the IP Telephone

To PING from the IP Phone

1. View and record the IP Phone device address, subnet mask, and default gateway.
2. Press SuperKey while connecting power to the IP Phone until the set displays MANUAL IP SETUP MODE.
3. Enter the IP address for the telephone and press.
4. Enter the subnet mask and press.
5. Enter the default gateway and press.
6. At the Perform PING Test? request, press #.
7. Enter the destination IP Address. The set display indicates PINGING.
The telephone will display the number of successful and failed PINGs.
8. Disconnect and reconnect the power to reboot the IP Phone.

Checking the Options Enabling

To check for Enabling Options faults:

1. This message indicates an error in selection of an option or value:
Options Password entered does not correspond to options selected.
2. Check each option and value against the printout shipped with the software.
3. Ensure that the 48 digit Mitel Options Code that is generated on the screen is be identical to the code on the printout.
4. When upgrading from one software stream to another (i.e. LW 29 to LW30) obtain a new Password from Mitel.

Identifying SAM Faults

1. Check the Mitel Log Viewer to ensure that the Security Access Module is not generating any error logs. The Mitel Log Viewer lists these errors under the “Hardware Key” category. See , *Using the Mitel Log Viewer (p. 162)*.
2. From a CDE session, access the Dimension and Feature Select form. Verify the System Identity Code is correct.
3. Ensure that the SAM is plugged in and the Sentinel Driver is running.



Removal of the SAM while the machine is under power will result in damage.

Checking the Virtual Peripheral Cabinet

To troubleshoot the Virtual Peripheral Cabinet (V-Per):

1. Verify that the host NIC, RTC and E2T patch cables are connected correctly to the Layer 2 switch. If these cards are plugged into a HUB, replace the HUB with a Layer 2 switch (for example, a Cisco 1900, 2900, etc.).

If you do not see a green LED status on all host NIC, RTC and E2T ports of the Layer 2 switch, check for faulty patch cables. (Note that the LED status of the RTC on the 3200 ICP system is red during initialization and turns green if Vxworks loads properly later.)

2. Verify that the port settings on the 3200 ICP system and the Layer 2 switch are configured as shown in Table 8.

Table 8: Port Settings

Port	3200 ICP System	Layer 2 Switch	Comment
Host NIC	AUTO	AUTO	
	Full Duplex; 100BaseT	Full Duplex; 100BaseT	Recommended
RTC	Full Duplex; 10BaseT <hard-coded >	Full Duplex; 10BaseT	No Auto-negotiate
E2T	Full Duplex; 10BaseT <hard-coded >	Full Duplex; 10BaseT	No Auto-negotiate
<p>Note: To check the host NIC settings on the 3200 ICP system server, right-click on Network Neighbourhood and select Properties. Click on the Adaptors tab. Select the NIC card and then click on Properties.</p>			

3. Verify that IP addresses have been assigned to the host NIC, RTC and E2T cards in the following sequence:

First, assign an IP address for the host NIC and then reboot the server so that the address is written into the

WinNT registry. This IP address must be in the WinNT registry in order for the RTC and E2T cards to retrieve it. Next, using the Mitel Adaptor Configurator, assign IP addresses for the RTC and E2T cards, save the changes and reset the cards. After the cards are reset, both the RTC and E2T cards retrieve the host NIC IP address from the WinNT registry and use this IP address to obtain the RTC and E2T loads.

Note: If you are not sure whether you have done this sequence correctly, reset the RTC and E2T cards from Mitel Adaptor Configurator one more time after the server has been rebooted.

4. Verify that you have used a standard subnet mask for the host NIC, RTC and E2T cards. Typically, a standard subnet mask should be used (i.e. Class A=255.0.0.0, Class B=255.255.0.0, Class C=255.255.255.0). There is no restriction on how to assign IP addresses to the host NIC, RTC and E2T cards.

If a non-standard subnet mask (known as subnetting) is in use, make sure that IP addresses assigned to the host NIC, RTC and E2T cards are in the lowest IP range of the specified subnet.

5. Verify that you can ping the host NIC, RTC and E2T cards.
6. Verify that the RTC/E2T successfully logs in to the host server as MitellperaUser2000: You can either check the Event Viewer for logs about "Mitellpera2000User" failing to login or view the log at:
Winnt\system32\logfiles\MSFTPSVC1\inyymmdd.log
(e.g in010218.log).

If this user name has failed to FTP, check the following:

- Make sure the Mitellpera2000User username is defined in the User Manager for Domains application.
- Make sure "Mitellpera2000User" is a member of "Users"
- Make sure that "Users" has the policy, "log on locally"

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To verify that a user's privilege is set correctly, log on the server as follows:

Username: Mitellpera2000User

Password: password

If you can't log on with this password, reset the password for Mitellpera2000User in the User Manager for Domains application.

7. Check whether FTP fails to locate the path "RTC\RTC\VXWORKS" by viewing the log at: Winnt\system32\logfiles\MSFTPSVC1\inyymmdd.log (e.g in010218.log) for FTP failures. If there is an FTP failure, perform the following steps:

Check the FTP path. If FTP has failed, go to Window NT Option Pack > Microsoft Internet Information Server > Internet Service Manager and check that the E2T and RTC aliases are referencing "C:\Program Files\Mitel\SX2000 for Windows NT\et2" and "C:\Program Files\Mitel\SX2000 for Windows NT\rtc" respectively.

Verify that the RTC and E2T FTP failure isn't due to permission settings on IIS4. Perform the following steps: Click on WinNT4 Option Pack > Microsoft Internet Information Server > Internet Service Manager. The Microsoft Management Console window that appears. Click on the host server name. Right-click on Default FTP Site and select Properties. The Default FTP Site Properties window appears. Select the Security Accounts tab and ensure the "Allow only anonymous connections" options is not selected. Click on OK to close the dialog boxes you have opened.

8. Go to c:\program files\mitel\sx2000 for windows NT\et2 and c:\program files\mitel\sx2000 for windows NT\rtc and ensure you have the RTC_Vxworks and E2T_Vxworks files. Check the file dates to ensure you have the latest upgrades.
9. If the V-Per takes too long to load, resets repeatedly in a short period of time, or Vxworks fails to get RTC download files intermittently due to network congestion issues, it may be because the RTC has been flooded with

broadcast messages from IP phones or Data Devices. To resolve or workaround this issue, stop the incoming traffic to the RTC and E2T cards by isolating these ports from the rest of data and voice network. Sniffer trace analysis may also help troubleshoot switch performance and connectivity problems.

Checking the Peripheral Interface Cards

The printed circuit board (PCB) cards in the peripheral node have LED indicators, numeric displays, or both on their front panels.

The card status LEDs provide the current status of the associated card. The possible combinations are as follows:

Green LED on: indicates that the card is part of the active control plane. The green LED appears only on the peripheral switch controller card. It indicates the card's activity.

Yellow LED on: indicates that a card has been taken out of service by maintenance software, or by personnel. The yellow LED indicates the in service/out of service status of the card.

Red LED on: indicates that a fault in the card has been detected by maintenance software or some or all of the circuits on the card have been removed from service. This LED does not necessarily indicate total failure of the card and the card may remain in service with the red LED on.

Green and Yellow on: indicates that the card is currently out of service. This LED combination may occur at power-up, when a peripheral switch controller is in the process of receiving a software download.

Green and Red on: indicates that maintenance software has detected a fault on the peripheral switch controller card.

Yellow and Red on: indicates that the card is currently out of service. The pattern appears on all cards at power-up because maintenance software cannot assess the status of a card until all necessary diagnostics are operational.

Green and Yellow and Red on: indicates that the peripheral switch controller card has a fault and is out of service. The display arises at power-up before the system is operational.

No LEDs Illuminated: indicates a fully-operational state for peripheral interface cards. For the peripheral switch controller card, this LED condition indicates a faulty or missing MFC card.

Circuit Status Bar LEDs

Circuit Status Bar LEDs are found on line, trunk and DTMF receiver peripheral cards.

- If the bar LED associated with a circuit is on, the circuit is in use or the system is performing a diagnostic test on the circuit.
- If the bar LED flashes continuously, there is a fault in the corresponding circuit.

Finding Faults from a Maintenance Session

To find faults from a maintenance session:

1. Access a maintenance terminal session.
2. To view alarm category, enter:
SHOW STATUS ALARMS
3. To view alarm category and faulty card or device, enter:
SHOW FAULTS ALARM
4. Record the name and the <plid> physical location identifier of the faulty card or device.



Also check for error logs. See , Using the Mitel Log Viewer (p. 162). Use the OPS Manager Alarms Audit functionality.

Identifying FIM Faults

Frame synchronization is indicated by the LEDs on the FIM. The upper LED indicates the status of the local FIM. The lower LED indicates the status of the remote MFC. If a remote MFC Status LED is OFF, go to the FIM and check its local FIM Status LED. If it is ON, the fiber optic cable may be faulty.

Upper FIM LED	Meaning for Local FIM
ON	In frame synchronization.
OFF	Power off or held in reset.
FLASHING	Out of synchronization, or Tx or Rx cables might be reversed.
Lower FIM LED	Meaning for Remote MFC
ON	In frame synchronization.
OFF	Power off or held in reset.
FLASHING	Out of synchronization, or Tx or Rx cables might be reversed.

Identifying Peripheral Switch Controller Faults

The following table shows all of the power-up error codes which may appear on the peripheral controller card numeric displays.

Error Code	Likely Cause(s)
18, EE, Blank	<ul style="list-style-type: none"> • Incorrect MFC card settings. • Faulty MFC or MFC card is not loaded. • Faulty peripheral controller card.
00, EE thru 17, EE or 19, EE thru 1F, EE	<ul style="list-style-type: none"> • Faulty peripheral controller card.

Error Code	Likely Cause(s)
B1	<ul style="list-style-type: none"><li data-bbox="367 197 902 352">• This is not necessarily an error condition. The card could just be waiting to be downloaded. If B1 remains for an unreasonable length of time, assume an error condition exists.<li data-bbox="367 368 745 395">• Faulty main control complex.<li data-bbox="367 408 788 435">• Faulty peripheral controller card.<li data-bbox="367 448 810 475">• Blown fuse (F1) on the backplane.

If an error is indicated:

- note the indications on the numeric display status LEDs of the peripheral controller card
- restart the faulty peripheral controller card by removing and reinserting the card (slot 16)
- check the faulty subsystem as it initializes by opening a debug session, loading the PBX, and then watching for the MFC to load
- if no LEDs are on, verify the MFC settings. It is possible that the MFC did not load properly
- reload the system.

If any or all peripheral control complexes are faulty, check the main control complex functionality before proceeding. During initialization, check the following components:

- peripheral controller software (requires a reload)
- main control complex software (requires a reload)
- power-up or initialization tests (check for error codes - use caution when identifying error codes because the numeric display is used to display more than error codes)
- FIM or FIM connections (check FIM LEDs)

- peripheral controller card (slot 16, peripheral cabinets)
- peripheral resource card
- power system
- backplane or inter-cabinet connections
- fiber interface module
- power input (also check FIM LEDs to ensure that power is coming into the cabinet).

Correcting PBX Database Errors

If the DBMS CHECK command finds errors in the database, you can correct the database by restoring an uncorrupted version from a DATA SAVE or DBMS Save.

Restoring a PBX Database

To restore the database from a DATA SAVE backup or DBMS Save backup:



The restore will fail if a user account and password have not been assigned to the FTP services (see page 128).



Use this procedure to recover from a corrupt database. The system does not support a tape drive.



For a rebuild of 3200 ICP system, begin at step 8 after you have reinstalled the 3200 ICP system software.

1. Access the OPS Manager application. See page 71.
2. Launch a PBX maintenance session. See page 72.
3. Enter the DBMS FLAG OFF command.
4. Enter the LOAD command to blank the database.
5. The PBX code reloads.
The procedure will stop and restart the PBX service and the Telnet server.
6. Wait a couple of minutes, then reconnect and log in.
7. While the PBX is loading, update the Network Element form to reflect the current default username and passwords. The defaults will be installer and sx2000. This step is required for the success of the data restore.

8. Access the dimension and feature select form to confirm that the options are loaded. Log out of the maintenance session but leave the window open.
9. On the OPS Manager **Utilities** menu, point to **Restore**, and then click **SX-2000 Data**.
The Restore PBX Data window opens.
10. Select the current data save network element to be restored.
11. In the **Restore To** area, select the **Active** plane.
12. Click **Restore**.
A dialog box appears with questions that you must answer. **DO NOT** restore the options from the data save (this has already been done).
13. Enter a new 10-digit Mitel Option Password (MOP) if this Restore is an inter-stream Data Restore.
14. If custom flexible dimensioning is found on the PBX, confirm either to overwrite or to keep the configuration (default is Yes).
15. If incompatible options are found on the PBX, confirm either to overwrite or to keep the configuration (default is Yes).
16. Specify whether or not to restore Hotel/Motel data (default is No).
17. After you answer the questions in the dialog box, click **Restore** to continue. Click **Cancel** to return to the Restore PBX Data window.

If you enter an incorrect MOP, the restore terminates and returns you to the Restore PBX Data window. An error dialog box identifies the failure. Click Restore again.

Blank Database is Reported

If you set the DBMS FLAG off, by issuing the DBMS FLAG OFF command, the database is blanked during the next system reload. Blanking a database does not remove Mitel options.

If the 3200 ICP system has a blank database, restore the database from a DATA SAVE backup by using OPS Manager.

System Dimensions Do Not Match

If you change your system dimensions and reset, the system will not download the database and will report that the system dimensions do not match the saved database.

You must issue a Data Restore from the DATA SAVE and say NO to 'Restore Dimensions from Saved Data'.

To recover from a system dimension discrepancy, change the system dimensions back to the original settings (using your old MITEL OPTIONS password), and Reset to recover your original database. Then, follow the procedure on page 160 to change your system dimensions.

SYSID Mismatch

If the system reports a SYSID mismatch

1. Check the Dimension and Feature Selection Form. Ensure that the System Identification code matches the code on your options sheet.
2. Verify that device drivers are loaded and running.
3. Your SAM module is faulty or the wrong SAM module has been installed in your system (see page 101). Contact MITEL Technical Support for assistance.



Removal of the SAM while the machine is under power will result in damage.

Correcting OPS Manager Database Errors

To restore backed up OPS Manager data to the OPS Manager database

1. Access the OPS Manager application (see page 71).
2. On the **Utilities** menu, point to **Restore** and then click **OPS Manager Data**.
3. In the Restore window, select **Floppy** in the **Restore from** menu. The 3200 ICP system does not support a tape drive.
4. Click **Restore**.
5. Load the floppy into the drive. Wait until the drive is idle. Then, click **OK** in the dialog box.
6. Use the selection lists in the Data to Restore window to select the parts of the database to restore; otherwise, all selected items are restored.
7. Click **Restore**. A warning dialog box is displayed:



The next step commits to restore the database. You cannot cancel the restore once it has started. All OPS Manager applications stop during a restore and restart at the end of the process. The PBX continues to function but the operation may be disrupted.

8. Click **OK** in the warning dialog box.
The database and files are restored and a series of messages follow the progress of the restoration.
9. The OPS Manager Error window is displayed, when all data has been restored successfully, indicating that OPS Manager has been restarted. Click **Exit**. The system is available for use after the reboot is completed.
10. Restart your OPS Manager session.

Recovering From Hard Disk Corruption

Try the Microsoft for Windows NT emergency repair disk. If the hard drive is faulty, replace the hard drive; then, restore the server software.

If you do not have a backup of the server hard drive, you must rebuild the system on a new hard drive (see page 116), and then restore the customer database from a Data Save (page 110).

Power-Down Procedures

Powering Down the Server

1. End any customer data entry sessions.
2. If you don't have an up-to-date DATA SAVE on floppy, perform a DATA SAVE (see page 148).
3. Enter DBMS STAT
The DBMS initialized flag should be ON.



If you do not shut down properly, file corruption could occur. This file corruption could prevent you from starting up the system.

4. From the **Start** menu, click **Shut Down**.
5. Select **Shut down the computer?**
6. Click **Yes**. Wait for the prompt that instructs you to turn off the power.
7. Turn off the server power switch (on the Telephony Server 1500SR, press the red button).
8. Unplug the power cord from the rear panel of the server. Maintain ground.

Powering Down a Peripheral Node

1. Set the power converter switch to 0 (OFF).
2. Set the rear panel power switch to 0 (OFF).
3. Unplug the ac power cord from the rear of the node.

Power-Up Procedures

Powering Up the Server

1. Ensure that the voltage selector switch is set to the required setting for your country.
2. Connect the external ac power cord at the rear panel.
3. Turn on the server power switch.

Powering Up the Peripheral Node

1. Ensure that the voltage selector switch is set to the required setting for your country.
2. Connect the external ac power cord at the rear panel of the node.
3. Set the power switch on the rear of the node to I (ON).
4. Go to the front of the node and set the switch on the ac power converter to I (ON).

Rebuilding the 3200 ICP System

Install Windows NT Operating System software only if the hard drive needs to be replaced or the operating system becomes corrupted.

Rebuilding the 3200 ICP system involves the following procedures and information:

- Installing Windows NT Software (see below) using the required information (page 118)
- Editing the system BIOS (page 119)
- Install Service Pack 5 and Service Pack 5 - Internet Explorer 4.01 SP2 (refer to the online Infobase)
- Install Video Drivers (refer to the online Infobase)
- Install the E2T drivers (page 14)
- Install Option Pack 4 to apply the Internet Information Server 4 (page 124 or refer to the online Infobase)
- Re-apply Service Pack 5
- Configure Internet Information Server 4 (refer to the online Infobase)
- Configure the DHCP Server (page 20)
- Install Remote Access Service (refer to the online Infobase)
- Installing the 3200 ICP system software (page 120)
- Installing the IP Trunk card drivers (if necessary) (refer to IP Trunking online help)
- Creating mnms and Administrator accounts (page 125)
- Installing the internet browser Java Plug-in (page 126)

- Installing the Symbol NetVision Ipera 2000 Phone Administrator (page 127)
- For Ericsson Wireless Assistant and Ericsson Mobile Advantage only: Install Adaptec 4 port NIC driver, and then disable DHCP bindings (page 24)
- Install other programs as necessary (Ericsson Wireless Assistant; Ericsson Mobile Advantage, IP Trunking, etc.)
- Install patches and restore the PBX and OPS Manager databases.

Installing the Microsoft NT Software

To install Windows NT software

1. Insert the NT4 Server CD-ROM into the CD-ROM drive.
2. To rebuild on the 1500SR or 1400SR (redundant server), complete the Adaptec RAID Controller Drivers installation; then return to the next step in this procedure.
3. Reboot the server.
When the files have loaded, the Welcome to Setup screen appears.
4. Complete the Windows NT Server Setup:
For the 3200 ICP with Ericsson Wireless Assistant, 3800 Ericsson Wireless Assistant Gateway and 3800 Ericsson Mobile Advantage, you need to create two partitions on your hard drive.
 - Type C to create the first partition. The size will be 4095MB. Accept the default size for the second partition.
 - Select C: (New) Unformatted and format the partition using the NTFS file system.
 - Install Windows NT in the default location (\WINNT) on your hard disk.
5. Remove the CD-ROM.

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6. Press [Enter] to reboot.
7. Insert the CD-ROM when requested and click OK.
8. Follow on-screen instructions to continue the installation (referring to the Required Information section for settings).
9. For the 3200 ICP with Ericsson Wireless Assistant, 3800 Ericsson Wireless Assistant Gateway and 3800 Ericsson Mobile Advantage: Once installation is complete, format the second partition on your harddrive.

Required Information



At the Licensing Modes screen, select 5 Seats Per Server.

- Server Type = Stand-Alone.
- Administrator Account password = rmx250 (to match OPS Manager).
- Do not create an Emergency repair disk at this time. You can create it later after the applications are installed.
- Select Components window: Select Windows Messaging, click Details and deselect Internet Mail and Microsoft Mail; ensure Windows Messaging is selected.
- Select Components window: Select Accessories, click Details and deselect "screen savers" and accept the other defaults.
- Select Wired to a network.
- Install the Internet Information Server (for OPS Manager).
- Network Adaptor: Install the Mitel-provided NTWK EthrExprs Pro Driver.
- Network Protocols = TCP\IP Protocol and Streams Environment.
- Network Service: Select Microsoft DHCP Server

- System Services = Remote Access Service.
- TCP/IP Setup = use DHCP (**Note:** For the 3800 Wireless Applications Gateway, TCP/IP Setup = no not use DHCP).
- Install New Modem = Dial-Up Networking Serial Cable between 2 PCs.
- Select COM2.
- Internet Information Server = deselect Gopher; select Internet Service Manager (HTML).
- ODBC drivers = SQL Server.

Editing the system BIOS (800 and 1500SR servers only)

Editing the BIOS is required only for the first upgrade from Mitel's system software, Release 1.2/1.3 to Release 2.0 or greater or if you have to replace the Motherboard. Please refer to the CD-ROM documentation for detailed procedures.

BIOS configuration required for system rebuild

The following must be configured prior to rebuilding the system:

1. Disable Power Management.
2. Reserve Applicable IRQs as follows:
 - 800 and 1400/1400SR: IRQ 5, 10 and 11
 - 1500SR: IRQ 5, 10 & 14.

Replacing the RAID Controller, Video Driver, Ethernet Adapter

Refer to the relevant documentation that you received with your software.

Installing TFTP Server

A TFTP Server is required to download software to the SUPERSET IP telephones. The 3200 ICP system is shipped with the Weird Solutions TFTP Server installed.

Installing Windows Messaging

1. On the **Start** menu point to **Settings** and click **Control Panel**.
2. Double-click the **Add/Remove Programs** icon.
3. On the **Windows NT Setup** tab check the box for Windows Messaging and click **OK**.

Installing 3200 ICP System Software - Clean Install

To install 3200 ICP System Software Release 2.3:

1. Insert the PBX software CD-ROM in the CD-ROM drive.
2. Open Explorer and double-click **lpera2000_<releasename>_setup.exe** in the root directory of the CD-ROM drive. An installation confirmation message appears.
3. Click **Yes** to continue. The InstallShield verifies that the server has the required software installed, and then extracts the files that will install the PBX applications.
CAUTION: If the server does not have the required software installed, the installation will abort. You must install the required software and then start the installation again.
4. Once all files have been extracted, a **Question** dialog appears asking whether you want to install Mitel's

Microsoft Libraries Update. Click **Yes**. The **Mitel's Libraries Update Setup** launches.

5. At the **Welcome** dialog box, click **Next**.
6. To accept the Software License Agreement, click **Yes**. The **Setup Information** dialog box appears.
7. Click **Next**.
8. Click **Yes** to overwrite Read-only files.
9. In the **Setup Complete** dialog box, click **Finish** to restart the computer.
10. Once the computer has restarted, log into Windows NT using the Administrator Account password (refer to Required Information).
11. To restart the setup program, open Explorer and double-click **lpera2000_<releasename>_setup.exe** in the root directory of the CD-ROM drive. An installation confirmation message appears.
12. Click **Yes** to continue.
13. The InstallShield verifies that the server has the required software installed, and then extracts the files that will install the PBX applications.
14. At the **Welcome** dialog box, click **Next**.
15. To accept the Software License Agreement, click **Yes**.
16. At the **User Information** window, enter your information and click **Next**.
17. In the **Setup Type** window, accept **Typical** and click **Next**. The lpera Setup dialog box appears.
18. Click **Next**.
19. **Note:** You do not have to install the OPS Manager application on the PBX server if the system will be

managed by a centralized OPS Manager (that is, the system will belong to a cluster). If you don't want to install OPS Manager, select **Custom** and deselect OPS Manager from the list of software applications being installed.

20. In the **Read Only File Detected** dialog box, click **Yes**.
21. In the **Setup Type** dialog box accept **Typical** and click **Next**.
22. In the **Country** dialog box, click Next.
23. In the RegSvr32 dialog box, click **OK**.
24. Select the **RTC** tab in the **Mitel Adapter Configurator** window.
Enter the IP Address and the Default Gateway. Click **Save**, and then click **Reset**. In the Mitel Adaptor Configurator window, click **Yes**, and then click **OK**.
25. Select the **E2T** tab in the **Mitel Adapter Configurator** window.
Enter the IP Address and the Default Gateway. Click **Save**, and then click **Reset**. In the Mitel Adaptor Configurator window, click **Yes**, and then click **OK**.
26. Click **Cancel** to close the Mitel Adapter Configurator window.
Note: The RTC and E2T ports on a Layer 2 Switch must be set at 10 Mbps, full duplex. **Set the ports on the Layer 2 Switch for the RTC and E2T to Auto Negotiate disabled.** The port for the NIC is set to Auto Configure.
27. In the Hardware Configuration window, select your server platform from the drop-down list. Click **Apply**; then click **OK** to accept the default settings:
 - server 1500SR; T1/E1=IRQ14, memory address 0xE0000, MFC=IRQ10
 - server 800;server 1400/1400SR; T1/E1=IRQ11, memory address 0xE0000, MFC=IRQ10.**Note:** For the server 1400, select the 800 server; configuration of the 1400 is the same as for the 800.

28. At the ATAPI DMA Support window, for the 800 server, click **Enabled** for both channels and click **OK**. After enabling the DMA Support, a warning window will appear. This is normal; click **Yes**. A "**Finished**" pop-up appears; click **OK** for either server.
29. In the OPS Manager information window, enter the following:
 - **OPS Manager Hostname:** If you are installing the OPS Manager application on this server, enter the hostname (default is the server name). If the system will be managed by a centralized network OPS Manager, enter the hostname of that OPS Manager platform.
 - **FTP Username:** The user name that is assigned to the FTP account on the March Networks 3200 ICP system server (default is mnms) .
 - **FTP Password:** The password that is assigned to the FTP account on the March Networks 3200 ICP system server (default is mx2000).
 - **Confirm Password:** Reenter your password.
30. Click **OK**.
31. At the **Configure Startup Later** window, click **OK**.
32. In the **NT Schedule Service** window, click **Next**.
33. Enter the OPS Activation Key.
34. At the Purchased Options window, confirm information and click **Next**.
35. Accept **Typical** at the Setup Type screen and click **Next**.
36. At the **Start Copying Files** dialog box, click **Next**.
37. At the World Wide Web Publishing/FTP Service dialog box, click **Yes** to stop all WWW services.
38. The **Welcome** dialog box appears for the **Mitel IDS Configuration Setup**.

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39. Click **Next** on the following seven screens to accept default settings.
40. Click **Finish**.
41. The Mitel Network Gateway ISDN Application Installation begins. At the **Welcome** dialog box, click **Next**.
42. In the second **Welcome** dialog box, read the information and click **Next**.
43. In the **Software License Agreement** dialog box, click **Yes**.
44. In the Read Me Information dialog box, click **Next**.
45. In the **User Information** window, enter your information and click **Next**.
46. In the **Setup Complete** dialog box, click Finish.
47. After reading the **Information** dialog box, click OK.
48. At the **Welcome** window, click **Next**.
49. Click **Yes** at the Software License Agreement window.
50. Click **Next** at the Readme Information dialog box.
51. At the **User Information** window, enter your information and click **Next**.
52. At the Setup Complete window, select Yes and click **Finish to restart the system**.

Installing Internet Information Server 4

1. Log into Windows NT with Administration rights. Exit all Windows NT programs.
2. Insert the Microsoft NT 4.0 Option Pack CD-ROM.

3. Auto run program will launch Internet Explorer. If not, open Explorer and double-click setup.exe
4. Follow on-screen installation instructions. Select **Upgrade Plus** during setup.
5. Restart the computer after the Option Pack is installed.
6. On the **Start** menu, point to Programs, **Windows NT 4.0 Option Pack, Microsoft Internet Information Server**, and click **Internet Service Manager**.
7. Right-click the **Default FTP Site** folder and select **Properties**.
8. Click the **Security Accounts** tab on the Default FTP Site Properties window; ensure that the **Allow Anonymous Connections** check box is clear.
9. If necessary, clear **Allow Anonymous Connections**. Clearing the check box launches the Internet Service Manager window to request confirmation. Click **Yes**.

Creating mnms and Administrator Accounts

To create the mnms and administrator accounts (opsmgr ftp)

1. On the **Start** menu, point to **Programs**, then point to **Administrative Tools** and click **User Manager for Domains**.
2. On the **User** menu, click **New User**. Type the User Name, Full name, Description, and Password.
Match the FTP Username (default mnms) and Password (default mx2000) as programmed during the software installation.
3. Select **User Cannot Change Password** and **Password Never Expires**.
4. Make the mnms account a member of **Users group** only.

5. You can modify the administrator account now; password is mx2000 by default. Add it to the **MitelOPSMGR6 local group**.

Installing IMAT

The installation of IMAT is part of the system software install (see page 152).

Install Internet Browser Java Plug-in

To install the Activator Plug-in

1. Launch the Internet Browser from the client workstation.
2. Enter the system URL: **http://<servername>/opsclient/** where servername is the netbios name of the OPS Manager server. The **Mitel OPS Manager for Windows NT** page appears.
3. Click the **OPS Manager Client Resources** link.
4. Click the **Install Java Plugin** link.
5. Click **Win32 Sunsoft Java Plug-in**.
6. Select **Run this program from its current location** and click **OK**. The **Security Warning** dialog box appears.
7. Click **Yes**. The **Software License Agreement** dialog box appears.
8. Click **Yes** to accept. The **Choose Destination Location** dialog box appears.
9. Click **Next** to install the plug-in in the default directory. When installation is completed, the **Java Plug-in** page re-appears.
10. Scroll down and click on the **identifydb.obj** link. the **File Download** dialog box appears.

11. Save the file in **C:\winnt\profiles\administrator** and then **OK**.

Note: You can now use the OPS Manager application.

Install the Symbol NetVision Ipera 2000 Phone Administrator

This program applies to the 3200 ICP system with the Wireless Software Option and the 3800 Wireless Applications Gateway system.

To install the Symbol NetVision Ipera 2000 Phone Administrator:

1. Insert the System Software CD ROM.
2. Starting at the root of the CD, navigate to and click on **symbol/redist/disk1/setup.exe**. The **Welcome** dialog box appears.
3. Click **Next**. The **Select Components** dialog box appears.
4. Click **Next**. The **Select Components** dialog box appears again.
5. Click **Next**. Installation begins. When installation is complete, the **Information** dialog box appears.
6. Click **OK**.
7. Starting again at the root of the CD, navigate to and click on **symbol/setup.exe**. The **InstallShield** dialog box appears.
8. Click **Next**. The **License Agreement** appears.
9. Follow the prompts accepting all defaults. (If an error message appears, click **Ignore**.)
10. Click **Finish** when installation has completed.

Program the FTP Password

The 3200 ICP and OPS Manager applications exchange information such as Data Save/Restore and the results of Free PLID/Number collects by using the FTP protocol.

To do this you must configure a user account in the FTP server's "User Manager for Domain". The server housing the OPS Manager software in the FTP host. The FTP host can be on the 3200 ICP server or it can be a standalone OPS Manager server.



By default, a user account is not assigned with FTP services (user name and password are not programmed). Therefore, to complete the installation, you must program a user account and password for FTP service.



The Mitel default FTP account = name: mnms -
password: mx2000.

To program a user account to support FTP services

1. Click **Start**, point to **Programs**, point to **Administrative Tools (Common)**, and then click **User Manager for Domains**.
2. From the **User** menu, click **Select Domain**; then, select the domain of the local machine.
3. From the **User** menu, click **New User**. Then, assign a user account and password for the FTP services. Ensure that the following option is selected:
Password never expires
4. Click **Start**, point to **Programs**, point to **Microsoft Internet Server (Common)**, and then click **Internet Service Manager**.
5. Double-click on the computer for the FTP services. The FTP Services Properties window opens.

6. Ensure that anonymous connections are allowed (that is, box must be clear):
 - Allow only anonymous connections.

Installing the Mitel Hardware



Power-down the server before installing any hardware.

The hardware should use the following settings and be placed in the correct slots. View a drawing of the 1500SR server card layout on page 29, the 1400/1400SR server card layout on page 31 or 800 server card layout on page 34.

MVIP BUS TERMINATORS: When installing the cards in the order shown in the example card layout, install the MVIP terminators on the E2T card at the end of the cable, on the MFC card, and on the Tone & Conference card. The MVIP bus terminator jumpers should be removed from both of the Dual T1/E1 cards.

SEC8K/IC244 JUMPER: The Sec8k terminator jumper should be installed on the MFC card on connector P15, across pins 5 and 6 and across pins 7 and 8. The purpose of the termination is to filter out the reflected waves caused by an impedance mismatch between the clock master (source) and the clock slaves (receiver). The termination should be placed at the end of the MVIP bus farthest from the clock source.

IRQ JUMPERS: If a single Dual T1/E1 card is installed, the IRQ terminator should be installed. If you are installing two Dual T1/E1 cards, then both cards should be set to the same IRQ (IRQ 14 for the server 1500 and IRQ 11 for the servers 1400/1400SR and 800), but only the second Dual T1/E1 card should have the IRQ terminator installed.

Replacing Mitel Server Components

Server Card Slot Assignment

The number, type, and configuration of the cards depends on your specific system requirements. For default card layouts for different servers, see page 29 for the 1500SR, page 31 for the 1400/1400SR, and page 29 for the 800.

Install the DHCP Server

To install the DHCP server:

Note: The DHCP server installation is required only when you upgrade from Mitel's Release 1.x software to Release 2.0 or later.

1. Insert the Microsoft Windows NT 4.0 Server Operating System CD-ROM into the CD drive.
2. Right-click Network Neighborhood and click Properties.
3. On the Services tab, click Add.
4. Double-click Microsoft DHCP Server.
5. i386 appears in a window. Click Continue.
6. Click OK and then click Close.
7. Remove the CD-ROM.
8. Restart the server.

Configure the DHCP Server

Refer to Chapter 2 - Installation on page 20.

Dual T1 Card or Dual E1 Card

To remove and replace a faulty Dual T1 or Dual E1 card



For Dual T1/E1 IRQ termination rules, see page 42.

1. Power down the server (see page 114).
2. Open the server cabinet.
3. Disconnect the digital trunk cables from the card.
4. Unplug the MVIP cable from the faulty card. To access the faulty card, you may have to disconnect the cable from other cards.
5. Remove the screw that secures the card faceplate to the top of the expansion slot. Retain the screw for the replacement card.
6. Attach an antistatic strap to your wrist.
7. Hold the edges of the card and with a rocking motion, firmly pull the card from the interconnect board.



Do not touch the solder or components on the card. Do not accidentally change the switch settings while handling the card.

8. Set the termination jumpers, address switches, interrupt jumpers, and line pair jumpers on the replacement card to match those of the removed card. See page 42 for the switch settings.



When a card is shipped independently from the factory the IRQ setting must be changed from IRQ 7 to IRQ 14 or 11. Refer to “Setting the Dual E1/T1 Card IRQ” on page 43 for more information.

9. Install the replacement card. Press firmly to seat the card connectors; then, secure the card with the screw.

10. Plug the MVIP cable connector into the card. The connector is keyed to match the prongs on the card. Reconnect all MVIP connectors.
11. Connect the digital trunk cables.
12. Replace the cabinet panel.
13. Power up the server (see page 115).
14. Check the LEDs on the card faceplate (see Figure 23 and Table 7).

Installing an Additional Dual T1/E1 Card

To install an additional Dual T1 or E1 card

1. Power down the server (see page 114).
2. Remove the server cabinet panel.
3. Attach an antistatic strap to your wrist.



Do not touch the solder or components on the card. Do not accidentally change the switch settings.

4. Set the termination jumpers, address switches, interrupt jumpers, and line pair jumpers on the replacement card to match those of the removed card. See the Dual T1 card or Dual E1 card for the default switch settings; see page 42 for more details on the card settings.
5. Set the address switch S1 to the SECOND card position (see page 29 and page 34 for settings).
6. Set the jumper on P16 to the same IRQ level that is assigned to the other Dual T1/E1 card (default is IRQ 14 for the server 1500 and IRQ 11 for the server 1400/1400SR and 800).
7. Because you are installing the second card, position the termination jumper across pins 6 and 7 on P16. Only the second Dual T1/E1 card in the cabinet should have this

jumper installed. Remove the termination jumper from the first Dual T1/E1 card.



When a card is shipped independently from the factory the IRQ setting must be changed from IRQ 7 to IRQ 14 or 11. Refer to “Setting the Dual E1/T1Card IRQ” on page 43 for more information.

8. Set the jumpers on P18 through P21 to the User Side Connection position. See page 42 for more details on the card settings.
9. Install the replacement card. Press firmly to seat the card connectors; then, secure the card with the screw.
10. Plug the MVIP cable connector into the card. The connector is keyed to match the prongs on the card.
11. Replace the server cabinet panel.
12. Connect the digital trunk cables.

Installing an E2T Card (Ethernet to TDM)

To install an E2T card

1. Power down the server (see page 114).
2. Open the server cabinet.
3. Install E2T cards in PCI Slots (for circuit card layouts for the different servers, see page 29 for Server 1500, page 31 for the 1400/1400SR and page 34 for Server 800).



A new MVIP cable is required when E2T cards are installed for the first time. Remove the existing MVIP cable connectors from each application card. The new cable connects the MFC card, Dual T1/E1 card, Tone and Conference DSP card, and the E2T cards.

4. Power up the server (see page 115).

Installing the E2T Drivers

Refer to page 14 for instructions.

Upgrading an E2T Card

E2T card replacement is required for an upgrade from Ipera 2000 Release 2.0 (E2T revision 302 to 303).

1. Remove the E2T drivers (see page 134)
2. Power down the server (see page 114)
3. Remove the existing E2T card and install the new card.
4. Power up the server (see page 115)
5. Install the new E2T drivers through Microsoft NT (see page 134)
6. Configure the E2T cards through the Mitel Adapter Configurator (see page 17).

To remove the E2T drivers

1. On the **Start** menu, point to **Settings**, and then click **Control Panel**.
2. Double-click the **Network** icon.
3. From the Network window, click the **Adapters** tab.
4. Select the Mitel E2T NIC and click **Remove** for each adapter.
5. Close the **Network** window, then power down the server (see page 114).

Main Fiber Control

To remove and replace a faulty MFC card

1. Power down the server. See page 114.
2. Open the server cabinet.
3. Disconnect the fiber cables from the MFC card.
4. Unplug the MVIP cable from the faulty card. To access the faulty card, you may have to disconnect the cable from other cards.
5. Remove the screw that secures the card faceplate to the top of the expansion slot. Retain the screw for the replacement card.
6. Attach an antistatic strap to your wrist.
7. Hold the edges of the card and with a rocking motion, firmly pull the card from the interconnect board.



Do not touch the solder or components on the card. Do not accidentally change the switch settings while handling the card.

8. Set the termination, address, and interrupt jumpers settings on the replacement card to match those of the removed card. See page 41 for the switch settings.
9. Install the replacement card. Press firmly to seat the card connectors; then, secure the card with the screw.
10. Plug the MVIP cable connector into the card. The connector is keyed to match the prongs on the card. Reconnect all MVIP connectors.
11. Connect the fiber cables.
12. Replace the cabinet panel.
13. Power up the server. See page 115.

14. Check the MFC LEDs. After the MFC card is loaded, the LEDs should be on solid. If the LEDs are flashing, swap the Tx and Rx cables.

MVIP Cable

To remove and replace a faulty MVIP cable

1. Power down the server. See page 114.
2. Open the server cabinet. Attach an anti-static wrist strap.
3. Unplug the MVIP cable connectors from each application card.
4. Plug the connectors on the new MVIP cable onto each application card. The connectors are keyed to match the application card. Ensure that the connectors are firmly seated.
5. Replace the cabinet panel.
6. Power up the server. See page 115.

Security Access Module (SAM)

The SAM is programmed with a site-specific security code. The SAM unlocks your PBX options System Identification code.

To remove and replace a faulty SAM module

1. Power down the server.
2. Remove the faulty SAM module from parallel port on the server rear panel.
3. Install the replacement SAM module.
4. Because the replacement SAM module has a different security code, you must reload the system. From a maintenance session, enter the LOAD command.
5. Enable your PBX software options. See , *Enabling Options or Changing the MFRDs* (p. 160).

Tone and Conference Card

To remove and replace a faulty Tone and Conference card



Refer to page 47 for IRQ settings and card placement.

1. Power down the server. See page 114.
2. Open the server cabinet.
3. Unplug the MVIP cable from the faulty card. To access the faulty card, you may have to disconnect the cable from other cards.
4. Remove the screw that secures the card faceplate to the top of the expansion slot. Retain the screw for the replacement card.
5. Attach an anti-static strap to your wrist.
6. Hold the edges of the card and with a rocking motion, firmly pull the card from the interconnect board.




Do not touch the solder or components on the card. Do not accidentally change the switch settings while handling the card.

7. The MVIP clock signals are terminated on the card. To terminate the MVIP signals, install jumper blocks across jumpers J3 and J4.
8. Install the replacement card. Press firmly to seat the card connectors; then, secure the card with the screw.
9. Plug the MVIP cable connector into the card. The connector is keyed to match the prongs on the card. Reconnect all MVIP connectors.
10. Replace the cabinet panel.
11. Power up the server (see page 115).

Replacing Peripheral Node Components

Replacing a Peripheral Interface Card


You can replace a peripheral interface card while the node is operating.

1. From a maintenance session enter: `BUSY <plid of faulty card>`
Select the `COURTESY DOWN` option.
2. Enter `STATE <plid of faulty card>`
This command shows whether the circuits are in the busy state.
3. Wait until all the circuits are in the busy state.
 Wear an anti-static wrist strap whenever you handle circuit cards.
4. Replace the faulty card with a new card of the same type.
5. Enter `RTS <plid>` to return the circuits to service.

Replacing a Peripheral Switch Controller Card



Step 1 takes the peripheral devices connected to the node out of service.

1. Power down the peripheral node. See *Powering Down a Peripheral Node* (p. 115).
 Wear an anti-static wrist strap whenever you handle circuit cards.
2. Replace the faulty peripheral switch controller card with the new peripheral switch controller card.
3. Power up the peripheral node. See *Powering Up the Peripheral Node* (p. 115).

Replacing a Fiber Interface Module

To remove and replace a fiber interface module (FIM) in a peripheral node

1. Power down the peripheral node (see page 115).
2. If you need more room, remove the ac power converter and the peripheral switch controller card.
3. Disconnect the fiber cables from the FIM.
Place dust caps on the fiber cable connectors and on the FIM connectors.
Slide the cable underneath the card guide through the sliding cable port at the rear of the cabinet.
4. Slide the FIM out of the card guide.
5. Unpack the new FIM.
6. Slide the FIM into the card guide at the rear of slot 17 until it is seated firmly in the backplane.
7. Connect the fiber interface module cable.
8. Slide the fiber cable through the sliding cable port at the rear of the cabinet.
9. Route the cable underneath the card guide to the front of the FIM.
Remove the dust caps from the fiber cable and from FIM connectors.
Align the key on the fiber cable connector with the slot on the FIM connector, insert and lock in place.
10. If the PSC and power converter were removed, replace them now.
11. Power up the node. See , *Powering Up the Peripheral Node* (p. 115).

Chapter 5

Routine Maintenance

System Verification

Checking the System

- Able to start OPS Manager from a client station (page 71)
- Able to access a maintenance session via telnet (page 175)
- No alarms present, no database errors (page 143)
- DBMS Check scheduled; DBMS Status initialized flag ON (page 143)
- PBX database backed up (page 148)
- OPS Manager database backed up (page 150)
- No error logs (check the Mitel Log Viewer on page 162)
- Automatic reboot of PBX server scheduled (page 167)
- All device drivers are running (page 94)
- Screen saver is set to blank



Ensure that there are no non-Mitel-approved applications installed on the PBX server; they could have a negative impact on system performance.

To verify that the system is functioning properly

1. Access a maintenance session (see page 72).
2. Enter the following commands:
 - SH ST AL** Checks for system alarms. There should be no alarms.
 - DBMS STAT** Checks the status of the initialized flag. The flag should be on. If the flag is off, enter the **DBMS SAVE** command.

DBMS CH ON Turns the automatic database checking on. The system default is 5:00 a.m. daily.

DBMS CH FULL Checks for database errors; there should be none. If errors are present, go to , *Checking the Peripheral Interface Cards* (p. 105).

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.

3. Open the Mitel Log Viewer. Check for Mitel error logs. See , *Using the Mitel Log Viewer* (p. 162).
4. Schedule an automatic reboot. See , *Scheduling Automatic System Reboots* (p. 167). Ensure that the scheduled reboot does not conflict with other applications; for example, OPS Manager synchronization events, full collections, data saves.
5. Open the Windows NT Performance Monitor. Check the CPU% performance. It should be below 100%.
6. If a monitor is connected to the server, ensure that you logout and that the screen saver is set to a blank screen. Screen savers (for example, Flying Windows) may degrade system performance.

Checking Voice Services Security

- No SECURITY alarms are present
- Passwords and user names have been changed
- Passwords and user names are recorded and secure
- Password expiry timer set
- CDE Form Access Authorization complete
- Account codes programmed
- SMDR records checked for irregularities

- Auto Logout timer is set (System Options Assignment)
- Trunk Class of Restrictions programmed correctly
- Voice mail system is secure
- Auto attendant is secure
- DISA is secure
- End user call forwarding feature is secure



See Technical Service Bulletin, MD4058-NA-0x for information on how to protect against toll fraud.

To verify the Voice Services security

1. Launch a maintenance session See page 72.
2. Check the Command/Response area of the maintenance terminal for the following warnings: “Expired password in use!”, “Default username and password in use!” If either warning appears, **change your user name and password.**
3. Enter SHOW FAULTS SECURITY and check for **security alarms.**
4. In the System Options Assignment form, set the **password expiry time** (Number of days before password expires). The default is 60 days.
5. If someone with login privileges leaves the company, disable any personal NT accounts and change the user names and passwords at ALL levels.

Change the SYSTEM, INSTALLER, MAINT1, MAINT2 user names and passwords with the DISPLAY USERNAMES, RESET USERNAMES, and RESET PASSWORD commands.

Change the SUPERVISOR and ATTENDANT passwords with the RESET PASSWORD command.

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Also, delete the user's name from the User Authorization Profile form and the Telephone Directory form.

6. Change all account codes that are known by any user who leaves the company. Change account codes in the Independent Account Code Assignment form.
7. Enable (set to Yes) **internet security** in the Internet Security Assignment form in CDE. Restrict telnet access into the PBX to IP or subnet addresses that will be allowed to telnet into the system.
8. **Record user names, passwords, and account codes** and store them in a secure place.
9. In the **Form Access Authorization** form, check that each authorization level only has access to the required forms.
10. Check the **SMDR logs** for billing irregularities. This is applicable only if SMDR is being sent to the Mitel Log Viewer. See , *Using the Mitel Log Viewer (p. 162)*.
11. In the System Options Assignment form, set the Maintenance Terminal **Lock-out Timer**. If a user fails to log in after three consecutive attempts, the maintenance terminal will lock the user out for the programmed time period. If a maintenance terminal session has been inactive for the programmed time period, the system will log the user out.
12. In the Trunk Service Assignment form, assign all trunks with a **Class of Restriction** that prohibits external calls.
13. In the Station Service Assignment form, assign all **voice mail ports, auto attendants**, and RADs with a COR that prohibits external calls.
14. If the system requires **DISA trunks** ensure that you use forced account codes. Change all account codes that are known by any user who leaves the company. See 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.

15. If DISA is required, set the “DISA failed attempts before lock-out” parameter and the “DISA number lock-out” parameter in the System Options Assignment form.
16. To ensure that users cannot forward an incoming call to a route that provides central office dial tone, set “**Call Forward External = No**” in the Class of Service Assignment form for the set.

Checking the Windows NT System Security

- Any third-party remote control software (for example, PC Anywhere) is password protected.
- All Windows NT and PBX user accounts and passwords are secure.
- The guest account must be disabled.

To verify the Windows NT System security

1. If someone with login privileges leaves the company, change the user names and passwords at ALL levels.
2. Disable all accounts that are known by any user who leaves the company. Disable accounts in the User Manager for Domains application.

Making Backups

You should perform regular backups of your system to a network drive. Then, if the server hard drive fails, you can restore the server software to a replacement drive. There are several types of backups that must be accomplished:

- PBX database backups
- OPS Manager database backups
- PBX software and database backups

Making PBX Database Backups

The PBX backup is a 2-stage process that can be scheduled. First the DBMS or Data Save is backed up to OPS Manager. Then back up the PBX data to a network drive or to a diskette.

A DBMS Save copies the PBX customer database. Make backups after you make changes to the customer database.

A DATA SAVE copies the entire PBX database. A DATA SAVE takes longer than a DBMS Save. However, you can use a DATA SAVE backup to fix corruption that may appear in CDE forms and tables.

Before backing up the customer database, ensure that

- no Telephone Directory propagation or full collection events are in progress
- you are logged out of the PBX
- there is no database activity on the network element
- the backup event does not coincide with a period of high system activity
- the backup is not scheduled to start until a previous backup is finished
- a user account and password has been assigned to the FTP services.

To perform a DBMS or DATA SAVE backup of the PBX data:



The DBMS or DATA SAVE backup will fail if a user account and password have not been assigned to the FTP services (see page 128).

1. Access the OPS Manager application (see page 71).
2. On the **Utilities** menu, point to **Backup** and then click **SX-2000 Data**.
The Backup - PBX Data window opens.
3. On the **Schedule** menu, click **New**.
4. In the Event Schedule window, define the **Interval** and **Start** for the backup event. In the Comment field, record the volume name of the backup medium.
5. Click **OK**.
6. Select the elements to be backed up by moving them between the **Selected** and **Not Selected** lists.
7. In the Backup Type area, click either **DBMS Save** or **DATA Save** (required for an upgrade).
8. Click **Commit** to commit the changes to the event.
The OPS Manager application performs the backup at the scheduled interval. To perform an interactive backup, click the **Backup Now** button.
A DBMS Save is saved to the hard drive in:
Program Files/Mitel/OPSManger/Sx2000/Backup/
DBMS/<element name>
A DATA SAVE is saved to the hard drive in:
Program Files/Mitel/OPSManger/Sx2000/Backup/
DataSave/<element name>.
9. After the database is saved, copy the element name folder and its contents to a diskette or to a network drive.
Keeping three backup floppies allows you to go further back in time to find an error-free database.

Making OPS Manager Database Backups

OPS Manager can be programmed to backup PBX data, Programmable data, and Alarms history.

You can back up the OPS Manager database directly to a diskette or to a file on the hard drive.

A backup to diskette is recommended to insure against a hard drive failure and is required for software upgrades.

Before backing up the customer database interactively, ensure that

- no Telephone Directory propagation or full collection events are in progress
- no scheduled alarm audit is in progress
- the Telephone Directory Editor is not in use
- the top level OPS Manager window is displayed
- the time of the backup event does not coincide with a period of high system activity; it may affect system performance
- the backup is not scheduled to occur too soon after a previous backup; it may fail if the first backup is not yet finished
- the backup is not scheduled to occur at the same time as any other scheduled events; for example, telephone directory collection or propagation, or alarms audits.

To perform a scheduled or immediate backup of OPS Manager data

1. Access the OPS Manager application (see page 71).
2. On the **Utilities** menu, point to **Backup** and then click **OPS Manager Data**.
3. On the **Schedule** menu, click **New**.

4. In the Event Schedule window, define the **Interval** and **Start** for the backup event. Record the volume name of the backup medium in the **Comment** field.
5. Click **OK** to commit the event definition.
6. If required, modify the list of data that you want backed up. In the Backup window, move the data types between the **Selected** and **Not Selected** boxes. Select **PBX Data** and **Programmable Data** for PBX upgrades.
7. In the Backup - OPS Manager window, select **Floppy Disk** or **Hard Drive** from the **Backup To** drop-down menu. Select **Floppy Disk** for PBX upgrades. The tape drive option is not applicable to the 3200 ICP system.

Click **Floppy Disk** (recommended for protection in case of a hard drive failure, and required for server software upgrades), label the diskette and insert it into the drive

8. Click **Commit**.
9. Once the drive is idle, click **OK**.
Click **Backup Now** to start the backup. The volume dialog box is displayed if the diskette is full but the backup is not complete; insert another diskette and click **Backup Now** to continue.
Remove the diskette from the disk drive before the next scheduled backup and reboot.
The Backup Completed dialog box is displayed when all the data has been backed up.
Keep three backup diskettes to allow you to go further back to find an error-free database. Always back up the database to the diskette with the oldest backup file.
10. If you selected **Hard Disk**, the database will be saved to the following directory:
Program Files\Mitel\OPSManger\Data\
Backupmnms.tar.

Loading Software Upgrades

The 3200 ICP system software is shipped on a CD-ROM disk. The installation script installs the following software: Mitel Utilities, CTI Services (MiTAI), 3200 ICP system software, TFTP Server, OPS Manager, ISDN, and IMAT.



Install software on the server during off-hours only.



Do not install non-Mitel-approved applications on the server. Non-Mitel-approved applications could have a negative impact on system performance.



When you upgrade from Release 1.x software to Release 2.0 or later, there are hardware and software changes that are not part of the following procedure. Refer to 'Upgrading from Mitel Release 1.x System Software' in the CD-ROM documentation.

To perform software installations, you need the PBX Feature Options Record, OPS Manager Feature Options Record, ISDN Options (if applicable), NT Administration rights, your user name, and company name.

Upgrading from Ipera 2000 Release 2.0 or 2.1.1 System Software

1. Perform a Datasave (see page 148)
2. Upgrade from Release 2.0 only: Replace the E2T cards (see page 134)
3. Install system software (see page 152)
4. Restore the Datasave (see page 110).

Upgrading System Software



After an upgrade, inspect the installation logs and delete the contents of the C:/Temp directory.

1. Log into the system.
2. To upgrade Ipera 2000 (3200 ICP system)
 - make a PBX database backup
 - make an OPS Manager database backup
 - make an ISDN/IMAT backup to diskette
3. Make note of your current passwords, user names, IP Addresses, and alarm thresholds.
4. Exit all Windows NT programs, including OPS Manager and Internet Explorer.
5. Insert the PBX software CD-ROM in the CD-ROM drive.



The following step takes the PBX out of service.

6. Open Explorer and double-click **Ipera2000** **<releasename>_setup.exe** in the root directory of the CD-ROM drive. The InstallShield verifies that the server has the required software installed, and then extracts the files that will install the PBX applications. Click **Yes** to continue.



If the server does not have the required software installed, the installation will abort. You must install the required software and then start the installation again.

7. Read and accept the Welcome dialog and Software License Agreement.
8. At the User Information window, click **Next**.
9. In the Setup Type window, accept **Typical**. Click **Next** once.

Note: You do not have to install the OPS Manager application on the PBX server if the system will be managed by a centralized OPS Manager (that is, the system will belong to a cluster).

10. In the Setup window, click **Next**.

MITEL Utilities:

11. The installation of the Mitel Utilities software begins. When the Mitel Utilities software is installed, the MiTAI software installation starts.

Note: Click **Yes** to re-install the software (always choose yes). If you are performing a clean install of 2.1, this dialog box will not appear. If you are performing an upgrade from Ipera 2.0, you must uninstall MITAI first as noted previously.

MiTAI:

12. At the Warning window, click **OK**.
13. Select the MiTAI initialization settings. Typically, you should select "The Default MiTAI settings". However, the following options are available:
 - If you are loading new software and want to carry over the MiTAI settings from the previous load, click "The MiTAI Settings in the existing (old) installation".
 - If you are loading the software for the first time, or if your site does not currently require CTI services, click "The Default MiTAI settings". Also choose this option, if you are rebuilding the hard disk.
 - If you have modified the MiTAI_Settings.dat file in advanced of this installation, you can have the file settings applied to this installation by clicking "The MiTAI settings contained in a pre-existing MiTAI_Settings.dat file."
 - The "Leave unchanged" option is not applicable the first time you see this window. If you make changes to the MiTAI Settings in the next window and then click back to this window, select this option to keep the changes that you made in the next window.
14. The MiTAI Settings window opens. Click **Next**.
15. At the Information window, click **Yes**.
16. At the Select Program Folder, click **Next**.
17. Review the contents of the Start Copying Files window; then, click **Next** to start copying the files to the target directory.

18. Select **Yes** to uninstall the MiTAI runtime.
 19. Select **OK** at the Remove Program Files From Your Computer window.
 20. Click **OK** to proceed. The MiTAI files are installed.
 21. In the Setup Complete window, click **Finish**.
- Note:** You can choose to read the ToDoList. If a printer is available, you can print the ToDoList and read it later. You must close the ToDoList window; otherwise it will hide the remaining installation windows.

Mitel 3200 ICP:

22. At the DHCP Server Service Warning window, click **OK**. This window will appear only if the DHCP server is **not** installed.
23. In the Setup Type window, click **Next** to accept **Typical**.
24. Ensure that the country setting is correct and click **Next**. This setting affects the tone and gain plans for the system.
25. Click **OK** at the Existing hdm.2K window (for **upgrade** only).
26. For an upgrade from Ipera Release 2.0, click the **System** tab in the Mitel Adapter Configurator window. Ensure that **Quality of Service** is enabled and set at **6**. Click **Save**.
27. Select the **RTC** tab in the Mitel Adapter Configurator window. Enter the IP Address and the Default Gateway. Click **Save**, and then click **Reset**. In the Mitel Adaptor Configurator window, click **Yes**, and then click **OK**.

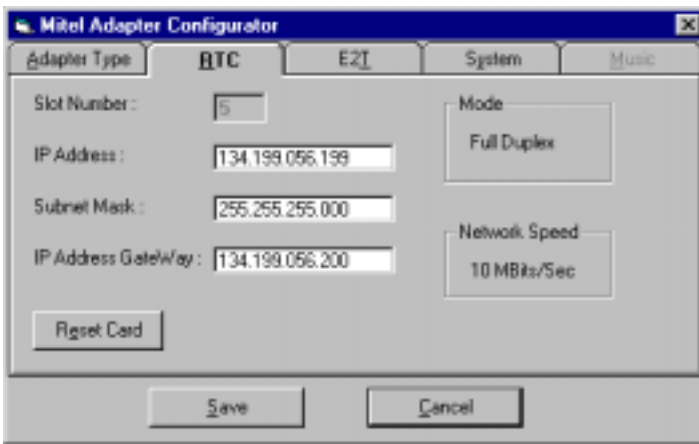


Figure 24: Mitel Adapter Configurator -- RTC

28. Select the **E2T** tab in the Mitel Adapter Configurator window. Enter the IP Address and the Default Gateway. Click **Save**, and then click **Reset**. In the Mitel Adaptor Configurator window, click **Yes**, and then click **OK**.
29. Click **Cancel** to close the Mitel Adapter Configurator window.

Note: The RTC and E2T ports on the Layer 2 Switch must be set to 10 Mbps, full duplex. Do not configure the switch to Auto Configure. The port for the NIC is set to Auto Configure. The NIC is set to Mbps, full duplex.

Note: The RTC/E2T cards can be configured after the upgrade has been completed. See Configure the E2T Card (see page 17) for instructions.
30. In the Hardware Configuration window, select your server platform from the drop-down list. If you have a 1400/1400SR server, select server 800 from the drop-down list; both have the same hardware configuration. Click **Apply**; then click **OK** to accept the default settings:
 - server 1500SR; T1/E1=IRQ14, memory address 0xE0000, MFC=IRQ10

- server 1400/1400SR and 800; T1/E1=IRQ11, memory address 0xE0000, MFC=IRQ10.
31. At the ATAPI DMA Support window, for the 800 server, click Enabled for both channels. After enabling the DMA Support, a warning window will appear. This is normal; click **Yes**. A “**Finished**” pop-up appears; click **OK** for either server.
 32. In the OPS Manager information window
 - **OPS Manager Hostname:** If you are installing the OPS Manager application on this server, enter the 3200 ICP hostname (default is lpera21). If the system will be managed by a centralized network OPS Manager, enter the hostname of that OPS Manager platform; then, click **OK**.
 - **FTP Username:** The user name that is assigned to the FTP account on the 3200 ICP server (default is mnms); then, click **OK**.
 - **FTP Password:** The password that is assigned to the FTP account on the 3200 ICP server (default is mx2000); then, click **OK**.
 33. At the Configure Startup Later window, click **OK**. **3200 ICP** portion of install is **complete**.

OPS Manager:

34. In the NT Schedule Service window, click **Next**.
35. The User Information window confirm the OPS Activation Key information. Click **Next**. For a new install of OPS Manager, enter the OPS Activation Key.
36. At the Purchased Options window, confirm information and click **Next**.
37. Accept **Typical** at the Setup Type screen and click **Next**.
38. At the Start Copying Files screen, click **Next**.

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39. At the World Wide Web Publishing Service screen click **Yes** to stop all WWW services.
40. At the OPS Database installation window click **Upgrade**. The Oracle application installs (for **upgrade** only).
Note: It will take approximately 15 minutes for the Oracle application to install.
41. At the Welcome window, click **Next**.
42. In the Mitel Integrated Directory Services Configure Setup window, click **Yes** or **No**. If you click **Yes**, see step 43.
43. If you are running Integrated Directory Services (IDS), a series of information windows will appear. Select or accept the defaults in each one and click **Next**. See OPS Manager documentation for details (for **upgrade** only).

IMAT:

44. At the IMAT Welcome windows, click **Next**.
45. Click **Yes** at the Software License Agreement window.
46. Click **Next** at the Readme window. Click **Next** at the User Information window.
47. At the Setup Complete window, click **Finish**.
48. At the Information window, click **OK**.

ISDN:

49. At the ISDN Welcome window, click **Next**.
50. Click **Yes** at the Software License Agreement window.
51. Click **Next** at the Readme and User Information windows.
52. At the Setup Complete window, select **Restart now** and click **Finish**. The PBX restarts. The PBX system database will be blank.

53. Proceed to final system configuration (see page 159).

Final System Configuration

Complete these steps after system software installation.

1. Log into Windows NT as administrator, password rmx250.
2. Install Updates and Patches if required (see page 159) (read the FCI). Restart the computer and log in.
3. Launch OPS Manager. If your browser does not host the Java plug-in, follow the on-screen instructions.
4. If new options or MFRDs have been purchased, log into the 3200 ICP system and enable them (see page 160).
5. Restore the PBX database (see page 110) using OPS Manager. Check date and time to restore the most recent database.
6. Reprogram your PBX login passwords and alarm thresholds.
7. Check the system (see page 143).

Installing Updates and Patches

To install Updates and Patches:

1. Log into Windows NT with Administration rights.
2. Exit all Windows NT programs.
3. Insert the PBX CD-ROM in the CD-ROM drive.
4. In Explorer double-click **Lightware_<releasename>_Update.exe** in the Lightware_update folder. In Explorer double-click **lpera2000_<releasename>_Patch.exe**.

5. Follow the on-screen instructions.
6. Restart the computer when requested.

Enabling Options or Changing the MFRDs



Read the Field Change Instruction (FCI) for the new software. FCI includes the latest information about your new software, including special upgrade notes.

Check your options and have your password ready. (You always need a new password for stream upgrades.)

- Have your Mitel Options Sheet with you.
- Confirm that the options listed are the ones purchased.
- Check for custom dimensions (Flexible Dimensioning).

Note the following conditions:

- Lamps for voice mail messages can only be restored if your voice mail system can be refreshed after an upgrade.
- User names, passwords, and alarm thresholds are not saved during a software upgrade. Record this information so it can be manually restored after the 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.

Enabling New Options and MFRDs

You enable the PBX software options through a customer data entry session. Note that the security access module (SAM) must be installed.

1. Perform a Data Save (see page 148).
2. Backup OPS Manager to diskette (see page 150).
3. Access a maintenance session (see page 72).
4. Enter **CU** to select customer data entry mode.
5. Select **System Forms** from the **Form Groups** menu by using the arrow keys on the numeric keypad; then, press the <form menu> softkey.
6. Select **Dimension and Feature Select**. Press the <edit form> softkey.
7. Refer to the computer printout that was shipped with the software CD-ROM disk. This printout provides the MITEL options code, the MITEL options password, and a list of the purchased options.
8. Set all options to match those on the computer printout (Note: X = Yes).
9. Press the <generate> softkey to generate a MITEL options code.
10. Press the <bottom> softkey to return to the bottom of the form.
11. Enter the MITEL options password (from the computer printout) and press the <commit> softkey followed by the <confirm> softkey. The message: "Changes committed. ** Reload the system to make new values effective **" appears.
12. Quit the form.
13. Enter MA to select maintenance mode.
14. To enable the options, enter the LOAD command. The system begins downloading the system software from the hard disk module. After downloading is completed, the desktop screen appears.
15. If you are changing options, the data save is on the hard drive, so simply type data restore.

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If you are performing a software upgrade, perform a data restore. See , *Restoring a PBX Database* (p. 110).

At the end of the data restore complete a dbms save.

16. Enter the following command: DBMS SAVE. This command causes the system to begin automatically saving the database to the hard disk on a continuous basis.

The system returns the following message:

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.

17. Turn on automatic database checking by entering DBM CH ON. Automatic database checking defaults to 5:00 am daily.

Moving, Adding, Changing or Deleting Users

Use the OPS Manager Moves, Adds & Changes application to move, add, change, and delete users from the network. See OPS Manager *Moves, Adds & Changes* for instructions.

Using the Mitel Log Viewer

The Mitel Log Viewer lets you view the following PBX logs:

- Maintenance
- Software
- SMDR

- Hotel/Motel.

You can filter logs based on category or source. As well, you can print or export filtered data from this window. To open the Mitel Log Viewer

- Click **Start**, click **Programs**, click **Mitel Utilities**, and then click **Log Viewer**.

The Mitel Log Viewer window opens.



Deleting NT Logs deletes Mitel Log Viewer logs.

Viewing Logs

To view logs





1. Click **Computer**. Select the computer whose logs you wish to view.

By default, the Mitel Log Viewer connects to the last computer that it was successfully connected to.

2. In the Source field, select **SX-2000 for Windows NT** as the source for the logs. By default, the PBX is selected as the source for the logs.

3. Select the desired log category

The logs are displayed in the window. The contents of the window will change each time you select a different category. An icon is associated with each log:

-  Information
-  Warning
-  Error
-  Unknown

4. Double-click the date of the desired log to display the log. Click **Next** or **Prev** to browse the logs.



Click **Refresh** to refresh the current view.

Searching Logs

To search the logs listed in the Mitel Log Viewer for a text string:

1. Click **Match**. The Pattern Match dialog box opens.
2. Enter the desired text string in the "Find what" field.
3. Click **Case Sensitive** if required, then click **OK**.
Any logs that contain text string are marked with an icon.
4. Click **Refresh** in the Mitel Log Viewer to clear the search.

Exporting Logs

You can export all the logs in a current view to a text file.

1. Click **Export All**. The Save As dialog box opens.
2. Specify a local or remote file.
3. Select **Text Files (*.txt)** as the file type, then click **Save**.
4. Use Microsoft WordPad to view the text file.

Printing Logs

To print the logs in the current view

1. Click **Print All**.
2. Select the printer, printer properties, print range and number of copies, then click **OK**.

Deleting Logs

You cannot delete a subset of logs from the Mitel Log Viewer. To delete logs from the Mitel Log Viewer, access the Microsoft Event Viewer and clear the entire Application log.

Customizing the PBX Outputs

The Log Output Manager dialog box allows you to

- direct PBX logs to a file or serial port; and to a printer or the Windows NT Event Log application
- direct print jobs that are sent to the PBX LPR1 printer port to a file, serial port, or printer.

Customizing the Log Outputs

To customize the log outputs

1. Click **Start**, click **Programs**, click **Mitel Utilities**, and then click **Log Output Manager**.

The Log Output Manager window opens.



Choose send SMDR Logs to a file in the Storage area for a complete record of calls. The Event Log output is a truncated version of the call record.

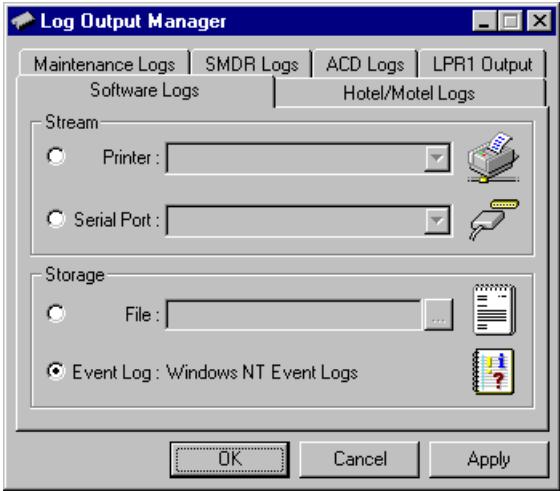



Figure 25: Log Output Manager


2. Click the tab of the desired log source (for example, Maintenance Logs).
3. Click **Printer** and select a printer form the drop-down menu
or
Click **Serial Port** and select a serial port from the drop-down menu. Each log source (for example, Maintenance Logs, Software Logs, and so forth) must use a different port. Logs are redirected to the specified serial port. The serial port uses the current settings.
4. Click **File** and enter a file name. Click the  button to bring up the Open File dialog box.
or
Click **Event Log** if you want the logs to appear in the Windows NT Event Logs. By default, this option is selected.
5. Click **OK**.



To de-select an output source (for example Serial Port), clear the radio button by clicking on it.

Configuring the LPR1 Printer Port

To configure the PBX LPR1 printer port

1. Click **Start**, click **Programs**, click **Mitel Utilities**, and then click **Log Output Manager**.
The Log Output Manager window opens.
2. Click the **LPR1** tab.
3. Click **Printer** and select a printer from the drop-down menu
or
Click **Serial Port** and select a serial port from the drop-down menu. Each log source (for example, Maintenance Logs, Software Logs, and so forth) must use a different port. Logs are redirected to the specified serial port. The serial port uses the current settings.
4. Click **File** and enter a file name. Click the  button to bring up the Open File dialog box.
or
Click **Event Log** if you want the logs to appear in the Windows NT Event Logs. By default, this option is selected.
5. Click **OK**.

Scheduling Automatic System Reboots

You can schedule the system to automatically reboot the PBX server on a daily or weekly basis.



Schedule system reboots to occur after hours. A system reboot results in a loss of telephone service.

To schedule automatic system reboots

1. Click **Start**, click **Programs**, click **Mitel Utilities**, and then click **Reboot Scheduler**.

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2. Click the **Schedule** check box.
3. Click the desired day(s) of the week. Enter the time in 24-hour format.
4. Click the **Message** check box. In the display box, type the message that you want displayed on the screen before the reboot occurs. Enter the length of time (0 to 3600 seconds) that you want this message displayed before the system reboots.



Click the Secure Auto Logon check box only if the server is in a secure location and only if you have an application that needs logon to run.

5. Click **OK**.



After the reboot message is launched, you can still abort the reboot by typing the <Esc> key.

To disable a scheduled reboot

1. Clear the **Reboot** check box.
2. Click **OK**.

To disable the displayed message

1. Clear the **Display** check box.
2. Click **OK**.

To disable automatic log on

1. Clear the **Automatically log on as** check box.
2. Click **OK**.

After the scheduled reboot, the standard logon prompt (**Press Ctrl-Alt-Delete** to log on) is displayed.

About the Mitel Services Recovery Manager

Each time you start the PBX server, it automatically starts the Services Recovery Manager (SRM) service to

- start up and shut down services in a specific order
- monitor the performance of critical applications.

If a failure in one or more services creates an NT event log message, then resets the faulty service to restore functionality.

What Services are Managed?

SX-2000 for Windows NT services

OPS Manager for Windows NT services

Mitel Computer Integration services

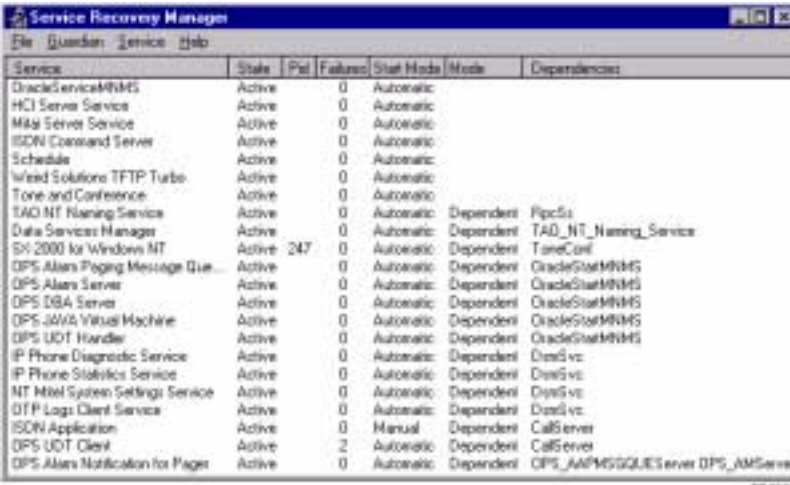
Third-Party services

Using the Mitel Service Recovery Manager

To open the Mitel Service Recovery application

1. Click **Start** and then click **Windows NT Explorer**.
2. Navigate to the following file:
C:\Program Files\Mitel\Shared\Bin\SRMWIN.exe
3. Double-click on SRMWIN.exe.

The Service Recovery Manager window opens (see Figure 26). It lists the status of all the Mitel services.



The screenshot shows the Service Recovery Manager window with a menu bar (File, Quanta, Service, Help) and a table of services. The table has columns for Service, State, Pid, Failures, Start Mode, and Dependencies. The services listed include OracleServiceMNMG, HCI Server Service, Mitel Server Service, ISDN Command Server, Schedule, Inland Solutions TFTP Turbo, Tone and Conference, TAD NT Naming Service, Data Services Manager, SX 2000 for Windows NT, OPS Alarm Paging Message Que..., OPS Alarm Server, OPS DBA Server, OPS JAVA Virtual Machine, OPS UDT Handler, IP Phone Diagnostic Service, IP Phone Statistics Service, NT Mitel System Settings Service, GTP Logs Client Service, ISDN Application, OPS UDT Client, and OPS Alarm Notification for Pager.

Service	State	Pid	Failures	Start Mode	Mode	Dependencies
OracleServiceMNMG	Active		0	Automatic		
HCI Server Service	Active		0	Automatic		
Mitel Server Service	Active		0	Automatic		
ISDN Command Server	Active		0	Automatic		
Schedule	Active		0	Automatic		
Inland Solutions TFTP Turbo	Active		0	Automatic		
Tone and Conference	Active		0	Automatic		
TAD NT Naming Service	Active		0	Automatic	Dependent	Pipc5a
Data Services Manager	Active		0	Automatic	Dependent	TAD_NT_Naming_Service
SX 2000 for Windows NT	Active	247	0	Automatic	Dependent	ToneConf
OPS Alarm Paging Message Que...	Active		0	Automatic	Dependent	OracleStartMNMG
OPS Alarm Server	Active		0	Automatic	Dependent	OracleStartMNMG
OPS DBA Server	Active		0	Automatic	Dependent	OracleStartMNMG
OPS JAVA Virtual Machine	Active		0	Automatic	Dependent	OracleStartMNMG
OPS UDT Handler	Active		0	Automatic	Dependent	OracleStartMNMG
IP Phone Diagnostic Service	Active		0	Automatic	Dependent	Dns5 vs.
IP Phone Statistics Service	Active		0	Automatic	Dependent	Dns5 vs.
NT Mitel System Settings Service	Active		0	Automatic	Dependent	Dns5 vs.
GTP Logs Client Service	Active		0	Automatic	Dependent	Dns5 vs.
ISDN Application	Active		0	Manual	Dependent	CallServer
OPS UDT Client	Active		2	Automatic	Dependent	CallServer
OPS Alarm Notification for Pager	Active		0	Automatic	Dependent	OPS_ALARMQUEUEServer OPS_AMServer

Figure 26: Mitel Service Recovery Manager

Setting the Refresh Rate

The refresh rate determines how frequently the information in the window is updated. To set the refresh rate

1. On the **File** menu, click **Properties**.
2. Enter the refresh rate in seconds (between 5 and 30).

Starting and Stopping Services

To start or stop a service

1. Click the service.
2. On the **Services** menu, click **Start** or **Stop**.



If you stop a service that other services depend on, then those services will also be stopped. A loss of telephone service could result.



If you start a service that depends on other services, then those services will be started in the correct sequence.

To start or stop all services

- On the **Guardian** menu, click **Start All** or **Stop All**.



Stopping all services causes a loss of telephone service.

Changing the Service Start Mode

To make services Manual/automatic start:

1. Select the services.
2. Pull-down the Service/Start Mode Menu.
3. Select the appropriate option from the menu.

Chapter 6

Maintenance Commands

Accessing a Maintenance Session

From the OPS Manager Application



To access a maintenance session from the OPS Manager application, see page 72.



For instructions on how to use the keyboard, see page 87.

Through a Telnet Session



If telnet security is enabled, your computer must be authorized to telnet into the PBX system. The IP address of your subnet or host (computer) must be entered in the “Allowed IP/Subnet Address” field of the Telnet Security Access form except for the local server IP address.

To access a maintenance session through telnet.

1. Click **Start > Run**.
2. Type **telnet** followed by the server hostname or IP address and port number 222.
Note: Port number 222 applies with 3200 ICP Release 2.3 O/S software or later.
3. Log on by using the user name and password for the maintenance session. Default user name is “installer”. Default password is “sx2000”.
4. After you are connected, issue a screen refresh command (CTRL-w) to redraw the screen if necessary.

A PBX maintenance session appears on your screen.

Note: Not all telnet clients support all the VT100™ commands; some screens may not be drawn completely and some keyboard keys may not function (for example dial pad softkeys).

Basic Commands

Accessing Desktop Mode

DESKTOP

Returns the screen to desktop mode.

Logging Out

DESKTOP <Ret> <Esc> 1

Logs you out of the system.

Selecting a Different Language

LANGUAGE Select <language> ALL FROM <catalog>

To change the language of the system. English and German are available on all components of the system. French, Italian, and Spanish are available only on the set displays.

Getting Help

HELP

Displays a list of maintenance commands. Enter <Esc> q or press <PF4> to exit.

HELP <command>

Provides an explanation of maintenance commands. Enter <Esc> q or press <PF4> to exit.

Changing a Password

CHange Password

Changes password of logged in user. Also see *Resetting the Password for a Lower Level* (page 177).

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 Usernames

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

Displaying Usernames

DISplay Usernames

Lets a System-level user to display a list of all valid user names.

Switching from CDE or Desktop to Maintenance Mode

MAintenance

Changes from CDE or desktop mode to maintenance mode.

Stepping Back Through Commands

<Esc>

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

<Esc> <Ctrl> j

Displays the previously issued command in the command line. You can step back through all commands previously entered during the session.

Displaying the System Software Revision

WHere

Displays the software revision of the system.

Displaying the System Software Versions

VErsion

Displays the software versions of the main control load and the peripheral processor loads. You can also apply this command to particular processors (for example, VE PERIPH.)

Reading the system time

Time <hh:mm:ss> AM/PM

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

Reading the system date

DATE <yyyy-mmm-dd>

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

Changing the Parity of a DNIC Port

PARlty <XYZ> <port name>

Changes the parity of a 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 LPR1.

Refreshing the Terminal Screen

<Ctrl> w

If the screen doesn't refresh, enter <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 LPR1

FOrmprint <form name> /ALL /PORT LPR1
ENable Print /Nonqueued

Prints all instances of the specified form to the file, serial port, or printer specified for port LPR1. See *Configuring the LPR1 Printer Port* (page 167). Enter **<Ctrl> c** to terminate printing.

PRInt <filename> /PORT LPR1
ENable Print /Nonqueued

Prints the specified file to the file, serial port, or printer specified for port LPR1. See *Configuring the LPR1 Printer Port* (page 167). Enter **<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> /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.

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 at the specified printer.

Cancelling a Print Job

CANcel Print ALL

Cancels all print jobs on the default printer.

CANcel Print <job number>

Cancels specified print job on the default printer port.

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

Cancels specified print job on the specified printer port.

Assigning a New Default Printer

MYprinter <printer name>

Assigns a new default printer for PBX print jobs.

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 the LPR1 port will print. 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, enter **<Ctrl> c**.

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 SStatus 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>**.

Returning a Busy Circuit or Trunk to Service

RTS <plid>

or

RTS TRUNK GROUP <group number> ALL

Removing a Courtesy Down Request

RCD <plid>

Removes a previous request to busy a peripheral circuit at plid.

Testing Circuits

TEst <plid>

Tests the circuit(s) at plid.

TEst <plid> Continuous

Repeatedly tests the circuit(s) at plid. Enter **<Ctrl> c** to end test.

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.

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TEst Trunk Group <group number>

Tests the trunks in the specified trunk group.

TEst <plid> Until Fail

Repeatedly tests the circuit(s) at 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 plid.

Main Control Commands

Turning Background Diagnostics On/Off

BACKground OFF/ON

Turns background diagnostics on or off.

BACKground OFF/ON <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 plid. Note that this command only applies to the cards installed in the peripheral node; that is, cabinet 2.

Configuring Cards in a New System

REConfiguration

This command automatically programs all the installed cards into the CDE System Configuration form. You use this command on a new system that does not have a saved database. If the database has already been saved, you will receive an error message.

Identifying System Resource Shortages

CONGestion

Lists system resource shortages.

Identifying Cards

PROM <plid>

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

Reloads the PBX system software.

LOAd <plid>

Loads software into the processor in the specified card slot.

LOAd Controllers

Loads software into all peripheral processors, Dual E1 and Dual T1 cards, 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.

Displaying the Status of Communication Paths

MEssage SUB

Displays status of message links between main control, and peripheral and digital trunk card processors. All links should be open.

Collecting Traffic Data

You set up traffic data collection in 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 for the period.

Displaying Traffic Files

CATalog INFO *.TRAFFIC

Displays a list of the traffic files.

Example display: *.TRAFFIC.1995FEB091200

To display the contents of a traffic file enter the file name. For example, enter: *.TRAFFIC.1995FEB091200

Database Commands

Checking the Database

DBMs CHECK FULL

Gives the number of database errors. There should be zero view and zero table errors. If there are errors, see page 110.

DBMs KILL

Terminates a DBMS CHECK in progress.

DBMs CHECK ON/OFF

Turns automatic database checking on/off. Default is 5:00 a.m. daily.

DBMs STATUS

Gives the status (on/off) of the DBMS Flag (indicated by "DBMS_INITIALIZED is on/off") - see also *DBMs FLag OFF* (page 192). The normal status is "DBMS_INITIALIZED is ON".

DBMs Query

Displays the dimension number, the number of cabinets, and the 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 Download

Copies the database from the *.REDUNB catalog on the hard disk into RAM.

DBMs FLaG OFF

Use this command with caution. Blanks the database on the next system reload. It must precede a DATA Restore. See also *DBMs STATus (page 191)*.

DATA SAve

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

DATA Restore

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

DATA Query

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

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 (the purpose it serves).

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}>

Identifies the first available PLID in a range.

LOCate ALL FREE PLID <card type> <plid_{start}> TO <plid_{end}>

Identifies all available PLIDs in a range.

LOCate FIRST FREE DN <dn_{start}> TO <dn_{end}> EXT

Identifies the first available unassigned directory number in a range.

LOCate ALL FREE DN <dn_{start}> TO <dn_{end}> EXT

Identifies all available unassigned directory numbers 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.

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

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.

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.

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>.

DTstat Read <APNss or DPNss> Group <#>

Gives the status of an APNSS or DPNss 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>.

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 Hybrid <plid of CEPT or DS1 formatter card> <hybrid>

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

RTS <plid of CEPT or DS1 formatter card> <hybrid>

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 source #.

NEtsync SEtsource FREERUN

Stops the system from synchronizing to any external sources.

NEtsync SEtsource AUTO

Allows the system to choose the most reliable sync source.

Displaying Synchronization Information

NEtsync SState

Lists the state of the sync source.

NEtsync SUmmary <shelf # of synch source>

Gives a performance history of the system's sync sources.

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 hours specified.

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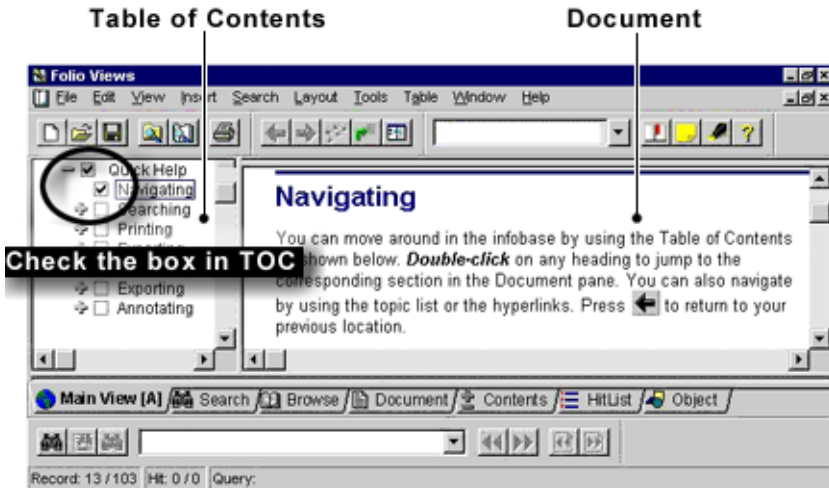
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E-Doc Tips

How do I print a procedure from the infobase?

1. In the Table of Contents, select the check box of the section that you want to print.



Advanced Graphical User Interface Example

2. On the **File** menu, click **Print**.
3. Click the **Print Document** tab.
4. Click **Section**.



CAUTION: Do not click **all** or you will print the entire infobase.

5. Click **OK**.

How do I export a section of the infobase to a word processing file?

1. In the **Table of Contents**, select the check box of the section that you want to export.
2. On the **File** menu, click **Export**.
3. In the **Save In** list, select the save location.
4. In the **File name** box, type a name.
5. In the **Save as type** list, select a file type.


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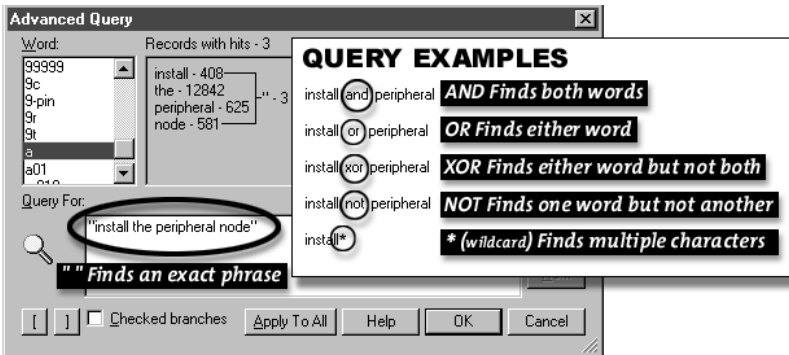
6. In the **Export Range** list, select **Checked Branches**.
7. Click **Export**.

How do I get more information?

The documentation CD-ROM contains all of the technical information in an electronic file called an “infobase”. Folio Views, the infobase viewer, has powerful search capabilities that let you find information quickly and easily. Once you’ve found the information that you need, you can read it on-line, print sections, or export segments to word processing files.




How do I search the entire infobase?

1. Click .
2. In the **Query For** box, type your search criteria.



3. Click **OK**.
To view the next hit, click ; to view the previous hit, click .

How do I search a section of the infobase?

1. In the **Table of Contents**, select the check box of the section that you want to search.
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3. In the **Query For** box, type your search criteria.
4. Ensure that the **Checked branches** check box is selected.
5. Click **OK**.
To view the next hit, click ; to view the previous hit, click .

Reference for Product Name Changes	
Old Name	New Names
Ipera 1000	March Networks™ 3100 Integrated Communications Platform (ICP)
	March Networks™ 3100 Controller
	March Networks™ 3100 Expansion unit
Ipera 2000	March Networks™ 3200 Integrated Communications Platform (ICP)
Ipera 3000	March Networks™ 3300 Integrated Communications Platform (ICP)
	March Networks™ 3300 Software Rel xx
	March Networks™ 3300 Controller
Network Services Unit 3020	March Networks™ 3300 Universal Network Services Unit
Network Services Unit 3021	March Networks™ 3300 R2 Network Services Unit
Network Services Unit 3022	March Networks™ 3300 BRI Network Services Unit
Analog Services Unit 3030	March Networks™ 3300 Universal Analog Services Unit
Analog Services Unit 3031	March Networks™ 3300 Analog Services Unit
	March Networks™ 3300 In-Line Power Unit
QUICK Installation Tool	March Networks™ 3300 Configuration Tool
38XX Gateways	
Ipera Applications Gateway	March Networks™ 3800 Applications Gateway
Ipera 2000 with Ericsson Mobile Advantage	March Networks™ 3800 Ericsson Mobile Advantage Gateway
Xipnet	March Networks™ 3800 IP Trunking Gateway
(no old name)	March Networks™ 3800 Ericsson Wireless Assistant Gateway
4XXX Hardware Peripherals	
Networks IA ² D	March Networks™ 4500 Integrated Access Device
5XXX User Interfaces Devices	
Superset 501 IP	March Networks™ 5001 IP Phone
Superset 505 IP	March Networks™ 5005 IP Phone
Superset 510 IP (4015 IP)	March Networks™ 5010 IP Phone
Superset 520 IP (4025 IP)	March Networks™ 5020 IP Phone
Webset	March Networks™ 5140 IP Appliance
Small Office Conf Unit	March Networks™ 5305 IP Office Conference Unit
Board Room Unit	March Networks™ 5310 IP Board Room Conference Unit
PC Console (SC 2000)	March Networks™ 5550 IP Console
PKM12	March Networks™ 5410 Programmable Key Module
PKM48	March Networks™ 5415 Programmable Key Module
SIM1	March Networks™ 5421 Interface Module

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Reference for Product Name Changes (continued)	
Old Name	New Names
SIM2/AIM	March Networks™ 5422 Analogue Interface Module
IrDA Module	March Networks™ 5423 IrDA Module
PDA Software	March Networks™ 5810 PDA Application
Impresa Personal Assistant	March Networks™ 5820 Desktop Assistant
SC1000 for IP	March Networks™ 5500 IP Console
SIP Phone (POTS)	March Networks™ 5051 SIP Phone
SIP Phone	March Networks™ 5055 SIP Phone
6XXX Applications eComm/eBusiness	
	March Networks™ 6000 Small Business Applications Server (SBAS)
Customer Interaction Suite	March Networks™ 6100 Contact Center Solutions (CCS)
Impresa Workforce	March Networks™ 6120 Contact Center Scheduling
Impresa iQueue	March Networks™ 6160 Intelligent Queue (IQ)
Impresa <u>Cyber@ED</u>	March Networks™ 6150 Multimedia Contact Center (MCC)
Impresa CyberACD	March Networks™ 6110 Contact Center Management (CCM)
CyberACD Interactive	March Networks™ 6115 Interactive Contact Center
Nurse Dispatch	March Networks™ 6451 Intelligent Dispatch (ID)
Speak@Ease	March Networks™ 6500 Speech Enabled Applications
<u>Speak@Ease</u> Attendant	March Networks™ 6500 Speech Enabled Attendant
<u>Speak@Ease</u> Messenger	March Networks™ 6500 Speech Enabled Unified Messaging
7XXX Applications Network Management	
OPS Manager for 3300 ICP	March Networks™ 7100 Network Management
8XXX Business Services	
8100	March Networks™ 8100 Service Solutions Portfolio
8200	March Networks™ 8200 Managed Broadband Services