

MITEL NETWORKS

3300 | Integrated
Communications Platform

TECHNICIAN'S HANDBOOK

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Product Information

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Contacting Technical Support

Please contact Mitel Technical Support if you require technical assistance. Before you call, check this Help system for tips and solutions. If you are unable to find a solution, please have the following information ready when you call:

- The product serial number
- The nature of the problem
- What you were doing with the application when the problem occurred
- Troubleshooting results.

Sending Us Feedback

If you have suggestions on how to improve this documentation, please contact:

Mitel Networks Corporation
World Headquarters
350 Legget Drive, P.O. Box 13089
Kanata, Ontario, Canada K2K 2W7
Telephone: 613-592-2122
Fax: 613-592-4784

Internet: <http://www.mitel.com>
Email: techpubs@mitel.com

About The Document Set

The Mitel Networks 3300 ICP documentation set includes the following components:

- General Information Guide (Web Site, CD-ROM, and system)
- Technician's Handbook (Web Site and paper with the system)
- Manual Maker (Web Site)
 - Embedded User Information (Web Site and system)
 - Hardware User Guide (Web Site, CD-ROM, and system)
- Configuration Tool Online Help (Web Site, CD-ROM)

- System Administration Tool Online Help (Web Site, CD-ROM, and system)
- IMAT Online Help (CD-ROM).

Install System

System Installation Overview



The ground symbol within a circle identifies the terminal to be connected to an external protective conductor. Connect this terminal to earth ground before you make any other connections to the equipment.

To install the 3300 ICP system:

1. Install the 3300 ICP Controller
2. Configure the Controller
3. Install the Universal NSU
4. Install the R2 NSU
5. Install the BRI NSU
6. Install the Universal ASU
7. Install the ASU
8. Install the Peripheral Unit
9. Install the SUPERSET HUB
10. Install the Digital Service Unit
11. Install Wireless Devices
12. Connect the Controller to the LAN
13. Launch the System Administration Tool to program the system. (Refer to Overview of Programming).



Tip: You can complete all of the programming without having physical connections to the Controller. After programming you can connect units to the controller and then power-up the system.

Installation Planner

The following required and default settings are necessary for an installation:

System Administration Tool	
username	(Default = system)
password	(Default = password)

Controller Configuration (RTC)			
	Default Settings	Settings to Change	
boot device	ata=0,0		
processor number	0		
host name			
file name	/sysro/RTC8260		
inet on ethernet (e)	192.168.1.2		IP address: subnet mask
inet on backplane (b)			
host inet (h)			IP address: ftp server
gateway inet (g)			Default Gateway
user (u)	ftp		FTP user (installer's PC)
ftp password (pw)	@		FTP password (installer's PC)
flags (f)	0x0		
target name (tn)			
startup scripts (s)			
other (o)	motfcc		

DHCP Configuration (for scope supporting IP Voice devices)			
IP Address Scope			
Start Address			
End Address			
Subnet Mask			
Lease Duration	Days:	Hours:	Minutes:
Options (for all devices)	Identifier	Data Type	Value
(Router) Default Gateway	003	IP Address	
Options (for WEB devices)			
DNS Server	006	IP Address	
DNS Domain Name	015	ASCII String	
Options (for 3300 E2T)			
TFTP Server (hostname or IP)	066	ASCII String	(typically the IP address of the controller RTC)
TFTP BootFile	067	ASCII String	/sysro/E2T8260
Options (for IP Phones)			
Mitel IP Phone DHCP server	130	ASCII String	MITEL IP PHONE
IP Phone TFTP Server	128	IP Address	(typically the IP address of the controller RTC)
MN3300 (RTC) IP Address	129	IP Address	
VLAN ID	132	Hex Long (32 bit word)	e.g. 0x2
VLAN Priority	133	Hex Long (32 bit word)	0x6

Capacity

The 250-user 3300 ICP will support one of the following maximum configurations:

- 250 IP telephones and 96 ONS telephones with no peripheral unit support.
- 250 IP telephones and a 192 port peripheral unit with a DTMF card installed.
- a combination of IP, ONS, and DNI telephones (for example, 100 IP telephones, 96 ONS telephones, and 100 DNI telephones on a peripheral unit).

The 700-user 3300 ICP will support the quantities listed in the following hardware and feature capacity tables.

3300 ICP Hardware Capacity	
Parameter Name	Number
Attendant Consoles	24
DNI Channels	2368
Programmable Key Modules	75
System Ports	
- DTMF Receivers	128
- Multiline Sets	756
- Single Line Sets (ONS/OPS Lines)	700
- Trunks	628
Tone Detector Circuits	32

3300 ICP Feature Capacity	
Parameter Name	Number
ACDII - Agent Groups	32
Agents per Group	500
ACDII - Agent IDs	1181
ACDII - Agent Paths	256

3300 ICP Feature Capacity	
Parameter Name	Number
Attendant Console Groups	48
Attendant Console Calls Waiting	72
Broadcast Groups	1875
- Members per Broadcast Group	32
Busy Lamp Groups (Monitored Devices)	439
- Members per Busy Lamp Group	16
Call Reroute Always	176
Call Reroute 1st Alternates	336
Call Reroute 2nd Alternates	32
Class of Restriction (COR)	96
Class of Service (COS)	96
Conferences; maximum	5
Conferees in a conference; maximum	5
Default Account Codes	225
Departments (in Tel Dir)	2000
Digit Modification Tables	256
Digit Blocks	4055
Digital Links	16
Group Page Groups	16
Hunt Groups	176
- Members per Hunt Group	64
Independent Account Codes	1000
Locations (in Tel Dir)	250
Modem Groups	15
Modems per Modem Group	10
MSDN/DPNSS Cluster Elements	30
MSDN/DPNSS Remote Directory Numbers	18500
Networked ACD - Remote Agent Subgroups	32

3300 ICP Feature Capacity	
Parameter Name	Number
Page Groups (Zones)	16
Personal Speed Call Users (blocks of 10 speed calls per user)	500
Pickup Groups	200
- Members per Pickup Group	75
Routes	200
Route Lists	128
Speed Call Digit String (avg. 12 digits)	1500
SUPERSET Callback Messages per System	500
System Account Codes	24
System Digit Strings	6814
System Speed Call	600
Telephone Directory Entries	19995
Trunk Groups	112
Trunks per Trunk Group	175
Trunk Service Numbers	150

Fiber Interface Module (FIM)

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 lightweight 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).

WARNING: 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.

Specifications

At each end of a fiber optic cable is a Fiber Interface Module (FIM). At the transmitting end, the FIM converts electrical signals into pulses of light to be transmitted over the cable. At the receiving end, the FIM converts the pulses of light back into electrical signals usable by the node.

The FIM connects the 3300 Controller to a peripheral unit or DSU. These FIMs cannot be installed in the Applications Gateway. Each FIM variant may be identified by its optical wavelength and fiber type (indicated on the FIM faceplate). The same FIM variant must be used at each end of a fiber optic cable. However, a node may be equipped with different FIM variants to suit the length of each cable run.

Fiber Interface Module Specifications (9400-300-301-NA)	
Approximate maximum fiber cable run length (See Note 1)	1km (0.62 miles)
Power consumption (Watts)	2.5
Number of fiber links per FIM	1 Tx, 1 Rx
Fiber connector type	ST (See Note 2)
Electrical interface (See Note 3)	8 serial ST links
Optical wavelength (nm)	820
Optical budget (See Note 4)	6 db
Date rate (Mbits/second)	16.384
Bit rate after encoding (Mbaud)	20.48

Fiber Interface Module Specifications (9400-300-301-NA)	
Fiber optic cable type	62.5/125 um Multimode
Notes: 1. The run length is the one-way length of fiber optic cable between nodes. 2. ST is a registered trademark of AT&T. 3. Some channels of the electrical interface are not available. 4. The optical budget is the allowable loss through fiber optic cable, splices, and connectors. The optical budget applies to the run length.	

Operation

The FIM has three functional sections: a transmitter, a receiver, and a control section.

The transmitter section accepts data from the node in which it is installed. The data is converted to byte-interleaved format, and a checksum is calculated. The checksum byte is combined with the data and the frame synchronization information. The frame is encoded as serial data and transmitted on the fiber.

The receiver section converts the incoming data to parallel format, extracts the frame synchronization information, and decodes the data. Control and status information is extracted and further decoded. The checksum is verified and an error counter updated. The status information and data are combined, frame-aligned, and re-formatted for output.

The control section generates control signals and the transmit clocks. This section also regenerates the telephony clocks for the peripheral nodes, and provides status information for the Main Controller.

Two LEDs indicate the detection of local and remote clocks.

Controller

Configurations

There are several configuration options for the 3300 ICP:

- 250 user system without compression
- 250 user system with 32 compression channels
- 250 user system with 64 compression channels
- 700 user system without compression
- 700 user system with 32 compression channels
- 700 user system with 64 compression channels.

The following top view diagram shows the MMC/A slot numbering convention. The diagram also indicates the type of MMC module that will be used in a particular slot. Slots 1 through 4 allow connectors to protrude through the front panel.

3300 ICP MMC SLOT NUMBERING CONVENTION

Rear Panel

Slot 8 For Telecom DSP	Slot 7 For Telecom DSP	Slot 6 For Telecom DSP or Echo Cancellor	Slot 5 For Echo Cancellor
Slot 1 For FIM	Slot 2 For FIM	Slot 3 For Compression DSP	Slot 4 For Compression DSP

Front Panel

IP0416

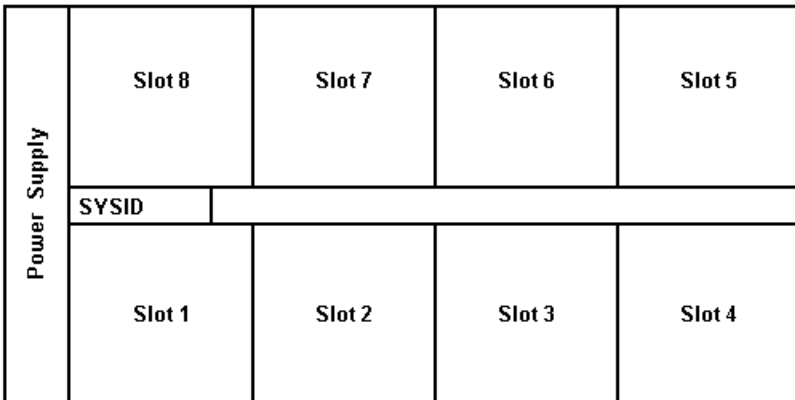
Install the System ID Module

The system ID module is shipped with the software. You must install the system ID module in the 3300 ICP controller. The module contains a unique identifier that the system reads on start-up.

To install the System ID Module:

1. Remove the cover.
2. Press firmly to seat the module on the board. Placement is between MMC 1 (the Dual FIM) and MMC 8 (the DSP). The module will cover the 'MMC 8' text printed on the board.
3. Replace the cover.

System ID Module Placement



IP0421

Install the 3300 Controller

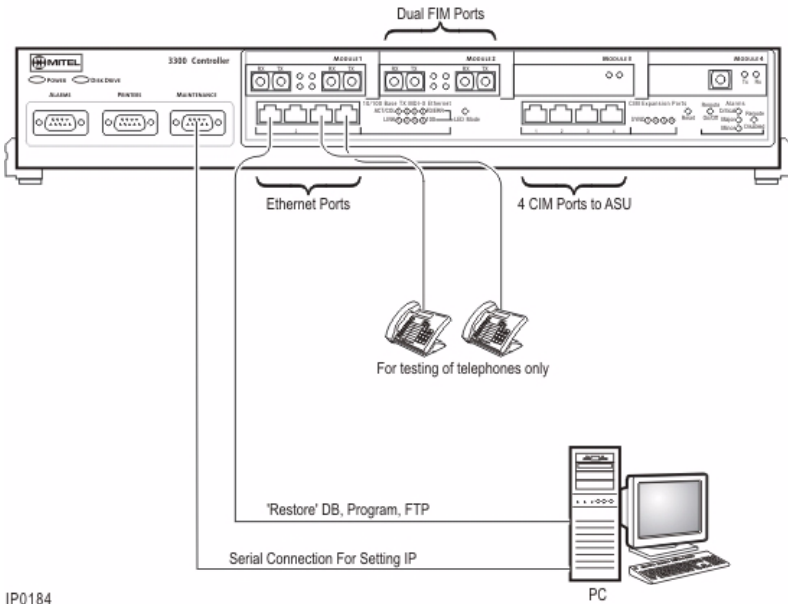
To install the 3300 Controller:

1. Install the System ID Module.
2. Set up a serial connection between the 3300 Configuration Tool PC and the Maintenance (RS-232) port on the 3300 Controller. Baud rate - 9600, Data bits - 8, Parity - None Stop bits - 1, Flow control - None.
3. Set up an Ethernet connection between the 3300 Controller and the 3300 Configuration Tool PC (a standard LAN cable from an RJ-45 connector on the 3300 Controller L2 switch to the PC NIC).



Note: You can connect IP telephones to the 3300 Controller through L2 switch external ports, for testing only, after installation of the database and configuration. IP Phones require a configured DHCP server.

3300 ICP Controller Installation



IP0184

Configure the Controller



Note: Before you begin, you should review the LAN and WAN guidelines and plan the network. Complete the Installation Planner. You will need to know the IP addresses reserved by the customer for the 3300 ICP Controller (one for the RTC and one for the E2T) and for the IP Phones.



Time: The initial power-up and the reset in this procedure will each take 15 to 20 minutes.

To complete the installation of the Mitel Networks 3300 ICP:

1. Connect power to the 3300 Controller. The controller will come up, in 15 to 20 minutes, with factory-installed software.
2. To check connections between the 3300 Controller and the PC:
PING the 3300 Controller IP address
FTP to the 3300 Controller IP address
Go to the 3300 Controller URL address (<http://192.168.1.2>).
3. Launch browser to login to the System Administration Tool (<http://192.168.1.2> -- username is system, password is password).
4. Optional. Install the Mitel Networks 3300 Configuration Tool on your PC. Use the Configuration Tool to reset the default database, import the .csv file, and make programming changes. Refer to the 3300 Configuration Tool online help for detailed instructions.
5. Enable the options in the License and Option Selection form and reboot.
6. Program the system by using the System Administration Tool or restore a database.
7. Configure the DHCP Server with IP addresses provided by the customer. Refer to the Note and default settings table following this procedure.
8. If you are using an external DHCP Server, disable the internal DHCP Server.
9. Perform a Backup.

10. Reboot the system.
11. Set the 3300 Controller (RTC) IP address through a communication program.
12. Install the other units as described in the System Installation Overview.
13. As the final step, connect the 3300 Controller to the LAN.



Note: You may use the internal or an external DHCP Server. The controller is shipped with the DHCP server Enabled. Use DHCP reservations against the MAC address for the E2T.

Internal DHCP Server default settings - shipped enabled		
TFTP Server	066	192.168.1.2
TFTP BootFile	067	/sysro/E2T8260
IP Phone TFTP Server	128	192.168.1.2
MN330 (RTC) IP Address	129	192.168.1.2
Mitel IP Phone DHCP Server	130	MITEL IP PHONE
Range	Start End	192.168.1.20 192.168.1.24

Set the 3300 Controller IP Address

To set the 3300 Controller IP address:

1. Establish a serial connection from the 3300 Configuration Tool PC (or any PC equipped with a communications program) to the Maintenance Port on the 3300 Controller.
2. Launch the communication program.
3. Set the RS-232 communication parameters:
 - Baud rate - **9600**
 - Data bits - **8**
 - Parity - **None**
 - Stop bits - **1**
 - Flow control - **None**
4. Connect AC power to the 3300 Controller.

5. Press the Reset button on the 3300 Controller with a small pointed object.
6. Wait for the "Press any key to stop auto-boot" message and then press a key.
7. At VxWorks Boot type **c** and then press Enter.
Press Enter after you enter required text. For all other fields, (displayed in grey text, for information only) accept the default value or leave blank.
boot device: ata=0,0 (Boot device is Disk)
unit number: 0 (default, leave at 0, not used)
processor number: 0 (default, leave at 0, not used)
host name: (optional)
file name: /sysro/Rtc8260 (boot location and file name)
inet on ethernet (e): **134.199.63.11:ffffff00** (example RTC IP and subnet mask)
Note: Type the IP address and subnet mask (in hexadecimal format for the end user's site (i.e. ffffff represents 255.255.255.00).
inet on backplane (b):
host inet (h):
gateway inet (g): **134.199.63.251** (example Router (Gateway) address)
Note: Enter the IP address of the end user's gateway for the 3300 Controller.
user (u): ftp (must be ftp for Release 3.1)
ftp password (ftp) (blank = @):
flags (f): 0x0 (a fixed IP address (0x40 is used on E2T for DHCP)
target name (tn):
startup script (s):
other (o): motfcc (other device, E2T using Network to boot from)
8. Press the **Reset** button on the 3300 Controller.
9. Remove the Serial connection. The system will return to service in about 10 to 15 minutes.



Note: It may be helpful to leave the serial connection in place to capture any potential errors.

Network Services Units

Install the 3300 Universal NSU

To install the 3300 Universal NSU:

1. Set DIP switch #6 for Network or Line termination mode. The default is network termination mode. Refer to Universal NSU DIP Switch Settings.
2. Establish a fiber connection from the fiber port on the NSU to the fiber port on the 3300 Controller.
3. Connect the NSU L0 and/or L1 port to the remote system (the PSTN or another system) by using Category 5 cable.
4. Connect power to the NSU.



Note: The Ethernet port is used for FTP upgrades.



Note: The cable for the CIM ports must be an Ethernet crossover cable.

Install for PRI/Q.SIG

To install and configure the 3300 Universal NSU as a PRI/QSIG variant:

1. Install a Direct Connection Device Driver on a computer.
2. Create a Dial-up Network connection on your computer.
3. Connect the computer to the 3300 Universal NSU.
4. Use the IMAT Tool to complete required PRI configuration.
5. Connect the 3300 Universal NSU to the ISDN network.

Connecting a Laptop Computer to the NSU

To connect a computer to the NSU:

1. Install IMAT. From the 3300 Software CD-ROM, run Tools/IMAT/Disk1/setup.exe.
2. Use a straight through serial cable for a direct connection.

3. Use a null modem adapter if connecting to the card through a modem.
4. If you have not already done so on the laptop computer, install a Direct Connect modem type. You may also wish to install a modem for remote connection.
5. On the laptop, create a new Dial-up Networking entry.

Create a Modem Connection

1. Install the modem following the manufacturer's installation instructions.
2. In the Modem Properties/Advanced Settings window - Turn off error control - Turn on flow control and select Hardware.

Install Direct Connect Device Driver

By default, Windows does not support a direct cable connection. You must add a device driver. Windows takes the information from a Mitel file and creates the driver called NT Direct Connection.

Refer to detailed installation and configuration instructions for:

- Direct Connection Device Driver for Windows 95 and Windows 98
- Direct Connection Device Driver for Windows 2000 Professional

Driver for Windows 95 and Windows 98

To install and configure the Direct Connection Device Driver for Windows 95 or Windows 98:

1. On the **Start** menu, point to **Settings**, and then click **Control Panel**.
2. Double-click the Modems icon.
3. In the Modem Properties window, click **Add**.
4. In the Install New Modem screen, click **Other**.
5. Select **Don't detect my modem, I will select from a list**. Click **Next**.
6. Click **Have Disk**.

7. Type c:\Program Files\Mite\lmat in the Copy manufacturer's files from field and click **OK**.
8. On the Install from Disk window, click **OK**.
9. Click **Next** to select the NT Direct Connection.
10. Select COM 1 or COM 2, and then click **Next**.
11. Click **Finish**.
12. In the Modem Properties window, select **NT Direct Connection**, and then click **Properties**.
13. Set the following parameters:
 - Maximum speed: 38400
 - Check: only connect at this speed
 - Data bits: 8
 - Parity: none
 - Stop bits: 1
 - Mode: auto answer In the Advanced Settings window, do the following for a direct connect cable:
 - Turn off: error control
 - Turn off: flow control
14. Click **OK** and close the Control Panel window.

Driver for Windows 2000

To install and configure Direct Connection Device Driver for Windows 2000 Professional:

1. On the **Start** menu, point to **Settings**, then click **Control Panel**.
2. Double-click Phone and Modem Options icon.
3. Select the **Modem** tab.
4. Click **Add**.
5. Click **Other** on the Install New Modem screen.
6. Select **Don't detect my modem, I will select it from a list** and click **Next**.
7. In the Modems field, select **Communications cable between two computers**, then click **Next**.
8. Select COM 1 or COM 2, then click **Next**.

9. Click **Finish**.
10. The COM Port will be displayed in the Phone and Modem Options window, Modems tab. Select the COM Port and then click **Properties**.
11. From the **Maximum Port Speed** drop-down menu, select 38400.
12. In the Communications cable between two computers, select the **Advanced** tab, and then click **Change Default Preferences**.
13. From the **Port speed** drop-down list select **38400**, and then from the **Flow control** drop-down list select **None**.
14. Select the **Advanced** tab. From the drop-down menus, set the fields as follows: - Data bits: 8 - Parity: none - Stop bits: 1
15. Click **OK** and close the Control Panel window.

Create a Dial-up Network Connection

Typically, you will want to follow this procedure twice to create two Dial-up Networking connections, one for on-site direct access, and one for remote modem access.

Refer to detailed instructions for:

- Dial-up Networking Connection for Windows 95 or Windows 98
- Dial-up Network connection for Windows 2000 Professional

Dial-up Connection for Windows 95 or Windows 98

To create a dial-up networking connection for Windows 95 or Windows 98:

1. On the **Start** menu, point to **Programs**, point to **Accessories**, and then click **Dial-Up Connections**.
2. Double-click Make New Connection.
3. Enter an appropriate name for the connection (for example, Direct for direct connections, Remote or a customer's name for remote connections) and click Next. Note: If you are creating a direct connection, make sure NT Direct Connection is listed in the drop-down list in the Make a New Connection window.

4. Enter an Area Code and Telephone Number and select a Country Code from the drop-down list. Click **Next**. Note: Even though it is not needed for a direct connection, Windows requires that you enter this information.
5. Click **Finish**.
6. Right-click your new connection icon and click **Properties**.
7. Click **Configure**. Ensure the fields are set as follows:
 - Data bits: 8
 - Parity: noneFor a direct connection:
 - Maximum speed: 38400
 - Check: only connect at this speed
 - Select wait for dial tone before dialing
 - Select cancel the call time at 60 sec.
 - Click Advanced and turn off error control and flow controlFor a remote connection:
 - Stop bits: 1
 - Click Advanced and turn on error control and select Compress data.
 - Turn on flow control and select Hardware.
8. Click **OK**.
9. Select **Server Types** tab and make sure that PPP: Windows, WindowsNT3.5, Internet or PPP:Internet appears in the Type of Dial-Up Server field.
10. In the **Advanced Options** field, select **Log onto Network and Enable software compression**.
11. Make sure that only TCP/IP is selected in the Allowed network protocols field.
12. Select the Scripting tab and enter c:\program files\mitel\lmat\pridun.scp for a 3300 Universal NSU c:\program files\mitel\lmat\r2dun.scp for a 3300 R2 NSU.
13. Click **OK**.

Dial-up Connection for Windows 2000

To create a dial-up networking connection for Windows 2000 Professional:

1. On the **Start** menu, point to **Programs**, point to **Accessories**, click **Communications**, and then click **Dial-Up Connections**.
2. Double click **Make New Connection**, and then click **Next**.
3. Select **Dial-up to the Internet**, and then click **Next**.
4. Select **I want to set up my Internet connection manually**, or **I want to connect through a local area network (LAN)**. Click **Next**.
5. Select **I connect through a phone line and a modem**, and then click **Next**.
6. Use the COM Port that has been configured as a NULL Modem connection: 38400, 8, none, 1.
7. In the **Choose Modem** box, from the drop-down list select **Communications cable between 2 computers**. Click **Next**.
8. Clear the box Use area code and dialing rules, and then click **Advanced**.
9. For the Connection type, select PPP (Point to Point Protocol). For the Logon procedure, select Use logon script, and then click Browse. Select pridun.scp. Click OK, and then click Next.
10. In the Internet account logon information box, leave the username and password fields blank and then click **Next**.
11. Dialog boxes appear that warn you that you will not be able to connect to your Internet service provider without your user name and your password. Disregard these warnings and click Yes on these boxes to continue.
12. Enter the Connection name, and then click **Next**.
13. In the box to set up an Internet mail account, select **No**, and then click **Next**.
14. De-select the option to connect to the Internet immediately, then click **Finish**.
15. In the Network and Dial-up Connections window, right-click on the new DUN connection, point to **Properties**, then click **Configure**.

16. From the Maximum speed (bps) drop-down list, select 38400 for the baud rate.

17. Click **OK** until you exit the windows.

3300 Universal NSU DIP Switch Settings

Hybrid Port DIP Switch Settings		
DIP Switch	Use	Notes
1	Tx Ground	Ground when down; floating when up.
2	Rx Ground	Ground when down; floating when up.
3	Impedance selector #1	120 ohm (enabled when down)
4	Impedance selector #2	100 ohm (enabled when down)
5	Impedance selector #3	75 ohm (enabled when down)
6	LT/NT selector	Up for NT; down for LT.

PRI/T1 Mode Connector DIP Switch Settings						
Impedance	1 Tx Gnd	2 Rx Gnd	3 I #1	4 I #2	5 I #3	6 LT/NT
100	Up	Up	Up	Down	Up	Down

E1/MF-R2 Mode/Connector DIP Switch Settings							
BNC Adapt. Req'd	Imp.	1 Tx Gnd	2 Rx Gnd	3 120 ohm	4 100 ohm	5 75 ohm	6 LT/NT
No	120	Up	Up	Down	Up	Up	Up
No	120	Up	Up	Down	Up	Up	Down
Yes	75	Note	Note	Up	Up	Down	Up
Yew	75	Note	Note	Up	Up	Down	Down

Note: Site-dependant – normally Tx is grounded and Rx is not grounded, but that depends on which remote connection is grounded.

Install the 3300 R2 NSU

To install and configure the 3300 R2 NSU:

1. Set the DIP switches for the protocol and site installation. The default configuration of the DIP switches will support T1 protocols in network termination mode.
2. Establish a fiber connection from the fiber port on the NSU to the fiber port on the 3300 Controller.
3. Connect the NSU L0 and/or L1 port to the remote system (the PSTN or another system).
4. Install a Direct Connection Device Driver on a PC. Refer to Install the 3300 Universal NSU for details.
5. Create a Dial-up Network connection on the PC. Refer to Install the 3300 Universal NSU for details.
6. Connect the computer to the 3300 R2 NSU.
7. Use the IMAT Tool to complete the required configuration.
8. Connect the 3300 R2 NSU to the PSTN network.
9. Connect the 3300 R2 NSU to the 3300 Controller.
10. Connect power to the NSU.

Connections

Connect the computer to the 3300 R2 NSU

To connect the computer to the 3300 R2 NSU:

1. Connect the serial cable from the computer's COM port to the 3300 R2 NSU 9-pin serial port.
2. On the **File** menu, click **Connect to Remote Site**.
3. In the **Dial-Up Entry** box, select the <name> you entered for the connection when creating the dial-up connection. (See Dial-Up Networking Connection.) Note: The 3300 R2 NSU does not require a password.
4. Ensure that **PRI CARD** is selected under **Remote ISDN System**.

5. Click **Connect**.
6. In the **Connected to remote site window**, click **OK**.



Note: A networked computer running Win95/98 has difficulties communicating using Dial-up Networking. It is strongly suggested that a non-networked computer be used.

Connect the 3300 R2 NSU to the 3300 Controller

A fiber connection originates from a fiber interface module (FIM) port on the front of the 3300 Controller and is terminated on the FIM port of the digital trunking 3300 R2 NSU.

The 3300 R2 NSU is connected to the Public Switched Telephone Network (PSTN) termination point from the L0 port with CAT 5 cable.

MF-R2 Port DIP Switch Settings			
Switch	Use	Default	Notes
1	Tx Ground	Up	Tx shield ground when down
2	Rx Ground	Up	Rx shield ground when down
3	Impedance selector #1	Up	120 ohm
4	Impedance selector #2	Up	100 ohm
5	Impedance selector #3	Up	75 ohm
6	LT/NT selector	Up	Up for NT, down for LT

E1/MF-R2 Mode/Connector DIP Switch Setting								
BNC Adapt Req'd	Imp.	LT/NT Mode	1 Tx Gnd	2 Rx Gnd	3 120 ohm	4 100 ohm	5 75 ohm	6 LT/NT
No	120	NT	Up	Up	Down	Up	Up	Up
No	120	LT	Up	Up	Down	Up	Up	Down
Yes	75	NT	Note	Note	Up	Up	Down	Up
Yes	75	LT	Note	Note	Up	Up	Down	Down

Note: Site dependent - normally Tx is grounded and Rx is not grounded, but that depends on which remote connection is grounded.

Install the 3300 BRI NSU

To install the 3300 BRI NSU:

1. Configure the 3300 Controller E1 DPNSS on the 3300 Universal NSU that will be used to connect to the 3300 BRI NSU.
2. Program the BRI-specific requirements for the E1 DPNSS interface.
3. Set up the maintenance PC.
4. Complete the 3300 BRI NSU programming.
5. Connect power to the NSU.



Note: The 3300 BRI NSU is set for 75 ohms impedance when connected to a digital trunking NSU running E1 DPNSS. The 3300 Universal NSU is also set for 75 ohms impedance.



Note: A Category 5 connection from the 3300 BRI NSU E1 port to a 3300 Universal NSU that is running E1 DPNSS. E1 connections as TX and RX pairs in RJ-45. Option to ground one side of TX and or RX (using DIP switch) to use with coax adapter.



Note: The 3300 BRI NSU is connected to an appropriate device (such as a PSTN or ISDN device) from a 25-pair Amphenol connector.

Setting Up the Maintenance PC

To install, configure, and maintain the 3300 BRI NSU, you must connect it to a maintenance computer. The computer must be running DOS and have a communications program (such as ProComm Plus ©) installed.

To connect a maintenance PC to the 3300 BRI NSU:

1. Using the RJ45 to 9-pin D-type MMI cable, connect the RS-232 port on the 3300 BRI NSU to COM port 1 or 2 on the PC.
2. Set up the communications program on COM port 1 or 2 with the following parameters: 9600 baud, 8 data bits, no parity, 1 stop bit, ASCII character set, and XON/XOFF flow control.

3300 NSU Pin Allocations

T1 and E1 Connector Allocation	
Signal Name	RJ-45 Connector Pin
RXRING	1
RXTIP	2
Not used	3
TXRING	4
TXTIP	5
Not used	6
Not used	7
Not used	8

RS-232 Maintenance Connector Allocation	
Signal Name	RJ-45 Connector Pin
DTR (data terminal ready) DCD (data carrier detector)	1
RXD (receive data)	2
TXD (transmit data)	3
DTR (data terminal ready)	4
GND	5
Not used	6
RTS (ready to send)	7
CTS (clear to send)	8
Not used	9

BRI Connector Allocation	
T1	1
T2	2
T3	3
T4	4
T5	5
T6	6
T7	7
T8	8
T9	9
T10	10
T11	11
T12	12
T13	13
T14	14
T15	15
R1	26
R2	27

BRI Connector Allocation	
R3	28
R4	29
R5	30
R6	31
R7	32
R8	33
R9	34
R10	35
R11	36
R12	37
R13	38
R14	39
R15	40

NSU Chaining

NSU chaining refers to the physical connection of two NSUs together, on one fiber interface, from the Controller. BRI NSUs may not be chained.

To connect two NSUs to the Controller:

1. Connect the first NSU to the controller through a fiber connection from the fiber port on the NSU to the fiber port on the 3300 Controller.
2. Using a CAT5 crossover cable make a connection from CIM2 on the first NSU to CIM1 on the second NSU.
3. Connect power to the NSU.



Note: The first NSU must have the Message Link dip switch set to 1, up. The second NSU must have the Message Link dip switch set to 2, down.

Analog Services Units

Install the 3300 Universal ASU

Before you begin, ensure that there is a free CIM port on the 3300 Controller.

To install the 3300 Universal ASU:

1. Mount the 3300 Universal ASU in the 19-inch rack (if applicable).
2. Connect the supplied Cross-over Category 5 cable with RJ-45 connector to the CIM port on the 3300 Universal ASU and a free CIM port on the 3300 Controller. Note that up to four ASUs can be connected to the 3300 Controller.
3. Complete telephony cabling.
4. Complete programming.
5. Connect power to the 3300 Universal ASU. CIM LEDs will be on once the CIM link synchronizes. The 3300 Controller will detect the 3300 Universal ASU, and the application software will download and start immediately.

Install the 3300 ASU

Before you begin, ensure there is a free CIM port on the 3300 Controller.

To install the 3300 ASU:

1. Mount the 3300 ASU in the 19-inch rack (if applicable).
2. Connect the supplied Cross-over Category 5 cable with RJ-45 connector to the CIM port on the 3300 ASU and a free CIM port on the 3300 Controller. Up to four ASUs can be connected to a 3300 Controller.
3. Power up the 3300 ASU. CIM LEDs will be on once the CIM link synchronizes. The 3300 Controller will detect the 3300 ASU, and the application software will download and start immediately.
4. Complete telephony cabling.

5. Complete programming.

3300 ASU and Universal ASU Pin Allocations

CIM Connector Pin Allocations			
Pin	Signal	Pin	Signal
1	RX+	5	Not Used
2	RX-	6	TX-
3	TX+	7	Not Used
4	Not Used	8	Not Used

Note: The 3300 Universal ASU connects to the 3300 Controller over a Category 5 Universal Twisted Pair (UTP) cross-over cable through a CIM interface. The Category 5 cable is of the same type used for Ethernet connections and within the cable twisted pairs are arranged as: 1,2; 3,6; 4,5; 7,8. Each tied pair is connected to a 75 ohm resistor. The 3300 Universal ASU can be located up to 30 meters (98.4 feet) away from the 3300 Controller. The interface employs a single standard 8-pin modular jack consisting of 2 balanced signal pairs and is located on the front of the unit.

25 pair Connector Pin Allocations			
Note: Connection of the Tip and Ring (A and B) leads of the ONS lines and LS trunk circuits are through a 25 pair female D-type connector.			
Pin	Signal	Pin	Signal
1	ONS Tip 1	26	ONS Ring 1
2	ONS Tip 2	27	ONS Ring 2
3	ONS Tip 3	28	ONS Ring 3
4	ONS Tip 4	29	ONS Ring 4
5	ONS Tip 5	30	ONS Ring 5
6	ONS Tip 6	31	ONS Ring 6
7	ONS Tip 7	32	ONS Ring 7
8	ONS Tip 8	33	ONS Ring 8
9	ONS Tip 9	34	ONS Ring 9

25 pair Connector Pin Allocations			
Note: Connection of the Tip and Ring (A and B) leads of the ONS lines and LS trunk circuits are through a 25 pair female D-type connector.			
Pin	Signal	Pin	Signal
10	ONS Tip 10	35	ONS Ring 10
11	ONS Tip 11	36	ONS Ring 11
12	ONS Tip 12	37	ONS Ring 12
13	ONS Tip 13	38	ONS Ring 13
14	ONS Tip 14	39	ONS Ring 14
15	ONS Tip 15	40	ONS Ring 15
16	ONS Tip 16	41	ONS Ring 16
17	LS Tip 1	42	LS Ring 1
18	LS Tip 1-1	43	LS Ring 1-1
19	LS Tip 2	44	LS Ring 2
20	LS Tip 1-2	45	LS Ring 1-2
21	LS Tip 3	46	LS Ring 3
22	LS Tip 1-3	47	LS Ring 1-3
23	LS Tip 4	48	LS Ring 4
24	LS Tip 1-4	49	LS Ring 1-4
25	N/C	50	N/C

Music on Hold Connector Pin Allocations (Universal ASU only)			
Pin	Signal	Pin	Signal
1	Tip 1	5	Ring 3
2	Ring 1	6	Ring 2
3	Tip 2	7	Tip 4
4	Tip 3	8	Ring 4
<p>Note: The four MOH tips & rings occupy an 8 pin female modular jack located on the rear panel.</p> <p>Note: Only one port is supported through software on the system.</p>			

Paging Connector Pin Assignments (Universal ASU only)			
Pin	Signal	Pin	Signal
1	Tip 1	5	Ring 2
2	Ring 1	6	Ring 1-1
3	Tip 1-1	7	Tip 1-2
4	Tip 2	8	Ring 1-2
<p>Note: The paging port employs a single standard 8-pin modular RJ-45 jack located on the rear panel.</p> <p>Each paging port has a tip/ring pair for audio and a second tip/ring pair designated tip1/ring1 contact closures for zone control.</p>			

Peripheral Unit

Overview of the Peripheral Unit Installation

To install a Peripheral Unit:

1. Unpack, position, and ground the Peripheral Unit.
2. Check the card layout.
3. Connect the fiber cable to the node.
4. Check the grounding.
5. Install the power converter.
6. Install the Peripheral Interface cards.
7. Cable the node to the MDF.
8. Power up the Peripheral Unit.



Note: For information about removing and replacing the front panel of the cabinet, see Front Panels in Install Upgrades and FRUs.

Proceed to Installing a DSU Node, Installing a SUPERSET HUB, or return to System Installation Overview.

Unpack, Position, and Ground the Peripheral Unit

To unpack, position, and ground the node:

CAUTION: Power must not be applied to the Peripheral Unit until you have installed the ground cable.

1. Unpack the peripheral node.
2. Check the contents against the packing list.
3. Visually inspect the node and attached equipment for damage. Repack and return any damaged equipment.
4. Position the node.
5. Connect an external ground to the ground terminal on the rear panel of the peripheral cabinet. Refer to the Safety Instructions

for detailed grounding requirements. These instructions are packaged with each system.

Peripheral Unit Card Layout

Typically, 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 as Field Replaceable Units (FRUs). You must install and cable the FIM before you install the peripheral switch controller card and power converter (see Peripheral Unit FRUs section).

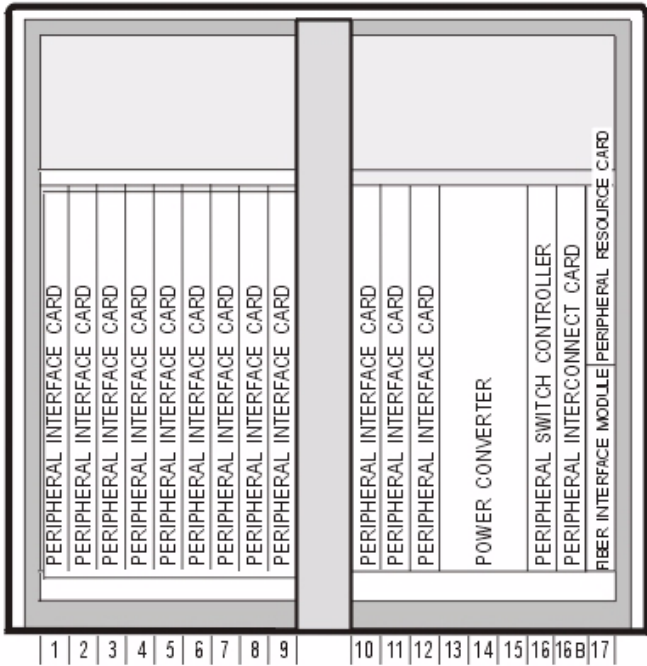
The cards in the peripheral unit should be installed in the following configuration:

Slot Number	Card Type
1 to 12	Peripheral Interface card
13, 14, 15 (combined)	Power Converter
16	Peripheral Switch Controller (PSC)
17	Fiber Interface Module (FIM)



Note: If you are installing an expanded Peripheral Unit, or expanding an existing one, the card layout will be different depending on if the cabinet is used as the master or slave of the peripheral pair.

PERIPHERAL CABINET SLOT LAYOUT



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Connect Fiber Cable to the Peripheral Unit

The fiber optic cable connects the FIM in the 3300 Controller to the FIM in the Peripheral Unit.

To connect the fiber optic cable to the FIM in the peripheral node:

1. Review the guidelines for handling fiber optic cable.
2. 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.
3. Install a short piece of nylon spiral wrap over the cable at the point where the cable exits the rear of the cabinet.
4. Close the sliding cable port door. Ensure that the door closes on the nylon spiral-wrapped section of fiber cable.

5. Remove the plastic dust caps from the fiber optic cable and the connector ferrules on the FIM faceplate.
6. 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.

Peripheral Unit Grounding

CAUTION: Ensure that the grounding meets the requirements specified in the Safety Instructions. These instructions are packaged with each system.

WARNING: Danger to personnel and/or equipment damage could result if the cabinet is not powered off.

To check the grounding:

1. Ensure that the power switch (S1) on the power distribution unit (PDU) is set to the off (0) position and that the switch on the power converter faceplate is set to the off (0) position.
2. Attach the anti-static wrist strap to your wrist.
3. Slide the installed circuit cards forward slightly so that the card connectors are not in contact with the cabinet backplane. Leave the power converter installed.
4. Remove the anti-static wrist strap.
5. Plug the external power cable from the AC commercial power supply into the power-input plug on the power distribution unit (PDU).
6. Disconnect the protective earth wire from the protective earth ground stud on the rear of the cabinet.
7. Using a digital multimeter, measure the AC potential between the protective earth wire (building ground) and the protective earth ground stud. A voltage reading of less than 1 VAC is acceptable. To prevent damage to the multimeter, set it to the maximum AC scale, then reduce the setting gradually to the 10 VAC range.

8. If the potential is greater than 1 VAC, recheck the ground connections and repeat the measure.
9. If the reading still exceeds 1 VAC, the building ground is unacceptable. Connect the protective earth wire to a new building ground and repeat the steps 7 through 9 until you have an acceptable AC potential. **WARNING:** Do not continue until you have a potential of 1 VAC or less between the building ground and the protective earth ground stud. Otherwise, personal injury and/or equipment damage may result.
10. Reconnect the protective earth wire to the protective earth ground stud and attach the anti-static wrist strap to your wrist.
11. Slide the installed circuit cards back into contact with the cabinet backplane. Ensure that each card is fully inserted in its slot.

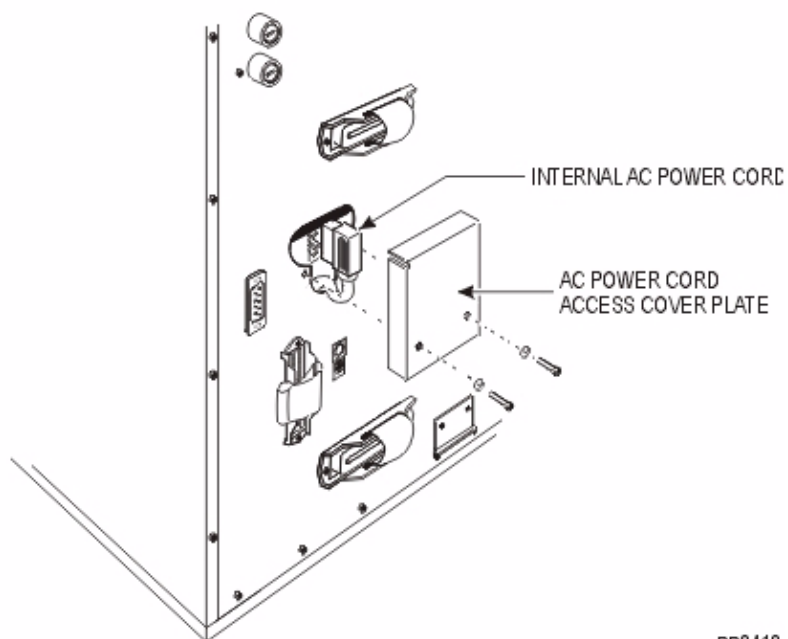
Power Converter

To install an AC power converter:

WARNING: Danger to personnel and/or equipment damage could result if the cabinet is not powered off during installation of the AC power converter.

1. At the rear of the cabinet, remove the two screws that fasten the internal AC power cord access cover plate to the backplane, and remove the cover plate (see figure).
2. Ensure that the switch on the power converter faceplate is set to off (0).
3. Install the power converter in slots 13 through 15.
4. Plug the internal AC power cord from the power distribution unit (PDU) into the power converter through the access cutout in the backplane.
5. Replace the internal AC power cord access cover plate over the access cutout in the backplane, and replace the two screws.

PERIPHERAL NODE REAR



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Install Peripheral Interface Cards

To install the Peripheral Interface cards:

CAUTION: To prevent static damage to electrical components, ensure that the system is grounded before you install the cards. Whenever you handle circuit cards, wear an anti-static strap.

1. Install the peripheral switch controller card in slot 16.
2. Set the E&M Trunk Card settings and the OPS Line Card Message Waiting Switches in the Peripheral Unit Specifications section.
3. Install the Peripheral Interface cards. Refer to Install a Circuit Card in "Install Upgrades and FRUs" for circuit card installation procedures.

Cable the Unit to the MDF

Cable the lines and trunks from the Peripheral Unit to the Main Distribution Frame (MDF) by using the Peripheral Interface Cabling Tables.

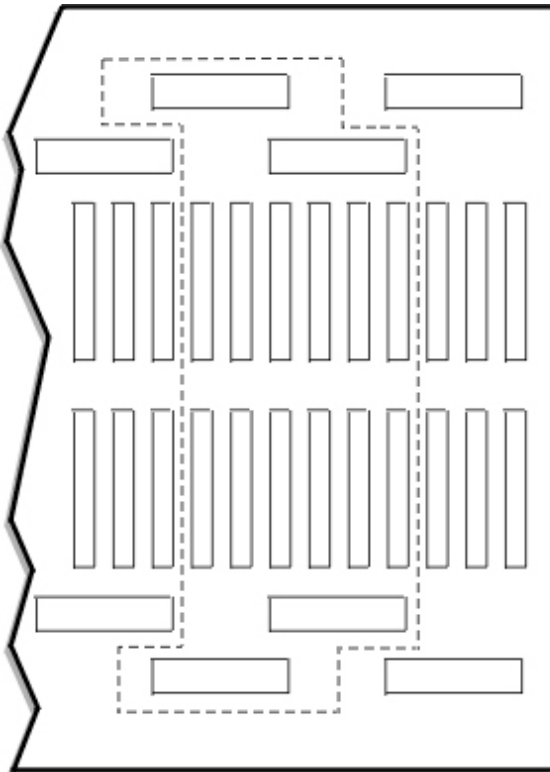
About Peripheral Interface Cabling

Peripheral equipment (e.g., stations, SUPERSET telephones, trunks) is connected to the relevant interface circuits of the system via a cross-connect field. Peripheral Interface cards, situated in slots 1 through 12, are connected to the cross-connect field by a maximum of eight 25-pair cables (customer-supplied) per Peripheral Unit. Cables terminate at the node on 50-pin plugs, J1 through J8, with the number of cables being dependent on the quantity and type of interface cards installed in the node.

Plugs J1 through J8 are hardwired to backplane connectors in slots 1 through 12 to form four slot groups, each comprising three adjacent cards and each associated with a pair of plugs. Two adjacent slot groups are shown in Backplane Connector Arrangements. The circuits of interface cards contained in a slot group are evenly distributed to the relevant pair of plugs, such that, half the circuits of each card in a group are connected to the odd-

numbered plug and half to the even-numbered plug. Peripheral Wiring (Backplane) details the hardwire connections between one slot group and the associated plugs. The wiring sequence is identical for the remaining three slot groups.

Cable jacks (P1 through P8), are customer-supplied and should be labeled at time of installation. P1 through P8 are secured to J1 through J8 with hook and loop type fasteners. Equipment that is external to the system (i.e., system to cross-connect field cables and cross-connect field hardware) is not supplied by MITEL. Therefore, the type of equipment used and the layout of the cross-connect field cables is at the discretion of the installation company. Installation information for such equipment must be obtained from the equipment manufacturer.



RR0565

Backplane Connector Arrangements

- 90 tapered slide-on hood.

USOC Connector Pin Designations

The USOC connector numbers are:

- RJ2I X 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.

USOC Connector Pin Designations

Pin	Color Code	RJ21X	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

Pin	Color Code	RJ21X	RJ2EX	RJ2GX	RJ2FX	RJ2HX
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
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	--	--

Card Connections to Cross-Connect Field

The following 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 L C: ONS line card and ONS CLASS/CLIP line card

OPS L C: OPS line card

LS/GS Trunk: Loop Start/Ground Start Trunk card

E&M Trunk: E&M trunk card

DID/LT Trunk: direct inward dialing/loop tie trunk card

DID/2 Trunk: direct inward dialing

DNI L C: digital network interface line card.

Tables for Card Slots 1 through 12 follow.

Card Slot 1

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	DNI L C	Back-plane Plugs
26	W/BL	1T	1T	1T	1T	1T	1T	1T	P1
1	BL/W	1R	1R	1R	1R	1R	1R	1R	
27	W/O	2T	1MWB	1T(MR)	1T1			2T	
2	O/W	2R	1MWA	1R(MR)	1R1			2R	
28	W/G	3T	2T	2T	1E	2T	2T	3T	
3	G/W	3R	2R	2R	1SG	2R	2R	3R	
29	W/BR	4T	2MWB	2T(MR)	1M			4T	
4	BR/W	4R	2MWA	2R(MR)	1SB			4R	
30	W/S	5T	3T	3T	2T		3T	5T	
5	S/W	5R	3R	3R	2R		3R	5R	
31	R/BL	6T	3MWB	3T(MR)	2T1			6T	
6	BL/R	6R	3MWA	3R(MR)	2R1			6R	
32	R/O	7T	4T	4T	2E		4T	7T	
7	O/R	7R	4R	4R	2SG		4R	7R	

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	DNI L C	Back-plane Plugs
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	9T	P2
1	BL/W	9R	5R	5R	3R	3R	5R	9R	
27	W/O	10T	5MWB	5T(MR)	3T1			10T	
2	O/W	10R	5MWA	5R(MR)	3R1			10R	
28	W/G	11T	6T	6T	3E	4T	6T	11T	
3	G/W	11R	6R	6R	3SG	4R	6R	11R	
29	W/BR	12T	6MWB	6T(MR)	3M			12T	
4	BR/W	12R	6MWA	6R(MR)	3SB			12R	
30	W/S	13T	7T	7T	4T		7T	13T	
5	S/W	13R	7R	7R	4R		7R	13R	
31	R/BL	14T	7MWB	7T(MR)	4T1			14T	
6	BL/R	14R	7MWA	7R(MR)	4R1			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 2

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	DNI L C	Back-plane Plugs
34	R/BR	1T	1T	1T	1T	1T	1T	1T	
9	BR/R	1R	1R	1R	1R	1R	1R	1R	
35	R/S	2T	1MWB	1T(MR)	1T1			2T	
10	S/R	2R	1MWA	1R(MR)	1R1			2R	
36	BK/BL	3T	2T	2T	1E	2T	2T	3T	
11	BL/BK	3R	2R	2R	1SG	2R	2R	3R	

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	DNI L C	Back-plane Plugs	
37	BK/O	4T	2MWB	2T(MR)	1M			4T	P1	
12	O/BK	4R	2MWA	2R(MR)	1SB			4R		
38	BK/G	5T	3T	3T	2T		3T	5T		
13	G/BK	5R	3R	3R	2R		3R	5R		
39	BK/B	6T	3MWB	3T(MR)	2T1			6T		
14	R	6R	3MWA	3R(MR)	2R1			6R		
40	BR/B	7T	4T	4T	2E		4T	7T		
15	K	7R	4R	4R	2SG		4R	7R		
41	BK/S	8T	4MWB	4T(MR)	2M			8T		
16	S/BK	8R	4MWA	4R(MR)	2SB			8R		
	Y/BL									
	B/Y									
34	R/BR	9T	5T	5T	3T	3T	5T	9T		P2
9	BR/R	9R	5R	5R	3R	3R	5R	9R		
35	R/S	10T	5MWB	5T(MR)	3T1			10T		
10	S/R	10R	5MWA	5R(MR)	3R1			10R		
36	BK/BL	11T	6T	6T	3E	4T	6T	11T		
11	BL/BK	11R	6R	6R	3SG	4R	6R	11R		
37	BK/O	12T	6MWB	6T(MR)	3M			12T		
12	O/BK	12R	6MWA	6R(MR)	3SB			12R		
38	BK/G	13T	7T	7T	4T		7T	13T		
13	G/BK	13R	7R	7R	4R		7R	13R		
39	BK/B	14T	7MWB	7T(MR)	4T1			14T		
14	R	14R	7MWA	7R(MR)	4R1			14R		
40	BR/B	15T	8T	8T	4E		8T	15T		
15	K	15R	8R	8R	4SG		8R	15R		
41	BK/S	16T	8MWB	8T(MR)	4M			16T		
16	S/BK	16R	8MWA	8R(MR)	4SB			16R		
	Y/BL									
	BL/Y									

Card Slot 3

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	DNI L C	Back-plane Plugs	
42	Y/O	1T	1T	1T	1T	1T	1T	1T	P1	
17	O/Y	1R	1R	1R	1R	1R	1R	1R		
43	Y/G	2T	1MWB	1T(MR)	1T1			2T		
18	G/Y	2R	1MWA	1R(MR)	1R1			2R		
44	Y/BR	3T	2T	2T	1E	2T	2T	3T		
19	BR/Y	3R	2R	2R	1SG	2R	2R	3R		
45	Y/S	4T	2MWB	2T(MR)	1M			4T		
20	S/Y	4R	2MWA	2R(MR)	1SB			4R		
46	V/BL	5T	3T	3T	2T		3T	5T		
21	BL/V	5R	3R	3R	2R		3R	5R		
47	V/O	6T	3MWB	3T(MR)	2T1			6T		
22	O/V	6R	3MWA	3R(MR)	2R1			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	9T		P2
17	O/Y	9R	5R	5R	3R	3R	5R	9R		
43	Y/G	10T	5MWB	5T(MR)	3T1			10T		
18	G/Y	10R	5MWA	5R(MR)	3R1			10R		
44	Y/BR	11T	6T	6T	3E	4T	6T	11T		
19	BR/Y	11R	6R	6R	3SG	4R	6R	11R		
45	Y/S	12T	6MWB	6T(MR)	3M			12T		
20	S/Y	12R	6MWA	6R(MR)	3SB			12R		
46	V/BL	13T	7T	7T	4T		7T	13T		
21	BL/V	13R	7R	7R	4R		7R	13R		
47	V/O	14T	7MWB	7T(MR)	4T1			14T		
22	O/V	14R	7MWA	7R(MR)	4R1			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		

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	DNI L C	Back-plane Plugs
24	BR/V	16R	8MWA	8R(MR)	4SB			16R	
50	----	----	----	----	SPARE	----	----	----	
25	----	----	----	----	SPARE	----	----	----	

Card Slot 4

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	DNI L C	Back-plane Plugs
26	W/BL	1T	1T	1T	1T	1T	1T	1T	P3
1	BL/W	1R	1R	1R	1R	1R	1R	1R	
27	W/O	2T	1MWB	1T(MR)	1T1			2T	
2	O/W	2R	1MWA	1R(MR)	1R1			2R	
28	W/G	3T	2T	2T	1E	2T	2T	3T	
3	G/W	3R	2R	2R	1SG	2R	2R	3R	
29	W/BR	4T	2MWB	2T(MR)	1M			4T	
4	BR/W	4R	2MWA	2R(MR)	1SB			4R	
30	W/S	5T	3T	3T	2T		3T	5T	
5	S/W	5R	3R	3R	2R		3R	5R	
31	R/BL	6T	3MWB	3T(MR)	2T1			6T	
6	BL/R	6R	3MWA	3R(MR)	2R1			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	9T	
1	BL/W	9R	5R	5R	3R	3R	5R	9R	
27	W/O	10T	5MWB	5T(MR)	3T1			10T	
2	O/W	10R	5MWA	5R(MR)	3R1			10R	
28	W/G	11T	6T	6T	3E	4T	6T	11T	
3	G/W	11R	6R	6R	3SG	4R	6R	11R	
29	W/BR	12T	6MWB	6T(MR)	3M			12T	

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	DNI L C	Back-plane Plugs
4	BR/W	12R	6MWA	6R(MR)	3SB			12R	P4
30	W/S	13T	7T	7T	4T		7T	13T	
5	S/W	13R	7R	7R	4R		7R	13R	
31	R/BL	14T	7MWB	7T(MR)	4T1			14T	
6	BL/R	14R	7MWA	7R(MR)	4R1			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

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	DNI L C	Back-plane Plugs
34	R/BR	1T	1T	1T	1T	1T	1T	1T	P3
9	BR/R	1R	1R	1R	1R	1R	1R	1R	
35	R/S	2T	1MWB	1T(MR)	1T1			2T	
10	S/R	2R	1MWA	1R(MR)	1R1			2R	
36	BK/BL	3T	2T	2T	1E	2T	2T	3T	
11	BL/BK	3R	2R	2R	1SG	2R	2R	3R	
37	BK/O	4T	2MWB	2T(MR)	1M			4T	
12	O/BK	4R	2MWA	2R(MR)	1SB			4R	
38	BK/G	5T	3T	3T	2T		3T	5T	
13	G/BK	5R	3R	3R	2R		3R	5R	
39	BK/BR	6T	3MWB	3T(MR)	2T1			6T	
14	BR/BK	6R	3MWA	3R(MR)	2R1			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	9T	

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	DNI L C	Back-plane Plugs
9	BR/R	9R	5R	5R	3R	3R	5R	9R	P4
35	R/S	10T	5MWB	5T(MR)	3T1			10T	
10	S/R	10R	5MWA	5R(MR)	3R1			10R	
36	BK/BL	11T	6T	6T	3E	4T	6T	11T	
11	BL/BK	11R	6R	6R	3SG	4R	6R	11R	
37	BK/O	12T	6MWB	6T(MR)	3M			12T	
12	O/BK	12R	6MWA	6R(MR)	3SB			12R	
38	BK/G	13T	7T	7T	4T		7T	13T	
13	G/BK	13R	7R	7R	4R		7R	13R	
39	BK/BR	14T	7MWB	7T(MR)	4T1			14T	
14	BR/BK	14R	7MWA	7R(MR)	4R1			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 6

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	DNI L C	Back-plane Plugs	
42	Y/O	1T	1T	1T	1T	1T	1T	1T	P3	
17	O/Y	1R	1R	1R	1R	1R	1R	1R		
43	Y/G	2T	1MWB	1T(MR)	1T1			2T		
18	G/Y	2R	1MWA	1R(MR)	1R1			2R		
44	Y/BR	3T	2T	2T	1E	2T	2T	3T		
19	BR/Y	3R	2R	2R	1SG	2R	2R	3R		
45	Y/S	4T	2MWB	2T(MR)	1M			4T		
20	S/Y	4R	2MWA	2R(MR)	1SB			4R		
46	V/BL	5T	3T	3T	2T		3T	5T		
21	BL/V	5R	3R	3R	2R		3R	5R		
47	V/O	6T	3MWB	3T(MR)	2T1			6T		
22	O/V	6R	3MWA	3R(MR)	2R1			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	9T		P4
17	O/Y	9R	5R	5R	3R	3R	5R	9R		
43	Y/G	10T	5MWB	5T(MR)	3T1			10T		
18	G/Y	10R	5MWA	5R(MR)	3R1			10R		
44	Y/BR	11T	6T	6T	3E	4T	6T	11T		
19	BR/Y	11R	6R	6R	3SG	4R	6R	11R		
45	Y/S	12T	6MWB	6T(MR)	3M			12T		
20	S/Y	12R	6MWA	6R(MR)	3SB			12R		
46	V/BL	13T	7T	7T	4T		7T	13T		
21	BL/V	13R	7R	7R	4R		7R	13R		
47	V/O	14T	7MWB	7T(MR)	4T1			14T		
22	O/V	14R	7MWA	7R(MR)	4R1			14R		
48	V/G	15T	8T	8T	4E		8T	15T		
23	G/V	15R	8R	8R	4SG		8R	15R		

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	DNI L C	Back-plane Plugs
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

Card Slot 7 Connections To Cross-Connect Field									
Pin	Color Code	ONS L C	OPS L C	LS/GS Trunk	E&M Trunk	DID/LT Trunk	DID/2 Trunk	DNI L C	Back-plane Plugs
26	W/BL	1T	1T	1T	1T	1T	1T	1T	P5
1	BL/W	1R	1R	1R	1R	1R	1R	1R	
27	W/O	2T	1MWB	1T(MR)	1T1			2T	
2	O/W	2R	1MWA	1R(MR)	1R1			2R	
28	W/G	3T	2T	2T	1E	2T	2T	3T	
3	G/W	3R	2R	2R	1SG	2R	2R	3R	
29	W/BR	4T	2MWB	2T(MR)	1M			4T	
4	BR/W	4R	2MWA	2R(MR)	1SB			4R	
30	W/S	5T	3T	3T	2T		3T	5T	
5	S/W	5R	3R	3R	2R		3R	5R	
31	R/BL	6T	3MWB	3T(MR)	2T1			6T	
6	BL/R	6R	3MWA	3R(MR)	2R1			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	9T	
1	BL/W	9R	5R	5R	3R	3R	5R	9R	
27	W/O	10T	5MWB	5T(MR)	3T1			10T	
2	O/W	10R	5MWA	5R(MR)	3R1			10R	
28	W/G	11T	6T	6T	3E	4T	6T	11T	
3	G/W	11R	6R	6R	3SG	4R	6R	11R	

Card Slot 7 Connections To Cross-Connect Field									
Pin	Color Code	ONS L C	OPS L C	LS/GS Trunk	E&M Trunk	DID/LT Trunk	DID/2 Trunk	DNI L C	Back-plane Plugs
29	W/BR	12T	6MWB	6T(MR)	3M			12T	P6
4	BR/W	12R	6MWA	6R(MR)	3SB			12R	
30	W/S	13T	7T	7T	4T		7T	13T	
5	S/W	13R	7R	7R	4R		7R	13R	
31	R/BL	14T	7MWB	7T(MR)	4T1			14T	
6	BL/R	14R	7MWA	7R(MR)	4R1			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 8

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	DNI L C	Back-plane Plugs
34	R/BR	1T	1T	1T	1T	1T	1T	1T	P5
9	BR/R	1R	1R	1R	1R	1R	1R	1R	
35	R/S	2T	1MWB	1T(MR)	1T1			2T	
10	S/R	2R	1MWA	1R(MR)	1R1			2R	
36	BK/BL	3T	2T	2T	1E	2T	2T	3T	
11	BL/BK	3R	2R	2R	1SG	2R	2R	3R	
37	BK/O	4T	2MWB	2T(MR)	1M			4T	
12	O/BK	4R	2MWA	2R(MR)	1SB			4R	
38	BK/G	5T	3T	3T	2T		3T	5T	
13	G/BK	5R	3R	3R	2R		3R	5R	
39	BK/BR	6T	3MWB	3T(MR)	2T1			6T	
14	BR/BK	6R	3MWA	3R(MR)	2R1			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	

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	DNI L C	Back-plane Plugs
34	R/BR	9T	5T	5T	3T	3T	5T	9T	P6
9	BR/R	9R	5R	5R	3R	3R	5R	9R	
35	R/S	10T	5MWB	5T(MR)	3T1			10T	
10	S/R	10R	5MWA	5R(MR)	3R1			10R	
36	BK/BL	11T	6T	6T	3E	4T	6T	11T	
11	BL/BK	11R	6R	6R	3SG	4R	6R	11R	
37	BK/O	12T	6MWB	6T(MR)	3M			12T	
12	O/BK	12R	6MWA	6R(MR)	3SB			12R	
38	BK/G	13T	7T	7T	4T		7T	13T	
13	G/BK	13R	7R	7R	4R		7R	13R	
39	BK/BR	14T	7MWB	7T(MR)	4T1			14T	
14	BR/BK	14R	7MWA	7R(MR)	4R1			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

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	DNI L C	Back-plane Plugs	
42	Y/O	1T	1T	1T	1T	1T	1T	1T	P5	
17	O/Y	1R	1R	1R	1R	1R	1R	1R		
43	Y/G	2T	1MWB	1T(MR)	1T1			2T		
18	G/Y	2R	1MWA	1R(MR)	1R1			2R		
44	Y/BR	3T	2T	2T	1E	2T	2T	3T		
19	BR/Y	3R	2R	2R	1SG	2R	2R	3R		
45	Y/S	4T	2MWB	2T(MR)	1M			4T		
20	S/Y	4R	2MWA	2R(MR)	1SB			4R		
46	V/BL	5T	3T	3T	2T		3T	5T		
21	BL/V	5R	3R	3R	2R		3R	5R		
47	V/O	6T	3MWB	3T(MR)	2T1			6T		
22	O/V	6R	3MWA	3R(MR)	2R1			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	9T		P6
17	O/Y	9R	5R	5R	3R	3R	5R	9R		
43	Y/G	10T	5MWB	5T(MR)	3T1			10T		
18	G/Y	10R	5MWA	5R(MR)	3R1			10R		
44	Y/BR	11T	6T	6T	3E	4T	6T	11T		
19	BR/Y	11R	6R	6R	3SG	4R	6R	11R		
45	Y/S	12T	6MWB	6T(MR)	3M			12T		
20	S/Y	12R	6MWA	6R(MR)	3SB			12R		
46	V/BL	13T	7T	7T	4T		7T	13T		
21	BL/V	13R	7R	7R	4R		7R	13R		
47	V/O	14T	7MWB	7T(MR)	4T1			14T		
22	O/V	14R	7MWA	7R(MR)	4R1			14R		
48	V/G	15T	8T	8T	4E		8T	15T		
23	G/V	15R	8R	8R	4SG		8R	15R		

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	DNI L C	Back-plane Plugs
49	V/BR	16T	8MWB	8T(MR)	4M			16T	
24	BR/V	16R	8MWA	8R(MR)	4SB			16R	
50	----	----	----	----	SPARE	----	----	----	
25	----	----	----	----	SPARE	----	----	----	

Card Slot 10

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	DNI L C	Back-plane Plugs
26	W/BL	1T	1T	1T	1T	1T	1T	1T	P7
1	BL/W	1R	1R	1R	1R	1R	1R	1R	
27	W/O	2T	1MWB	1T(MR)	1T1			2T	
2	O/W	2R	1MWA	1R(MR)	1R1			2R	
28	W/G	3T	2T	2T	1E	2T	2T	3T	
3	G/W	3R	2R	2R	1SG	2R	2R	3R	
29	W/BR	4T	2MWB	2T(MR)	1M			4T	
4	BR/W	4R	2MWA	2R(MR)	1SB			4R	
30	W/S	5T	3T	3T	2T		3T	5T	
5	S/W	5R	3R	3R	2R		3R	5R	
31	R/BL	6T	3MWB	3T(MR)	2T1			6T	
6	BL/R	6R	3MWA	3R(MR)	2R1			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	9T	
1	BL/W	9R	5R	5R	3R	3R	5R	9R	
27	W/O	10T	5MWB	5T(MR)	3T1			10T	
2	O/W	10R	5MWA	5R(MR)	3R1			10R	
28	W/G	11T	6T	6T	3E	4T	6T	11T	
3	G/W	11R	6R	6R	3SG	4R	6R	11R	

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	DNI L C	Back-plane Plugs
29	W/BR	12T	6MWB	6T(MR)	3M			12T	P8
4	BR/W	12R	6MWA	6R(MR)	3SB			12R	
30	W/S	13T	7T	7T	4T		7T	13T	
5	S/W	13R	7R	7R	4R		7R	13R	
31	R/BL	14T	7MWB	7T(MR)	4T1			14T	
6	BL/R	14R	7MWA	7R(MR)	4R1			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 11

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	DNI L C	Back-plane Plugs
34	R/BR	1T	1T	1T	1T	1T	1T	1T	P7
9	BR/R	1R	1R	1R	1R	1R	1R	1R	
35	R/S	2T	1MWB	1T(MR)	1T1			2T	
10	S/R	2R	1MWA	1R(MR)	1R1			2R	
36	BK/BL	3T	2T	2T	1E	2T	2T	3T	
11	BL/BK	3R	2R	2R	1SG	2R	2R	3R	
37	BK/O	4T	2MWB	2T(MR)	1M			4T	
12	O/BK	4R	2MWA	2R(MR)	1SB			4R	
38	BK/G	5T	3T	3T	2T		3T	5T	
13	G/BK	5R	3R	3R	2R		3R	5R	
39	BK/BR	6T	3MWB	3T(MR)	2T1			6T	
14	BR/BK	6R	3MWA	3R(MR)	2R1			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	

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	DNI L C	Back-plane Plugs
34	R/BR	9T	5T	5T	3T	3T	5T	9T	P8
9	BR/R	9R	5R	5R	3R	3R	5R	9R	
35	R/S	10T	5MWB	5T(MR)	3T1			10T	
10	S/R	10R	5MWA	5R(MR)	3R1			10R	
36	BK/BL	11T	6T	6T	3E	4T	6T	11T	
11	BL/BK	11R	6R	6R	3SG	4R	6R	11R	
37	BK/O	12T	6MWB	6T(MR)	3M			12T	
12	O/BK	12R	6MWA	6R(MR)	3SB			12R	
38	BK/G	13T	7T	7T	4T		7T	13T	
13	G/BK	13R	7R	7R	4R		7R	13R	
39	BK/BR	14T	7MWB	7T(MR)	4T1			14T	
14	BR/BK	14R	7MWA	7R(MR)	4R1			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 12

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	DN I L C	Back-plane Plugs	
42	Y/O	1T	1T	1T	1T	1T	1T	1T	P7	
17	O/Y	1R	1R	1R	1R	1R	1R	1R		
43	Y/G	2T	1MWB	1T(MR)	1T1			2T		
18	G/Y	2R	1MWA	1R(MR)	1R1			2R		
44	Y/BR	3T	2T	2T	1E	2T	2T	3T		
19	BR/Y	3R	2R	2R	1SG	2R	2R	3R		
45	Y/S	4T	2MWB	2T(MR)	1M			4T		
20	S/Y	4R	2MWA	2R(MR)	1SB			4R		
46	V/BL	5T	3T	3T	2T		3T	5T		
21	BL/V	5R	3R	3R	2R		3R	5R		
47	V/O	6T	3MWB	3T(MR)	2T1			6T		
22	O/V	6R	3MWA	3R(MR)	2R1			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	9T		P8
17	O/Y	9R	5R	5R	3R	3R	5R	9R		
43	Y/G	10T	5MWB	5T(MR)	3T1			10T		
18	G/Y	10R	5MWA	5R(MR)	3R1			10R		
44	Y/BR	11T	6T	6T	3E	4T	6T	11T		
19	BR/Y	11R	6R	6R	3SG	4R	6R	11R		
45	Y/S	12T	6MWB	6T(MR)	3M			12T		
20	S/Y	12R	6MWA	6R(MR)	3SB			12R		
46	V/BL	13T	7T	7T	4T		7T	13T		
21	BL/V	13R	7R	7R	4R		7R	13R		
47	V/O	14T	7MWB	7T(MR)	4T1			14T		
22	O/V	14R	7MWA	7R(MR)	4R1			14R		
48	V/G	15T	8T	8T	4E		8T	15T		
23	G/V	15R	8R	8R	4SG		8R	15R		

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	DN I L C	Back-plane Plugs
49	V/BR	16T	8MWB	8T(MR)	4M			16T	
24	BR/V	16R	8MWA	8R(MR)	4SB			16R	
50	----	----	----	----	SPARE	----	----	----	
25	----	----	----	----	SPARE	----	----	----	

SUPERSET HUB

Overview of the SUPERSET Hub Installation

To install the SUPERSET HUB:

1. Install the Peripheral Slot FIM Carrier in the Peripheral Cabinet.
2. Install the SUPERSET HUB unit. The supplied mounting brackets allow you to install the unit in an equipment rack or to mount the unit on a wall.

Once you have completed these steps, you can proceed to Installing a DSU Node or return to System Installation Overview.



Notes:

- When installing the SUPERSET HUB in an enclosed rack, you **MUST** provide adequate ventilation (for example, fans) to ensure that the maximum ambient temperature inside the rack does not exceed 40°C.
- When mounting the SUPERSET HUB in a rack, you should ensure that a hazardous condition is not achieved due to any uneven mechanical loading.
- When using the SUPERSET HUB in a rack, you should consider the connection of the equipment to the supply circuit and the effect that overloading of circuits might have on over-current protection and supply wiring. When addressing this concern, consider the SUPERSET HUB's ratings label.
- You can upgrade or replace the Fiber Interface Module in a SUPERSET HUB.

WARNING: this product uses a Class 1 LED. Fiber optic sources emit infrared radiation. This radiation is invisible to the human eye and can damage the retina. NEVER look directly into the end of a fiber optic cable that you suspect is energized by a fiber optic source. When working with raw fiber optic cable, be aware of fiber ends and slivers which can puncture the skin and cause irritation.

Install the Peripheral Slot FIM Carrier

To install the Peripheral Slot FIM Carrier:

1. Attach an anti-static wrist strap.
2. Unpack the Peripheral Slot FIM Carrier and inspect it to ensure that it is not damaged.
3. Remove the Peripheral Cabinet front and rear panels.
4. Slide the Peripheral Slot FIM Carrier partway into the first available slot from the right.
5. Remove the black plastic dust caps from the fiber optic cable connectors and from the connector ferrules on the faceplate of the FIM.
6. Connect the fiber optic cables to the connectors on the FIM via the fiber optic access port on the rear of the cabinet. Note: The fiber optic cable connectors have a small key that you must align with a slot on the FIM connectors. Lock each connector into position by pushing its metal collar forward and clipping it onto the FIM connector.
7. Push the Peripheral Slot FIM Carrier fully into the slot and secure it with the card latch.
8. Remove the anti-static wrist strap.
9. Route the fiber optic cables from the Peripheral Cabinet to the SUPERSET HUB.
10. Replace the Peripheral Cabinet front and rear panels.



Note: For more information, see Fiber Interface Module (FIM).

Install the SUPERSET HUB

To install the SUPERSET HUB unit:

1. Attach the rubber feet to the base of the unit.
2. If required, secure the mounting brackets to the SUPERSET HUB case by using the holes appropriate to the selected mounting position and install the unit in an equipment rack or mount the unit on a wall. Note: The side that contains the row of RJ-45 connectors faces the front when the unit is rack-mounted

or the top when the unit is wall-mounted. If you are wall-mounting the unit, use wall anchors that are appropriate for the wall type. Use # 12 screws that are at least 1.5 inches long, and ensure that the screws are not fully tightened so that the unit may be easily removed (without the use of a tool) for servicing.

3. Ensure that the ventilation holes are not blocked.
4. Remove the black plastic dust caps from the fiber optic cables and from the connector ferrules on the unit.
5. Connect the fiber optic cables from the Peripheral Slot FIM Carrier in the Peripheral Cabinet to the connectors on the SUPERSET HUB unit.
6. Connect the RJ-45 connectors to the UTP distribution panel according to the building-wiring plan.
7. Connect the power cable to a convenient wall socket. Note: The wall socket is the main disconnect device and must, therefore, be installed near the unit and be easily accessible.
8. Program the peripheral devices.



Note: Program the SUPERSET HUB as a DNI Line Card in the slot where the Peripheral Slot FIM Carrier is inserted.

Digital Service Unit

Overview of the Digital Service Unit Installation

WARNING: Power must not be applied to the equipment at any time during equipment installation.

To install a DSU Node:

1. Unpack, position, and ground the DSU Node.
2. Check the card layout.
3. Connect the fiber cable to the node.
4. Install the DSU cards.
5. Install the interface assembly on cards.
6. Install the DS1 interface assembly and cabling.

7. Install the CEPT interface assembly and cabling.
8. Power up the DSU.

Once you have completed these steps, you can return to System Installation Overview.

Unpack, Position, and Ground the DSU

To unpack and position the DSU Node:

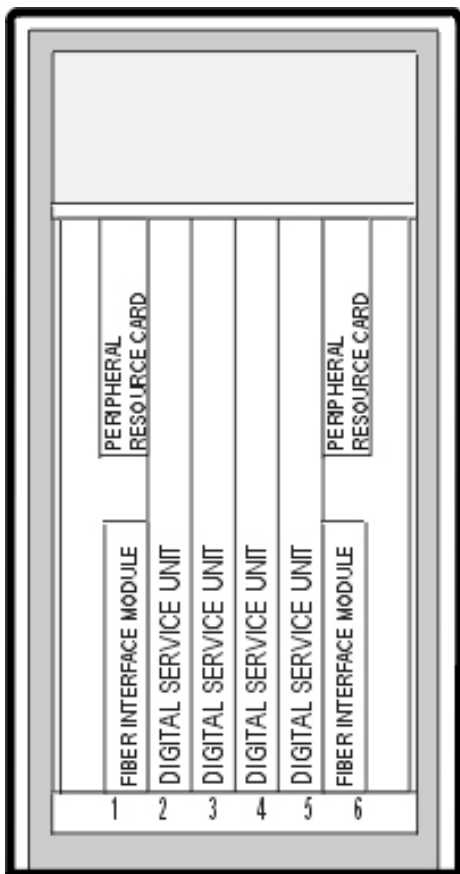
CAUTION: Do not open or unpack any printed circuit board cartons at this time.

1. Open the DSU node carton.
2. Remove the plastic bag from the top and sides of the cabinet. Lift the DSU node out of the carton.
3. Check that the node and all attached equipment are undamaged. Repack and return any damaged equipment.
4. Place the node in its assigned position.
5. Remove the DSU node front panel.

CAUTION: Ensure that you use the Cabinet Stacking Brackets if you want to stack cabinets on top of each other. Stacking cabinets without these brackets could result in damage to the equipment or injury.

DSU Card Layout

Each DSU node has one or two FIMs, depending on the number and location of DSU cards installed in the node. The FIM in the bottom of slot 1 provides communications with the 3300 Controller for the DSU cards in slots 2 and 3, and the FIM in the bottom of slot 6 provides communications for the DSU cards in slots 4 and 5. You must install and cable the FIMs before you install any cards in the DSU node.



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DSU Card Layout

Connect Fiber Cable to the DSU

The fiber optic cable connects the FIMs in the 3300 Controller to the FIMs in the DSU node.

To connect the fiber optic cable to the FIM in the peripheral node:

1. Review the guidelines for handling fiber optic cable.

2. Route the fiber optic cable through the sliding cable port at the rear of the DSU cabinet into the cabinet. Extend the fiber cable approximately 30 cm (1 ft) beyond the front of the cabinet.
3. Install a short piece of nylon spiral wrap over the cable at the point where the cable exits the rear of the cabinet.
4. Close the sliding cable port door. Ensure that the door closes on the nylon spiral-wrapped section of fiber cable.
5. Remove the plastic dust caps from the fiber optic cable and the connector ferrules on the FIM faceplate.
6. 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.

Install DSU Cards

To install the DSU cards:

CAUTION: To prevent static damage to electrical components, ensure that the system is grounded before you install the cards. Whenever you handle circuit cards, wear an anti-static strap.

1. Ensure that the FIMs are installed and cabled.
2. Connect the power cord to the external ac power source.
3. Install the DSU cards. Refer to "Install Upgrades and FRUs" for circuit card installation procedures.

Interface Assembly

The Interface Assembly attaches to the following cards:

- PRI card
- DS1/T1 Formatter II cards
- CEPT Formatter II cards.
- R2 card

To install the Interface Assembly:

1. Attach the anti-static strap to your wrist.
2. Unpack the Interface Assembly and inspect it to ensure that it is not damaged.
3. At the rear of the cabinet, locate the slot in the DSU cabinet that corresponds to the slot that you will use for the PRI, R2, CEPT, or DS1/T1 Formatter card.
4. Remove the blanking plate from the selected slot.
5. Using the screws that secured the blanking plate, mount the Interface Assembly extension bracket on the selected slot. The closed side of the extension bracket must be to the left when viewed from the rear of the cabinet.
6. Insert the Interface Assembly. Ensure the edge connector on the card aligns with the connector on the backplane of the system.
7. Secure the Interface Assembly to the extension bracket with the screws provided.

DS1 Interface Assembly and Cabling

If you install a DS1 Formatter Card, you must also install a DS1 Interface Assembly and connect the external cables.

The DS1 Interface Assembly provides two filtered DB-15 pin connectors for the external cables required by one DS1 Formatter Card. You can mount up to four DS1 Interface Assemblies in the DSU.

To install the DS1 Interface Assembly and Cables:

1. Attach the anti-static strap to your wrist.
2. Unpack the DS1 Interface Assembly. Inspect it to ensure that it is not damaged.
3. Locate the slot in the DSU that corresponds to the DSU slot that holds the DS1 Formatter card. When you are facing the rear panel, the DSU slots, from right to left, correspond to DSU slots 3/1/2 to 3/1/5 or on the SX-2000 they correspond to DSU slots 2 to 5.

4. Remove the cover plate from the slot on the metal box by unscrewing the two screws that hold it in place.
5. Insert the DS1 Interface Assembly into the empty slot in the DSU box, and plug it into the DIN connector in the back of the DSU box.
6. Align the screw holes on the DS1 Interface Assembly faceplate with the screw holes in the metal box, and fasten the faceplate to the box.
7. Connect the 22 AWG (22 IWG) shielded twisted pair cables from the external network to the DB-15 pin connectors on the DS1 Interface Assembly.
8. Remove the DS1 Formatter Card.
9. If the card is an E1/T1 (DS1) Formatter card, set the links for either E1 or T1 operation by using the E1/T1 switches located on the side of the card. For E1 operation, see Connecting to MSDN CEPT links.
10. Set the DS1 Formatter card line equalizer switches (S1 and S2).
11. Re-install the DS1 Formatter card.
12. Remove the anti-static strap from your wrist.

CEPT Interface Assembly and Cabling

If you install a CEPT Formatter card, you must also install a CEPT Interface Assembly and connect the cables.

The CEPT Interface Assembly provides four filtered BNC connectors for the external cables required by one CEPT Formatter card. You can mount up to four CEPT Interface Assemblies on an SX-2000 MICRO LIGHT node or an SX-2000 DSU node. Each CEPT Interface Assembly plugs into a J3 DIN 3 X 32 connector. These connectors are located in a 9 cm x 12.5 cm (3.5 inch x 5 inch) metal box that projects from the backplane.

To install the CEPT Interface Assembly or CEPT Interface Assembly II and Cables:

1. Attach the anti-static strap to your wrist.

2. Unpack the CEPT Interface Assembly. Inspect it to ensure that it is not damaged.
3. Set the CEPT Interface Assembly jumpers to the desired positions.
4. Locate the slot in the DSU box that corresponds to the DSU slot that holds the CEPT Formatter card. When you are facing the rear panel, the DSU box slots, from right to left, correspond to DSU slots 3/1/2 to 3/1/5, or on an SX-2000 DSU node correspond to DSU slots 2 to 5.
5. Remove the cover plate from the slot on the metal box by unscrewing the two screws that hold it in place.
6. Insert the CEPT Interface Assembly into the empty slot in the DSU box, and plug it into the DIN connector in the back of the DSU box.
7. Align the screw holes on the CEPT Interface Assembly faceplate with the screw holes in the metal box, and fasten the faceplate to the box.
8. Connect the cables from the external network to the BNC connectors on the CEPT Interface Assembly.
9. Remove the anti-static strap from your wrist.

Install Wireless Devices

Installation Overview:

1. Symbol Technologies will complete a site survey.
2. Symbol Technologies will install and configure the Air Access Points.
3. Complete Programming on 3300 ICP.
4. Configure the wireless phones using the Symbol NetVision MiNET Phone Administrator Tool.



To migrate from a 3200 ICP the wireless network must use the Direct Sequencing (DS) Spread Spectrum using the 802.11b protocol. The wireless phones will be required to have new firmware downloaded.

Install Symbol NetVision MiNET Phone Administrator Tool

The tool is found on the 3300 ICP software CD and must be installed on a PC that is running Windows NT or Windows 2000.

To install the tool:

1. Insert the software CD into the CD-ROM drive.
2. Click \3rd_Party\Wireless\Administration_Tool\MiNET<xxx>.exe.
3. Click Unzip to place files in C:\temp\symbol.
4. Click Close.
5. Open the C:\temp\symbol folder.
6. Click setup.exe.
7. Follow the instructions in the install wizard.

Install 3300 ICP as a Stand-alone IP Gateway

The 3300 ICP can be used as an IP Gateway providing the functionality of both IP and Wireless MiNET protocols adjunct to a legacy or third party PBX connected over DPNSS or Q.Sig trunks.

Before you begin

- Ensure that Symbol Technologies have installed and configured the Air Access Points.
- Ensure you have the ESS ID numbers of the Air Access Points.
- Install the Symbol NetVision MiNET Phone Administrator Tool on a Windows NT or Windows 2000 PC.

To install as a stand-alone system:

1. Install the 3300 ICP Controller.
2. Install the System ID Module.
3. Connect power to the 3300 Controller. The controller will come up, in 15 to 20 minutes, with factory-installed software.

4. To check the connections between the 3300 Controller and the PC:
PING the 3300 Controller IP address
FTP to the 3300 Controller IP address
Go to the 3300 Controller URL address (e.g. <http://192.168.1.2>).
5. Launch browser to login to the System Administration Tool (<http://192.168.1.2> -- username is **system**, password is **password**).
6. License and Option Selection form: Program number of digital links, IP device licenses, and country variant. Reboot the system.
7. Controller Module Configuration form. Select the Programmed Module Type.
8. Network Services Unit Configuration form. Set the type of NSU and the protocol to be used.
9. Program digital trunks Q.SIG or MSDN/DPNSS.
10. Program Symbol Wireless phones as per instructions in System Administration Tool.
Note: You will require the ESS ID's of the Air Access Points for the configuration. Information on the steps requiring the Symbol NetVision MiNET Phone Administrator Tool can be found in the tools help system. You will be required to upgrade the Symbol phones firmware to the MiNET protocol.
11. Perform a Backup.
12. Reboot the system.
13. Set the 3300 Controller (RTC) IP address through a communication program.
14. Install a Universal NSU.

Install 3300 ICP as a Stand-alone Voice Mail

The 3300 ICP can be used as a voice mail system adjunct to a legacy or third party PBX.

To install as a stand-alone voice mail system:

1. Install the 3300 ICP Controller.

2. Install the System ID Module.
3. Connect power to the 3300 Controller. The controller will come up, in 15 to 20 minutes, with factory-installed software.
4. To check the connections between the 3300 Controller and the PC:
 - PING the 3300 Controller IP address
 - FTP to the 3300 Controller IP address
 - Go to the 3300 Controller URL address (<http://192.168.1.2>).
5. Launch browser to login to the System Administration Tool (<http://192.168.1.2> -- username is **system**, password is **password**).
6. License and Option Selection form
 - program number of digital links, voice mail licenses, and country variant.
 - If OPS Manager is being used to manage the voice mail select Yes in the Networking Option field.
7. Reboot the system.
8. Controller Module Configuration form. Select the Programmed Module Type.
9. Network Services Unit Configuration form. Set the type of NSU and the protocol to be used.
10. Program digital trunks Q.SIG or MSDN/DPNSS
11. Program voice mail as per instructions in System Administration Tool.
12. Perform a Backup.
13. Reboot the system.
14. Set the 3300 Controller (RTC) IP address through a communication program.
15. Install a Universal NSU.

Software

Install the 3300 Configuration Tool

The 3300 Configuration Tool PC must have Windows NT 4.0 or Windows 2000 Professional operating system. In addition, the Java Plug-in 1.1.3 by Sun™ Microsystems is required (Netscape Communicator 4.05 and the Java Plug-in are shipped with the 3300 Configuration Tool software).

To install the 3300 Configuration Tool:

1. Insert the 3300 Configuration Tool CD-ROM into the CD-ROM drive.
2. Open Explorer and double-click the Setup.exe file in the root directory of the CD-ROM drive.
3. Enter your user name and company name. Click **Next**.
4. Click **Next** to select the default destination folder, or click Browse to install in a different folder.
5. Click **Typical install**.
6. Click **Next** to begin copying files to the target directory. The 3300 Configuration Tool installation program automatically starts the Oracle installation program. Follow the prompts to install Oracle.

Install and Configure the Java Plug-In

Install the Java Plug-in on the 3300 Configuration Tool PC to improve performance of the 3300 Configuration Tool application. You can access the Java Plug-in from a browser at the following URL: <http://servername/opsclient/> where servername is the netbios name of the 3300 Configuration Tool platform.

After you have installed the plug-in you must set the parameters as follows:

1. From the **Start** menu, point to **Programs**, and click **Java Plug-in ControlPanel**.
2. Click **Basic**.

3. Enter the following parameter: Network Access: Unrestricted or Applet host (do not select None)
4. Use the default settings for the parameters in the Advanced and Proxies property sheets.
5. Click **Apply**.

The 3300 Configuration Tool PC, operating on Windows NT 4.0 or Windows 2000 Professional, is connected to the 3300 Controller through a serial connection and a network connection. The PC must be equipped with an Ethernet card, an Ethernet cable, a communications program, a serial port (use HyperTerminal default settings), and a serial cable.

Install IMAT

Mitel Networks ISDN Maintenance and Administration Tool (IMAT) is a Windows-based application you use to program and maintain the Universal NSU and the R2 NSU on the 3300 ICP.

To install the IMAT software:

1. Shut down all applications on the IMAT PC.
2. Insert the CD-ROM into the CD drive.
3. On the **Start** menu, click **Run**.
4. Type your CD drive letter followed by `:\imat\disk1\setup.exe`
5. Click **OK**.
6. Follow the prompts.

Install Upgrades and FRUs

Hardware

Controller Upgrade Options

There are several upgrade options for the 3300 ICP Controller:

- 250 user to 700 user system
- 250 user system upgrade to support 32 compression channels
- 250 user system upgrade to support 64 compression channels
- 700 user system upgrade to support 32 compression channels
- 700 user system upgrade to support 64 compression channels

Before you begin:

- Ensure that the upgrade kit is complete.
- Check each module to ensure that no damage has occurred in transit.
- You will need a Philips screwdriver.
- Have a 3300 ICP system back-up.

Caution: To prevent ESD damage while handling modules on any unit, always attach the wrist strap from the cabinet being serviced, and immediately place any item removed from a cabinet into an anti-static bag.

You can also migrate:

- SX-2000 LIGHT to 3300 ICP
- SX-2000 MICRO LIGHT to 3300 ICP
- 3200 ICP to 3300 ICP
- 3800 WAG to 3300 ICP.

250 User to 700 User System - No Compression

This system uses the following existing modules:

- One RTC (3.0/3.1 133 MHz; 3.2 300 MHz)
- One E2T (3.0/3.1 133 MHz; 3.2 300 MHz)
- One Dual FIM Module
- One Quad DSP Module for tone and conference support
- One 64 Channel Echo Canceller

You will need the following new modules:

- One Quad DSP Module (21161) for tone and conference support
- One Dual FIM Module
- One 64 Channel Echo Canceller

This provides:

- Eight DSP devices, to provide tone and conference functions
- 128 Channels of Echo Cancellation
- Four External FIM connections
- Four ASU connections (integral to unit)

The four external FIM connections are for providing connectivity for up to two Peripheral Units or up to six NSUs. Note that there are two T1/E1 links per NSU.

To upgrade a 250 user system to a 700 user system:

1. Remove the cover.
2. Install the new Dual FIM Modules (slot MMC2).
3. Install the new 21161 DSP Module (slot MMC7).
4. Install the 64 Echo Canceller Module (slot MMC6).
5. Replace the cover.

250 User System to 700 User System - No Compression

Slot 8 DSP for Telecom	Slot 7 DSP for Telecom	Slot 6 64 Channel Echo Canceller	Slot 5 64 Channel Echo Canceller
Slot 1 FIM	Slot 2 FIM	Slot 3 Empty	Slot 4 Empty

IP0423

250 User System - Add 32 Compression Channels

250 User System (Release 3.0/3.1 chassis) upgrade to add support for 32 compression channels.

This system uses the following existing modules:

- One 133 MHz RTC
- One 133 MHz E2T
- One 64 Channel Echo Canceller
- One Dual FIM
- One Quad DSP Module (21061) for tone and conference support

Add one new module:

- One Quad DSP Module (21161) for 32 Channels of Compression (you must purchase compression licenses)

This provides:

- Four DSP devices (21061), to provide tone and conference functions
- Four DSP devices (21161), to provide 32 channels of compression

- 64 Channels of Echo Cancellation
- Two External FIM connections
- Four ASU connections (integral to unit)

The two external FIM connections are for providing connectivity for up to two Peripheral Units or up to four NSUs. Note that there are two T1/E1 links per NSU.

To add 32 compression channels to a 250 user system (Release 3.0/3.1 chassis):

1. Remove the cover.
2. Install the additional Quad DSP Module (slot MMC3).
3. Replace the cover.

250 User System - Add 32 Compression Channels

Slot 8 21061 DSP Telecom	Slot 7 Empty	Slot 6 Empty	Slot 5 64 Channel Echo Canceller
Slot 1 FIM	Slot 2 Empty	Slot 3 21161 DSP Compression	Slot 4 Empty

IP0418

250 User System - Add 64 Compression Channels

250 User System (Release 3.0/3.1 chassis) upgrade to add support for 64 compression channels requires a new Release 3.2 chassis.



Note: Retain your System ID Module and Hard Drive.

The 250 user, 64-channel compression upgrade package includes:

- One 300 MHz RTC
- One 300 MHz E2T
- One 64 Channel Echo Canceller
- One Dual FIM
- One Quad DSP Module for tone and conference support
- Two Quad DSP Modules for 64 channels of compression
- 40 Compression licenses.

This provides:

- Four 21061 DSP devices, to provide tone and conference functions
- Eight 21161 DSP devices, to provide 64 channels of compression
- 64 Channels of Echo Cancellation
- Two external FIM connections
- Four ASU connections (integral to unit)

The two external FIM connections are for providing connectivity for up to two Peripheral Units or up to four NSUs. Note that there are two T1/E1 links per NSU.

To add 64 compression channels to a 250 user system (Release 3.0/3.1 chassis):

The old Release 3.0/3.1 chassis:

1. Remove the cover.
2. Remove the Sys ID Module.
3. Remove the Hard Drive.

The new Release 3.2 chassis:

1. Remove the cover.
2. Install the two DSP Modules (slots MMC3 and MMC4).
3. Install the Sys Id Module.
4. Install the Hard Drive.
5. Replace the cover.

250 User System - Add 64 Compression Channels

Slot 8 21161 DSP Telecom	Slot 7 Empty	Slot 6 Empty	Slot 5 64 Channel Echo Canceller
Slot 1 FIM	Slot 2 Empty	Slot 3 21161 DSP Compression	Slot 4 21161 DSP Compression

IP0417

700 User System - Add 32 Compression Channels

700 User System (Release 3.0/3.1 chassis) upgrade to add support for 32 compression channels.

This system uses the following existing modules:

- One 133 MHz RTC
- One 133 MHz E2T
- One 128 Channel Echo Canceller
- Two Dual FIMs
- Three Quad DSP Modules (21061) for tone and conference support

And one new module:

- One Quad DSP Module (21161) for 32 Channels of Compression (you must purchase compression licenses)

This provides:

- Twelve DSP devices (21061), to provide tone and conference functions
- Four DSP devices (21161), to provide 32 channels of compression
- 128 Channels of Echo Cancellation
- Four external FIM connections
- Four ASU connections (integral to unit)

The four external FIM connections are for providing connectivity for up to two Peripheral Units or up to six NSUs. Note that there are two T1/E1 links per NSU.

To add 32 compression channels to a 700 user system (Release 3.0/3.1 chassis):

1. Remove the cover.
2. Install the DSP Module (slot MMC3).
3. Replace the cover.

700 User System - Add 32 Compression Channels

Slot 8 21061 DSP Telecom	Slot 7 21061 DSP Telecom	Slot 6 21061 DSP Telecom	Slot 5 128 Channel Echo Canceller
Slot 1 FIM	Slot 2 FIM	Slot 3 21161 DSP Compression	Slot 4 Empty

IP0418

700 User System - Add 64 Compression Channels

700 User System (Release 3.0/3.1 chassis) upgrade to add support for 64 compression channels requires a new Release 3.2 chassis.



Note: Retain your System ID Module and Hard Drive.

The 700 user, 64-channel compression upgrade package includes:

- One 300 MHz RTC
- One 300 MHz E2T
- One 128 Channel Echo Canceller
- Two Dual FIMs
- Two Quad DSP Modules for tone and conference support
- Two Quad DSP Modules for compression
- 40 Compression licenses

This provides:

- Eight DSP devices, to provide tone and conference functions
- Eight DSP devices, to provide 64 channels of compression
- 128 Channels of Echo Cancellation
- Four external FIM connections
- Four ASU connections (integral to unit)

The four external FIM connections are for providing connectivity for up to two Peripheral Units or up to six NSUs. Note that there are two T1/E1 links per NSU.

To add 64 compression channels to a 250 user system (Release 3.0/3.1 chassis):

The old Release 3.0/3.1 chassis:

1. Remove the cover.
2. Remove the Sys ID Module.
3. Remove the Hard Drive.

The new Release 3.2 chassis:

1. Remove the cover.
2. Install the DSP Modules (slots MMC3 and MMC4).
3. Install the Sys ID Module.
4. Install the Hard Drive.
5. Replace the cover.

700 User System - Add 64 Compression Channels

Slot 8 21161 DSP Telecom	Slot 7 21161 DSP Telecom	Slot 6 Empty	Slot 5 128 Channel Echo Canceller
Slot 1 FIM	Slot 2 FIM	Slot 3 21161 DSP Compression	Slot 4 21161 DSP Compression

IP0420

SX-2000 LIGHT to 3300 ICP

To upgrade SX-2000 LIGHT hardware for 3300 control:

- 384 port Peripheral - main control replacement
- DSU - main control replacement
- Peripheral cards - DNIC Line, ONS CLASS, ONS Line, LS/GS Trk, E&M Tie Trk, OPS Line, DID/Loop Tie
- DSU cards - T1 (DS1) Formatter, CEPT Interface, ISDN PRI, E1/T1 Dig Trk Formatter, E1 R2, 6CCT BRI, 15CCT BRI
- If existing capacity is greater than that of the 3300 ICP, the conversion will fail. See the capacity table for the 3300 ICP.

The SX-2000 LIGHT Digital Services Unit (DSU) cabinet provides digital trunk capability, and the SX-2000 LIGHT peripheral cabinet provides connectivity for analog trunks, analog telephones, and Mitel DNI devices. Both cabinet types can be connected to the 3300 Controller by using multi-mode fiber connections.

The DSU cabinet supports BRI, PRI, T1/D4, MSDN/DPNSS, and DASS II trunks.

The peripheral cabinet supports the following analog trunks:

- Analog CO trunks
- E&M trunks
- Direct Inward Dial and Tie Trunks.

The peripheral cabinet also supports the following DNI telephones and devices:

- SUPERSET 401
- SUPERSET 401+
- SUPERSET 410
- SUPERSET 420
- SUPERSET 430
- SUPERSET 4001
- SUPERSET 4015
- SUPERSET 4025
- SUPERSET 4125
- SUPERSET 4150
- SUPERCONSOLE 1000.

For additional information, refer to SX-2000 technical documentation.

SX-2000 MICRO LIGHT to 3300 ICP

To upgrade SX-2000 MICRO LIGHT hardware for 3300 control:

- Replace the Main Controller in the MICRO LIGHT with a Triple FIM Card.

- If existing capacity is greater than that of the 3300 ICP, the conversion may fail. See the capacity table for the 3300 ICP.

By installing a triple FIM card in the SX-2000 MICRO LIGHT main cabinet, you can physically connect it to the 3300 ICP by using multi-mode fiber. As a result, you can use the existing peripheral and digital trunk cards within the main cabinet. Connect any external cabinets by using FIMs.

3200 ICP to 3300 ICP

To upgrade 3200 ICP hardware for 3300 ICP control:

- If existing capacity is greater than that of the 3300 ICP, the conversion may fail. See the capacity table for the 3300 ICP.

The 3200 ICP database is converted and restored to a 3300 ICP database, and any peripheral cabinets connected to the FIM ports on the 3300 Controller.

In addition to the DNIC telephones supported by the peripheral cabinet, the 3300 ICP supports the following legacy IP telephones:

- SUPERSET 4015IP
- SUPERSET 4025IP.

Software

Software Upgrade Procedure

Before you begin:

- Ensure you have a new option password
- Ensure you have a 3300 ICP system back-up
- Upgrade OPS Manager if you are using it to manage your system, to minimum Version 6.6
- Inform all system users that the system is being upgraded.
- Windows 2000 users should clear the browser cache.

Ensure that your PC is equipped with the following software and hardware:

- The CD-ROM containing the Mitel Networks 3300 ICP software release deliverables
- An Ethernet cable (RJ45) to connect from your PC to the 3300 ICP controller
- A serial cable (9600,8n1) to connect from your PC to the 3300 ICP maintenance port.
- Communication software such as HyperTerm or VT100 Console to communicate with the 3300 ICP through the maintenance port.



Time: Total upgrade time is about 4 hours.



Tip: You will need the 3300 ICP IP address, username, and password.

To perform a software upgrade:

1. Launch the communication program.
2. Establish a serial connection from the 3300 Configuration Tool PC (or any PC equipped with a communications program) to the Maintenance Port on the 3300 Controller.
3. Set the communication program parameters to the following:
Baud rate - **9600**
Data bits - **8**
Parity - **None**
Stop bits - **1**
Flow control - **None**.
4. Connect to the 3300 Real Time Complex (RTC) via the maintenance port and type **bootChange**. Press Enter after you enter required text. For all other fields, (displayed in grey text, for information only) accept the default value or leave blank.
boot device: ata=0,0 (Boot device is Disk)
unit number: 0 (default, leave at 0, not used)
processor number: 0 (default, leave at 0, not used)
host name: (optional)
file name: /sysro/Rtc8260 (boot location and file name)
inet on ethernet (e): **134.199.63.11:fffff00** (example RTC IP and subnet mask)

Note: Type the IP address and subnet mask (in hexadecimal format for the end user's site (i.e. fffff represents 255.255.255.00).

inet on backplane (b):

host inet (h):

gateway inet (g): **134.199.63.251** (example Router (Gateway address))

Note: Enter the IP address of the end user's gateway for the 3300 Controller.

user (u): **ftp**

ftp password: **@**


flags (f): 0x0 (a fixed IP address (0x40 is used on E2T for DHCP))

target name (tn):

startup script (s):

other (o): motfcc (other device, E2T using Network to boot from)

5. Insert the software CD-ROM into the CD drive of the installer's PC.
6. Run the "Setup.exe" program from the CD.
7. Select **Upgrade Installation**.
8. Choose a location for the Setup program to install files (default is C:\MN3300).
9. Type in the IP address of the RTC.
10. Enter the username and password to Log into the FTP Server (by default the username is ftp and the password is @). The installSetup program:
 - Provides a progress indicator and log file
 - Checks the disk space in the specified location
 - Checks the country variant of existing software
 - Puts files in the created directory under the chosen location.Default location will result in: "c:3300 ICP".
 - Runs an FTP Client Session to load new software files to the Install directory.
11. Review the Readme file.
12. Go to the cmd prompt (->) of the RTC shell.

13. Type the command "upgrade". This command takes approximately 45 minutes to execute.
The upgrade command:
 - Stops all active user sessions
 - Disallows any new user sessions
 - Stops system services
 - Checks disk space in the Hard Disk Drive of the 3300 ICP
 - Displays the current software version and the new upgrade version number
 - Moves original software and data to a different location in Hard Disk drive as a temporary back up.The system resets and then extracts the software file hierarchy from the tar file.
 14. Log into the System Administration Tool.
 15. Select System Configuration, expand System Capacity, click License and Option Selection and enter the data for this switch into the form.
 16. Reboot the system.
 17. Restore the database:
 - Log into the 3300 ICP System Administration Tool.
 - Select Maintenance and Diagnostics from the Selection pull-down menu.
 - Click the Restore icon.
 - Browse for the location of the database you wish to restore.
 - Click "Start Restore".
 - OK the status message to start the restore procedure. A Restore in Progress status message is displayed. The system displays a 'successful' message, and asks you to reboot.
 18. Reboot the system.
 19. Close the (COM) serial session to the 3300 ICP.
 20. De-cable from the COM port of the 3300 ICP.
-  Tip: A DBMS Save is automatically performed after the Data Restore but it is a good practice to check if the DBMS flag is on and set DBMS Check ON.



Note: The upgrade procedure does not change the DHCP Server settings or the Voice Mail messages. DHCP Lease times are renewed after an upgrade.

SX-2000 LIGHT to 3300 ICP

- Only one 3300 ICP can be configured at a time; and only one SX-2000 PBX can be migrated to a 3300 ICP at a time.
- Migration and Configuration cannot be performed in a single task or session using the 3300 Configuration Tool.
- After migration, configuration must be completed using System Administration Tool.
- Data restoration automatically triggers data migration.
- If existing capacity is greater than that of the 3300 ICP, the conversion will fail. See the capacity table for the 3300 ICP.
- Windows 2000 users should clear the browser cache.

To transfer database from SX-2000 LIGHT to 3300 ICP:

1. Prepare the SX-2000 LIGHT for migration:
 - reduce Peripheral and DSU nodes to a maximum of 4
 - deprogram unsupported devices and cards (AC13, AC15, SCDC, DID3, Advanced Tone Detector, ISDN Gateway, FIM Carrier Card, COV Line Card, 3DN, 4DN, SUPERSET 3, SUPERSET 4, SUPERSET 700, SUPERSET 7DN, SUPERCONSOLE 2000, and datasets).
2. Program SX-2000 connectivity using the Configuration Tool. Create a Network Element that is the same as the SX-2000 PBX.
3. Backup SX-2000 database (datasave) to the 3300 Configuration Tool or copy a datasave from OPS Manager to the Configuration Tool. The Configuration Tool will convert the SX-2000 database to a 3300 database.

4. Change the Variant to 3300 ICP and change the IP Address if required.
5. Enable Options.
6. Perform a Restore of the SX-2000 converted database onto the 3300 ICP. An automatic validation operation occurs to determine if the restore can proceed.
7. Reboot the 3300 ICP. Check the logs for any data restore failures (see Note).
8. Change the 3300 ICP system name through the System Administration Tool.



Tip: After the Restore and Reboot, check the log file. In the System Administration Tool, click Maintenance and Diagnostics, select Maintenance Commands, and click All. Type the following text in the Command line: **type *.dr.logfile_1** and click Submit.

SX-2000 MICRO LIGHT to 3300 ICP

- Only one 3300 ICP can be configured at a time; and only one SX-2000 can be migrated to a 3300 ICP at a time.
- Migration and Configuration cannot be performed in a single task or session using the 3300 Configuration Tool.
- After migration, configuration must be completed using the System Administration Tool.
- Data restoration automatically triggers data migration.
- The MICRO LIGHT appears as 2 pair of NSUs and a Peripheral Unit to the 3300 ICP.
- If existing capacity is greater than that of the 3300 ICP, the conversion will fail. See the capacity table for the 3300 ICP.
- Windows 2000 users should clear the browser cache.

To transfer database from SX-2000 MICRO LIGHT to 3300 ICP:

1. Prepare the SX-2000 MICRO LIGHT for migration:
 - reduce Peripheral and DSU nodes to a maximum of 4
 - deprogram unsupported devices and cards (AC13, AC15, SCDC, DID3, Advanced Tone Detector, ISDN Gateway, FIM

Carrier Card, COV Line Card, 3DN, 4DN, SUPERSET 3, SUPERSET 4, SUPERSET 700, SUPERSET 7DN, SUPERCONSOLE 2000, and datasets).

2. Program SX-2000 connectivity using NE Editor.
3. Backup SX-2000 database (datasave) from the 3300 Configuration Tool. The Configuration Tool will convert the SX-2000 database to a 3300 database.
4. Program 3300 ICP connectivity using NE editor with the Variant as 3300 ICP.
5. Enable Options.
6. Perform a Restore of the SX-2000 converted database onto the 3300 ICP. An automatic validation operation occurs to determine if the restore can proceed.
7. Reboot the 3300 ICP. Check the logs for any data restore failures (see Note).
8. Change the 3300 ICP system name through the System Administration Tool.



Note: After the Restore and Reboot, check the log file. In the System Administration Tool, click Maintenance and Diagnostics, select Maintenance Commands, and click All. Type the following text in the Command line: **type *.dr.logfile_1**

3200 ICP to 3300 ICP

- Only one 3200 ICP can be migrated to a 3300 ICP at a time.
- Migration and Configuration cannot be performed in a single task or session using the 3300 Configuration Tool.
- After migration, configuration must be completed using System Administration Tool.
- Data restoration automatically triggers data migration.
- If existing capacity is greater than that of the 3300 ICP, the conversion may fail. See the capacity table for the 3300 ICP.
- Windows 2000 users should clear the browser cache.
- Export the Name, Number and PIN of each user with a Symbol phone to a .csv file using the Telephone Directory Export Application in OPS Manager (only do this if you are migrating a 3200 ICP that has Symbol Phones programmed that use Direct Sequence Spread Spectrum).
- Install the Symbol NetVision MiNET Phone Administrator Tool on a Windows NT or Windows 2000 PC.



Note: Although the 3200 ICP FD_DSU programming is restored to the 3300 ICP, you must deprogram the DSU and reprogram using the System Administration Tool after you install new hardware.

To transfer database from a 3200 ICP to a 3300 ICP:

1. Prepare the 3200 ICP for migration:
 - deprogram unsupported devices and cards (AC15, SCDC, Advanced Tone Detector, ISDN Gateway, FIM Carrier Card, COV Line Card, 3DN, 4DN, SUPERSET 3, SUPERSET 4, SUPERSET 7DN, and datasets).
2. Program 3200 ICP connectivity using the Configuration Tool. Create a Network Element that is the same as the 3200 ICP.
3. Back up 3200 ICP database (datasave) to the 3300 Configuration Tool or copy a datasave from OPS Manager to

the Configuration Tool. The Configuration Tool will convert the 3200 database to a 3300 database.

4. Change the Variant to 3300 ICP and change the IP Address if required.
5. Perform a Restore of the 3200 ICP converted database onto the 3300 ICP.
An automatic validation operation occurs to determine if the restore can proceed.
6. Reboot the 3300 ICP.
Check the logs for any data restore failures (see Note).
7. (Optional - see Note) Collect the telephone directory information from the 3300 ICP using the Full Collect application in the Configuration Tool.
8. (Optional - see Note) Collect information on the free PLIDs using the Free PLID Collection application.
9. (Optional - see Note) Import the .csv file that contains the Name, Number and PIN information of each Symbol phone user using the Moves, Adds and Changes Import application in the Configuration Tool.
10. Change the 3300 ICP system name through the System Administration Tool.
11. Deprogram the 3200 ICP FD_DSU using the System Administration Tool.
12. Install new hardware (Network Services Unit or DSU Cabinet).
13. Reprogram the digital links.
14. (Optional - see note) Update the firmware in the Symbol NetVision phone. Refer to the Symbol NVP II MiNET Update Procedure.
15. (Optional - see Note) Complete the programming of the Symbol phone using the Symbol NetVision MiNET Phone Administrator Tool.



Note: After the Restore and Reboot, check the log file. In the System Administration Tool, click Maintenance and

Diagnostics, select Maintenance Commands, and click All.
Type the following text in the Command line: **type *.dr.logfile_1**



Note: The optional steps are only applicable if the database has Symbol Wireless phones being migrated.

3800 Wireless Applications Gateway to 3300 ICP

- Only one 3800 Wireless Applications Gateway can be migrated to a 3300 ICP at a time.
- Only D.S. Wireless phones can be migrated.
- Migration and Configuration cannot be performed in a single task or session using the 3300 Configuration Tool.
- After migration, configuration must be completed using System Administration Tool.
- Data restoration automatically triggers data migration.
- Windows 2000 users should clear the browser cache.
- For steps requiring the Configuration Tool refer to the Configuration Tool Help System.
- Install the Symbol NetVision MiNET Phone Administrator Tool on a Windows NT or Windows 2000 PC.

To transfer database from a 3800 WAG to a 3300 ICP:

1. Prepare the 3800 ICP for migration
 - Export the Name, Number and PIN of each user with a Symbol phone to a .csv file using the Telephone Directory Export Application in OPS Manager.
 - change OPS Manager Configuration Settings.
2. Prepare the 3300 ICP for migration.
 - Input the License information in the License and Option Selection form.
 - Reboot the system.
 - Change the System Name to the same as that of the 3800 WAG being migrated in the System Options Assignment form.
3. Program 3800 WAG connectivity using the Configuration Tool. Create a Network Element that is the same as the 3800 WAG.

4. Backup 3800 WAG database (datasave) to the 3300 Configuration Tool.
The Configuration Tool will convert the 3800 database to a 3300 database.
5. Change the Variant to 3300 ICP and change the IP Address if required.
6. Perform a Restore of the 3800 WAG converted database onto the 3300 ICP.
An automatic validation operation occurs to determine if the restore can proceed.
7. Reboot the 3300 ICP.
Check the logs for any data restore failures (see Note).
8. Collect the telephone directory information from the 3300 ICP using the Telephone Directory Full Collect application in the Configuration Tool.
9. Collect unused circuit information from the 3300 ICP using the Collect Unused Directory Circuits application in the Configuration Tool.
10. Import the .csv file that contains the Name, Number and PIN information of each Symbol phone user using the Moves, Adds and Changes Import application in the Configuration Tool.
11. Change the 3300 ICP system name and the default usernames/passwords using the System Administration Tool.
12. Update the firmware in the Symbol NetVision phone. Refer to the Symbol NVP II MiNET Update Procedure located in the Hardware User Guide On-line Help.
13. Complete the programming of the Symbol phone using the Symbol NetVision MiNET Phone Administrator Tool.



Note: After the Restore and Reboot, check the log file. In the System Administration Tool, click Maintenance and Diagnostics, select Maintenance Commands, and click All. Type the following text in the Command line: **type *.dr.logfile_1**

Field Replaceable Units

Controller

Remove the Cover



Note: Ensure that you have read the Safety Instructions before carrying out these procedures.

WARNING: Before any servicing that requires the case to be removed, the power to the system must be removed by disconnecting the system plug from the power supply. All PSTN/Network connections must also be removed before opening the case.

WARNING: Servicing of this unit shall be performed by suitably qualified, trained technicians who are fully aware of the safety requirements contained in the Hardware User Guide.

To remove the 3300 ICP Controller cover:

1. Turn off the power to the unit.
2. Disconnect all cables.
3. Remove the 3300 Controller from the rack and place it on a suitable work area.
4. Remove the front faceplate (this will clip off).
5. Turn the 3300 Controller over gently, keeping the front panel facing forward.
6. Remove the two screws from the underside of the 3300 Controller.
7. Turn the 3300 Controller the right side up and rotate until the back of the unit is facing forward.
8. Remove the two screws from the back panel.
9. Slide the cover forward until it catches, then tilt the cover upward to remove it.
10. Turn the 3300 Controller until the front panel is toward you.

Replace the Cover

To replace the 3300 ICP cover:

1. Turn the 3300 Controller until the back panel is facing forward.
2. Lift the lock for the AC power cord and place the shell at an angle to hook onto the back of the unit.
3. Straighten and slide the cover forward as far as it will go.
4. Secure the shell by inserting and snugly securing the two screws on the back panel.
5. Rotate the 3300 Controller until the front panel is facing forward.
6. Turn the 3300 Controller gently upside down.
7. Secure the screws on the bottom front of the unit.
8. Turn the 3300 Controller right side up.
9. Clip on the front faceplate taking care not to damage the protruding FIM connectors.
10. Reinstall the 3300 Controller into the rack (if applicable).
11. Reconnect all cables.
12. Power on the unit.

Dual FIM Module

CAUTION: To prevent ESD damage while handling modules on any unit, always attach the wrist strap from the cabinet being serviced, and immediately place any item removed from a cabinet into an anti-static bag.

CAUTION: Do not drop screws or lock washers in the controller.

To remove a Dual FIM Module:

1. Remove the cover.
2. Remove the two Philips screws from the faceplate in slot MMC 2

3. Remove the faceplate.
4. Remove the screws and lock washers from the Dual FIM Module.
5. Pull up on the module to remove it.

To install a Dual FIM Module:

1. Remove the cover.
2. Remove the two Philips screws from the faceplate in slot MMC 2.
3. Remove the faceplate.
4. Remove the Dual FIM Module from the packaging, line up the connectors and firmly seat onto the board.
5. Secure the module onto the board using the screws and lock washers provided.
6. Replace the cover.

DSP or Echo Canceller Module

CAUTION: To prevent ESD damage while handling modules on any unit, always attach the wrist strap from the cabinet being serviced, and immediately place any item removed from a cabinet into an anti-static bag.

CAUTION: Do not drop screws or lock washers in the controller.

To remove an MMC Module:

1. Remove the cover.
2. Remove the screws and lock washers from the module.
3. Pull up on the module to remove it.
4. Replace the cover.

To install an MMC Module:

1. Remove the cover.
2. Line up the module and firmly seat it onto the board.

3. Secure the module onto the board using the screws and lock washers provided.
4. Replace the cover.

Hard Drive

CAUTION: To prevent ESD damage while handling modules on any unit, always attach the wrist strap from the cabinet being serviced, and immediately place any item removed from a cabinet into an anti-static bag.

To replace the hard drive:

1. Turn off the power to the unit.
2. Disconnect all cables.
3. Place the 3300 Controller on the work area with the bottom of the unit facing up.
4. To remove the hard drive, remove the 6 smaller, border screws (the four larger screws secure the hard drive to the backing plate).
5. Replace the hard drive.
6. Return power to the unit but do not connect to the network.
7. Reset the IP Address of the RTC, through the RS232 port, to the default 192.168.1.2.
8. Set the IP Address of the source PC to match the RTC IP scheme.
9. Connect the PC NIC to the 3300 ICP.
10. Configure the FTP server for the install process.
11. From the software CD-ROM, select INSTALL.
12. Reboot the system.
13. Login to the System Administration Tool.
14. Restore a backup.
15. Reset the RTC IP Address to the customer setting.
16. Connect to the network.

17. Reset the system.



System ID Module

To remove the System ID Module:

1. Remove the cover.
2. Remove the module from the board. Placement is between Slot 1 (the Dual FIM) and Slot 8 (the DSP).
3. Replace the cover.

System ID Module Placement

Power Supply	Slot 8	Slot 7	Slot 6	Slot 5
	SYSID			
	Slot 1	Slot 2	Slot 3	Slot 4

IP0421

Peripheral Unit

Power Down the Peripheral Unit

To power down a Peripheral Unit:

1. Remove the front panels.
2. Switch off the power converter.
3. Set the power switch on the rear of the unit to '0' (OFF).
4. Unplug the external power cord at the rear of the unit.

Power Up the Peripheral Unit

To power up a Peripheral Unit:

1. Ensure the voltage selector switch is set to the required setting for your country.
2. Connect the power cord at the rear of the unit to the external AC power source.
3. Set the power switch on the rear of the unit to 'I' (ON).
4. Set the switch on the power converter faceplate to 'I' (ON).

Remove a Front Panel

To remove a front panel from the DSU or Peripheral Unit:

1. Insert a screwdriver in the slot on the right side of the front grill and pry it open.
2. Loosen the two screws on the front cover and lift the cover up and away from the cabinet.

Replace a Front Panel

To replace a front panel in a DSU or Peripheral Unit:

1. Align the front panel screws with the holes in the cabinet and tighten the two screws.
2. Insert the left front grill into the slot and snap it closed.

Remove a Circuit Card

To remove a DSU or Peripheral Unit circuit card:

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

1. Enter BUSY <PLID of faulty card>, and select the COURTESY DOWN option.
2. To confirm that all circuits are in the busy state, enter STATE <PLID of faulty card>.
3. Pull the upper and lower latches outward until they are both in the horizontal release position.
4. Draw the card toward you.
5. Immediately place the card in an anti-static bag.

Install a Circuit Card

To install a DSU or Peripheral Unit circuit card:

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

1. For cards that have switches, refer to the card's hardware description for information about switch settings.
2. Check the connector pins to be certain that they are straight.
3. Slide the card into the slot.

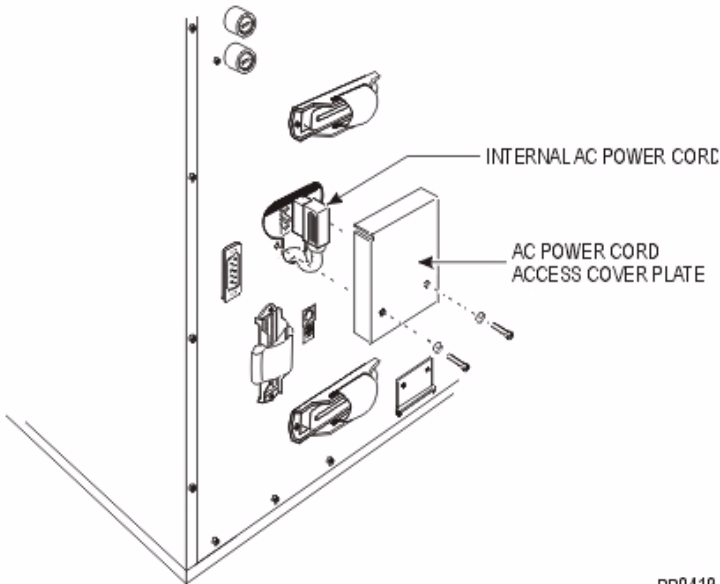
4. Push the upper and lower latches away from you until they are vertical and the card is locked in place.
5. To return the circuits to service, enter RTS <PLID>.

Install a Power Converter

To replace an AC Power Converter in a Peripheral Unit:

1. Remove the front panels.
2. Power down the node.
3. Disconnect the internal AC power cord.
 - Unscrew and remove the cover plate over the internal AC power cord access on the rear of the node (see the figure below).
 - Unplug the internal AC power cord from the rear of the AC power converter (accessed through cutout in the backplane).
4. Remove the converter.
 - Move the card latches on the converter to the horizontal position.
 - Carefully withdraw the converter unit from the shelf.
5. Unpack and inspect the converter.
 - Unpack the converter and remove all packing materials.
 - Inspect the converter to ensure that the unit is not dented or scratched and that all fittings are secure.
6. Install a new converter.
 - Slide the replacement converter into position (slots 13 - 15).
 - Move the card latches to the vertical position to secure the converter.
 - Plug the internal ac power cord from the PDU into the ac power converter, through the cutout in the backplane.
 - Replace the cover plate over the access cutout in the backplane, and fasten in place with the screws removed in step 3.
7. Power up the node.
8. Replace the front panels.

PERIPHERAL NODE REAR



RR0419

Install a Power Distribution Unit (PDU)

To replace a PDU in a Peripheral Unit:

1. Power down the node.
2. Remove the front panels.
3. Remove the PDU.
 - Unplug the external power cord from the PDU.
 - Remove the PDU internal power cover plate.
 - Unplug the PDU internal power cord from the power converter.
 - Remove the outer screws on the PDU faceplate.
 - Pull the PDU out until you can access the fan power connector at the rear of the PDU.
 - Disconnect the fan power connector and remove the PDU.
4. Install a new PDU.
 - Unpack and inspect the new PDU for damage.
 - Set the power switch on the new PDU to off (O).
 - Connect the fan power connector at the rear of the PDU.
 - Insert the PDU and replace the outer screws on the PDU

faceplate.

- Plug the PDU internal power cord into the power converter.
- Replace the internal power access cover plate.
- Plug the external power cord into the PDU.

5. Power up the node.
6. Replace the front panels.

Install a Cooling Fan

To replace a cooling fan in a Peripheral Unit:

1. Power down the unit.
2. Remove the front panels.
3. Disconnect the fan assembly.
4. Remove the defective fan.
5. Insert the new fan.
6. Replace the fan assembly.
7. Replace the front panels and power up the unit.

Install an Electronic Filter for Cooling Fan

To replace an electronic filter for a cooling fan in a peripheral cabinet:

1. Power down the unit.
2. Remove the front panels.
3. Remove the cards from the left side of the cabinet.
4. Identify and disconnect the plugs from the filter that is attached to the underside of the top of the cabinet.
5. Remove the screws holding the filter to the cabinet, and remove the filter from the cabinet.
6. Unpack, inspect, and install the filter by reversing the previous steps.
7. Replace the cards.
8. Replace the front panels.

9. Power up the unit.

Replace a Fiber Interface Module (FIM)

Remove a FIM

To remove a FIM from a Peripheral Unit:

WARNING: Power must not be applied to the Peripheral Unit while the Fiber Interface Module is removed.

1. Power down the node.
2. Remove the front panels.
3. Attach the anti-static strap to your wrist.
4. If you need more room, remove the power converter and the PSC.
5. Disconnect the fiber cables from the FIM. - Place dust caps on the fiber cable connectors and on the FIM connectors. - Remove the cable by sliding it through the cable port at the rear of the cabinet.
6. Pull the FIM out gently from slot 17, unplugging it from the backplane.

Install a FIM

To install a FIM in a Peripheral Unit:

WARNING: Power must not be applied to the Peripheral Unit during the installation of the Fiber Interface Module.

1. Attach the anti-static strap to your wrist.
2. Unpack the FIM, and inspect it to ensure that it is not damaged.
3. Slide the FIM into the bottom of slot 17 until it connects with the backplane firmly.
4. Fasten the FIM in place with the two screws provided or the latch on the card guides.
5. Attach the FIM cable by following the steps in Connect the Fiber Optic Cable.

6. If the PSC and power converter were removed, replace them at this time.
7. Power up the node.
8. Replace the front panels.

Install a Peripheral Switch Controller Card (PSC)

To replace a peripheral switch controller card:

CAUTION: This procedure takes the peripheral devices connected to the node out of service.

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

1. Power down the Peripheral Unit.
2. Replace the faulty peripheral switch controller card with the new peripheral switch controller card.
3. Power up the Peripheral Unit.

Install a Dual 10Base-T Interface Assembly

To replace a Dual 10Base-T Interface Assembly

1. Remove the front panels.
2. Disconnect the Ethernet cables from port J5 on each of the Ethernet Interface (ETI) cards. Note that disconnecting these cables disconnects access to the switch from OPS Manager and raises an alarm on the OPS Manager station.
3. Go to the rear of the cabinet.
4. Disconnect the Ethernet LAN cables from the dual 10Base-T connector assembly. The dual 10Base-T connector assembly is located in the 12th FIM slot.
5. Remove and retain the two screws that fasten the dual 10Base-T connector assembly to the fiber carrier box.
6. Remove the dual 10Base-T connector assembly and carefully draw the attached cables out through the 12th FIM slot. If the

cables become entangled, do not attempt to force them from the cabinet. Reach in through the front of the cabinet and free the cables.

7. Unpack the replacement 10Base-T connector assembly.
8. Insert the cables that are attached to the replacement 10Base-T connector assembly into the 12th FIM slot.
9. Go to the front of the cabinet and carefully draw the two cables through to the front of the cabinet. Route the cables along the base of the cabinet.
10. At the rear of the cabinet insert the dual 10Base-T connector assembly into the 12th FIM slot.
11. Fasten the dual 10Base-T connector assembly to the fiber carrier using the two screws that you removed in step 5.
12. Connect the two Ethernet cables to the 8-position, 8-pin connectors on the dual 10Base-T connector assembly.
13. At the front of the cabinet, connect the 10 Base-T internal cable for plane A to port J5 on the faceplate of the Ethernet interface card in slot 1/1/3.
14. Connect the 10 Base-T internal cable for plane B to port J5 on the faceplate of the Ethernet interface card in slot 1/1/6.
15. Reset the ETI cards using the RESET switch on the faceplate of each ETI card. The RDY LED on the ETI cards turn on steady indicating that the ETI cards are receiving their software loads from OPS Manager.

Digital Service Unit

Power Down the DSU

To power down a DSU node:

1. Set the power switch on the rear of the node to '0' (OFF).
2. Unplug the external power cord at the rear of the node.

Power Up the DSU

To power up a DSU node:

1. Connect the external power cord at the rear of the node.
2. Set the power switch on the rear of the node to 'I' (ON).

Remove a Front Panel

To remove a front panel from the DSU or Peripheral Unit:

1. Insert a screwdriver in the slot on the right side of the front grill and pry it open.
2. Loosen the two screws on the front cover and lift the cover up and away from the cabinet.

Replace a Front Panel

To replace a front panel in a DSU or Peripheral Unit:

1. Align the front panel screws with the holes in the cabinet and tighten the two screws.
2. Insert the left front grill into the slot and snap it closed.

Remove a Circuit Card

To remove a DSU or Peripheral Unit circuit card:

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

1. Enter **BUSY <PLID of faulty card>**, and select the **COURTESY DOWN** option.
2. To confirm that all circuits are in the busy state, **enter STATE <PLID of faulty card>**.
3. Pull the upper and lower latches outward until they are both in the horizontal release position.
4. Draw the card toward you.
5. Immediately place the card in an anti-static bag.

Install a Circuit Card

To install a DSU or Peripheral Unit circuit card:

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

2. Check the connector pins to be certain that they are straight.
3. Slide the card into the slot.
4. Push the upper and lower latches away from you until they are vertical and the card is locked in place.
5. To return the circuits to service, enter **RTS <PLID>**.

BRI Installation Overview

Before you install the BRI card, ensure that:

- The configuration includes a CEPT Formatter card that has an unused hybrid circuit (one Rx/Tx pair) configured with DPNSS protocol
- The system has a free DSU slot for the BRI card
- The wiring from the Network Termination Terminal Equipment (NTTE), Network Termination 1 (NT1), or terminating equipment is Cat 5 UTP
- A computer is available for use as maintenance PC.

Installation Sequence

Install the BRI card in the following sequence:

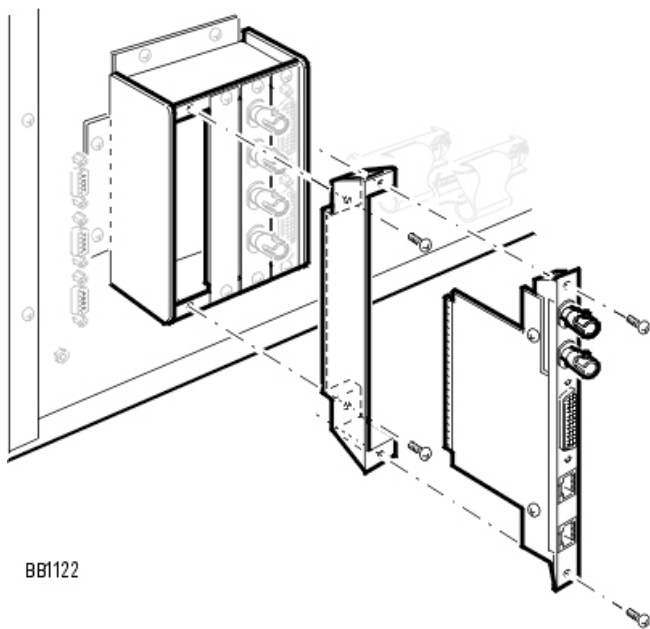
- Program the customer data in the 3300 ICP
- Install the BRI interface assembly
- Install the BRI card and make connections
- Connect the terminal equipment.

Install a BRI Interface Assembly

To install the BRI interface assembly:

1. Attach the anti-static strap to your wrist.
2. Unpack the interface assembly and inspect it to ensure that it is not damaged.
3. At the rear of the DSU cabinet, locate the slot in the DSU box that corresponds to the slot in the system card frame that will be used for the BRI card. The BRI card should be as close as possible to its associated CEPT card.

4. Remove the blanking plate from the selected slot.
5. Insert the interface assembly extension bracket into the slot with the closed side of the bracket to the left (when viewed from the rear of the cabinet).
6. Using the screws that secured the blanking plate, secure the interface assembly extension bracket into the slot.
7. Insert the interface assembly into the slot.
8. Using the screws provided, secure the interface assembly to the extension bracket.



BB1122

Install a BRI Card

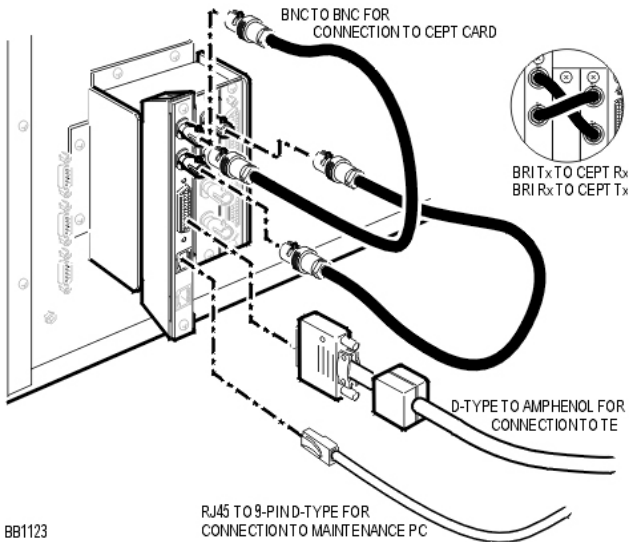
To install the BRI card:

1. Attach the anti-static strap to your wrist.
2. Unpack the BRI card and inspect it to ensure that it is not damaged.

3. Insert the BRI card into the slot that corresponds to the BRI interface assembly and close the locking latches.

To make the connections to the BRI card:

1. Using a BNC to BNC cable, connect the Rx port on the BRI interface assembly to the Tx port on the CEPT interface assembly.
2. Using a BNC to BNC cable, connect the Tx port on the BRI interface assembly to the Rx port on the CEPT interface assembly.
3. Using the 44-pin D-type to Amphenol cable, connect the ISDN BRI port on the BRI interface assembly to the distribution frame, RJ45 patch panel, or network terminating rack. (See tables for the cable pinout; 6 circuit and 15 circuit)



Install a CEPT or DS1 Formatter II Card

Before you begin

- Program the Card Assignment with CEPT Formatter or DS1 Formatter cards.

- Install the Interface Assembly.

The CEPT DS1/T1 Formatter cards are installed in any empty DSU slot. The DSU cabinet supplies the power for the card and provides a message interface back to the control cabinet through the FIM interface and the fiber optic cable.

To install the cards:

1. Attach the anti-static strap to your wrist.
2. Insert the card into the slot and close the locking latches.

Testing the Card

If the installation is successful, the card will boot up.

To test the card:

1. Inspect the LEDs on the faceplate to verify that the card is functioning. See Faceplate LEDs.
2. In the System Administration Tool, Maintenance and Diagnostics, use the STATE command to verify that the trunks associated with the corresponding channels are all in IDLE State.

PRI Installation Overview

The following section describes how to install the PRI card and PRI interface assembly. You will need to program the PRI card into the 3300 ICP database to allocate links and trunks.

Install the PRI card in the following sequence:

- Program the customer data in the 3300 ICP
- Configure the card for Line Side or Trunk Side termination
- Install the interface assembly
- Install the PRI card
- Configure the IMAT database
- Connect the computer to the PRI card
- Save the IMAT database onto the PRI card
- Connect the PRI card to the ISDN network

Install a PRI Card

The PRI card is installed in any empty DSU slot. The DSU cabinet supplies the power for the card and provides a message interface back to the control cabinet through the FIM interface and the fiber optic cable.

To install the PRI card:

1. Attach the anti-static strap to your wrist.
2. Insert the PRI card into the slot and close the locking latches.

Connect PRI Card to the Network

To connect the PRI card to the network:

1. Unpack and inspect the ISDN PRI cables. Retain the original package.
2. Plug the ISDN PRI cable into the PRI port.
3. Plug the ISDN PRI cable into the network terminating equipment.



Note: A dual-port card needs two ISDN PRI cables if you are using both ports.

Install for PRI QSIG

To install and configure the PRI Card in the DSU as a PRI/QSIG variant, refer to the 3300 Universal NSU Install for PRI QSIG instructions.

These are the steps that are required for installation and programming:

1. Connect a computer to the PRI card.
2. Install a Direct Connection Device Driver on a computer.
3. Create a Dial-up Network connection on your computer.
4. Connect the computer to the PRI Card.
5. Use the IMAT Tool to complete required PRI configuration.

6. Connect the PRI Card to the ISDN network.

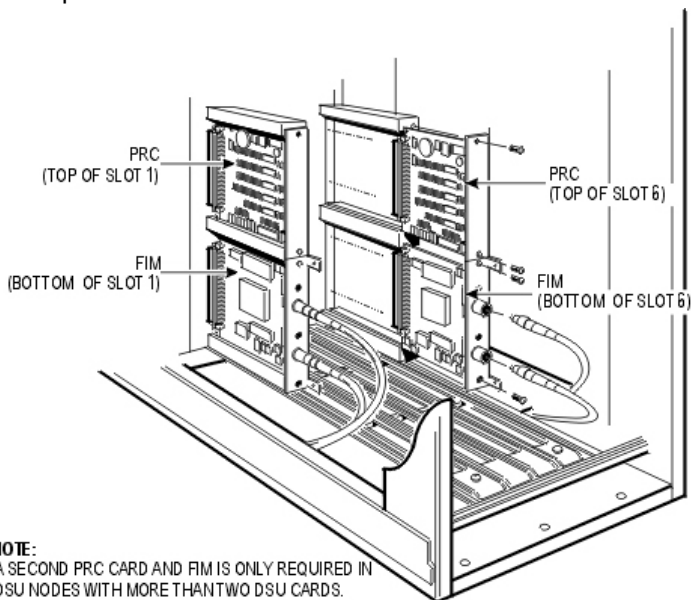
Install a Peripheral Resource Card

Each FIM in the DSU must have a Peripheral Resource Card (PRC) installed above it.

WARNING: Power must not be applied to the Peripheral Unit while you are installing the Peripheral Resource card.

To install a PRC in a DSU:

1. Unpack the PRC.
2. Slide the PRC into the top of slot 1 until it connects firmly with the backplane.
3. Fasten the PRC in place using the two screws provided, or use the latches on the card guides.
4. If a second PRC is required, install it in the same manner in the top of slot 6.



BB0406

Install a Fiber Interface Module (FIM)

Replace a FIM

To replace a FIM in a DSU:

1. Power down the node.
2. Remove the front panels.
3. Attach an anti-static strap to your wrist.
4. If you need more room, remove adjoining DSU cards.
5. Disconnect the fiber cables from the FIM.
 - Mark the cable connectors so they are replaced correctly on the new FIM.
 - Remove the screws or release the latches on the FIM.
 - Pull the FIM out gently from slot 1 or 6, unplugging it from the backplane.
6. Install a new FIM.
 - Slide the new FIM into the bottom slot 1 or 6, seating it firmly.
 - Fasten the screws or release the latches on the FIM.
 - Remove the plastic caps from the cable connectors on the FIM faceplate and connect the optical fiber cables to those connectors.
7. Replace the DSU cards.
8. Power up the node.
9. Replace the front panels.

Install a FIM

To install a FIM in a DSU Node:

WARNING: Fiber optic sources emit infrared light invisible to the human eye that can damage the retina. Never look directly into a source or into the end of a fiber energized by a source. When working with raw fiber optic cable, be careful of fiber ends or slivers that can puncture the skin and cause irritation.

1. Attach the anti-static strap to your wrist.

2. Unpack the FIM. Inspect the FIM to ensure that it is not damaged.
3. Remove the DSU node front door
 - Pry open the two latches on the right hand side of the black cover panel on the front door, and swing the cover panel off to the left.
 - Loosen the two screws under the black panel to release the front door.
 - Pull the top corners of the front door out and lift it off the lip at the bottom front of the node.
4. Remove the DSU cards from the cabinet. Insert each circuit card in a separate anti-static bag.
5. Slide the FIM into the bottom slot 1 or slot 6 until it connects with the backplane firmly. Fasten the FIM in place with the two screws provided or use the latch on the card guides. See FIM and PRC Installation in the DSU Node.
6. Remove the anti-static strap from your wrist.

R2 Installation Overview

The following section describes how to install the R2 card and R2 interface assembly. You will need to program the R2 card into the 3300 ICP database to allocate links and trunks.

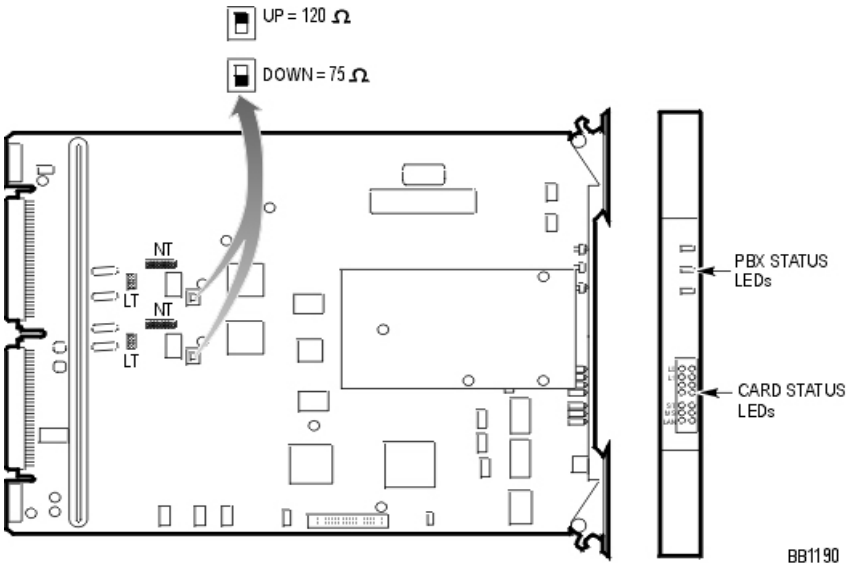
Install the R2 card in the following sequence:

- Program the customer data in the 3300 ICP
- Configure the card for Line Side or Trunk Side termination
- Install the interface assembly
- Install the R2 card
- Configure the IMAT database
- Connect the computer to the R2 card
- Save the IMAT database onto the R2 card
- Connect the R2 Card to the PSTN network

Configure for Line Side/Trunk Side Termination

To configure the R2 card for Line Side or Trunk side termination:

1. Attach the anti-static strap to your wrist.
2. Unpack the R2 card and inspect it to ensure that it is not damaged.
3. Ensure the jumper block covers the NT position for the Trunk Side termination and the LT position for Line Side termination.
4. Set the termination impedance switch of the line to the up position for 120 ohms or down for 75 ohms.



Install the R2 Card

The R2 card is installed in any empty DSU slot. The DSU cabinet supplies the power for the card and provides a message interface back to the control cabinet through the FIM interface and the fiber optic cable.

To install the R2 card:

1. Attach the anti-static strap to your wrist.
2. Insert the R2 card into the slot and close the locking latches.

Connect the R2 card to the PSTN network

To connect the R2 card to the network:

1. Unpack and inspect the R2 coaxial cables.
2. Plug the R2 cable into the R2 port.
3. Plug the R2 cable into the network terminating equipment.



Note: A dual-port card needs two coaxial cables if you are using both ports.



Note: The R2 coaxial cables have both transmit (arrow pointing away from cable) and receive (arrow pointing towards cable) connectors. When you set the card for trunk side termination (jumper at NT position), connect the R2 coaxial cable transmit lead to the network receive connector, and the R2 coaxial receive lead to the network transmit connector. When you set the card for line side termination (jumper at LT position), connect the R2 coaxial cable transmit lead to the network transmit connector, and the R2 coaxial receive lead to the network receive connector.

RJ-45 Connector Pin Functions	
Pin	Function
1 & 2	TX
4 & 5	RX

Program System

Overview of Programming

To program the system:

1. Use the 3300 Configuration Tool. Refer to the 3300 Configuration Tool online help for programming information.
2. Use the System Administration Tool. Refer to the System Administration Tool online help for programming information.
3. Use IMAT.
4. Register the IP telephones.



Note: The following options are required in the DHCP server programming:

- 3 (Router) Default Gateway IP Address
- 6 DNS Server IP Address
- 66 TFTP Server ASCII String format (typically the 3300 ICP Controller)
- 67 TFTP BootFile (ASCII String = /sysro/e2t8260)
- 128 TFTP Server IP address format (typically the 3300 ICP Controller)
- 129 RTC IP address format (typically the 3300 ICP Controller)
- 130 IP phone DHCP Server (ASCII String = MITEL IP PHONE)
- 132 VLAN ID for the voice LAN (Hex - 32 bit word, optional)
- 133 Priority, values of 1-7 (Mitel recommends 6; optional).

Use IMAT

The IMAT software is used to program hardware and call characteristics for the NSUs that run PRI or R2 protocols. IMAT is also used to install software upgrades.

Maintenance activities include access to the following R2 maintenance information:

- A list of all software files and versions on the 3300 R2 NSU
- Log messages which contain a history of activities and the status of faults
- R2 database.

Use IMAT to backup the database from the 3300 R2 NSU, or to upgrade the R2 software on the 3300 R2 NSU. For more information, refer to the IMAT online Help.

To log on to an IMAT computer:

1. Launch IMAT from the desktop. IMAT may display a user-name configuration error message. Ignore this message, and press **OK**.
2. From the **File** menu, select **Connect to Remote Site**.

To exit the IMAT application:

1. Save any open databases.
2. On the **File** menu, click **Exit**.

Register IP Telephones from the Station

This procedure registers the IP devices with the 3300 ICP database. The procedure will program the 3300 ICP database with the MAC address of the IP device.

Before you begin

- Ensure a Set Registration Access Code is assigned in the System Options Assignment form.
- Ensure the directory number and device type is programmed in the Single Line IP Set Configuration form or Multiline IP Set Configuration form.

To register IP telephones:

1. Connect the IP telephone to an RJ-45 Ethernet port on the LAN.
2. Press * during power-up (to clear any PIN number in memory).
3. Type the PIN number at the prompt on the IP device. Prompts
 - The 5001 IP Phone displays a solid message light.
 - The 5005, 5010, 5020 IP telephones and the 5140 IP Appliance show "Enter the PIN number" on the display.
4. Complete one of the following:
 - Press Hold for the 5001 and 5005 IP Phones
 - Press SuperKey for the 5010 and 5020 IP Phones
 - Press OK for the 5140 IP ApplianceThe set will complete initialization.



Note: Use the System Administration Tool to program all other station features (for example, Class of Service, Interconnect Restriction, Set Key Assignments, and Class of Restriction).

When using the 3300 ICP in a cluster, the actual registering sequence of the IP device is unchanged provided the following guidelines have been observed:

- The Cluster Element ID programmed in the Cluster Element Assignment form must match the ICP/PBX Number programmed in the ICP/PBX Assignment form.

- In a clustered environment, each member of the cluster must be able to see the directory numbers programmed on the other controllers. This information is programmed by using OPS manager.
- The Set Registration Access Codes and Set Replacement Access Codes must be the same for each controller in the cluster.
- Each IP Phone must be able to retrieve the IP address of one of the controllers in the cluster (see program DHCP server instructions).



Note: Mitel Networks OPS Manager is required to use 3300 ICP systems in a clustered environment.

Troubleshooting

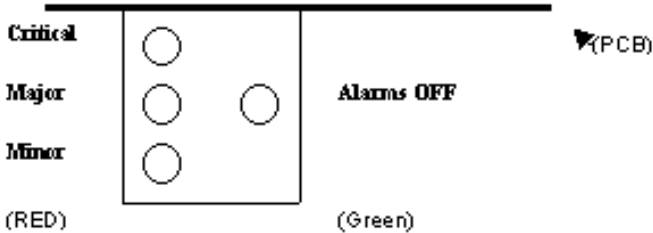
3300 Controller

Fiber Interface Module LEDs

FIM LED	Meaning for Local, Upper and Remote, Lower FIM
On	In frame synchronization.
Off	Power off or held in reset.
Flashing	Out of synchronization, or Tx or Rx cables might be reversed.

Note: 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 cable may be faulty.

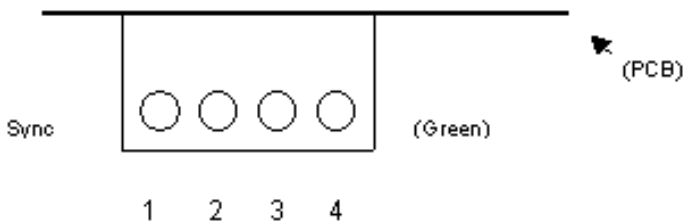
Alarm LEDs



Alarm	State	LED	Meaning
Critical	On	Red	Indicates that customer service has been lost and immediate maintenance is required. A critical alarm invokes system fail transfer if enabled. This LED will be on during POR (power on reset) or when the INIT switch is activated (resets all boards).
	Off		No alarm.
Major	On	Red	Indicates that service has degraded beyond predetermined thresholds. This LED is also on when there is a critical Alarm. This LED will be on during POR or INIT switch active.
	Off		No alarm.

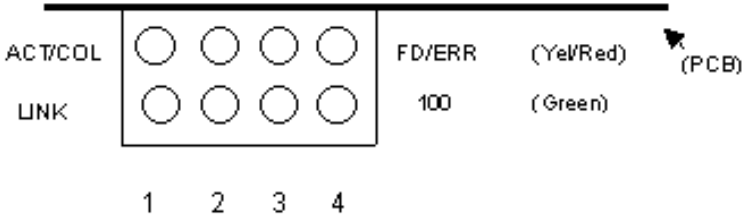
Minor	On	Red	Indicates the presence of a minor malfunction in the system. A minor alarm is raised whenever the system is not fully operational. This LED is also on when there is a critical Alarm. This LED will be on during POR or INIT switch active.
	Off		No alarm.
Alarm OFF	On	Green	Alarm is on but silenced. Silence state is toggled by the Remove Alarms ON/OFF switch.
	On	Green	During POR or INIT switch active.
	Off		Alarm is audible.
	Off		During power-up state.
Integrated Voice Mail			
Major	On	Red	The voice mail is not functioning or disk space is at 95%.
	Off		No alarm.
Minor	On	Red	Voice mail disk space is at 90%.
	Off		No alarm.

Copper Interface Module (CIM)



CIM LED Patterns	
LED Pattern	Description; Local - Upper and Remote - Lower
Off	No Power
Flashing	Link established but not configured
On	Communication Link established and configured

LAN Ethernet Ports



10/100 Base TX MDI-X Ethernet

	LED State	Color	Meaning
Normal mode	Top - On	Yellow	Link activity
	Top - On	Red	Collision
	Bottom - On	Green	Link integrity
	Bottom - Off		No link integrity
LED mode switch pressed	Top - On	Yellow	Full Duplex
	Top - On	Red	ERR
	Bottom - On	Green	100 Mbps
	Bottom - Off		10 Mbps

System Hardware Profile

To check the hardware that is installed in the controller:

1. Click System Hardware Profile from the Maintenance and Diagnostic menu.
2. Select one of the following:
 - Compute Cards for information of the E2T or RTC cards
 - Modules for information on the MMC cards.

3300 Universal NSU

Link Status		
LED	State	Meaning
LAN	flashing	LAN activity
MS (message system)	solid green	message link open to the system
	off	message link not open to the system; may be downloading when L0 and L1 are "walking"
ST (status)	flashing	operational; flashing in 1/2 second intervals
	off	not operational
	solid	card is booting or not operating; should be blinking in 1/2 sec intervals
L0 and L1 (on front and rear panel)	right side - solid red	no Layer 1
	right side - off	no error
	left side - solid green	D-channel established (PRI) Layer 1 established (T1, E1, DPNSS)
	left side - flashing green	Layer 1 established (PRI)
	left side - off	no link
	right side - yellow with left side - flashing green	alarm indication from far end
	right side - yellow with left side - off	blue alarm from card - normal during link startup (PRI NA or response to yellow)
	yellow and green alternating between L0 and L1	downloading (15 - 25 minutes)
	yellow alternating between L0 and L1	decompressing and copying files (2 - 4 minutes)

CIM LED Patterns	
LED Pattern	Description

Off	No Power
Flashing	Powered On, BSP Running
On	Communication Link synchronized with 3300 Controller

Message Link Controlled (Card status)	
LED State	Meaning
Green - On	no error
Yellow - On	out of service
Red - On	error - does not necessarily indicate total failure
Green and Yellow - On	out of service - this combination may occur at power-up
Green and Red - On	a fault has been detected
Yellow and Red - On	out of service - this combination appears at power-up
Green, Yellow and Red - On	at power-up before fully operational
No LEDs illuminated	fully operational

Fiber Interface Module LEDs	
FIM Upper LED	Meaning for Local, upper and Remote, lower FIM
On	In frame synchronization
Off	Power off or held in reset
Flashing	Out of synchronization or Tx and Rx cables reversed
Note: When a remote MFC Status LED is off, check the local FIM Status LED. If it is on then the fiber optic cable may be faulty.	

3300 R2 NSU

To access the 3300 R2 NSU maintenance window:

1. Connect the modem or the straight-through cable to the 3300 R2 NSU.
2. For terminal emulation (dumb terminal), do the following:
 - Run a communications package (for example, ProComm Plus ©)
 - Ensure that the settings are 8 bits, no parity, 1 stop bit, 38400 baud rate.

Link Status		
LED	State	Meaning
LAN	flashing	LAN activity
MS (message system)	solid green	message link open to the system
	off	message link not open to the system
ST (status)	flashing	operational
	off	not operational
	solid	card in booting
L0 and L1	right side - solid red	error (no physical layer is present or network/line side (NT/LT) jumper is not set correctly)
	right side - off	no error
	left side - solid green	AB signaling established
	left side - flashing green	Layer 1 established
	left side - off	no link
	right side - yellow with left side - flashing green	alarm indication from far end
	right side - yellow with left side - off	blue alarm from card - normal during link startup

Link Status		
LED	State	Meaning
	Yellow and green alternating between L0 and L1	downloading (15 - 25 minutes)
	Yellow alternating between L0 and L1	decompressing copying files (2 - 4 minutes)

CIM LED Patterns	
LED Pattern	Description
Off	No Power
Flashing	Powered On, BSP Running
On	Communication Link synchronized with 3300 Controller

3300 BRI NSU

One status LED and fifteen circuit LEDs are mounted on the faceplate. The status LED shows the status of the CEPT link, and each of the circuit LEDs shows the status of one BRI circuit. The BRI circuit LEDs are also used during card initialization to indicate the progress of the self-test and to indicate that the download is in progress.

CEPT LED	State	Meaning
Status	Off	CEPT link not established
	Flashing at 1 Hz	Layer 1 established
	Flashing at 4 Hz	Layer 2 established
	On	Call in progress on the DPNSS link

3300 BRI NSU CEPT Port DIP Switch Manufacture Settings			
DIP Switch	Use	Setting	Notes
1	Tx Ground	Up	Off - ungrounded Not required for RJ-45 connector
2	Rx Ground	Up	Off - ungrounded Not required for RJ-45 connector
Note: Site dependent - normally Tx is grounded but that depends if the remote Rx connection is grounded.			

3300 Universal ASU

LEDs are located on the front panel and indicate the status of the CIM circuit, ONS circuits, LS circuits, and power.



Note: The Music on Hold and Paging Ports do not have an LED to show status

CIM LED Patterns

LED Pattern	Description
Off	No Power
Flashing	Powered On, BSP Running
On	Communication Link synchronized with 3300 Controller

ONS Circuit LED Patterns

The front panel has 16 LEDs representing the ONS line circuits.

LED Pattern	Circuit State	Status
Off	Idle	NA
Steady On	Off Hook	NA
Slow Flash	Idle	Circuit is manual busy
Fast Flash	Idle	Circuit Fault
Flashing in a pattern		Loading software

LS Trunk Circuit LED Patterns

There are four LEDs on the front panel of the unit representing the LS trunk circuits

LED Pattern	Circuit State	Status
Off	Idle	NA
Steady On	Off Hook	NA
Slow Flash	Idle	Circuit is manual busy
Fast Flash	Idle	Circuit Fault

3300 ASU

LEDs are located on the front panel and indicate the status of the CIM circuit, ONS Circuits, and power.

CIM LED Patterns

LED Pattern Status	Description
Off	No Power
Flashing	Powered On, BSP Running
On	Communication Link synchronized with 3300 Controller

ONS Circuit LED Patterns

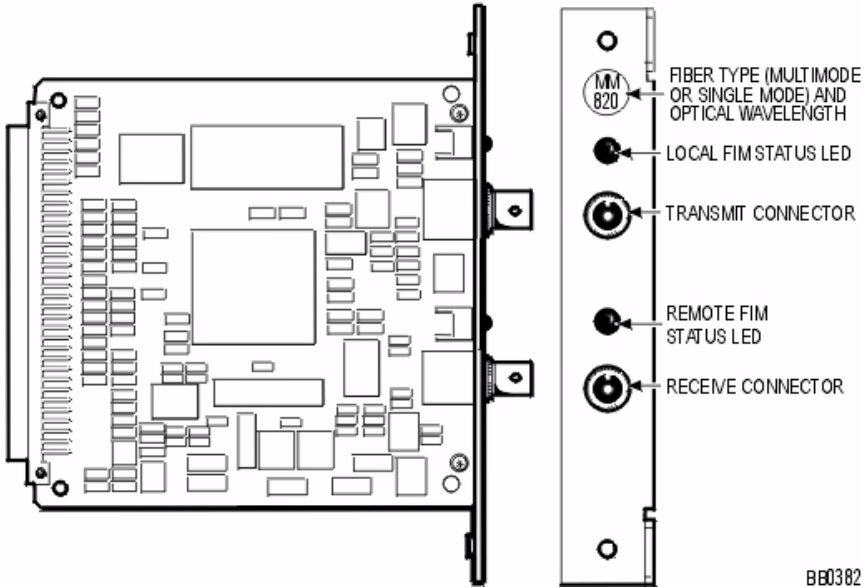
The front panel has 24 LEDs representing the ONS line circuits.

LED Pattern Status	Circuit State	Circuit Status
Off	Idle	NA
Steady On	Off Hook	NA
Slow Flash	Idle	Circuit is 'manual busy'
Fast Flash	Idle	Circuit Fault

Peripheral Unit

Troubleshoot Fiber Interface Module


FIBER INTERFACE MODULE (FIM)



BB0382

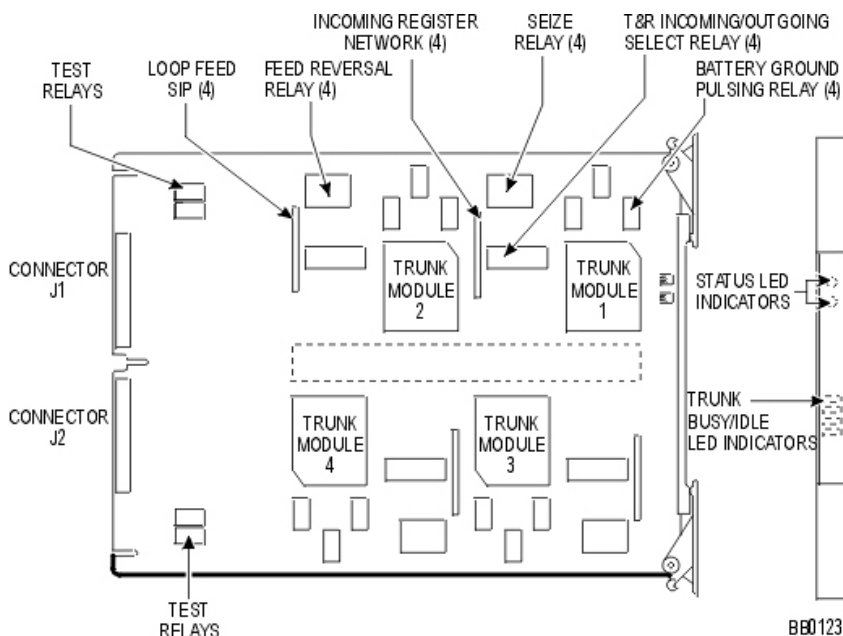
There are two LEDs on each FIM. The top LED indicates the status of the FIM itself; the bottom LED indicates the status of the other FIM (the FIM connected to the far end of the fiber optic cable).

FIM LED States	
State	Meaning
On	In frame synchronization
Off	Power off or held in reset
Flashing	Out of synchronization (see Notes below) OR Tx or RX cables could be reversed.

 Notes: 1. The FIM in the 3300 ICP monitors the synchronization of the clock that appears on the fiber link coming from the FIM in the peripheral or DSU Cabinet. 2. The

FIM in the peripheral or DSU cabinet monitors the synchronization of the clock that appears on the fiber link from the main control cabinet FIM. This synchronization state is encoded along with other information and sent back to the main control cabinet.

Troubleshoot the DID Loop/Tie Trunk Card

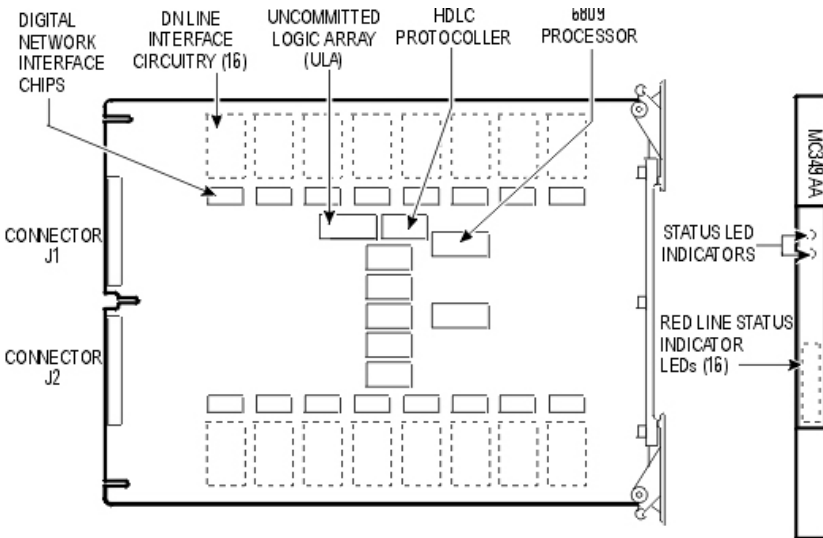


DNI Line Card

If you suspect a problem with a DNI Line Card that is interfaced to SUPERSET telephones, check for problems with the following components:

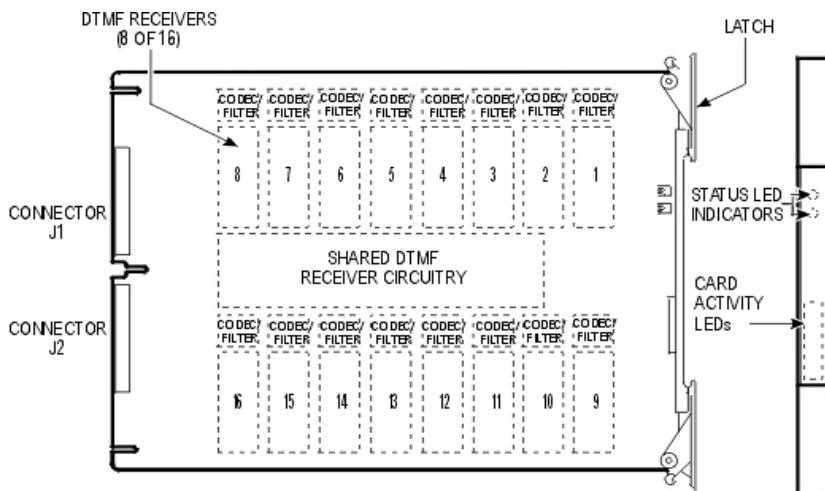
- Telephone and main distribution frame connections
- Main distribution frame and system connections
- Programming in the following forms:

- Class of Service Options Assignment
- Multiline DNI Set Configuration or Single Line DNI Set Configuration Form
- Multiline Set Key Assignment
- Station Service Assignment
- Class of Restriction Group Assignment
- Interconnect Restriction Table
- Telephones
- DNI Line Card (requires a reset)
- DNI port
- Backplane cable connections
- Peripheral switch or circuit switch (see Supplementary Peripheral Equipment Procedures)
- DTMF receivers (not enough for peak traffic load).



RR0120

Troubleshoot the DTMF Receiver Card



BB0119

Troubleshoot E&M Trunk Card

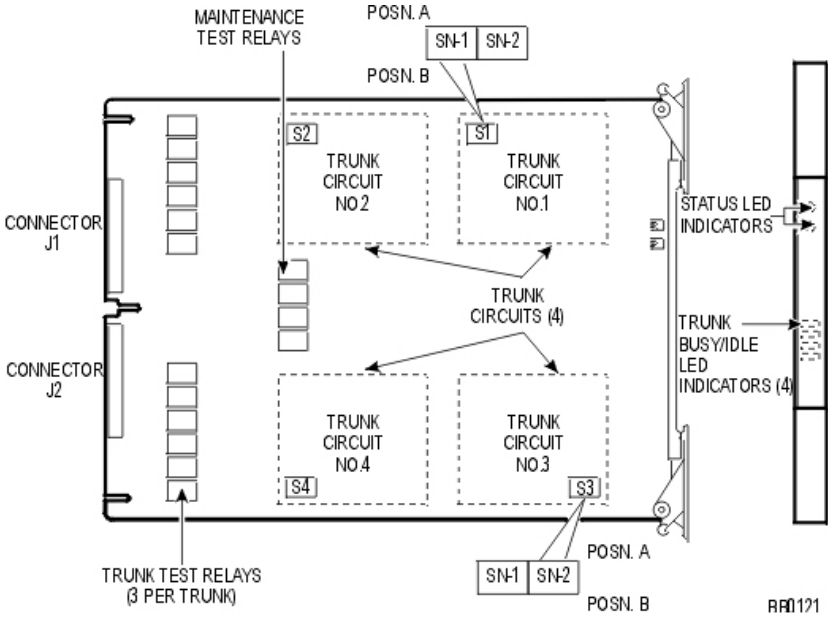
Trunk Circuit Configuration

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

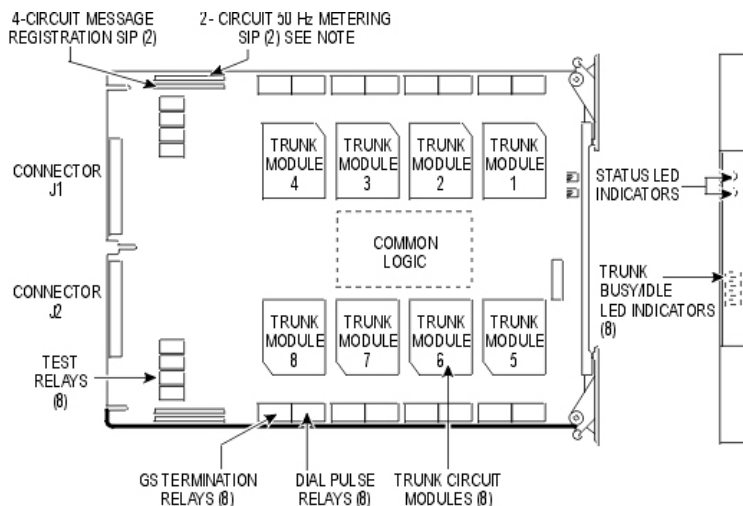
NOTE: SWITCH SECTIONS ARE SN-1 AND SN-2, WHERE N IS THE PARTICULAR TRUNK CIRCUIT NUMBER ON THE CARD

BB0149

SN-1 and SN-2 Dip Switches

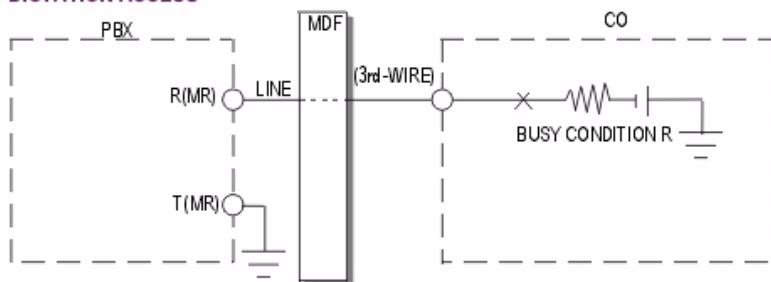


Troubleshoot LS/GS Trunk Card

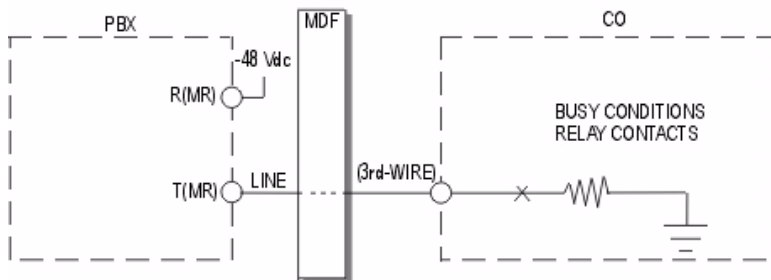


NOTE: 50 Hz METERING SIP INSTALLED ON MC340AB, MC340AD AND MC340AE CARDS ONLY. BB0117

DICTATION ACCESS



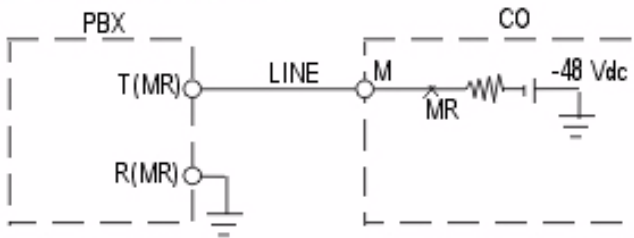
A) DICTATION ACCESS - BATTERY DRIVEN BUSY CONDITION



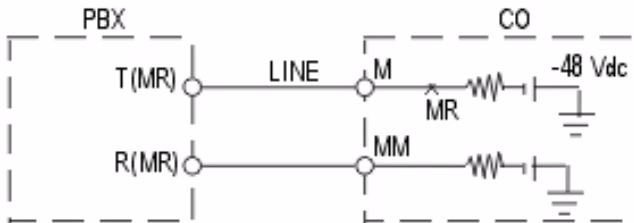
B) DICTATION ACCESS - GROUND DRIVEN BUSY CONDITION

RR0251

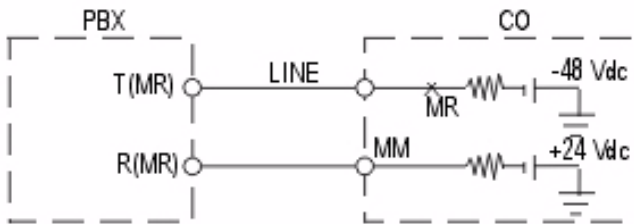
TERMINATION TYPES



A) MESSAGE REGISTRATION, -48 Vdc, GROUND RETURN



B) MESSAGE REGISTRATION, -48 Vdc, METALLIC RETURN

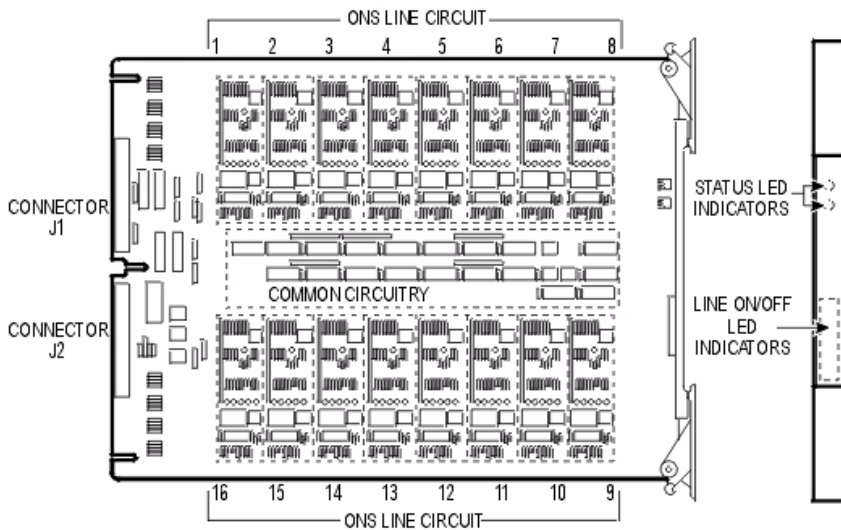


C) MESSAGE REGISTRATION, -72 Vdc, METALLIC RETURN

RR0266

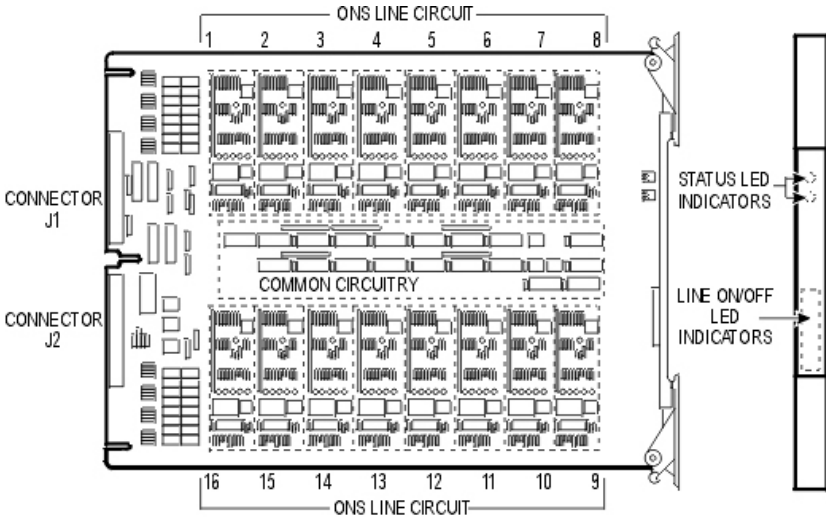
Troubleshoot the ONS CLASS/CLIP Card

ONS CLASS/CLIP LINE CARD



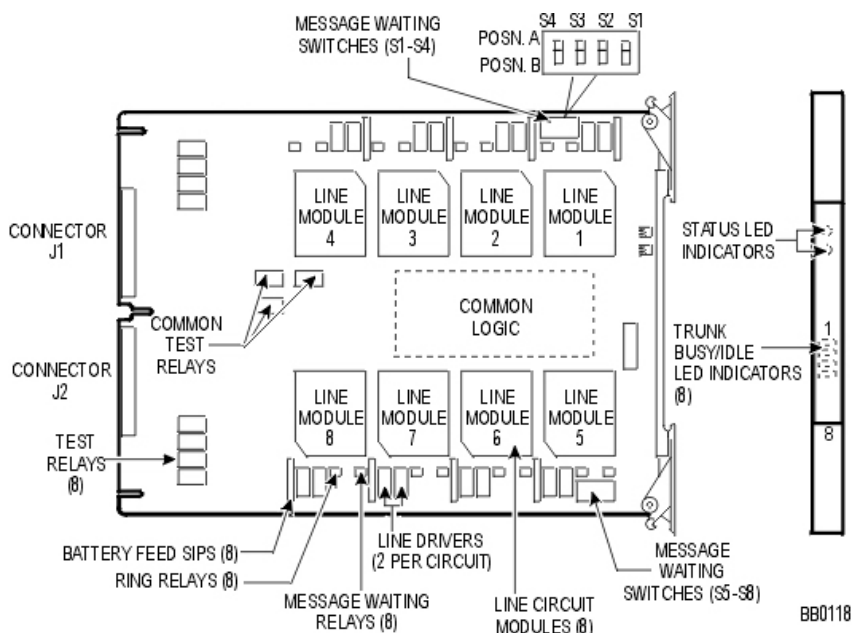
BB1202

Troubleshoot the ONS Line Card



RR0367

Troubleshoot the OPS Line Card



Digital Service Unit

BRI Troubleshooting

Faceplate LEDs

To determine the state of the CEPT link and the BRI card circuits, check the faceplate LEDs.

Alarms and Call Logs

To query alarms or call logs:

1. Log on to the 3300 BRI NSU.
2. Enter the Configuration menu item number.
3. Enter the Debug menu item number.
4. Enter the Alarms and Call Log menu item number.

5. Do one of the following:

- To query the alarms, enter the Query Alarms menu item number.
- To query the call logs, enter the Query Call Logs menu item number.

To clear and reset the call log:

1. Log on to the BRI card.
2. Enter the Configuration menu item number.
3. Enter the Debug menu item number.
4. Enter the Alarms and Call Log menu item number.
5. Enter the Restart Call Log menu item number. The following message appears: ARE YOU SURE? (Y or N) [N]>
6. Enter y.

To query the status of the CEPT or BRI channels:

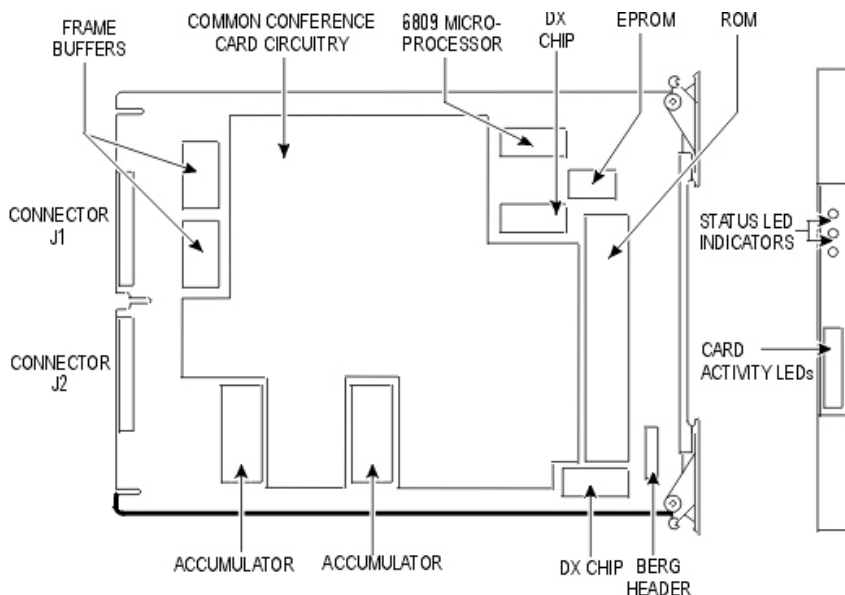
1. Log on to the BRI card.
2. Enter the Configuration menu item number.
3. Enter the Debug menu item number.
4. Enter the Alarms and Call Log menu item number.
5. Do one of the following:
 - To query the CEPT status, enter 4.
 - To query the BRI status, enter 5.

To query BRI or PRI port statistics or the management link status:

1. Log on to the BRI card.
2. Enter the Configuration menu item number.
3. Enter the Debug menu item number.
4. Enter the Alarms and Call Log menu item number.
5. Do one of the following:
 - To query the BRI port statistics, enter 7, and then enter <port number>.

- To query the PRI port statistics, enter 8.
- To query the management link status, enter 9.

Troubleshoot the Conference Card



RR0176

DS1 Formatter Card

This card provides an interface between the PBX and external digital facilities (using T1/D4, MSDN/DPNSS, or APNSS signaling). Each card contains 2 interfaces. Each interface controls a 24-channel serial link. For further information, see MSDN/DPNSS Voice 1.

If you suspect a problem with the card, check for problems with the following components:

- external equipment or far end
- external equipment and DS1 interface assembly connections
- DS1 interface assembly and backplane connections

- programming in the following forms:
 - MSDN/DPNSS/DASS2 Trunk Circuit Descriptor Assignment
 - Network Synchronization
 - Digital Trunk Assignment
 - DS1 Trunk Circuit Descriptor
 - Digital CO Trunk Circuit Descriptor Assignment
 - Digital DID Trunk Circuit Descriptor Assignment
 - Digital E&M Trunk Circuit Descriptor Assignment
 - Digital Link Assignment
 - Link Descriptor Assignment
- backplane cable connections (or bent pins on backplane and inside shelf)
- DS1 card switch settings (refer to figure).
- DS1 software (reload by using the LOAD command)
- DS1 card
- DS1 interface assembly
- peripheral switch or circuit switch (see Supplementary Peripheral Equipment Procedures).



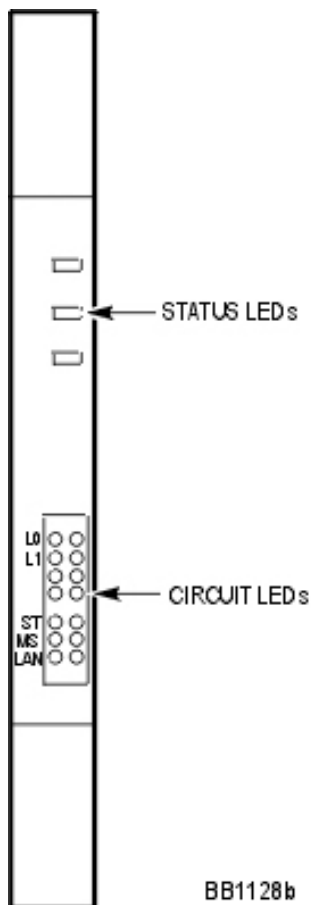
Tips

- Maintenance will take a link out of service if it demonstrates poor performance over a 24-hour period. To obtain an indication of a link's performance over a 24 hour period, use the command: "DTSTATS READ x x x x LAST 24" (where x x x x is the cabinet, slot, shelf, link of the card).
- For the STATE command: if state is "suspect", suspect faulty card or problem with 12-volt power. If state is "not seizable", suspect 24 hour limit exceeded, relay stuck closed (test using the TEST HYBRID command), or faulty programming. The card will also appear "not seizable" for a short period after being installed.
- For the DTSTATS command: if "sync is absent", suspect faulty cabling, problem at the far end, or directed testing

being performed at the far end. Otherwise, no sync coupled with directed hybrid test passing indicates cabling problem.

- When the card is reloaded or removed, all calls using any channel on the card will be dropped.
- If one channel on one card is faulty, and does not affect traffic, it is not necessary to replace the card. The channel may be busied out using the BUSY command.

Troubleshoot the PRI Card



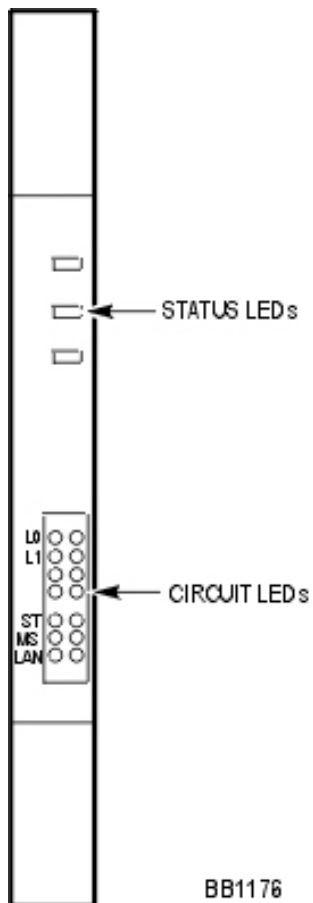
BB1128b

Faceplate LEDs

Three status LEDs and 4 circuit LEDs are mounted on the PRI card faceplate. Each of the card circuit LEDs shows the status of one PRI circuit.

PRI Card Link Status		
LED	State	Meaning
MS (message system)	solid green	message link open to the system
	off	message link not open to the system
ST (status)	flashing	operational
	off	not operational
	solid	card is booting
L0 and L1	right side - solid red	error
	right side - off	no error
	left side - solid green	D-channel established
	left side - flashing green	Layer 1 established
	left side - off	no link
	right side - yellow with left side - flashing green	alarm indication from far end
	right side - yellow with left side - off	blue alarm from card - normal during link startup

Troubleshoot the R2 Card



Faceplate LEDs

Three status LEDs and 4 circuit LEDs are mounted on the R2 card faceplate. Each of the card circuit LEDs shows the status of one R2 circuit.

Link Status		
LED	State	Meaning
MS (message system)	solid green	message link open to the system
	off	message link not open to the system
ST (status)	flashing	operational
	off	not operational
	solid	card in booting
L0 and L1	right side - solid red	error (no physical layer is present or network/line side (NT/LT) jumper is not set correctly)
	right side - off	no error
	left side - solid green	AB signaling established
	left side - flashing green	Layer 1 established
	left side - off	no link
	right side - yellow with left side - flashing green	alarm indication from far end
	right side - yellow with left side - off	blue alarm from card - normal during link startup

Telephone

Users may report the following problems:

- No Dial Tone
- Calls received in error

- Calls are being cut off
- Dial Tone at the set but unable to make calls
- No calls are being received
- If the IP Telephone fails to boot
- To PING from the IP telephone
- To PING from the ICP

No Dial Tone - Analog Telephones

1. Navigate to Maintenance Commands.
2. Establish the Location of the analog set using the Locate Extension command. If Locate Extension command does not work verify the programming in the Single Line Set Assignment.
3. Run the State <extension> command. You will get one of the following responses: Idle, Manbusy, Busy, or Locked Out.

Analog Telephone - Response Busy

If the Response is Busy:

1. Is the telephone engaged in a call? If Yes then the phone is functioning normally. If No then the phone is not functioning normally; take the following steps:
2. Disconnect the wiring going towards the phone at the internal frame closest to the Analog Services Unit.
3. Connect a known good telephone to the internal frame wiring that connects to the Analog Service unit and verify that there is dial tone.
4. If there is dial tone then there is a fault in the wiring. If there is no dial tone then it could be the D-type connector (Amphenol) cable or a fault with the ASU. Verify the integrity of the Amphenol by changing it out.

CAUTION: If you change the Amphenol connector this will affect all users who are connected to that ASU.

Analog Telephone - Response Idle

If the response is Idle:

1. Connect a known good analog telephone set to the wiring frame that is closest to the Analog Services Unit. If the phone works then the problem is with the wiring from the frame to the set or it is the set.
2. Disconnect the suspected set and connect a known good set into the terminal jack. If the test set works then the faulty set should be replaced. If the set does not work then the problem is in the wiring from the frame already tested or the jack.
3. Check that the wiring in the jack is correct. If the wiring is incorrect then make the adjustment required and try the known good set again. If the set still does not work then the problem is in the wiring.
4. Check the wiring from the known good point at periodic intervals.

Analog Telephone - Response Locked Out

If the Response is Locked Out:

1. Disconnect the wiring going towards the phone at the internal frame closest to the Analog Services Unit.
2. Connect a known good telephone to the internal frame wiring that connects to the Analog Service unit and verify if there is dial tone.
3. If there is dial tone then there is a fault in the wiring. If there is no dial tone then it could be the D-type connector (Amphenol) cable or a fault with the ASU. Verify the integrity of the Amphenol by changing it out.

CAUTION: If you change the Amphenol connector this will affect all users who are connected to that ASU.

Analog Telephone - Response Manbusy

If the Response is Manbusy:

1. Find out why the circuit was busied out.
2. Run the RTS <location id> command.

No Dial Tone - DNI Telephone

1. Navigate to Maintenance Commands.
2. Establish the Location of the DNI set using the Locate Extension maintenance command. If Locate Extension command does not work verify the programming in the Single Line Set Assignment.
3. Run the State <extension> command. You will get one of the following responses: Idle, Manbusy, Busy, or Locked Out.

DNI Telephone - Response Busy

If the response is Busy:

1. Is the telephone engaged in a call? If it is wait for the call to finish and check again for dial tone. If No then the phone is not functioning normally; take the following steps:
2. Disconnect the wiring going towards the phone at the internal frame closest to the Peripheral Cabinet.
3. Connect a known good telephone to the internal frame wiring that connects to the Peripheral Cabinet and verify that there is dial tone.
4. If there is dial tone then there is a fault in the wiring.

DNI Telephone - Response Idle

If the response is Idle:

1. Connect a known good DNI telephone set to the wiring frame that is closest to the Peripheral cabinet. If the phone works then the problem is with the wiring from the frame to the set or it is the set.
2. Disconnect the suspected set and connect a known good set into the terminal jack. If the test set works then the faulty set

should be replaced. If the set does not work then the problem is in the wiring from the frame already tested or the jack.

3. Check that the wiring in the jack is correct. If the wiring is incorrect then make the adjustment required and try the known good set again. If the set still does not work then the problem is in the wiring.
4. Check the wiring from the known good point at periodic intervals

DNI Telephone - Locked Out

If the Response is Locked Out:

1. Disconnect the wiring going towards the phone at the internal frame closest to the Peripheral cabinet that houses the DNI card.
2. Connect a known good telephone to the internal frame wiring that connects to the Peripheral cabinet and verify if there is dial tone.
3. If there is dial tone then there is a fault in the wiring. If there is no dial tone then it could be a fault with the DNI card.

DNI Telephone - Response Manbusy

If the Response is Manbusy:

1. Find out why the circuit was busied out.
2. Run the RTS <location id> command.

No Dial Tone - IP Telephone

1. Navigate to Maintenance Commands.
2. Establish the Location of the IP set using the Locate Extension maintenance command. If Locate Extension command does not work verify the programming in the following forms: IP Set Assignment and Multiline Set Key Assignment.
3. Run the State <extension> command. You will get one of the following responses: Idle, Manbusy, Busy, or Out of Service.

IP Telephone - Response Busy

If the response is Busy:

1. Is the telephone engaged in a call? If it is wait for the call to finish and check again for dial tone.
2. If the telephone is not on a call try resetting the handset.

IP Telephone - Response Idle

If the response is Idle

- Reset the telephone.

IP Telephone - Response Manbusy

If the response is Manbusy

1. Find out why it is Manbusy.
2. Return to Service using the RTS <location ID>command.

IP Telephone - Response Out of Service

If the response is Out of Service:

1. Check the phone has power (does it have a display).
2. If the phone does not have power then connect to an appropriate power source.
3. If the phone does have power then verify the link integrity LEDs. A green LED on the bottom of the phone indicates a proper connection. A flashing yellow LED indicates activity (data flow) on the network.
4. If the LEDs are not showing check the wiring.
5. If the phone has power and the LEDs are on then refer to the IP phone diagnostics.

If the IP Telephone Fails to Boot

1. Verify the Network Connection.
2. Verify power (is there a display?).
3. Check the wiring.

4. Check LED on the IP telephone for network activity.
 - A green LED on the bottom of the phone indicates a proper connection
 - A flashing red LED indicates activity (data flow) on the network.
5. Use the PING (Packet Internet Groper) on the IP telephone to determine whether the server's (3300 ICP, DHCP, and/or TFTP) IP address is accessible.
6. Ensure that the DHCP server has been programmed with the correct information.
7. If the IP telephone displays "TFTP LOAD FAILURE" verify that the TFTP Firmware, DSP and Main. software loads are available and not corrupted.
8. Ensure that the phone is registered with the system.

Calls are Being Cut-off

Look for a pattern.

- Are the calls always being made to the same number?
- Is it a cellular phone? If it is it is likely to be a cellular issue.
- Is this affecting many users or just one? Build a pattern.
- Many Users - Check SMDR records to see if it is a particular trunk or link that is causing the problem.
- One User - Ensure that it is not a hardware or wiring issue.

Calls Received in Error

A user may report that they are continually receiving incorrect calls.

Establish if the calls are always for the same person or if they are for different people.

- If the calls are always for the same person check the following:
 - Telephone Directory to ensure that the name and extension number are correct.
 - The users number against that of the person people are looking for. If the numbers are similar then it is possible that people are dialing incorrectly. Changing the user extension number

maybe an option. - That the person being called has not call forwarded or rerouted calls to the user (who raised the complaint) in error.

- If the calls are for different people try these options:
 - Ask the user to log the calls received in Error.
 - Check the SMDR logs to establish a pattern.

Dial Tone at the Set but Unable to Make Calls

A user may complain of being unable to make calls from their set.

1. Establish if the extension being used is the one assigned to the user.
2. Establish the type of calls the user is trying to make.
3. Check the programming on the system for that extension. Look at the Class of Service and Class of Restriction Assignment in particular.
4. If there is an error, correct the programming



Note: Before you change Class of Restriction to enable chargeable calls make sure that you have the authorization of the customer.

Is this an intermittent problem?

If yes then check to see if the number dialed is using a route list or plan. If it is then check the Class of Restriction of the routes in the route list or plan.



Tip: Use the SMDR records to assist you.

No Calls are Being Received

Check the programming to make sure the calls are not forwarded or rerouted elsewhere automatically by the system.

Check the Class of Service Options Assignment to make sure the programming allows incoming calls.

To PING from the 3300 ICP

1. Select Maintenance and Diagnostics in the System Administration Tool.
2. Select All IP Telephones or Programmed Telephones.
3. Select a telephone with an In Service state.
4. Click PING.
5. In the To IP Device field, select Number or IP.
6. Type the Directory Number or IP Address.
7. Click PING. The Ping Result field will display the number of successful and failed PINGs.

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 phone and press the Down arrow key.
4. Enter the subnet mask for the phone and press the Down arrow key.
5. Enter the default gateway for the phone and press Down arrow Key.
6. At the message "Perform PING Test", press #.
7. Enter the destination IP address. The phone display will indicate PINGING. The phone will also display the number of successful and failed PINGs.
8. Disconnect and Reconnect the Power to reboot the IP phone.

Console

SUPERCONSOLE 1000 Console

If you suspect a problem with a SUPERCONSOLE 1000 console, check for problems with the following components:

- Console and main distribution frame connections
- Main distribution frame and system connections
- Programming in the following forms:
 - Class of Service Options Assignment
 - DNI Console Configuration
 - Station Service Assignment
 - Class of Restriction Group Assignment
 - Interconnect Restriction Table
 - System Configuration
- Telephone
- Handset and cord assembly
- DNI card (requires a reload)
- DNI port
- Backplane cable connections
- Peripheral switch or circuit switch (see Supplementary Peripheral Equipment Procedures).

Software

Restore Procedure

To Restore a previously saved database:

1. Click Maintenance & Diagnostics.
2. Click Restore.
3. Type in the location of the database that is being restored or use the Browse facility.
4. Click Start Restore. A window warns that you must reboot after a restore and that a restore replaces the current database.
5. Click OK. The system will show an "in progress" message and then a complete message.
6. Reboot the system.

CAUTION: After restoring a database you must reboot the system. When the system reboots, service will be LOST.

Software Install Procedure

WARNING: You must back up the system and voice mail data.

WARNING: The software installation procedure will format the 3300 Controller hard drive and install new software.


Before you begin

Installer's PC requirements:

- Windows NT 4.0 or Windows 2000 operating system
- FTP server running (with IIS installed)
- Ethernet card and a connection to the Mitel Networks 3300 ICP
- A communications program such as VT100 or HyperTerm
- A serial connection to the 3300 ICP maintenance port
- Windows 2000 users should clear the browser cache.

You also need:

- the IP address of the 3300 ICP
- 3300 ICP software CD-ROM.

 Time: The entire rebuild procedure, including backup and restore, will take approximately 3 hours.

Rebuild Procedure

1. Connect your PC to one of the 3300 ICP ethernet ports.
2. From your PC, ping the 3300 ICP to verify that you have a connection established.

3. Back up the 3300 ICP database (including voice mail) to your PC.
4. Insert the Mitel Networks 3300 ICP software CD-ROM into the CD drive of the installer's PC.
5. Run the "Setup.exe" program from the CD.
6. Select New Installation.
7. Choose a location for the installSetup program to install files (normally that is C:\intpub\ftproot). installSetup program provides a progress indicator and a log file.
8. Click Finish when prompted. You are presented with a text file providing instructions.
9. Launch your communications program that connects to the 3300 ICP serial port.
10. Enter **reboot** to reboot the 3300 ICP.
11. Press a key at the "Press any key to stop auto-boot" prompt to stop the auto-boot.
12. At [VXWorks Boot] type c and then press Enter.
13. Change the following parameters as indicated:
 - Boot device : motfcc
 - File name : Boot_Install
 - Host inet : <the IP address of the ftp server PC host (your PC)>
 - User (u) : <user name for FTP server in PC host>
 - Ftp password (pw) (blank = use rsh) : <password for FTP server in PC host>
 - Flags (f) : 0x0 (for RTC only).
14. Press the reset button on the 3300 ICP. The software installation will take about 45 minutes.
15. Login to the System Administration Tool (username: **system**; password: **password**).
16. Set the options in the License and Option Selection form:
 - Select the System Administration Tool.
 - Select System Configuration from the pull-down menu.

- Select System Capacity -> License and Options Select.
- Fill in the purchased system options.

17. Reboot.

18. If you have a database backup, Restore the customer data to the system OR program the system using the System Administration Tool.

19. If you are using an external DHCP Server, disable the internal DHCP Server.

20. Perform a Backup (optional).

Management Tool Fails to Launch

The Mitel Networks 3300 ICP management tools include the System Administration, the Group Administration, and the Desktop Tools.

Because all of the management tools depend on being allowed to set cookies to maintain sessionID state, login will fail if cookies are not enabled.

Cookies are enabled by default in Microsoft Internet Explorer. Internet Explorer 5.5 and 6.0 will indicate that 'Cookies are not enabled'.

If the management tool fails to launch:

1. Launch Internet Explorer.
2. Select Internet Options from the Tools menu.
3. Select the Security tab and enable cookies.

Maintain

Healthy System Checklist

Ensure that the system is running properly by checking that there are:

- No alarms present
- DBMS Status initialized flag is on
- DBMS check is scheduled
- Programmed Reboot is scheduled
- No error logs
- Database is backed up

Checking the System

To check the system:

1. Click **Maintenance and Diagnostics**.
2. Click **Maintenance Commands**.
3. Click **All**.
4. 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. If the flag is off enter DBMS Save command.
PROGRAMMED REBOOT DISPLAY - Displays the scheduled system reset.
ME S - Checks the status of all communication links. All communication links should be open.
PCM TO - Checks for Circuit Switch Faults. There should be no faults.
5. Click **Logs**.
6. Click **Maintenance Logs**.
7. Click **Error** - Checks for error logs or click **ALL** to see all maintenance logs.

8. Check that you have recent back-ups of the database and hard drive.



Note: It is recommended back-ups are made at least once a week and where possible, copies of the last 3 back-ups should be available.

System Security Checklist

Complete the following to ensure the system is secure:

- No SECURITY alarms are present
- Passwords and usernames have been changed from defaults
- Passwords and usernames are recorded and secure
- Account codes programmed
- SMDR records checked for irregularities
- 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.

System Hardware Profile

To check the hardware that is installed in the controller:

1. Click System Hardware Profile from the Maintenance and Diagnostics menu.
2. Select one of the following:
 - Compute Cards for information on the E2T or RTC cards
 - Modules for information on the MMC cards (Dual FIMs, Echo Cancellers, DSPs etc.)

Backing Up System Information

The system back up includes call control data: 3300 ICP databases, internal DHCP server configuration, and voice mail (with or without messages).

To back-up the system:

1. Click Maintenance and Diagnostics.
2. Click **Back-up**.
3. Copy the identitydb.obj file to your PC (if required). Follow the instructions displayed on the screen.
4. Enter the path on your local drive to store the backup (e.g. C:\3300_ICP\backup).
5. Enter a name for your backup file.
6. Click **Yes** to include the voice mail messages in your backup.
Note: Including voice mail messages can increase the backup time significantly.
7. Click **Start Backup**. System will display progress and then a back-up complete message.
8. Click **OK**.
9. Verify the presence of the backup on the local drive.



Note: During a system backup, the 5140 IP Appliance will be unable to access an application through the command keys (Online Services, Personal Directory, Bookmarks, or Speed Dials).

Viewing Logs

To view maintenance or software logs:

1. Click Maintenance & Diagnostics.
2. Click Logs.
3. Select the desired log category (Maintenance or Software).
 - To view all logs in the category click All Maintenance Logs (or All Software Logs)
 - To view error Logs click error
 - To view warning logs click warning
 - To view information click Info

4. Highlight the desired log by moving your cursor over it and click once.
 - The details of the log will be displayed in the lower half of the screen.

List of Maintenance Commands

BACKGROUND

BACKGROUND ON

BACKGROUND OFF

BACKGROUND STATUS

BACKGROUND STATUS CEPT

BACKGROUND STATUS DS1

BACKGROUND STATUS R2

BACKGROUND STATUS UNIVERSAL E1

BACKGROUND STATUS UNIVERSAL T1

BLF REFRESH

BLF REFRESH CEID <CEID INDEX>

BLF REFRESH CEID ALL

BUSY

BUSY <unit><shelf><slot>

BUSY <unit> <shelf> <slot> <circuit>

BUSY <unit> <shelf> <slot> <circuit> <channel>

BUSY EXTENSION <extension number>

BUSY TRUNK GROUP <group number>

CBM

CBM DISABLE LOG

CBM ENABLE LOG

CCS

CCS RESET DASS2

CCS RESET DPNSS ROUTE_OPT_STATISTICS

CCS SHOW DPNSS FEATURE

CCS SHOW DASS2 FEATURE_STATUS

CCS SHOW DPNSS ROUTE SUMMARY

CCS SHOW DPNSS ROUTE DETAILED

CCS SHOW DASS2 ROUTE_OPT_STATISTICS

CCS TRACE ENABLE

CCS TRACE DISABLE

CCS TRACE SHOW OUTPUT

CCS TRACE SHOW CONTEXT

CCS TRACE SET CONTEXT <location ID>

CCS TRACE SET CONTEXT VIRTUAL <location ID>

CCS TRACE SET CONTEXT XNET

CCS TRACE CLEAR CONTEXT

CCS TRACE ENABLE CONTINUOUS

CONGESTION

CONGESTION

DBMS

DBMS CHECK ON

DBMS CHECK OFF

DBMS CHECK BRIEF

DBMS CHECK FULL

DBMS CHECK KILL

DBMS CHECK TIME <hour>

DBMS CLIENT

DBMS FLAG OFF

DBMS SAVE

DBMS STATUS

DIGITAL TRUNK STATISTICS

DTSTAT CLEAR <unit> <shelf> <slot> <hybrid>

DTSTAT READ <unit> <shelf> <slot> <hybrid>

DTSTAT READ <unit> <shelf> <slot> <hybrid> LAST <number of hours>

DISABLE SEIZE TEST

DISABLE SEIZE TEST

ENABLE SEIZE TEST

ENABLE SEIZE TEST

FIRMWARE

FIRMWARE PLID <unit> <shelf>

FIRMWARE PLID <unit> <shelf> <slot>

FIRMWARE PLID <unit> <shelf> <Slot> <circuit>

FIRMWARE PLID <unit> <shelf> <Slot> <circuit> <channel>

LANGUAGE DISPLAY

LANGUAGE DISPLAY SETS AUX1

LANGUAGE DISPLAY SETS AUX2

LANGUAGE DISPLAY SETS DEFAULT

LANGUAGE SELECT

LANGUAGE SELECT <language> SETS AUX1 FROM <catalog>

LANGUAGE SELECT <language> SETS AUX2 FROM <catalog>

LANGUAGE SELECT <language> SETS DEFAULT FROM
<catalog>

LOAD

LOAD <unit/module>

LOAD IPDevice <1,2...700>

LOAD IPDevice <1> TO <700>

LOAD <unit> <shelf> <slot> <circuit>

LOAD <unit> <shelf> <slot> <circuit> <channel>

LOCATE

LOCATE AGENT <agent identifier>

LOCATE ALL FREE DN

LOCATE ALL FREE PLID

LOCATE ALL FREE PLID <card type> <unit>

LOCATE ALL FREE PLID <card type> <unit> <shelf>

LOCATE ALL FREE PLID <card type> <unit> <shelf> <slot>

LOCATE ALL FREE PLID <card type> <plidmin> TO <plidmax>

LOCATE ALL FREE DN <dn number> TO <dn number>

LOCATE EXTENSION <extension number>

LOCATE FEATURE EXTENSION <number>

LOCATE FEATURE HUNT_GROUP <number>

LOCATE FIRST FREE DN

LOCATE FIRST FREE DN <number> TO <number>

LOCATE FIRST FREE PLID <card type>

LOCATE FIRST FREE PLID <card type> <unit>

LOCATE FIRST FREE PLID <card type> <unit> <shelf>

LOCATE FIRST FREE PLID <card type> <unit> <shelf> <slot>

LOCATE GROUP GROUP_REPORTING_NUM <number>

LOCATE NUMBER <number>

LOCATE PATH PATH_REPORTING_NUM <number>

LOCATE PLID <unit> <shelf> <slot>

LOCATE PLID <unit> <shelf> <slot> <circuit>

LOCATE REMOTE <number>

LOCATE TRUNK <trunk number>

MESSAGE

MESSAGE MATE

MESSAGE REMOTE

MESSAGE SUBSYSTEM

NETSYNC

NETSYNC SETSOURCE <number>

NETSYNC SETSOURCE AUTO

NETSYNC SETSOURCE FREERUN

NETSYNC STATE <number>

NETSYNC SUMMARY <number>

NETSYNC SUMMARY <number> LAST <number of hours>

PCM

PCM STATUS TX <number>

PCM STATUS RX <number>

PCM TEST TX <number>

PCM TEST RX <number>

PCM TEST BOTH <number>

PCM TOTALS

PENDING

PENDING CHANGES DELETE

PENDING CHANGES DISPLAY ALL

PENDING CHANGES DISPLAY COUNT

PENDING CHANGES DISPLAY NEW <number>

PENDING CHANGES GENERATE <string> BLANK

PENDING CHANGES GENERATE BLANK BLANK

PENDING CHANGES GENERATE BLANK <string>

PROGRAMMED REBOOT

PROGRAMMED REBOOT ON

PROGRAMMED REBOOT OFF

PROGRAMMED REBOOT DISPLAY

PROGRAMMED REBOOT MEMORY DAILY <HH : MM : SS>

PROGRAMMED REBOOT SCHEDULE <Day> <HH : MM : SS>

PROGRAMMED REBOOT SCHEDULE DAILY <HH : MM : SS>

PMS

PMS STATE

PMS TRACE DISABLE

PMS TRACE ENABLE

PROM

PROM <unit> <shelf> <slot>

READDATETIME

REMOVE

REMOVE COURTESY DOWN <unit> <shelf> <slot> <circuit>

REMOVE COURTESY DOWN EXTENSION <number>

RESOURCE

RESOURCE <unit> <shelf> <slot> <circuit> <channel>

RESOURCE XNET <number>

RTS

RTS <unit> <shelf> <slot>

RTS <unit> <shelf> <slot> <circuit>

RTS EXTENSION <number>

RTS MATE

RTS TRUNK GROUP <number>

SET THRESHOLDS

SET THRESHOLDS <alarm category> <number> <number>

SET THRESHOLDS <alarm category> <number> NIL NIL

SET THRESHOLDS <alarm category> <number> NIL <number>

SET THRESHOLDS <alarm category> <number> <number>
<number>

SHOW

SHOW FAULTS <category>

SHOW FAULTS ALARM

SHOW SEIZE TEST

SHOW STATUS <category>

SHOW STATUS ALARMS

STATE

STATE <unit>

STATE <unit> <shelf>

STATE <unit> <shelf> <slot>

STATE <unit> <shelf> <slot> <circuit>

STATE EXTENSION <number>

STATE TRUNK GROUP NUMBER

STATE XNET PBX <number>

STATE XNET LINK <number>

TEST

TEST <unit>

TEST <unit> <shelf>

TEST <unit> <shelf> <slot>

TEST <unit> <shelf> <slot> <circuit>

TEST EXTENSION <number>

TEST TRUNK GROUP <number>

TRAFFIC

TRAFFIC DELETE <month> <day> <number>

TRAFFIC FILES

TRAFFIC PRINT

TRAFFIC STATUS

TRAFFIC STOP

TYPE

WRITEDATETIME

<year><month><day> <day of the week> <hours> <mins>
<seconds>