Multiprotocol Switched Services (MSS) Server

Service and Maintenance Manual

GY27-0354-02

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Note

Before using this information and the product it supports, be sure to read the safety information under Appendix F, “Safety Information” and the general and emission notices under Appendix G, “Notices.”

Third Edition (October 1997)

This edition applies to Version 2.0 of the Multiprotocol Switched Services (MSS) Server.

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About This Manual

This manual describes how to service the MSS Server. The primary method of problem determination by the Level 1 Support Center will be through the dial-in connection through a *standard* PCMCIA modem in the 8210 MSS Server or the A-MSS Server Module. Some diagnostics and service will be provided through a Web browser. Level 1 Support Center will run the hardware tests.

There are two types of MSS Server: the IBM 8210 Nways Multiprotocol Switched Services (MSS) Server (8210), which is a standalone product, and the IBM Multi-protocol Switched Services (MSS) Server Module (A-MSS Server Module), which is installed as a module in the IBM 8260 Nways Multiprotocol Switching Hub (8260) or the IBM 8265 Nways ATM Switch (8265). Unless explicitly stated, the term *MSS Server* applies to both the 8210 MSS Server and the A-MSS Server Module.

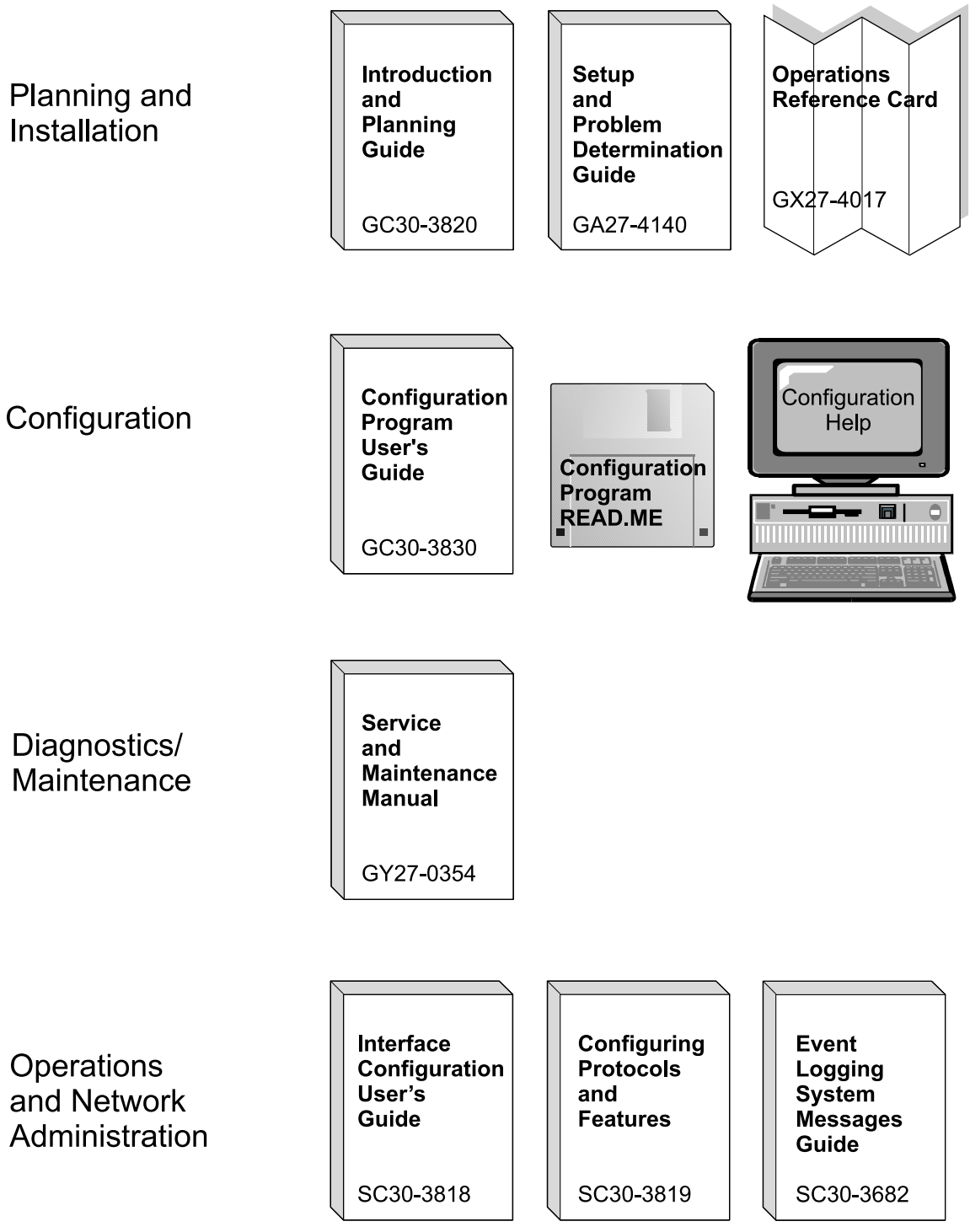
The hardware tests and removal and replacement procedures are described in this manual. It can be used to train service representatives and for reference when servicing an MSS Server. Service for the MSS Server is to be performed by a trained person only.

Who Should Read This Manual

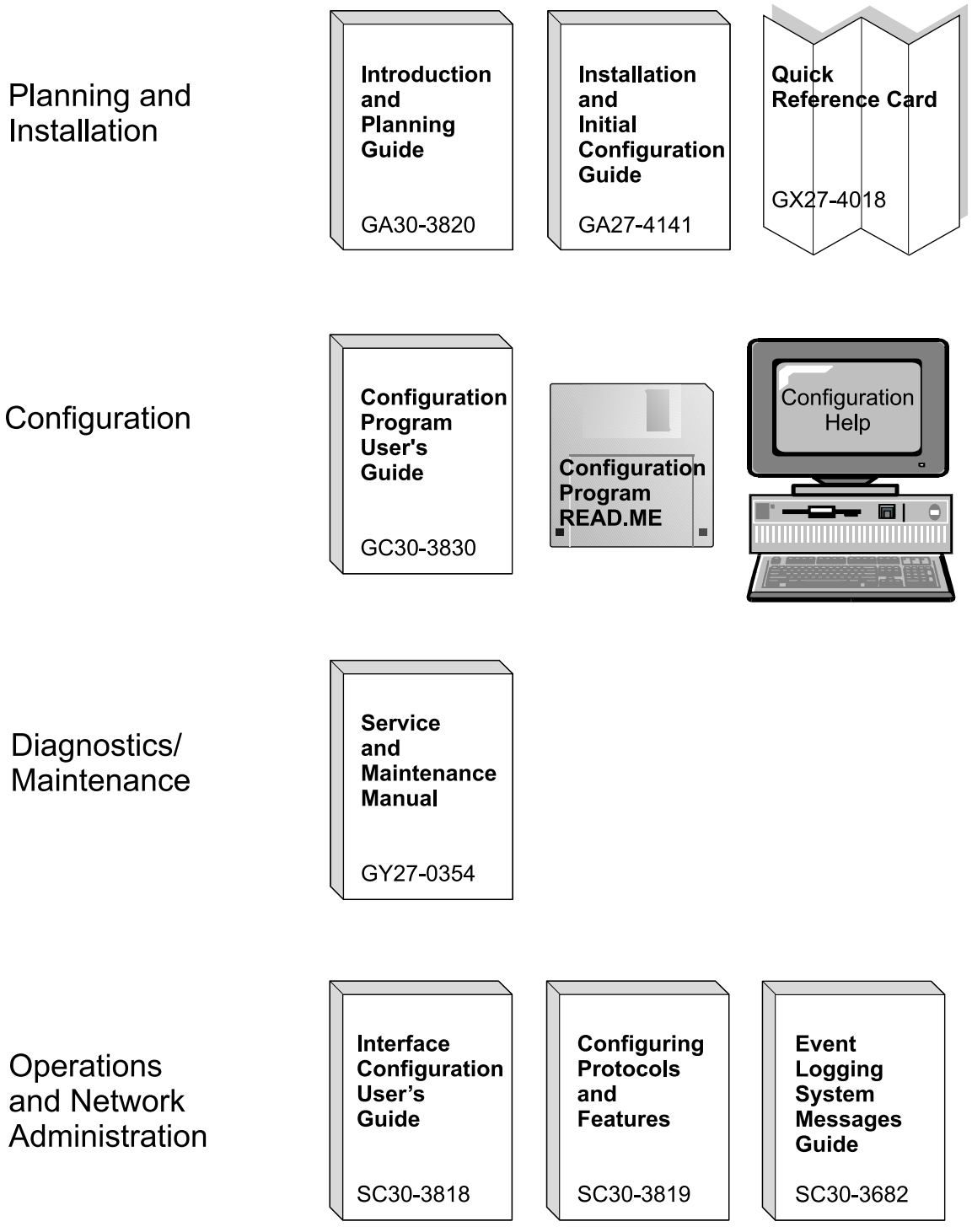
This manual is for the use of the person providing level 1 remote support of the MSS Server. IBM service representatives will refer to this manual when servicing the MSS Server on site. The person using this manual should be:

- Trained to service the MSS Server.
- Familiar with the configuration and operation of the MSS Server.

8210 MSS Server Library



A-MSS Server Module Library



MSS Server Library Overview

The following IBM hardcopy publications are shipped with the product. The manuals in this list are also included in displayable softcopy form on the Multiprotocol Switched Services (MSS) Softcopy Library CD-ROM (LK2T-0378). This CD-ROM is shipped with initial orders for the MSS Server.

The reference cards and the safety information booklet are shipped in hardcopy only and are not included on the CD-ROM.

- *Nways Multiprotocol Switched Services (MSS) Server Setup and Problem Determination Guide,* GA27-4140
- *8210 Nways Multiprotocol Switched Services (MSS) Server Operations Reference Card,* GX27-4017
- *Multiprotocol Switched Services (MSS) Server Module Installation and Initial Configuration Guide,* GA27-4141
- *Multiprotocol Switched Services (MSS) Server Module Quick Reference Card,* GX27-4018
- *CAUTION: Safety Information - Read This First,* SD21-0030

The following publications are not shipped in hardcopy, but are provided in softcopy form on the Multiprotocol Switched Services (MSS) Softcopy Library CD-ROM. All of these manuals (with the exception of the *Event Logging System Messages Guide*) can be separately ordered in hardcopy form through your IBM marketing representative.

- *Multiprotocol Switched Services (MSS) Server Introduction and Planning Guide,* GC30-3820
- *Multiprotocol Switched Services (MSS) Server Service and Maintenance Manual,* GY27-0354
- *Multiprotocol Switched Services (MSS) Server Interface Configuration and Software User's Guide,* SC30-3818
- *Multiprotocol Switched Services (MSS) Configuring Protocols and Features,* SC30-3819
- *Configuration Program User's Guide for Nways Multiprotocol Access, Routing and Switched Services,* GC30-3830
- *Event Logging System Messages Guide,* SC30-3682

Accessing the MSS Server Softcover Library

Important: Whether you choose to read the softcopy MSS Server publications directly from the CD-ROM or to upload the individual books to your hard disk, you first must install the Library Reader program (contained on the CD-ROM) on your workstation to enable you to view the publications.

The *Multiprotocol Switched Services (MSS) Server Softcopy Library* (included with the CD-ROM) describes how to install the Library Reader and how to access the softcopy books from a personal computer or PS/2 computer running DOS, Windows, or OS/2.

For alternative methods of managing your softcopy books, see the *Online Reference Online Library* that is on the CD-ROM.

Visit Our Web Sites

You can obtain the latest information on and support for the MSS Server by visiting our Web sites.

Information Updates and Corrections

To keep informed of engineering changes, clarifications, and fixes that are implemented after the manuals have been printed, refer to the IBM MSS Server home page at:

`http://www.networking.ibm.com/820/820prod.html`

Latest Switch Driver Images

To access updated versions of the MSS Server switch driver images, refer to the IBM Switch Driver Images page at:

`http://www.networking.ibm.com/nes/nesswitc.htm`

Online Support

To obtain support information and code for the MSS Server, refer to the IBM Network Environment Support page at:

`http://www.networking.ibm.com/nes/`

Summary of Changes

This manual has been revised to include the following changes and enhancements:

- Repackaging of the A-MSS Server Module to a one-slot 8260 module
- 166-MHz 603ev PowerPC processor for the A-MSS Server Module
- Addition of a 10BASE-T Ethernet service port to the A-MSS Server Module
- Replacement of the A-MSS Server Module's PCMCIA hard drive with an internal integrated drive electronics (IDE) hard disk
- Addition of an optional 20-MB flash drive for the A-MSS Server Module
- 64 MB of DRAM for both the 8210 and the A-MSS Server Module

The technical changes and additions are indicated by a vertical line (|) to the left of the change.

Chapter 1. Problem Determination

This chapter briefly describes the MSS Server, the ways to provide hardware and operational code service using the tools provided, and methods of diagnosing hardware problems. Pointers are given to the individual chapters in this manual that provide more detail.

MSS Server Hardware

There are two types of MSS Server: the IBM 8210 Nways Multiprotocol Switched Services (MSS) Server (8210), which is a standalone product, and the IBM Multiprotocol Switched Services (MSS) Server Module (A-MSS Server Module), which is installed as a module in the IBM 8260 Nways Multiprotocol Switching Hub (8260) or the IBM 8265 Nways ATM Switch (8265).

The standalone version, the 8210, is connected to the ATM network over 155-Mbps optical fiber cable equipped with industry-standard SC connectors. The A-MSS Server Module connects to the ATM network when it is installed and made operational in the 8260 or 8265.

The 8210 and the A-MSS Server Module have all the connectors and light-emitting diodes (LEDs) placed on the front.

Both the 8210 and the A-MSS Server Module have one standard serial service port: an EIA 232 male 9-pin D-shell connector. (In the A-MSS Server Module, the EIA 232 service port is identified as an RS-232 port.) The serial service port can be attached locally through a null modem cable or remotely through a modem attachment.

See Appendix C, “8210 MSS Server Hardware Characteristics” for a description of physical and environmental characteristics of the 8210 MSS Server and pin assignments for the EIA 232 service port.

The A-MSS Server Module also has a 10BASE-T Ethernet service port.

In the U.S., Canada, and most other countries, the MSS Server is shipped with a Personal Computer Memory Card International Association (PCMCIA) modem.[1] This modem is provided so that you can access the MSS Server remotely to perform product configuration and maintenance. The MSS Server supports autoanswer for both the PCMCIA and the external modem attachment.

Troubleshooting

Both hardware and software (operational code and configuration) problems can affect the MSS Server. Light-emitting diodes (LEDs), diagnostic programs, and error messages provide information needed for problem determination. This manual is chiefly concerned with diagnosing and correcting hardware problems, but it includes some software information for your convenience.

[1] If you are not sure whether this feature is available in your country, see your IBM marketing representative.

Accessing the MSS Server

The MSS Server is remotely serviced. Chapter 3, “Accessing the MSS Server” has information about accessing it. This information is covered in the *Multiprotocol Switched Services (MSS) Server Interface Configuration and Software User's Guide*, but it is repeated in this manual for your convenience.

Diagnosing Hardware Problems

Generally, errors that occur ***before*** the operational code is loaded are hardware-related. Light-emitting diodes (LEDs) on the front of the MSS Server are indicators of the status of hardware components within the MSS Server.

Go to “8210 MSS Server LED Indicators” for LED status and indicators for the 8210 MSS Server, or go to “A-MSS Server Module LED Status Indicators” on page 1-8 for LED status and indicators for the A-MSS Server Module. See Chapter 2, “Removal and Replacement Procedures” for information on removal and replacement procedures for field-replaceable units (FRUs).

See Chapter 4, “Using MSS Server Firmware” or Chapter 5, “Using Operational Diagnostics” (depending on how you are connected to the MSS Server) to run hardware diagnostics ***before*** the MSS Server has been configured.

Diagnosing Operational Code and Configuration Problems

Generally, errors that occur ***after*** the operational code is loaded indicate problems with the operational code or configuration file.

Error codes and corrective action are described in the *Event Logging System Messages Guide*.

See Chapter 4, “Using MSS Server Firmware” or Chapter 5, “Using Operational Diagnostics” to run diagnostics ***after*** operational code and configuration files have been loaded. Also see Appendix D, “Managing Operational Code and Configuration Files” for information on reconfiguring the MSS Server, should it become necessary.

8210 MSS Server LED Indicators

This section describes the LED indicators for the 8210 MSS Server.

Figure 1-1 on page 1-3 shows the locations of the LEDs, and Table 1-1 on page 1-3 indicates the meanings of the LEDs.

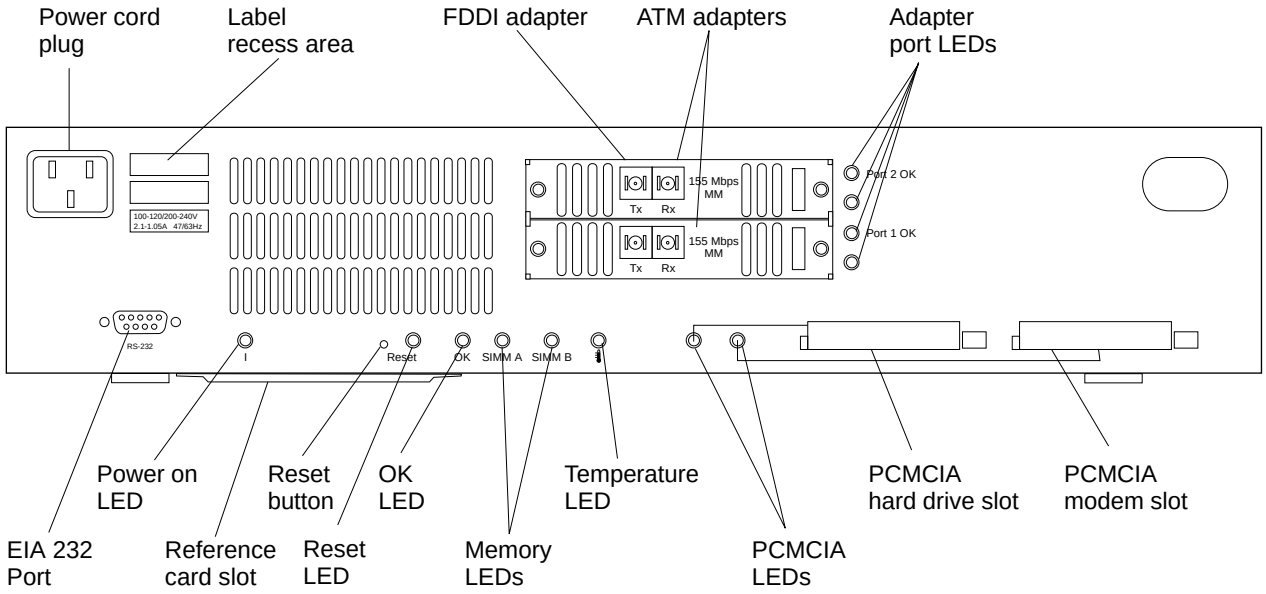


Figure 1-1. Front Panel of the MSS Server

Table 1-1 (Page 1 of 2). Meanings of the 8210 MSS Server LEDs

LED	Color	State	Explanation
I (Power On)	Green	ON	There is ac power to the 8210 MSS Server and the power supply is OK.
		OFF	No ac power is present, or there is a power supply failure.
Reset	Yellow	ON	System reset is in progress. The LED remains on until the reset is complete.
		OFF	System reset is complete.
OK	Green	ON	Hardware logic components are OK.
		OFF	System fault (if off for more than 2 minutes). Press the Reset button. If the LED is still OFF, there is a system fault.
		Blinking	Operational code load is in progress.
SIMM A or B	Yellow	ON	Memory module (SIMM A or B) fault.
		OFF	Memory module (SIMM A or B) is OK.
Temperature symbol	Yellow	ON	The 8210 MSS Server has an over-temperature condition. (See Appendix C, “8210 MSS Server Hardware Characteristics.”)
		OFF	The 8210 MSS Server operating temperature is within the normal range.
PCMCIA slots 1 or 2	Yellow	ON	A PCMCIA device is absent, is not seated correctly, or is faulty.
		OFF	A PCMCIA device is present and is seated correctly.

Table 1-1 (Page 2 of 2). Meanings of the 8210 MSS Server LEDs

LED	Color	State	Explanation
Adapter Ports 1 or 2	Green	ON	An adapter is in the port, configured, enabled, and operational. **Note:** If you have installed a FDDI adapter in Port 2 (top slot), see "FDDI Adapter LED Indicators" on page 1-6.
		OFF	The adapter is not configured, not enabled, or not operational; or, no adapter is in the port.
	Yellow	ON (not blinking)	The adapter in the port has failed.
		ON (blinking)	If blinking for more than 1 minute, there is a potential network or adapter problem.
		OFF	No problem is detected in the adapter, or no adapter is in the port.

Problem Solving

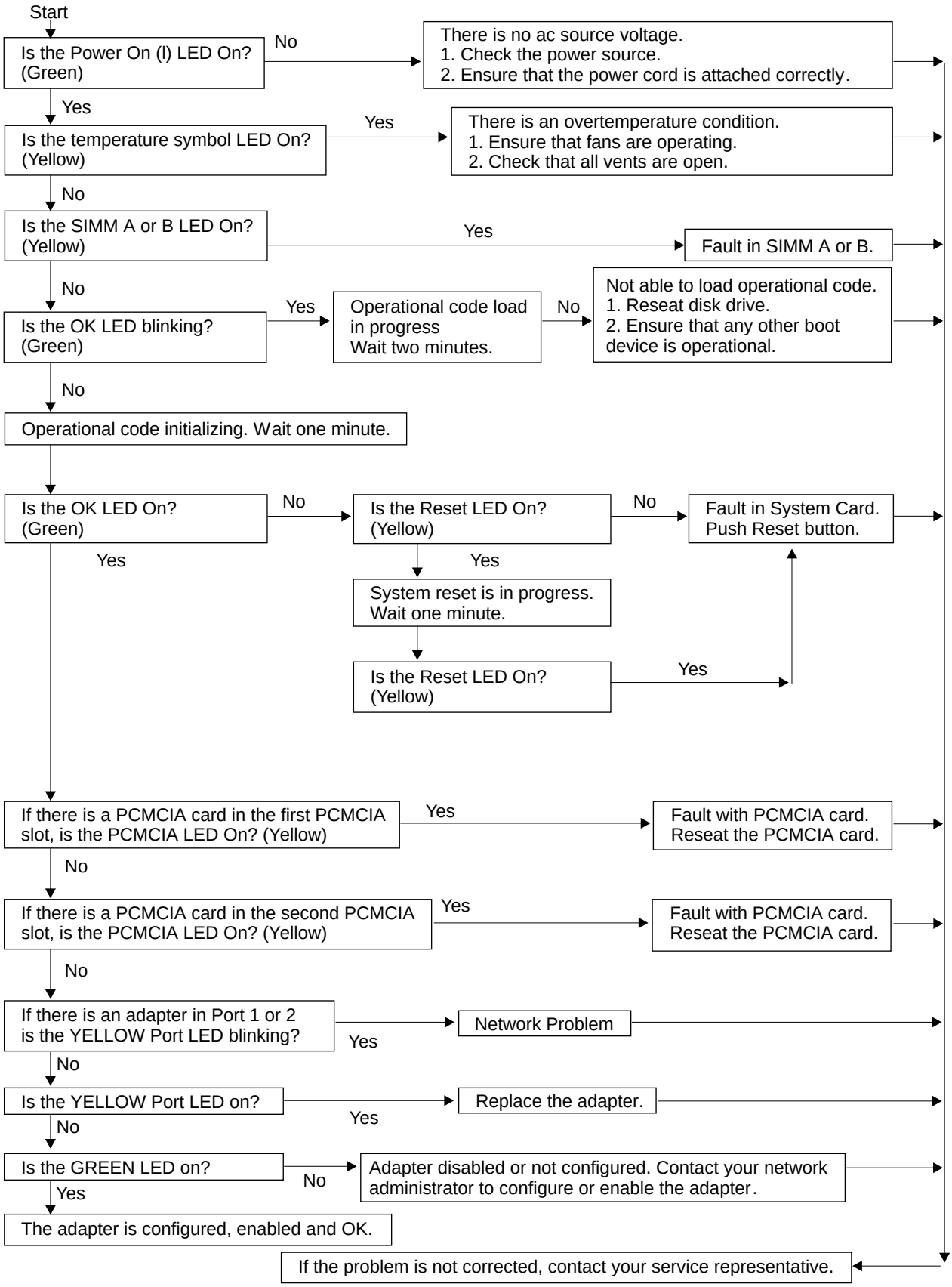


Figure 1-2. Problem Solving for the 8210 MSS Server

FDDI Adapter LED Indicators

If you have installed a FDDI adapter in Port 2 (top slot), and the Adapter Port 2 green LED is ON, check the condition of the green and yellow LEDs on the FDDI adapter in Table 1-2.

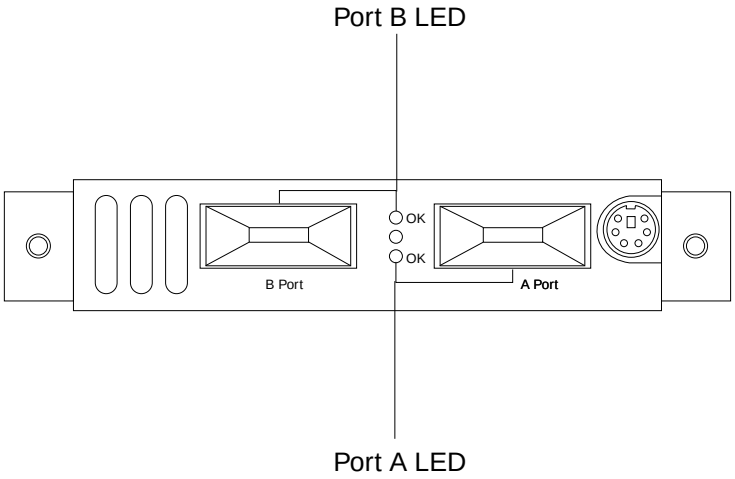


Figure 1-3. Front Panel of the FDDI Adapter

Table 1-2. Meanings of the FDDI Adapter LEDs

LED	Color	State	Explanation
FDDI Adapter	Green	ON	If both green LEDs are ON, both ports are connected correctly to the FDDI hub or port in the network, there is a primary and a redundant data path to the next FDDI hop, and data can be transmitted. If one green LED is ON (in either position), there is only one primary data path, and only one port is connected to the next hop in the FDDI network. The other port could be faulty because of one of the following conditions: • The port is not connected to the next FDDI port. • The port has a bad cable connection to the next FDDI port. • The next FDDI port in the network is faulty. When only one green LED is ON, the yellow LED is always OFF.
		OFF	There is no data path to the next hop in the FDDI network, or the adapter is not configured, enabled, or operational. When two green LEDs are OFF, the yellow LED is always ON.
	Yellow	ON	No data path is available. Neither port is connected to another valid FDDI port. This could be caused by one of the following conditions: • No cable is connected to the FDDI port. • You are using incorrect cables. • You have placed the cables in the wrong order to complete the correct data path needed for FDDI. • The connecting FDDI port in the network is faulty. • Code is loaded, but the adapter interface is not enabled. • The FDDI adapter is faulty. Perform the FDDI adapter wrap test (see "FDDI Adapter Wrap Test" on page 1-7) on the FDDI adapter ports to check the adapter before removing and replacing it.

FDDI Adapter Wrap Test

If the FDDI adapter yellow LED is ON, perform the following wrap test to ensure that the FDDI adapter is functional before removing and replacing it.

1. Insert and completely seat the ends of a small piece of optical fiber cable into the cable connectors on the FDDI adapter.
2. Observe the yellow LED.
   a. If the yellow LED goes OFF, the adapter is functioning normally. Check your FDDI cabling and the connecting FDDI port in the network.
   b. If the yellow LED remains ON, the adapter is faulty. Contact your network administrator or your service representative to remove and replace the faulty FDDI adapter. See “Removing the Adapter from Port 2 (Top Slot)” on page 2-15 and “Replacing the Adapter in Port 2” on page 2-16.

A-MSS Server Module LED Status Indicators

This section describes the LED status indicators for the A-MSS Server Module.

Generally, errors occurring ***before*** the operational code is loaded are hardware-related. LEDs on the front of the A-MSS Server Module reflect the status of the hardware components within the A-MSS Server Module.

Figure 1-4 shows the locations of the LEDs, and Table 1-3 on page 1-9 indicates the meanings of the LEDs.

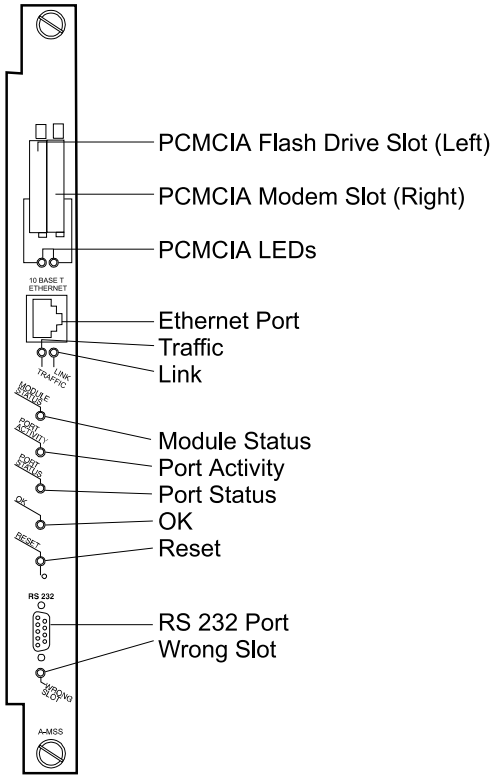


Figure 1-4. Front Panel of the A-MSS Server Module

Table 1-3. Meanings of the A-MSS Server Module LEDs

LED	Color	State	Indicates
PCMCIA slots 1 and 2	Yellow	ON	The PCMCIA device is absent, or not seated correctly, or failed the test.
		OFF	The PCMCIA device is present and is seated correctly.
Traffic	Green	ON (Flick-ering)	Traffic is flowing across the Ethernet network.
		OFF	No traffic is flowing across the Ethernet network. There is a fault in the Ethernet connection. Check the Ethernet cable.
Link	Green	ON	The Ethernet port is connected correctly.
		OFF	There is a fault in the Ethernet connection. Check the Ethernet cable.
Module Status	Green	ON	The module is logically connected to the hub ATM backplane.
		OFF	The module is not logically connected to the hub ATM backplane. Use **SET MODULE** *slot* **CONNECTED** (where the value for *slot* indicates the position of the module and can be 1 to 8 or 12 to 17 for the 8260 or 1, 3, 5, or 7 for the 8265).
		Blinking	The module is powered on, but diagnostics have failed.
Port Activity	Yellow	ON	Traffic is flowing to the A-MSS Server Module.
		OFF	No traffic is flowing to the A-MSS Server Module.
Port Status	Green	ON	The ATM backplane port is enabled.
		OFF	The ATM backplane port is not enabled. Use **SET PORT** *slot.1* **ENABLED** (where the value for *slot* indicates the position of the module and can be 1 to 8 or 12 to 17 for the 8260 or 1, 3, 5, or 7 for the 8265).
OK	Green	ON	Hardware logic components are OK.
		OFF	System fault (if off for more than 2 minutes). Press the Reset button.
		Blinking	Operational code load in progress.
Reset	Yellow	ON	System reset is in progress.
		OFF	System reset is complete.
Wrong Slot	Yellow	ON	The A-MSS Server Module is in an incorrect module slot (slots 9, 10, or 11 for the 8260 or slots 2, 4, or 6 for the 8265).
		OFF	The A-MSS Server Module is in the correct slot and is correctly seated.

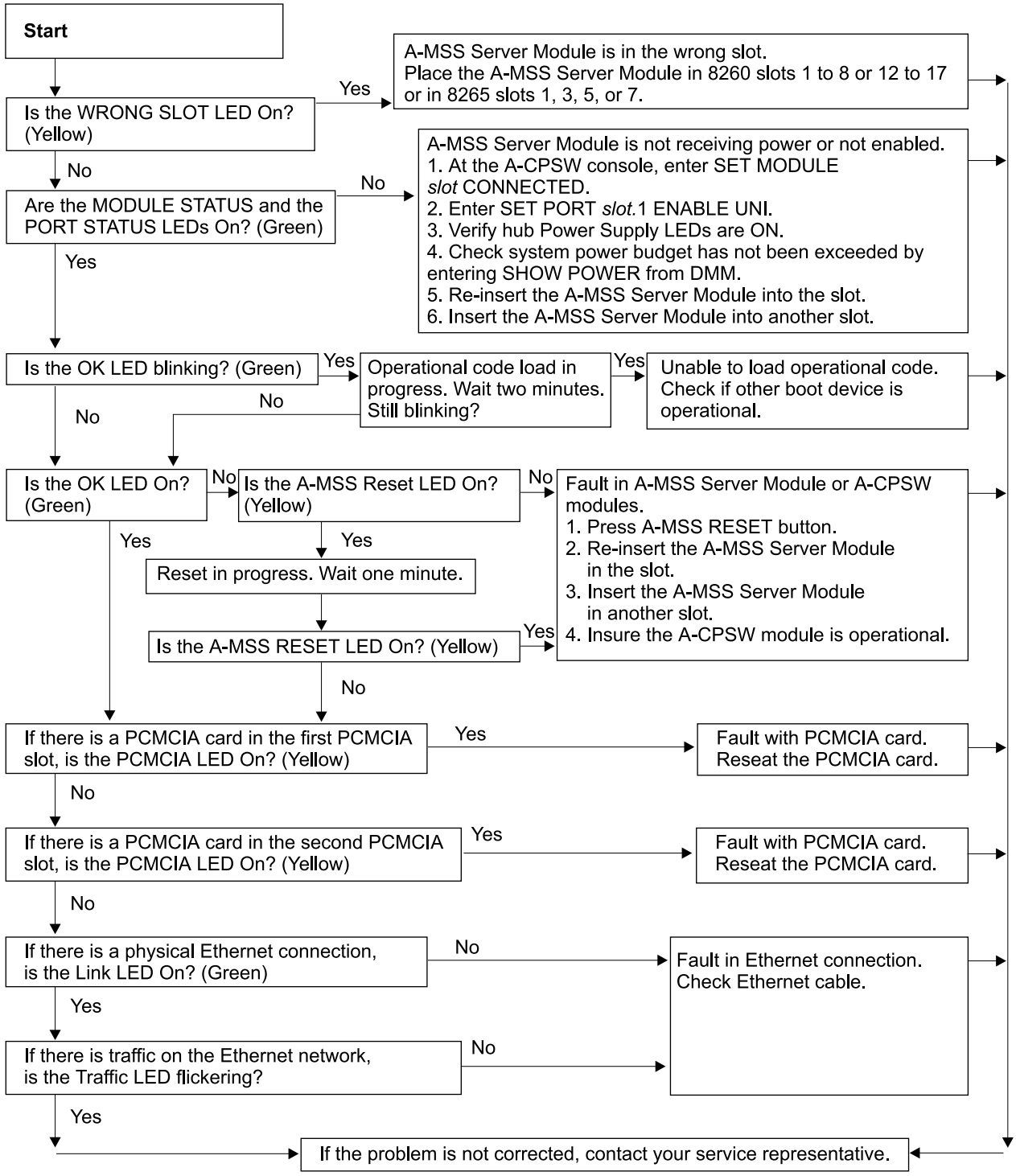


Figure 1-5. Problem Solving for the A-MSS Server Module

Chapter 2. Removal and Replacement Procedures

This chapter provides the following information on removal and replacement procedures for field-replaceable units (FRUs) for both the 8210 and the A-MSS Server Module:

- Preparatory information that applies to the removal and replacement procedures (see “Before You Start”). This information includes:
  - An overview of the common procedures that you must carry out before you remove or replace FRUs in the 8210.
  - A list of the equipment that you will need for both the 8210 and the A-MSS Server Module.
  - A description of the required safety precautions for both the 8210 and the A-MSS Server Module.
- Descriptions of the common removal and replacement procedures for the 8210 (see “Common Removal and Replacement Procedures” on page 2-2).
- Descriptions of the individual FRU removal and replacement procedures for both the 8210 and the A-MSS Server Module (see “FRU Removal and Replacement Procedures” on page 2-7).

For an overall perspective on the FRUs and their relative positioning to each other and the chassis, see Appendix B, “Parts Listings.”

Before You Start

Several common procedures need to be performed in sequence to gain access to the FRUs in the 8210. These common procedures are placed at the beginning of this chapter because they must be performed before you actually begin removing or replacing the FRUs.

Before you begin any removal or replacement activity, review the list of equipment you will need, read the common safety precautions and then proceed to the “Common Removal and Replacement Procedures” on page 2-2.

Equipment You Need

You need the following equipment to remove and replace the FRUs in the 8210:

- 7-mm nut driver
- 5/32-inch nut driver
- Flat-blade screwdriver
- Torx screwdriver T15 (PN 93F2835)
- Torx screwdriver T20 (PN 93F2836)
- Screw starter (optional)
- ATM adapter wrap plug, PN 16G5609 (separately orderable)

IBM recommends that you have a flat-blade screwdriver when removing and replacing the A-MSS Server Module.

Safety Precautions

The A-MSS Server Module does not have its own power supply and can function only while correctly installed in the 8260 or 8265; therefore, some of the safety notices in this chapter and Appendix F, “Safety Information” apply only to the 8210 MSS Server.

DANGER

To avoid a shock hazard, do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm. (Refer to DANGER 1 in Appendix F, “Safety Information” for translations.)

DANGER

Hazardous voltages exist inside this machine when it is powered on. Anytime you service this unit with the cover off, be sure to unplug the power cord. (Refer to DANGER 5 in Appendix F, “Safety Information” for translations.)

Common Removal and Replacement Procedures

This section describes the procedures you need to perform to gain access to FRUs in the 8210.

Disconnecting the Power Cord

Attention: Disconnecting the power cord will disrupt users in your network. Consult the network administrator before disconnecting the power cord.

You need to disconnect the power cord if you need to replace any of the following FRUs:

- AC power supply
- Cooling fan
- Adapter in Port 1
- Adapter in Port 2
- PCI logic card
- Riser
- Memory SIMMs
- Processor logic card

Disconnect the power cord from the ac power outlet and then from the MSS Server.

Where to Go Next

If you are replacing the power cord, continue with “Reconnecting the Power Cord” on page 2-3. Otherwise, go to “Removing the MSS Server from the Rack” on page 2-4.

Reconnecting the Power Cord

DANGER

To avoid shock hazard:

- **The power cord must be connected to a properly wired and grounded receptacle.**
- **Any equipment to which this product will be attached must also be connected to properly wired receptacles.**

(Refer to DANGER 4 in Appendix F, "Safety Information" for translations.)

Connect the power cord to the MSS Server and then to the ac power outlet.

Removing the MSS Server from the Rack

Attention: Disconnecting the power cord will disrupt users on your network. Consult the network administrator before disconnecting the power cord.

CAUTION:
You must support the unit while you are removing or tightening the screws to avoid dropping it on the floor or on other equipment beneath it in the rack. The unit weighs approximately 6.7 kg (14.5 lb). (Refer to CAUTION 1 in Appendix F, "Safety Information" for translations.)

1. Disconnect the power cord from the ac outlet and then from the MSS Server.
2. Label the cable attached to the ATM adapter connectors.
3. Disconnect the cable.
4. Remove the PCMCIA devices (the hard drive and modem).
5. Remove all loose items from the top of the MSS Server.
6. Remove the four screws that hold the MSS Server in the rack.
7. Remove the MSS Server from the rack by pulling it toward you.
8. Place the MSS Server on a flat surface.

Where to Go Next
You need to remove the top cover if you need to remove and replace any of the following FRUs:

- AC power supply
- Cooling fan
- Adapter in Port 1
- Adapter in Port 2
- PCI logic card
- Riser
- Memory SIMMs
- Processor logic card

Go to "Removing the Top Cover" on page 2-5 for instructions about removing the top cover.

Replacing the MSS Server

CAUTION:
You must support the unit while you are removing or tightening the screws to avoid dropping it on the floor or on other equipment beneath it in the rack. The unit weighs approximately 6.7 kg (14.5 lb). (Refer to CAUTION 1 in Appendix F, "Safety Information" for translations.)

1. Insert one of the screws into the MSS Server bracket.

2 Lift the MSS Server into position, lining up the screw and the MSS Server with the rack.

3 Partially tighten the screw.

4 Insert and partially tighten the screw in the other bracket.

5 Insert the other screw in each bracket and tighten all screws.

6 Install the PCMCIA modem into the rightmost slot (when facing the front of the 8210 MSS Server). Install and connect the modem cable.

7 Install the PCMCIA hard drive.

8 Connect the power cord to the MSS Server and then to the ac outlet.

9 Test the MSS Server as outlined in “Selecting a Device To Test” on page 4-5.

Removing the Top Cover

DANGER

> **Hazardous voltages exist inside this machine when it is powered on. Anytime you service this unit with the cover off, be sure to unplug the power cord. (Refer to DANGER 5 in Appendix F, “Safety Information” for translations.)**

Attention: Disconnecting the power cord will disrupt users connected to this MSS Server. Consult the network administrator before disconnecting the power cord.

1 Disconnect the power cord from the ac outlet and then from the MSS Server.

2 Remove the MSS Server from the rack.

3 Place the MSS Server on a flat surface.

4 Remove the three screws on each side of the MSS Server and remove the brackets that hold the MSS Server in the rack. Save the screws to use when you reinstall the top cover.

5 Lift the rear edge of the top cover and pull it to the rear of the MSS Server to disengage the tabs on the top cover that engage the front of the 8210.

6 Lift up the rear of the top cover and pull it up and away from the front of the MSS Server.

Where to Go Next

Go to “FRU Removal and Replacement Procedures” on page 2-7 to find the appropriate procedures for the FRU you need to remove or replace.

When you have removed and replaced the FRU, go to “Reinstalling the Top Cover” on page 2-6.

Reinstalling the Top Cover

1. Align the top cover tabs with the slots in the inside of the front of the MSS Server and slide the top cover forward until the tabs engage the slots.
2. Secure the brackets on each side of the MSS Server with the six screws you removed during removal of the cover.
3. Place the MSS Server in the rack.
4. Connect the ac power cord to the MSS Server and then to the power source.

FRU Removal and Replacement Procedures

This section outlines the removal and replacement procedures for each of the FRUs in the MSS Server.

Note: The figures in this section do not always show all the parts (FRUs). Do not remove a part just because it is not shown in a figure.

Use the following table to find the appropriate procedure for the FRU you need to remove or replace.

FRU	Procedure
PCMCIA flash drive	Go to “Removing and Replacing the PCMCIA Flash Drive” on page 2-9.
PCMCIA IDE hard file	Go to “Removing and Replacing the PCMCIA IDE Hard Drive” on page 2-10.
PCMCIA modem	Go to “Removing and Replacing the PCMCIA Modem” on page 2-10.
AC power supply	Go to “Removing the Power Supply” on page 2-11.
Cooling fan	Go to “Removing the Cooling Fan” on page 2-13.
Adapter in Port 2	Go to “Removing the Adapter from Port 2 (Top Slot)” on page 2-15.
Adapter in Port 1	Go to “Removing the Adapter from Port 1 (Bottom Slot)” on page 2-17.
PCI logic card	Go to “Removing the PCI Logic Card” on page 2-19.
Riser	Go to “Removing the Riser” on page 2-22.
Memory SIMMs	Go to “Removing the Memory SIMMs” on page 2-24.
Processor logic card	Go to “Removing the Processor Logic Card” on page 2-26.

Familiarize yourself with the location of each FRU (Figure 2-1 on page 2-8).

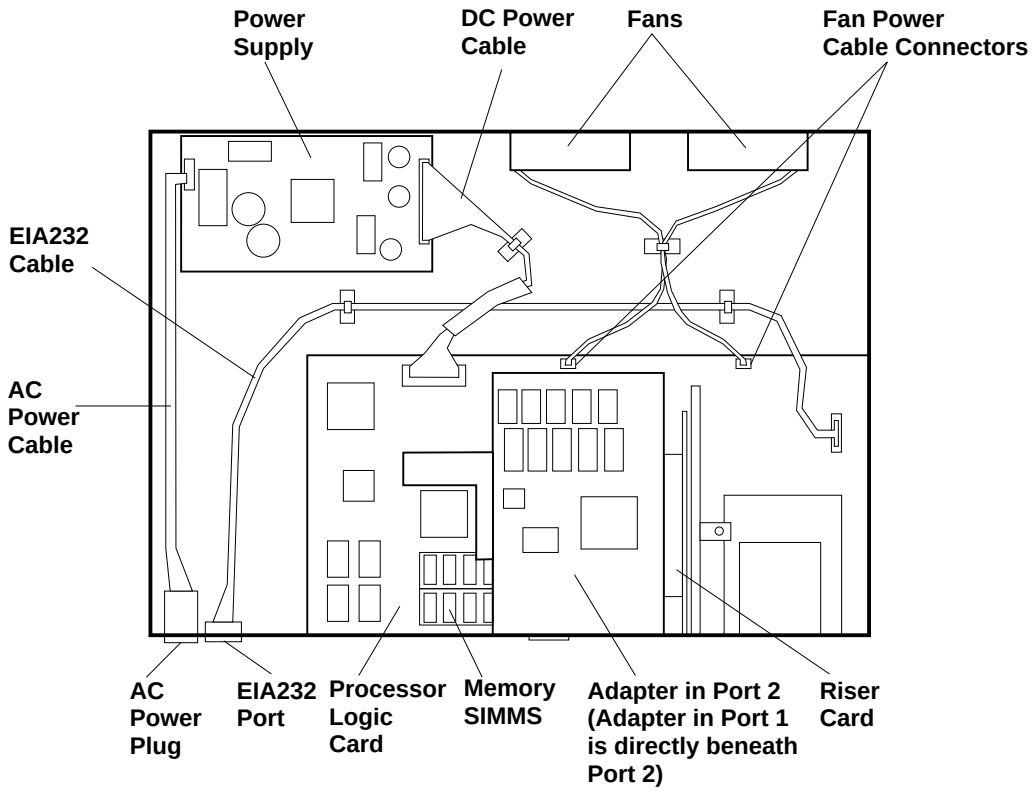


Figure 2-1. View of the MSS Server with Top Cover Removed

Removing and Replacing the PCMCIA Flash Drive

Attention: The PCMCIA flash drive must be located in the left slot of the A-MSS Server Module.

The PCMCIA flash drive is a hot-pluggable device; therefore, it is not necessary to disconnect power before removing and reinstalling these PCMCIA devices. The operational code can dynamically recognize the flash drive, but removal or installation during firmware operation requires that you reset the MSS Server.

To remove and replace the flash drive:

1. Holding one hand beneath the PCMCIA device slot, press the device eject button (located to the right or top of the device).
2. Obtain the replacement device and insert it in the slot. Ensure that the device is completely seated (yellow LED goes off).
3. See “A-MSS Server Module LED Status Indicators” on page 1-8 and verify that the replacement device is operational by the correct state of the LEDs.

Removing and Replacing the PCMCIA IDE Hard Drive

Attention: The PCMCIA IDE hard drive must be located in the leftmost slot (when facing the front of the 8210 MSS Server).

The PCMCIA hard drive is a hot-pluggable device; therefore, it is not necessary to disconnect power before removing and reinstalling these PCMCIA devices. The operational code can dynamically recognize the hard drive, but removal or installation during firmware operation requires that you reset the MSS Server.

To remove and replace the PCMCIA hard file:

1. Holding one hand beneath the PCMCIA device slot, press the device eject button (located to the right or top of the device).
2. Obtain the replacement device and insert it in the slot. Ensure that the device is completely seated (yellow LED goes off).
3. See "8210 MSS Server LED Indicators" on page 1-2 and verify that the replacement device is operational by the correct state of the LEDs.

Removing and Replacing the PCMCIA Modem

Attention: Correct installation according to these instructions is a condition for compliance with the regulations of electromagnetic interference.

The PCMCIA modem must be located in the rightmost slot (when facing the front of either the 8210 or the A-MSS Server Module).

The PCMCIA modem is a hot-pluggable device; therefore, it is not necessary to disconnect power before removing and reinstalling this PCMCIA device. The operational code can dynamically recognize the PCMCIA modem, but removal or installation during firmware operation requires that you reset the MSS Server.

To remove and replace the PCMCIA modem:

1. Disconnect the cable from the PCMCIA modem.
2. Holding one hand beneath the PCMCIA device slot, press the device eject button (located to the right of the device).
3. Obtain the replacement device and insert it in the slot. Ensure that the device is completely seated (yellow LED goes off).
4. Reconnect the PCMCIA modem cable.
5. See "8210 MSS Server LED Indicators" on page 1-2 or "A-MSS Server Module LED Status Indicators" on page 1-8 and verify the replacement device is operational by the correct status of the LEDs.

Removing the Power Supply

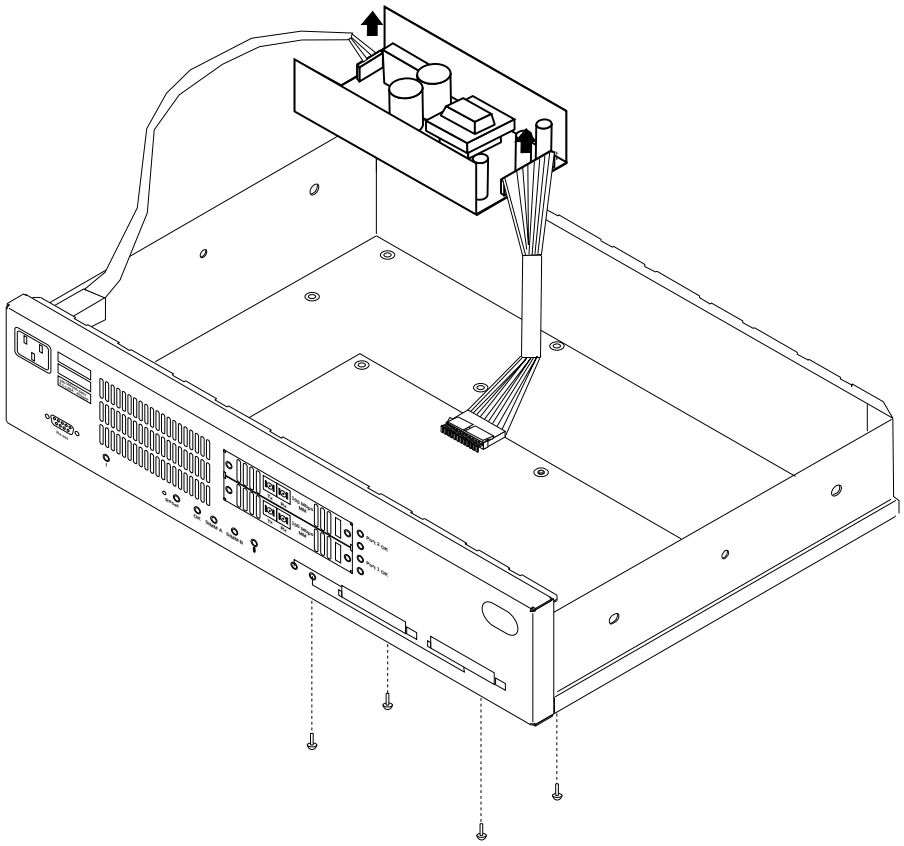


Figure 2-2. 8210 MSS Server Power Supply

1 With the top cover off, set the MSS Server on its edge where you can see the four screws that fasten the ac power supply in place (from the bottom side). See Figure 2-2.

2 Loosen and remove the four screws while supporting the ac power supply to avoid dropping it or otherwise damaging the unit.

3 Set the MSS Server down on the flat surface (bottom side down).

4 Disconnect the ac and dc power cable connectors from the ac power supply.

5 Carefully remove the ac power supply from the MSS Server.

6 Obtain the replacement ac power supply, place the MSS Server on its edge, and fasten the new ac power supply into position with the four screws. Reconnect the ac and dc power cable connections.

Where to Go Next

1 If your only task was to remove and replace the ac power supply, you are ready to reinstall the top cover and side brackets. Go to “Reinstalling the Top Cover” on page 2-6.

2 Reinstall the MSS Server into the rack with its cable bracket if it was rack-mounted, or place it in its position if it was table-mounted. Go to “Replacing the MSS Server” on page 2-4 and return here to continue.

3 Reattach the ATM cable and modem cable.

4 Connect the ac power cord to the MSS Server and then to the power source.

Removing the Cooling Fan

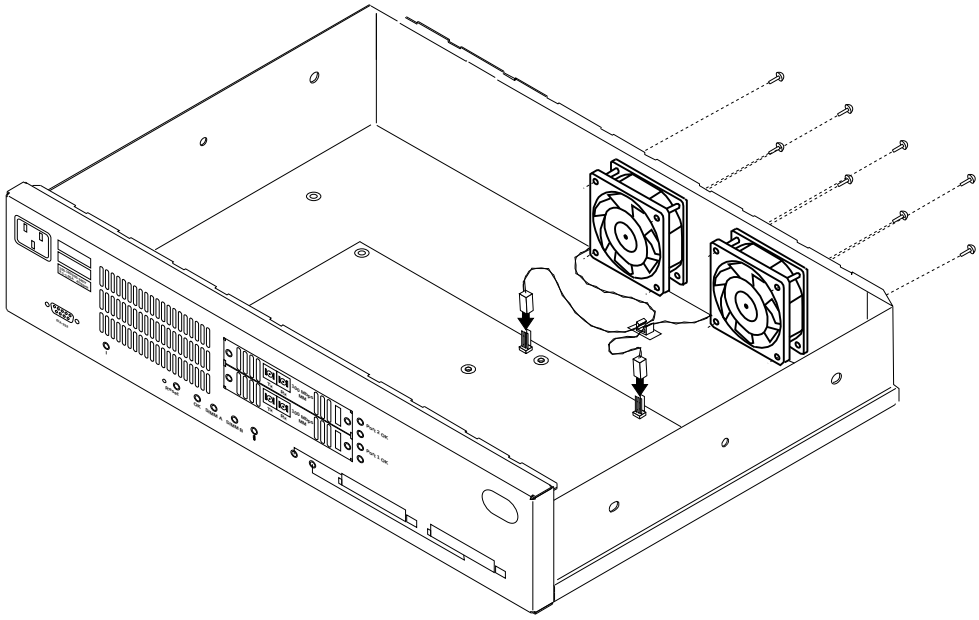


Figure 2-3. Fan Locations in the MSS Server

1 Using a 5/32-inch nut driver or a screwdriver, remove the four screws that hold the cooling fan assembly in place.

2 Disconnect the cable that connects the cooling fan to the processor logic card.

3 Ensure that the cable is free from the cable clamps in the bottom of the MSS Server.

4 Carefully remove the cooling fan from the MSS Server.

Where to Go Next

If your only task was to remove and reinstall the cooling fan, you are ready to go to “Replacing the Cooling Fan” on page 2-14.

Replacing the Cooling Fan

1. Using a 5/32-inch nut driver or a screwdriver, and holding the cooling fan assembly in place, reinstall the four screws that secure the cooling fan assembly in the MSS Server

2. Connect the cable that connects the cooling fan to the processor logic card.

3. Run the cable through the cable clamps in the bottom of the MSS Server.

4. If your only task was to remove and replace the cooling fan, you are ready to reinstall the top cover and side brackets. Go to “Reinstalling the Top Cover” on page 2-6, and then return here to continue.

5. Reinstall the MSS Server into the rack with its cable bracket if it was rack-mounted, or place it in its position if it was table-mounted. Go to “Replacing the MSS Server” on page 2-4 and return here to continue.

6. Reattach the ATM cable and PCMCIA modem cable.

7. Connect the ac power cord to the MSS Server and then to the power source.

Removing the Adapter from Port 2 (Top Slot)

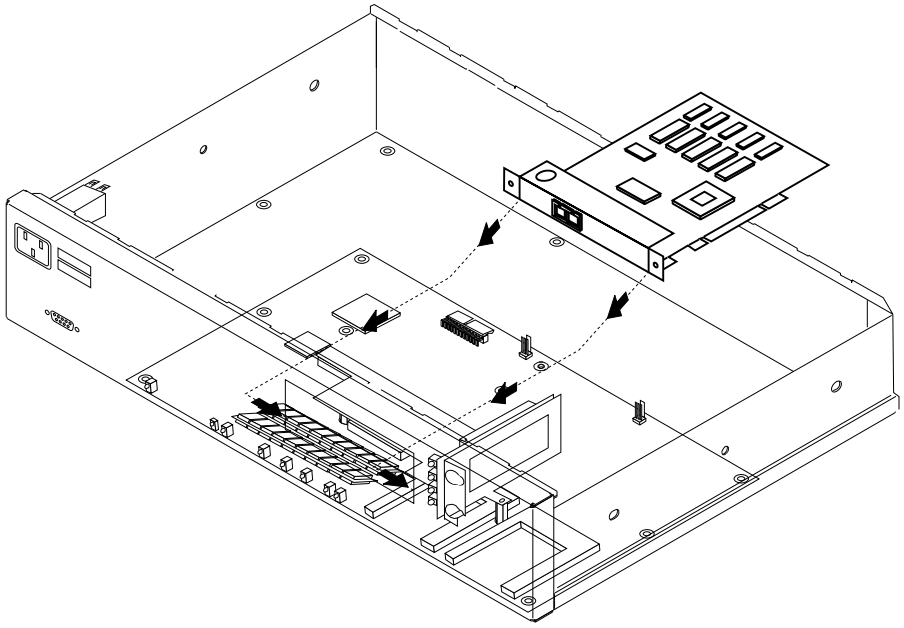


Figure 2-4. Adapter from Port 2

Note: FDDI and ATM adapters can be installed in Port 2 (top slot). This is the only slot in which FDDI adapters can be installed.

1 Using a T-20 Torx screwdriver, remove the two screws (front cover side) that hold the adapter in Port 2 (top slot).

2 Gently press the adapter face plate toward the back of the MSS Server while pulling the back corner of the printed circuit card (opposite the connector-side of the card) until the card connector clears its connector socket.

3 Holding the adapter by the front plate, remove it from the MSS Server.

Where to Go Next

If your only task was to remove and reinstall an adapter in Port 2, you are ready to go to “Replacing the Adapter in Port 2” on page 2-16.

Replacing the Adapter in Port 2

Note: FDDI and ATM adapters can be installed in Port 2 (top slot). This is the only slot in which FDDI adapters can be installed.

1 Obtain the new adapter for Port 2.

2 Remove the adapter, in its antistatic bag, from its shipping container.

Attention: Electrostatic discharge (ESD) can damage the static-sensitive devices on circuit boards. To avoid this kind of damage, use the following precautions:

- Do not remove the adapter from its antistatic bag until you are ready to insert it into the MSS Server.
- Use correct grounding techniques when inspecting and installing the adapter. Use a foot strap or grounding mat, or wear a grounded static-discharge wrist strap, or touch a grounded rack or other source of ground before you handle the adapter.

3 Remove the adapter from the antistatic bag. Inspect it for damage. Always handle the adapter by the faceplate; do not touch its components. If the adapter appears to be damaged, return it to the antistatic bag and contact the supplier.

4 Holding the adapter by the faceplate and by the back corner of the circuit card (opposite the connector side), guide the adapter faceplate into the slot. Move it forward until the connector is correctly aligned with the riser connector. Press firmly on the edge of the card (opposite the connector side) to correctly seat the adapter into the riser.

5 Reinstall the two T-20 Torx screws.

6 If your only task was to remove and reinstall the adapter in Port 2, you are ready to reinstall the top cover and side brackets. Go to “Reinstalling the Top Cover” on page 2-6 and return here to continue.

7 Reinstall the MSS Server into the rack with its cable bracket if it was rack-mounted, or place it in its position if it was table-mounted. Go to “Replacing the MSS Server” on page 2-4 and return here to continue.

8 Reattach the adapter and modem cables.

9 Connect the ac power cord to the MSS Server and then to the power source.

Removing the Adapter from Port 1 (Bottom Slot)

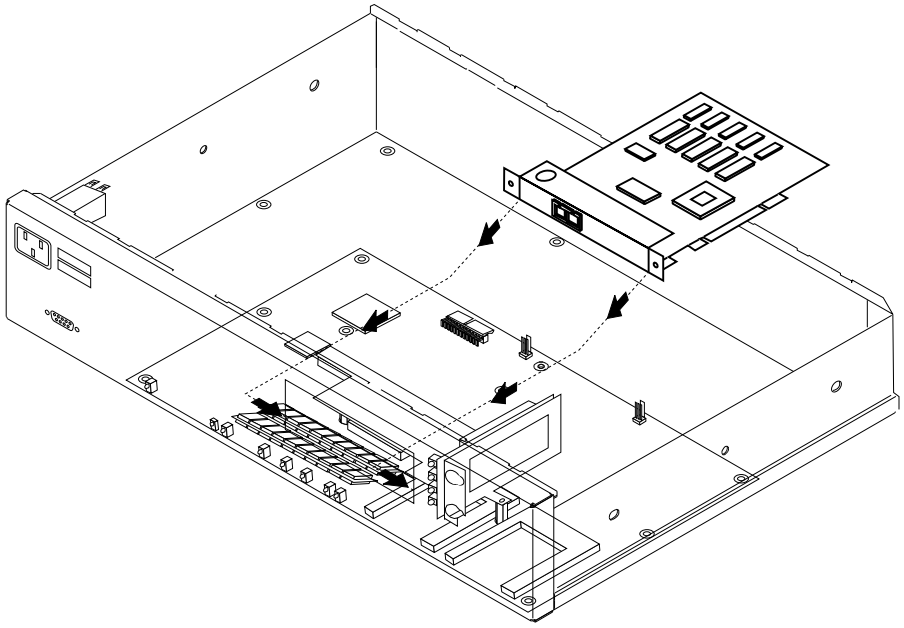


Figure 2-5. Adapter in Port 1

Note: Only ATM adapters can be installed in Port 1 (bottom slot).

To remove the adapter from Port 1 (bottom slot):

1. If your MSS Server has two adapters, you must remove the adapter from Port 2 (top slot) before you can gain access to the adapter in Port 1. If this is the case, follow the instructions in “Removing the Adapter from Port 2 (Top Slot)” on page 2-15 and return here to continue.

2. Using a T-20 Torx screwdriver, remove the two screws (front cover side) that hold the adapter in place.

3. Gently press the adapter faceplate toward the back of the MSS Server while pulling the back corner of the printed circuit card (opposite the connector-side of the card) until the card connector clears its riser connector socket.

4. Holding the adapter by the front plate, remove it from the MSS Server.

5. Obtain the new adapter for Port 1, and install it by following the steps outlined in “Replacing the Adapter in Port 1” on page 2-18.

Where to Go Next

If your only task was to remove and reinstall the adapter in Port 1, you are ready to go to “Replacing the Adapter in Port 1” on page 2-18.

Replacing the Adapter in Port 1

1 Obtain the new adapter for Port 1.

2 Remove the adapter, in its antistatic bag, from its shipping container.

Attention: Electrostatic discharge (ESD) can damage the static-sensitive devices on circuit boards. To avoid this kind of damage, use the following precautions:

- Do not remove the adapter from its antistatic bag until you are ready to insert it into the MSS Server.
- Use correct grounding techniques when inspecting and installing the adapter. Use a foot strap or grounding mat, or wear a grounded static-discharge wrist strap, or touch a grounded rack or other source of ground before you handle the adapter.

3 Remove the adapter from the antistatic bag. Inspect it for damage. Always handle the adapter by the faceplate; do not touch its components. If the adapter appears to be damaged, return it to the antistatic bag and contact the supplier.

4 Holding the adapter by the faceplate and by the back corner of the circuit card (opposite the connector side), guide the adapter faceplate into the slot. Move it forward until the connector is correctly aligned with the riser connector. Press firmly on the edge of the card (opposite the connector side) to correctly seat the adapter into the riser.

5 If you had an adapter in Port 2, reinstall the adapter in Port 2 as previously described.

6 Reinstall the two T-20 Torx screws.

7 If your only task was to remove and reinstall the adapter in Port 1, you are ready to reinstall the top cover and side brackets. Go to “Reinstalling the Top Cover” on page 2-6.

8 Reinstall the MSS Server into the rack with its cable bracket if it was rack-mounted, or place it in its position if it was table-mounted. Go to “Replacing the MSS Server” on page 2-4 and return here to continue.

9 Reattach the adapter cable and modem cable.

10 Connect the ac power cord to the MSS Server and then to the power source.

Removing the PCI Logic Card

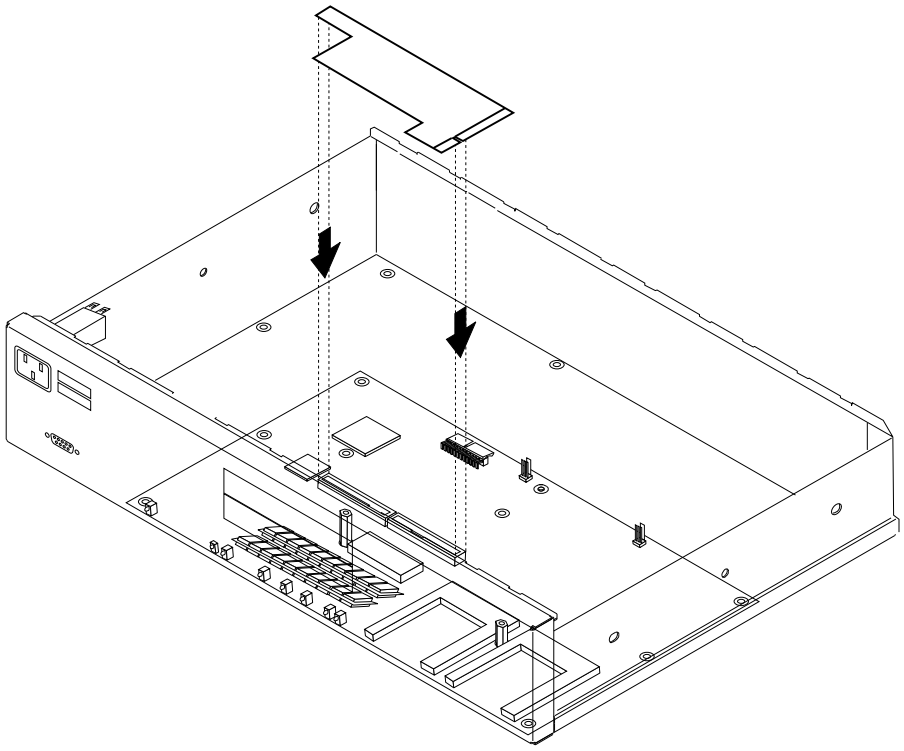


Figure 2-6. PCI Logic Card

| **1** Remove the ATM or FDDI adapter in Port 2. See “Removing the Adapter from Port 2 (Top Slot)” on page 2-15.

2 Remove the ATM adapter in Port 1. See “Removing the Adapter from Port 1 (Bottom Slot)” on page 2-17.

3 Using a 5/32-inch nut driver, remove the two screws fastening the PCI logic card and riser bracket.

| **4** Using a 7-mm nut driver, loosen the two screws that hold the riser bracket to the backside of the MSS Server faceplate.

| **5** Using a 5/32-inch nut driver, remove the screws fastening the PCI logic card and riser bracket.

| **6** Gently slide the riser bracket to the right to unseat it from the PCI logic card.

7 Gently lift the PCI logic card out of its connector socket on the processor logic card and remove it from its connector in the riser.

Where to Go Next

If your only task was to remove and reinstall the PCI logic card, you are ready to go to “Replacing the PCI Logic Card” on page 2-20.

Replacing the PCI Logic Card

1. Obtain the new PCI logic card.

2. Remove the PCI logic card, in its antistatic bag, from its shipping container.

   Attention: Electrostatic discharge (ESD) can damage the static-sensitive devices on circuit boards. To avoid this kind of damage, use the following precautions:

   - Do not remove the PCI logic card until you are ready to insert it into the MSS Server.
   - Use correct grounding techniques when inspecting and installing the PCI logic card. Use a foot strap or grounding mat, or wear a grounded static-discharge wrist strap, or touch a grounded rack or other source of ground before you handle the PCI logic card.

3. Remove the PCI logic card from the antistatic bag. Inspect it for damage. Always handle the PCI logic card by the edges (preferably grasp it between the middle finger and thumb; do not touch the components). If the PCI logic card appears to be damaged, return it to the antistatic bag and contact the supplier.

4. Grasping the PCI logic card between the middle finger and thumb, position its bottom connector over its processor logic card connector socket, and aligned with its riser connector.

5. Gently insert the PCI logic card into its connector socket in the riser and position it into its connector on the processor logic card. Correctly seat the PCI logic card into its connectors.

6. Align and reinstall the two 5/32-inch screws; one in the outer edge of the PCI logic card and the other in the riser metal bracket.

Where to Go Next

If your only task was to remove and replace the PCI logic card:

1. Replace the ATM adapter in Port 1 (see “Replacing the Adapter in Port 1” on page 2-18).

2. Replace the ATM or FDDI adapter in Port 2 (see “Replacing the Adapter in Port 2” on page 2-16). You are ready to reinstall the top cover and side brackets. Go to “Reinstalling the Top Cover” on page 2-6.

3. Reinstall the MSS Server into the rack with its cable bracket if it was rack-mounted, or place it in its position if it was table-mounted. Go to “Replacing the MSS Server” on page 2-4 and return here to continue.

4. Reattach the ATM cable and PCMCIA modem cable.

5. Connect the ac power cord to the MSS Server and then to the power source.

6 Reload your configuration.

Removing the Riser

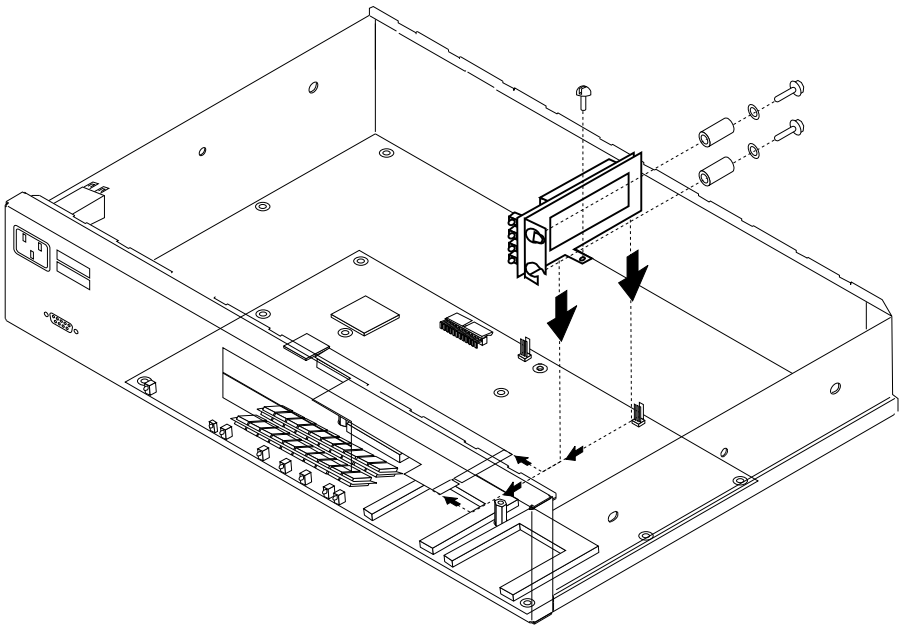


Figure 2-7. Riser

1 Using a 5/32-inch nut driver, remove the screws fastening the PCI logic card and riser bracket.

2 Using a 7-mm nut driver, remove the two screws and spacers that hold the riser bracket to the backside of the MSS Server faceplate.

3 Gently lift the PCI logic card out of its connector socket on the processor logic card and remove it from its connector in the riser. Place it on a grounded surface to avoid damage to the circuitry.

4 Move the riser bracket toward the back of the MSS Server until it clears the studs (back side of MSS Server faceplate).

Replacing the Riser

1. Obtain the new riser.
2. Handling it by its metal bracket, position it over the studs (back side of MSS Server faceplate).
3. Gently insert the PCI logic card into its connector socket in the riser and position it into its connector on the processor logic card. Correctly seat the PCI logic card connectors.
4. Align and reinstall the two 5/32-inch screws. Place the two spacers over the studs (backside of the MSS Server) and reinstall the two 7-mm screws.

Where to Go Next

If your only task was to remove and replace the riser:

1. Reinstall the adapters in ports 1 and 2. Follow the instructions in “Replacing the Adapter in Port 1” on page 2-18 and in “Replacing the Adapter in Port 2” on page 2-16 and then return here to continue.
2. You are ready to reinstall the top cover and side brackets. Follow the instructions in “Reinstalling the Top Cover” on page 2-6 and return here to continue.
3. Reinstall the MSS Server into the rack with its cable bracket if it was rack-mounted, or place it in its position if it was table-mounted. Go to “Replacing the MSS Server” on page 2-4 and return here to continue.
4. Reattach the ATM cable and modem cable.
5. Connect the ac power cord to the MSS Server and then to the power source.

Removing the Memory SIMMs

The MSS Server comes from the manufacturer with a minimum of 64 MB (two SIMMs). SIMM sockets are located directly below the ATM adapters (see Figure 2-8). SIMM sockets are accessible only after the two ATM adapters are removed.

This procedure can be used for removing faulty SIMM modules or to install memory upgrades to your MSS Server.

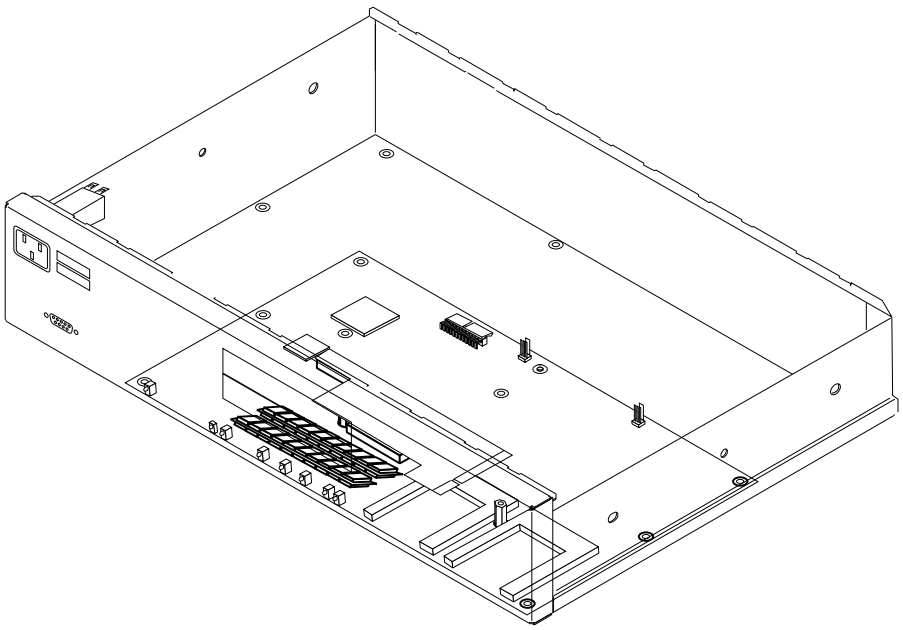


Figure 2-8. Memory (SIMM) Modules

1. Remove the ATM or FDDI adapter in Port 2. See “Removing the Adapter from Port 2 (Top Slot)” on page 2-15.
2. Remove the ATM adapter in Port 1. See “Removing the Adapter from Port 1 (Bottom Slot)” on page 2-17.
3. The SIMM sockets are exposed. SIMM-A is positioned closest the front of the MSS Server, and SIMM-B is positioned in the back.
4. Identify the faulty memory module. Spring latches at each end of the SIMM socket secure the memory module. Using your thumbnail or a small non-metallic device, gently move the spring latch away from the end of the SIMM while moving the SIMM card toward the back of the MSS Server.
5. When the SIMM card ends are free of the latches, lift the SIMM module up, out of its connector socket, and out of the MSS Server.

Where to Go Next

If your only task was to remove and replace the memory SIMM, you are ready to go to “Replacing the Memory SIMMs” on page 2-25.

Replacing the Memory SIMMs

1 Obtain the new memory SIMM.

2 Remove the memory SIMM, in its antistatic bag, from its shipping container.

Attention: Electrostatic discharge (ESD) can damage the static-sensitive devices on circuit boards. To avoid this kind of damage, use the following precautions:

- Do not remove the memory SIMM until you are ready to insert it into the MSS Server.
- Use correct grounding techniques when inspecting and installing the memory SIMM. Use a foot strap or grounding mat, or wear a grounded static-discharge wrist strap, or touch a grounded rack or other source of ground before you handle the memory SIMM.

3 Remove the memory SIMM from the antistatic bag. Inspect it for damage. Always handle the memory SIMM by the ends (preferably grasp it between the middle finger and thumb; do not touch the components). If the memory SIMM appears to be damaged, return it to the antistatic bag and contact the supplier.

4 Grasping the memory SIMM between the middle finger and thumb, place it connector edge down into the SIMM socket. Applying slight pressure to the top edge of the memory SIMM, move it forward until it is correctly aligned and snaps in place in the spring clips.

5 Replace the ATM adapter in Port 1 (see “Replacing the Adapter in Port 1” on page 2-18).

| **6** Replace the ATM or FDDI adapter in Port 2 (see “Replacing the Adapter in
| Port 2” on page 2-16).

7 If your only task was to remove and replace or initially install a memory SIMM, you are ready to reinstall the top cover and side brackets. Go to “Reinstalling the Top Cover” on page 2-6 and return here to continue.

8 Reinstall the MSS Server into the rack with its cable bracket if it was rack-mounted, or place it in its position if it was table-mounted. Go to “Replacing the MSS Server” on page 2-4.

9 Reattach the ATM cable and modem cable.

10 Connect the ac power cord to the MSS Server and then to the power source.

Removing the Processor Logic Card

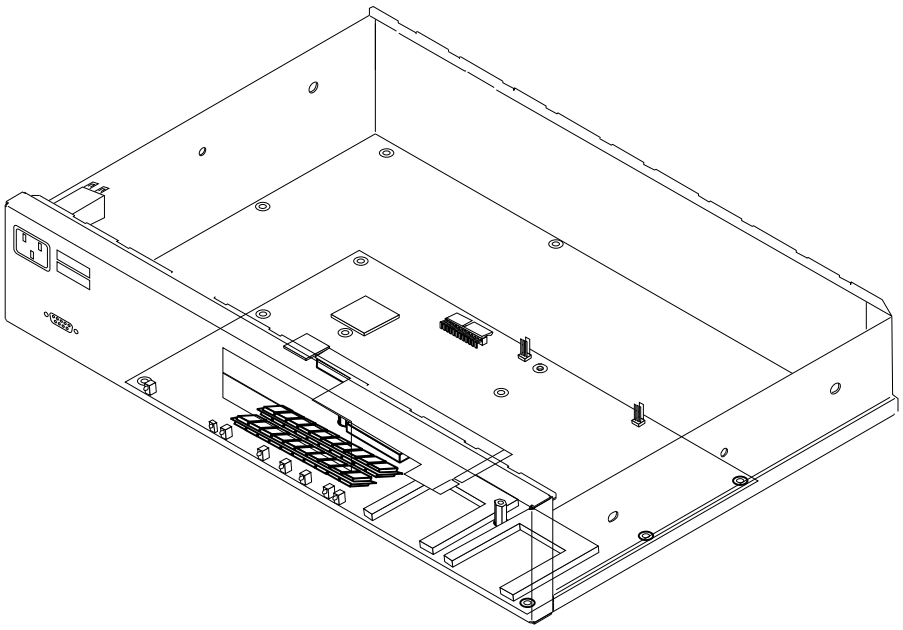


Figure 2-9. Processor Logic Card

1 Ensure that the PCMCIA hard drive and modem are removed and set safely aside.

2 If the ATM or FDDI adapter in Port 2 is reusable, remove it and set it safely aside for reinstallation. See “Removing the Adapter from Port 2 (Top Slot)” on page 2-15.

3 If the ATM adapter in Port 1 is reusable, remove it and set it safely aside for reinstallation. See “Removing the Adapter from Port 1 (Bottom Slot)” on page 2-17.

4 If the PCI logic card is reusable, remove it and set it safely aside for reinstallation (see “Removing the PCI Logic Card” on page 2-19).

5 If the riser is reusable, remove it and set it safely aside for reinstallation (see “Removing the Riser” on page 2-22).

6 If the memory SIMMs are reusable, remove them and set them safely aside for reinstallation (see “Removing the Memory SIMMs” on page 2-24).

7 Disconnect the cable connectors for the cooling fan, ac power supply, and the service port cable connector. Position them to prevent damaging them in the replacement procedure.

8 Using a 7-mm nut driver, loosen and remove the long and short standoffs that support the riser and PCI logic card. Set them safely aside for reuse in the replacement procedure.

9 Using a 5/32-inch nut driver, remove the screws that secure the processor logic card to the inside bottom of the MSS Server. Set them safely aside for reuse in the replacement procedure.

10 Remove the processor logic card.

11 Remove any unidentified items from the inside of the MSS Server chassis. Clean the bottom inside surface to remove dust and so forth.

Where to Go Next

If your only task was to remove and replace the processor logic card, you are ready to go to “Replacing the Processor Logic Card” on page 2-28.

Replacing the Processor Logic Card

1 Obtain the new processor logic card.

2 Remove the processor logic card, in its antistatic bag, from its shipping container.

Attention: Electrostatic discharge (ESD) can damage the static sensitive devices on circuit boards. To avoid this kind of damage, use the following precautions:

- Do not remove the processor logic card until you are ready to insert it into the MSS Server.
- Use correct grounding techniques when inspecting and installing the processor logic card. Use a foot strap or grounding mat, or wear a grounded static-discharge wrist strap, or touch a grounded rack or other source of ground before you handle the processor logic card.

3 Remove the processor logic card from the antistatic bag. Inspect it for damage. Always handle the processor logic card by the edges (preferably grasp it between the forefinger and thumb); do not touch the components. If the processor logic card appears to be damaged, return it to the antistatic bag and contact the supplier.

4 Ensure that the inside bottom of the MSS Server is clear and clean.

5 Correctly grasping the processor logic card, place it in the bottom of the MSS Server, aligning the hold-down screw holes, and ensuring the cable connectors are positioned to the rear of the MSS Server (toward the cooling fan and ac power supply).

6 Reinstall the long and short standoffs that support the riser and PCI logic card.

7 Reinstall the 5/32-inch screws that secure the processor logic card to the bottom of the chassis.

8 Replace the memory SIMMs (see “Replacing the Memory SIMMs” on page 2-25).

9 Replace the riser (see “Replacing the Riser” on page 2-23).

10 Replace the PCI logic card (see “Replacing the PCI Logic Card” on page 2-20).

11 Replace the ATM adapter in Port 1 (see “Replacing the Adapter in Port 1” on page 2-18).

12 Replace the ATM or FDDI adapter in Port 2 (see “Replacing the Adapter in Port 2” on page 2-16).

13 Reinstall the PCMCIA modem (see “Removing and Replacing the PCMCIA Modem” on page 2-10).

14 Reinstall the PCMCIA hard drive (see “Removing and Replacing the PCMCIA IDE Hard Drive” on page 2-10).

15 Using the firmware utility (“Viewing or Setting Vital Product Data” on page 4-14), reload the appropriate hardware VPD.

16 Reconnect the cable connectors for the cooling fan, power supply, and service port to the processor logic card.

Where to Go Next

1 If your only task was to remove and replace the processor logic card, you are ready to reinstall the top cover and side brackets. Go to “Reinstalling the Top Cover” on page 2-6 and return here to continue.

2 Reinstall the MSS Server into the rack with its cable bracket if it was rack-mounted, or place it in its position if it was table-mounted. Go to “Replacing the MSS Server” on page 2-4 and return here to continue.

3 Reattach the ATM cable and modem cable.

4 Connect the ac power cord to the MSS Server and then to the power source.

Formatting the Hard Drive

Notes:

1. This process will delete all existing code images, configuration files, and adapter diagnostics on your hard disk.
2. You can obtain the most recent firmware, operational code, and adapter diagnostics from our IBM Web pages. See “Latest Switch Driver Images” on page xiii.

Follow these steps to format the PCMCIA IDE hard drive:

1 First, restart the MSS Server in attended mode or enter **Ctrl C** or **F1** during the load sequence from a console. For more information about attended mode, refer to the *Multiprotocol Switched Services (MSS) Server Interface Configuration and Software User's Guide*.

2 Enter the supervisory password or the IBM service password. (The MSS Server is initially shipped with a supervisory password of **mss**.) The System Management Services menu appears.

3 Select **Utilities**.

4 Select **Prepare Hard Disk**, and then select **Yes** when the prompts appear that initiate the hard disk formatting process.

The process performs the following tasks:

- Reformats the hard disk
- Restarts the system
- Creates the CORE (dump) file
- Creates the necessary directory structure

Notes:

a. Do not interrupt this procedure. If you do, you will have to reinitiate the Prepare Hard Disk process.

b. Perform this procedure if one of the following situations applies:

   - Your hard drive is not a Version 1.1 or higher hard drive (see the label on the hard drive)
   - You have an unformatted hard drive
   - Your hard drive becomes corrupted

5 When the process has completed, select **Copy Remote Files** from the Utilities menu, and then download (via TFTP or XMODEM) a copy of the firmware to a file named PRECOVER.IMG.

6 Select **Copy Remote Files** from the Utilities menu, and then download (via TFTP or XMODEM) a copy of the adapter diagnostics to the c:\DIAGS directory.

7 Use change management on the Utilities menu to download the operation code images and associated config files to Banks A and B.

8 After you have successfully transferred the operational software, you must use change management on the Utilities menu to set the active bank and configuration file that you want to load from.

Chapter 3. Accessing the MSS Server

This chapter explains how to access the MSS Server using a workstation.

Methods of Connecting

You have four methods of connecting to the MSS Server:

- Using a teletype (TTY) connection
- Using a serial line IP (SLIP) connection
- Using an Ethernet connection
- Using the ATM network

TTY, SLIP, and Ethernet are considered *out-of-band* connections. Out-of-band connectivity is usually employed when the ATM network is not operational, or the MSS Server has not been configured yet. Therefore, if you are performing an initial (quick) configuration, you should use an out-of-band method (usually TTY).

The connection via the ATM network is *in-band*. In-band connectivity requires IP connectivity over the MSS Server's ATM network attachment. To enable in-band IP connectivity, you must configure one of the following on your workstation:

- LIS client or server (for Classical IP)
- LE client to which an IP address has been assigned (for LAN emulation)
- IP host services

The in-band and out-band connectivity will be detailed in the following sections.

Teletype (TTY) Connection

For this method you have three alternatives:

- A local connection through a null modem cable attached to the EIA 232 service port (see Figure 3-1 on page 3-2)
- A remote connection through a modem attached to the EIA 232 service port
- A remote connection through the PCMCIA modem, the Voice/Data/Fax PCMCIA Modem, or the Data/Fax PCMCIA Modem (see Figure 3-2 on page 3-2).

You can set up both remote and local connections, but only one connection can be active at any given time. For example, if a workstation is connected locally to the EIA 232 service port and a call comes in over the Voice/Data/Fax PCMCIA Modem or the Data/Fax PCMCIA Modem, priority is given to the call. After the call, the workstation will have to log back into the MSS Server.

Either connection, local or remote, must be made using communications software that enables terminal emulation and file transfer. You can continue to use local or remote access to the MSS Server after it has been configured.

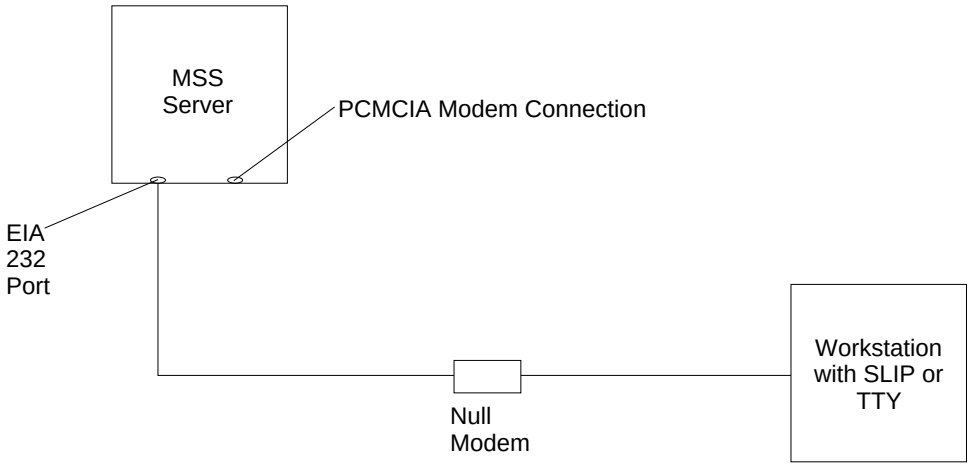


Figure 3-1. Local Serial Connection to the EIA 232 Port

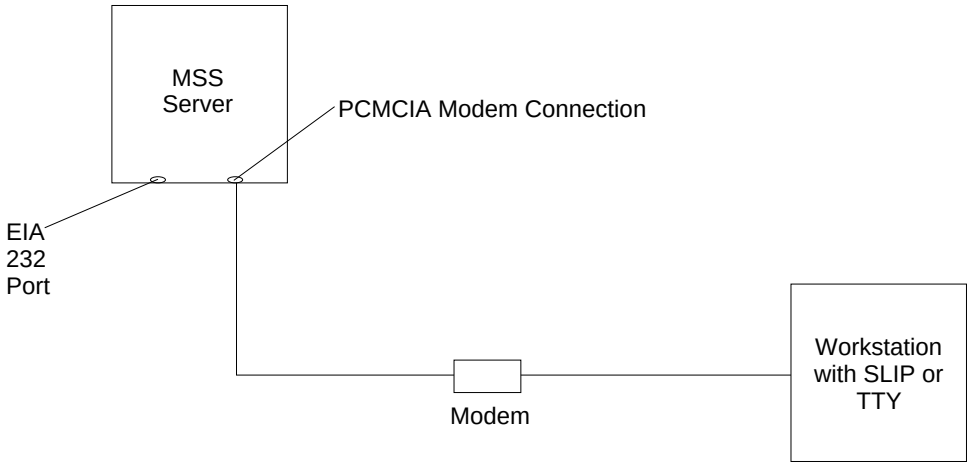


Figure 3-2. Remote Serial Connection to the PCMCIA Modem (Voice/Data/Fax PCMCIA Modem or Data/Fax PCMCIA Modem)

Local and Remote Console Access

When accessing the MSS Server locally on a null modem cable attached to the EIA 232 service port or remotely through the PCMCIA modem, use VT100 terminal emulation. Because VT100 does not define function keys above F4, edit the keyboard mapping for your terminal emulation as follows: For key definition F6, enter the mapping (ESC)OU. For key definition F9, enter the mapping (ESC)(Left square bracket)009q.

Note: (ESC) represents the carat symbol followed by the left square bracket.

Default Settings for Serial Port

These are the default settings for the serial port:

Speed 19.2 Kbps
Parity None
Data Bits 8
Stop Bits 1

Once the MSS Server operational code has loaded, the line speed for the serial port is automatically set to 19.2 Kbps.

Default Settings for PCMCIA Modem

The PCMCIA modem is a 28.8 Kbps V.32 bis modem. It is set up with a default speed of auto detect.

These are the default settings for PCMCIA modem:

Speed Auto detect
Parity None
Data Bits 8
Stop Bits 1

SLIP Connection

Over the local or remote connection described on page 3-1, you can choose to use the SLIP protocol instead of the TTY connection. Using SLIP requires TCP/IP on the workstation that connects to the MSS Server.

To configure SLIP, use these addresses:

The default SLIP address of MSS Server
10.1.1.2

The default IP address of the workstation
10.1.1.3

For instructions about installing SLIP, refer to the documentation for your version of TCP/IP.

Note: A PING done on the PCMCIA modem may take up to 2 minutes.

Ethernet Connection

Through a 10BASE-T Ethernet cable attached to the Ethernet service port, you can use Telnet (see Figure 3-3). Using Telnet requires TCP/IP on the workstation that connects to the MSS Server.

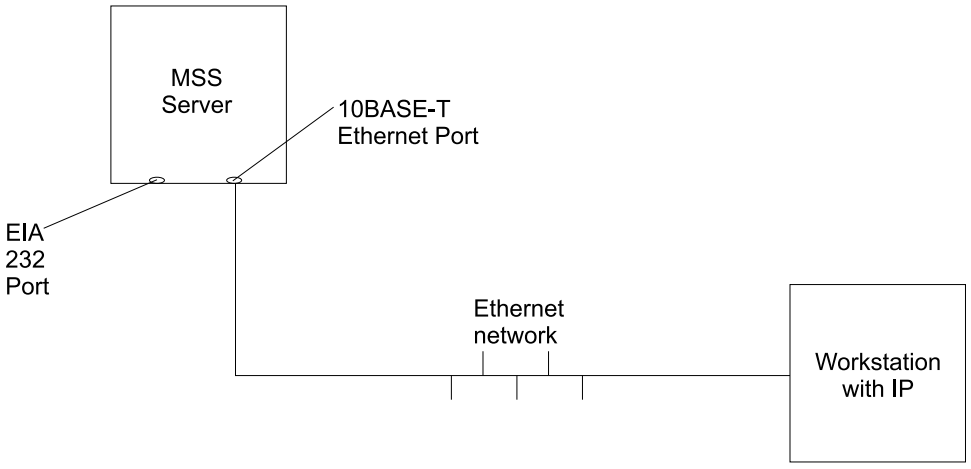


Figure 3-3. Connection Using IP through the Ethernet Port

To use Telnet over the Ethernet connection, use these addresses:

The default IP address of the MSS Server
10.1.2.2

The default IP address of the workstation and gateway
10.1.2.3

The default subnet mask of the MSS Server
255.255.255.0

For instructions about using Telnet over Ethernet, refer to the documentation for your version of TCP/IP.

ATM Network Connection

Figure 3-4 shows an *in-band* connection over the ATM network.

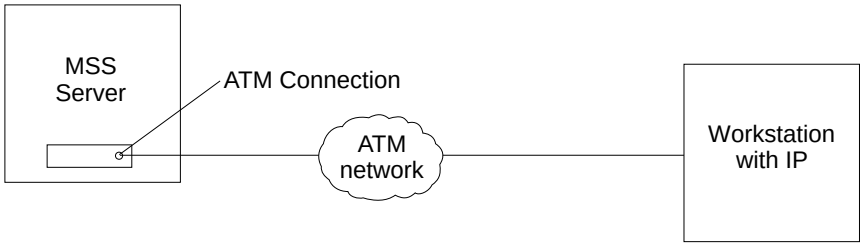


Figure 3-4. Connection Using IP Over the ATM Network (shown with the 8210). The 8210 or the module must be operational in the network to use this connection.

You can access the MSS Server via the ATM network only after it has been configured or by using the default configuration (see the *Installation and Initial Configuration Guide* for more information about the default configuration and its limitations). Therefore, for an initial (quick) configuration, you usually use one of the three connection methods described in the previous three sections.

After you have completed the initial configuration, you have to reload the MSS Server to activate the configuration. After this reload, the MSS Server is operational in the network, and you can access it via a LAN emulation or a Classical IP client.

Managing the Operational and Configuration Software

The MSS Server comes from the factory with its operational software loaded. However, if the operational software needs an upgrade or replacement, you have to reload it. Binary configuration files can be created by using the Configuration Program. These files can be uploaded to the MSS Server to reconfigure it. Binary configuration files also can be created at the MSS Server by using the command line interface or the Web browser.

MSS Server Software and Configuration Change Management

The MSS Server is capable of storing three copies of its operational software, two copies on the hard drive and one copy on the flash memory. (For the A-MSS Server Module, the flash memory is located on the optional flash drive.) The MSS Server can store four copies of configuration information for each copy of the operational software. You can store files in the MSS Server without interrupting its operation. Changes are subsequently activated in one of the following ways: immediately, after a timed interval, or at the next restart.

Should the MSS Server fail when a new version of the operational software is activated, one of the backup versions can be restored.

You use the command line interface for operational code change management operations and TFTP to transfer files.

You can use the System Management Services for change management operations and TFTP or Xmodem to transfer files from the operational code console.

File Transfer

You can transfer operational code files using TFTP. The MSS Server is designed so that it can get files from another device, but another device cannot put files in it. To get a file, Telnet into the MSS Server and use the TFTP get command to bring the file from the server into the MSS Server.

The MSS Server is not designed to receive files that are put from another device. This design prevents another device from putting inappropriate or harmful software in the MSS Server.

Chapter 4. Using MSS Server Firmware

The MSS Server contains firmware that tests the hardware each time the MSS Server is powered on. If the MSS Server has not loaded its operational code, the firmware should be running.

One of the functions is to perform hardware checking after a power-on, and decide which version of the operational code will be loaded. It also allows you to change some of the hardware-related parameters, and manage the operational code and your configuration files.

The System Management Services menu appears when the MSS Server is set up to boot up in "Attended Mode."

Important:

1. You can also access the firmware by stopping the boot process. To do this, you must have a TTY console directly attached to the EIA 232 service serial port. When the MSS Server starts its boot process, press and hold **Ctrl-C** or **F1** at the terminal keyboard.
2. If the firmware panels do not appear after you complete the above step:
   a. Be sure that your workstation is connected to the EIA 232 service serial port on the MSS Server.
   b. Reset or power down and power up the MSS Server.
3. You can use the up and down arrow (↓) keys or the Tab key to move around the firmware panels.

Attended Mode

When the MSS Server is configured to come up in attended mode, you have access to the Firmware System Management Services.

Connection in attended mode is via a TTY connection. You can transfer files using the Xmodem protocol for TTY or TFTP for IP connections.

In attended mode, you can start booting the MSS Server by pressing **F9** or by pressing **Ctrl**+**A**, then **9**, and then **Enter** to start the operating system. The system will prompt you to enter the supervisory password.

Unattended Mode

This is the normal mode for the MSS Server. (A password is not required to boot up in unattended mode.)

Starting MSS Server Firmware

You can begin using the information in this chapter after you have prepared your service terminal (as described in Chapter 3, “Accessing the MSS Server”) and have established connection with the MSS Server.

From the Main Menu panel (as shown in Figure 4-1), you can select one of four services. The following sections explain these services and provide instructions for going through the associated panels:

- “Managing the Configuration” on page 4-3
- “Selecting the Boot Sequence” on page 4-4
- “Selecting a Device To Test” on page 4-5
- “Using the Utilities” on page 4-7

```
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                            System Management Services


Select one:
  1. Manage Configuration
  2. Boot Sequence Selection
  3. Select Device to Test
  4. Utilities









 Enter    -   Esc=Quit    -   F1=Help    -   F3=Reboot  -   F9=Start OS -
-----------  --------------  -------------  -------------  --------------
```

Figure 4-1. Main Menu Panel

The Function Keys

As seen in Figure 4-1, various function keys appear at bottom of the panels. These keys are common among the MSS Server Firmware panels. On other panels the functions keys are stacked at the right of the panel. Use the F1 Help key to get descriptions for the function keys associated with the MSS Server Firmware.

Obtaining Help

Online helps are available for panels whenever the F1 key appears at the lower portion of the panel. Pressing F1 presents a pop-up help window with information relating to the currently active panel.

Managing the Configuration

Managing the configuration involves defining and modifying some configuration values. You can change the operational parameters for the EIA 232 service serial port and the PCMCIA modem by pressing the F6 Modify key.

Note: Although you can modify the speed, parity, data bits, and so on, of either the EIA 232 service serial port or the PCMCIA modem, it is recommended that you modify only the PCMCIA modem and not the EIA 232 service serial port.

1 Select **1. Manage Configuration** from the main menu as shown in Figure 4-1 on page 4-2.

2 The System Configuration Information panel appears as shown in Figure 4-2.

Note: Only the fields under Serial Ports can be changed (modified). To change the specifications for a port, move the cursor to the field, press **F6**, and type in the new value.

Use the down arrow (↓) key to scroll to the next panel.

3 Press **Enter** to make the change effective.

4 To display serial ports, press **F6** after selecting the processor type.

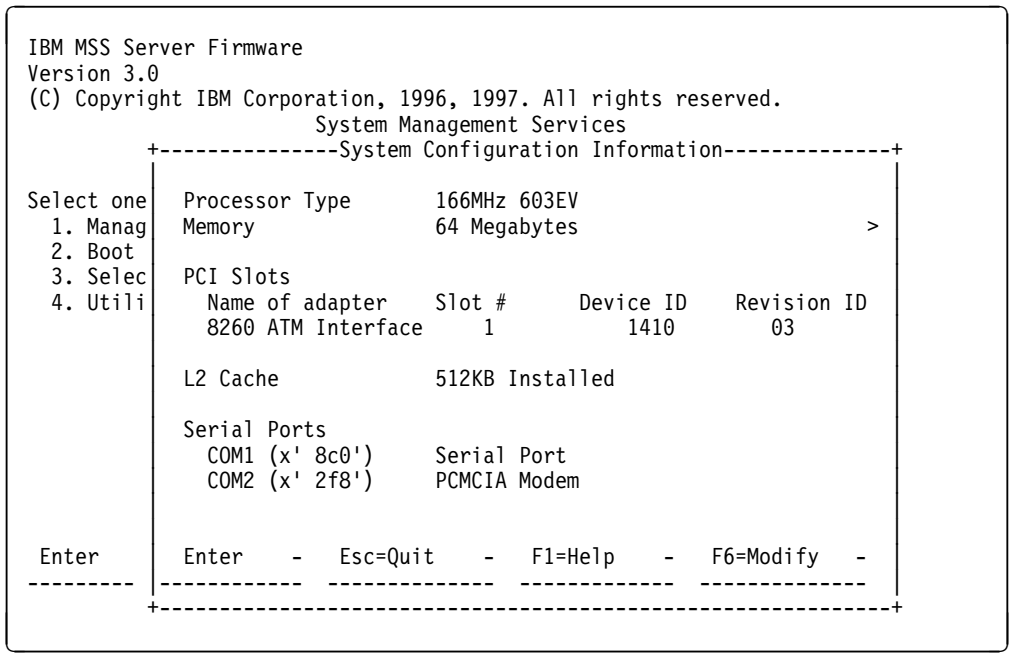

Figure 4-2. System Configuration Information

Selecting the Boot Sequence

This function enables you to select a sequence for the various boot devices, display the current boot device settings, restore the default setting, and boot from other boot devices.

Attention: It is not recommended that you use this function. Use the Change Management option under the Utilities menu instead. See Appendix D, “Managing Operational Code and Configuration Files” for more information about change management.

Selecting a Device To Test

The firmware performs hardware tests when the MSS Server boots up. But there may be times when you have removed and replaced a failing part and you want to run an individual test before a full boot up or reset. The firmware allows you to run these individual tests:

- Test All Subsystems: This test runs all the subsystem tests that are listed on this panel.

  Note: This list is a variable list and the entries are based on diagnostic files.

- Test Memory: This test searches all available memory regions, tests the regions, and presents a consolidated list of test results.
- Test System Board: This tests the PowerPC CPU, the System Board interrupts, the PCMCIA controller, the system board temperature sensor and its interrupt mechanism, and turns the LEDs on and off (you must visually confirm that the LEDs are indeed on or off).
- Test 8260 Mailbox: This tests the Mailbox communications interface with the 8260 or 8265.
- Test IDE Devices: This tests the IDE hard drive devices:
  - Device self test
  - Read/Seek test
  - Buffer test

  It also allows low-level formatting of the hard drive.

  Note: Perform low-level formatting only under the guidance of service support personnel.
- ATM Interface to Hub: This tests the ATM subsystem in the A-MSS Server Module.
- 155-Mbps ATM Adapter: This tests the ATM adapter and allows the testing of the physical interface in the 8210 when used with an optical wrap plug.
- FDDI Adapter: This tests the FDDI adapter in the 8210.

1 Select **3. Select Device to Test** from the main menu.

2 The Select Device to Test panel appears (Figure 4-3 on page 4-6).

Note: The Select Device to Test panel is created dynamically, depending on what diagnostics have been loaded. What items appear depend on whether you have an 8210 or an A-MSS Server Module.

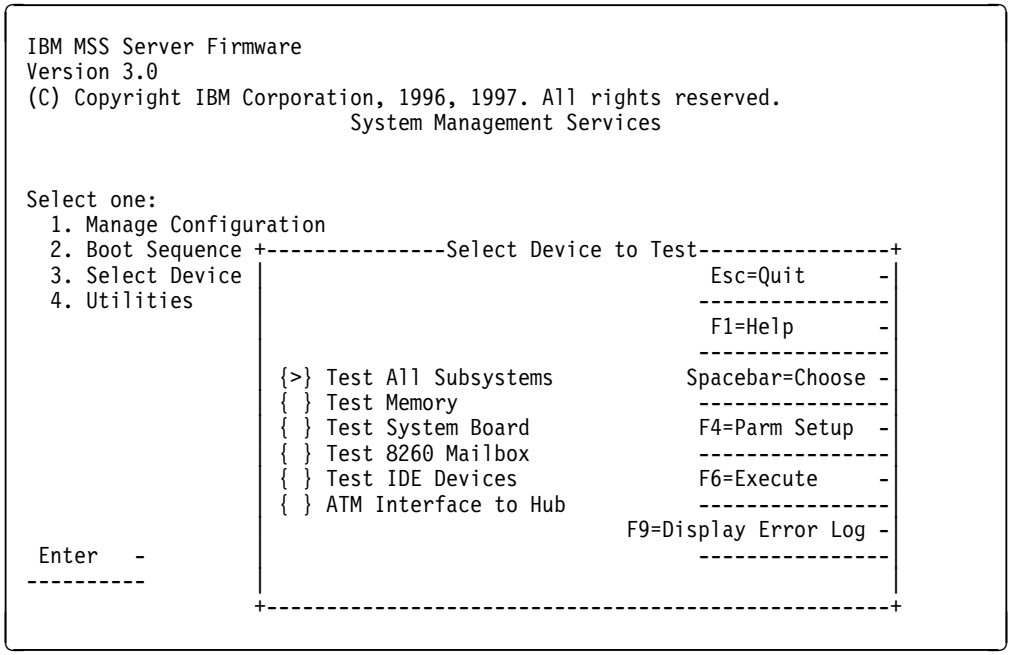

Figure 4-3. Test Selection Panel

3 Use the spacebar and up arrow and down arrow keys to select the test that you want to run.

4 Move the cursor to a selection and press **F4** to define additional test parameters.

Note: Errors encountered during diagnostics are logged in the hardware error log.

5 The Test Parameters panel appears. From this panel you can select:

- Run Interactive Test
- Run Wrap Tests
- Stop On Error
- Loop Tests
- Loop Count

Press **Esc** to return to the Select Device Test panel.

6 Press **F6** to start a test.

7 After the test is complete, press **Esc** to return to the main menu panel.

Using the Utilities

To use the utilities:

1 Select **4. Utilities** from the main menu.

2 A panel listing the available utilities appears (Figure 4-4).

```
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                            System Management Services


Select one:
  1. Set Supervisory Password
  2. Enable Unattended Start Mode
  3. Disable Unattended Start Mode
  4. Remove Supervisory Password
  5. Update System Firmware
  6. Display Event / Error Log
  7. View or Set Vital Product Data
  8. Copy Remote Files
  9. Remote Initial Program Load Setup
 10. Manipulate Dead Man Timer
 11. Verify Hard Disk Format
 12. Change Management
 13. Prepare Hard Disk

 Enter    -   Esc=Quit    -   F1=Help    -
-----------  --------------  -------------
```

Figure 4-4. Utilities Selection Panel

3 Make your selection. Additional panels appear to prompt you for additional information, and messages appear to indicate that the task is completed.

Setting the Supervisory Password

If a password is set and the MSS Server is configured to come up in unattended mode, you must enter the password before you can access the firmware System Management Services. The MSS Server is initially shipped with a password of **mss**. This utility allows you to set and change the password.

Note: You can perform this function only if you do it immediately after you perform a power-on reset.

1 Select **1. Set Supervisory Password** from the utilities panel. The Set Supervisory Password panel appears (Figure 4-5).

2 Type your new password and press **Enter**. The system prompts you to enter your new password again.

Note: The supervisory password can consist of from 1 to 8 characters with no restrictions on which characters can be used.

```
IBM MSS Server Firmware
Version 3.0
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                          System Management Services


Select one:
  1. Set Supervisor+--------Set Supervisory Password----------+
  2. Enable Unatten|                                          |
  3. Disable Unatte|  Type your new password, and then        |
  4. Remove Supervi|    press Enter.                          |
  5. Update System |                                          |
  6. Display Event |                                          |
  7. View or Set Vi|   Enter  -   Esc=Quit  -   F1=Help  -    |
  8. Copy Remote Fi|  ---------  ------------  -----------    |
  9. Remote Initial+--------------------------------------------+
 10. Manipulate Dead Man Timer
 11. Verify Hard Disk Format
 12. Change Management
 13. Prepare Hard Disk

 Enter    -   Esc=Quit    -   F1=Help    -
-----------  --------------  -------------
```

Figure 4-5. Set Supervisory Password Panel

3 Type the password again and press **Enter**.

4 The Password Saved panel appears with the message that your supervisory password has been saved.

Enabling Unattended Start Mode

The default is that the unattended start mode is enabled, which causes the MSS Server to load operational code automatically.

Note: You can perform this function only if you do it immediately after you perform a power-on reset.

1 Select **2. Enable Unattended Start Mode** from the utilities panel.

2 The Unattended Start Mode Changed panel appears (Figure 4-6).

```
IBM MSS Server Firmware
Version 3.0
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                            System Management Services


Select one:
  1. Set Supervisory Password
  2. Enable Unatten+------Unattended Start Mode Changed-------+
  3. Disable Unatte|                                           |
  4. Remove Supervi|    Unattended Start mode has been         |
  5. Update System |    enabled.                               |
  6. Display Event |                                           |
  7. View or Set Vi|                                           |
  8. Copy Remote Fi|                                           |
  9. Remove Initial+-------------------------------------------+
 10. Manipulate Dead Man Timer
 11. Verify Hard Disk Format
 12. Change Management
 13. Prepare Hard Disk


 Enter    -   Esc=Quit    -   F1=Help    -
-----------  --------------  -------------
```

Figure 4-6. Unattended Start Mode Changed (Enabled) Panel

Note: Once unattended start mode has been enabled, you can enter the firmware by pressing and holding **Ctrl-C** or pressing **F1** at the terminal keyboard when the boot process begins.

Disabling Unattended Start Mode

The default for the MSS Server firmware is that the unattended start mode is enabled. You disable Unattended Start Mode using this utility.

Note: You can perform this function only if you do it immediately after you perform a power-on reset.

1 Select **3. Disable Unattended Start Mode** from the utilities panel.

2 The Unattended Start Mode Changed panel appears (Figure 4-7).

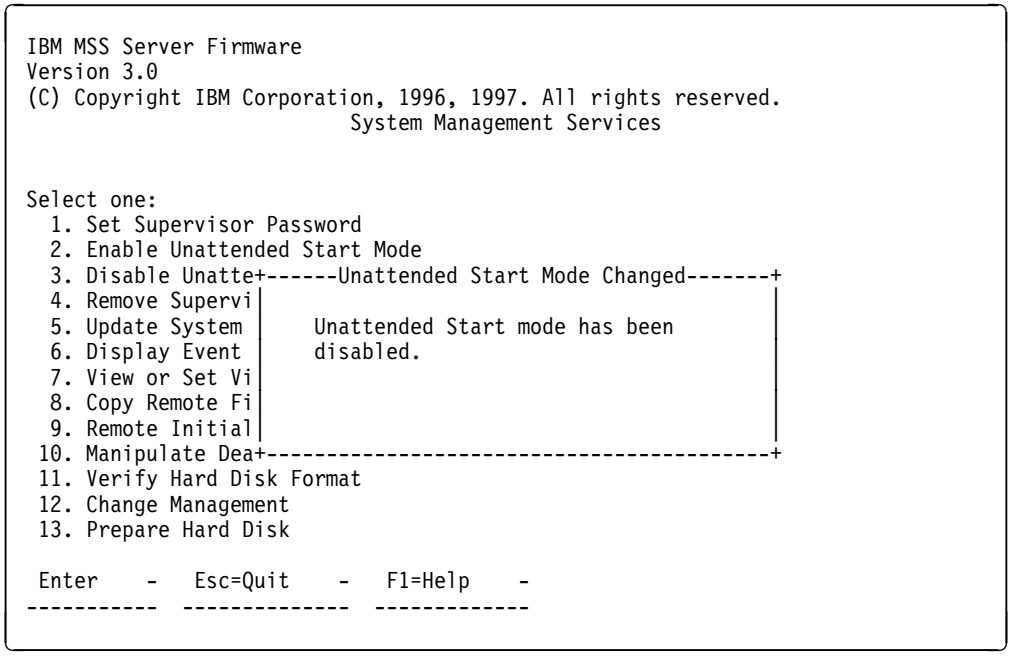

Figure 4-7. Unattended Start Mode Changed (Disabled) Panel

Removing Supervisory Password

The use of a supervisory password allows you a degree of security by preventing unauthorized access to the MSS Server. Removing the enforcement of a password, however, could be a convenience while servicing the MSS Server.

Note: You can perform this function only if you do it immediately after you perform a power-on reset.

1 Select **4. Remove Supervisory Password** from the utilities panel.

2 The Remove Supervisory Password panel appears (Figure 4-8).

```
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                          System Management Services


Select one:
  1. Set Supervisory Password
  2. Enable Unattended Start Mode
  3. Disable Unatte+-------Remove Supervisory Password--------+
  4. Remove Supervi|                                           |
  5. Update System | Do you want to remove the                 |
  6. Display Event | Supervisory password?                     |
  7. View or Set Vi|                                           |
  8. Copy Remote Fi|  Yes (Y)  -    No (N)  -                  |
  9. Remote Initial| -----------  -----------                  |
 10. Manipulate Dea+-------------------------------------------+
 11. Verify Hard Disk Format
 12. Change Management
 13. Prepare Hard Disk

 Enter    -   Esc=Quit    -   F1=Help    -
-----------  --------------  -------------
```

Figure 4-8. Remove Supervisory Password Panel

3 Type **Y** if you want to remove the supervisory password.

4 The Password Removed panel appears. This panel informs you that the supervisory password has been removed.

Updating System Firmware

Use this utility to update the MSS Server firmware.

Attention: Do not power off or reset the MSS Server during the process of updating the firmware. If the update fails, the MSS Server will boot a backup firmware image. If this happens, repeat the update procedure to reload the onboard firmware image.

1 Select **5. Update System Firmware** from the utilities panel.

2 The System Firmware Update panel appears (Figure 4-9).

```
IBM MSS Server Firmware
Version 3.0
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                           System Management Services


Select one:
  1. Set Supervisory Password
  2. Enable Unattended Start Mode
  3. Disable Unattended Start Mode
  4. Remove Supervisory Password
  5. Update System +----------F/W Update Options--------------+
  6. Display Event |                                           |
  7. View or Set Vi| 1. TFTP a Remote Image File               |
  8. Copy Remote Fi| 2. XMODEM a Remote Image File             |
  9. Remote Initial| 3. Use a Local Image File                 |
 10. Manipulate Dea|                                           |
 11. Verify Hard Di|  Enter -  Esc=Quit -   F-1=Help           |
 12. Change Managem| -------   ---------    ------------------|
 13. Prepare Hard D+-------------------------------------------+

 Enter    -   Esc=Quit    -   F1=Help    -
-----------  --------------  -------------
```

Figure 4-9. Update System Firmware Panel

3 Select the option that you want to use from those listed. For TFTP, the system prompts you for the local (the “to”) and the remote (the “from”) file name that you want to use and the name of the server that can be reached by the MSS Server. It also prompts you to create a recovery image and a file name from which to update the firmware.

For Xmodem, the system prompts you for the received file name and tells you when to begin the transfer.

The firmware update process begins. It informs you that the system firmware has been updated.

Displaying the Event / Error Log

See Appendix A, “Hardware Error Codes” to interpret the data that appears in the Error Code field.

1 Select **6. Display Event / Error Log** from the utilities panel.

2 The Event / Error Log panel appears (Figure 4-10). See Appendix A, “Hardware Error Codes” for an explanation of the data that appears in the Error Codes field.

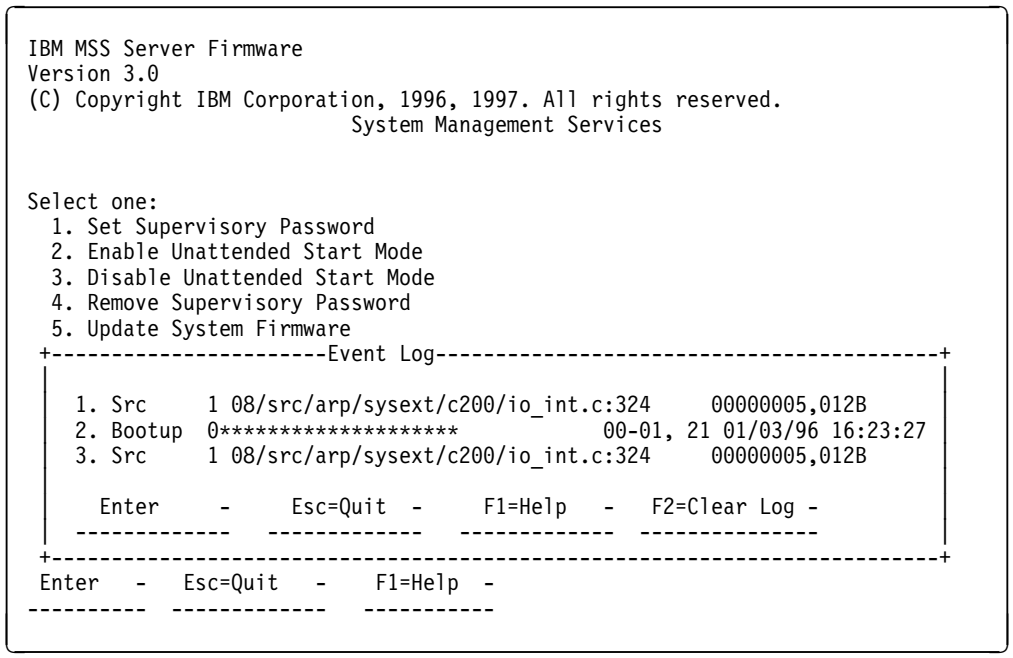


Figure 4-10. Event / Error Log Panel

3 If the log is too large to appear on one panel, you can move through the log by using the up and down arrow keys or the PgUp/PgDn keys. Press **F2** to clear the log.

Viewing or Setting Vital Product Data

This utility allows you to view or change vital product data (VPD) for the MSS Server.

1 If you want to view the VPD, go to step 4. If you want to change the VPD, continue with step 2.

Note: Only qualified service personnel should attempt to change the VPD.

2 Create a flat (ASCII) text file with a complete list of all VPD keywords. Make sure that you list *all* keywords, not just those that you want to change, because the ASCII file completely overwrites the existing list of keywords.

3 Transfer the ASCII file to the MSS Server by using the Copy Remote Files utility (see "Copying Remote Files" on page 4-16), which allows you to use either TFTP or Xmodem.

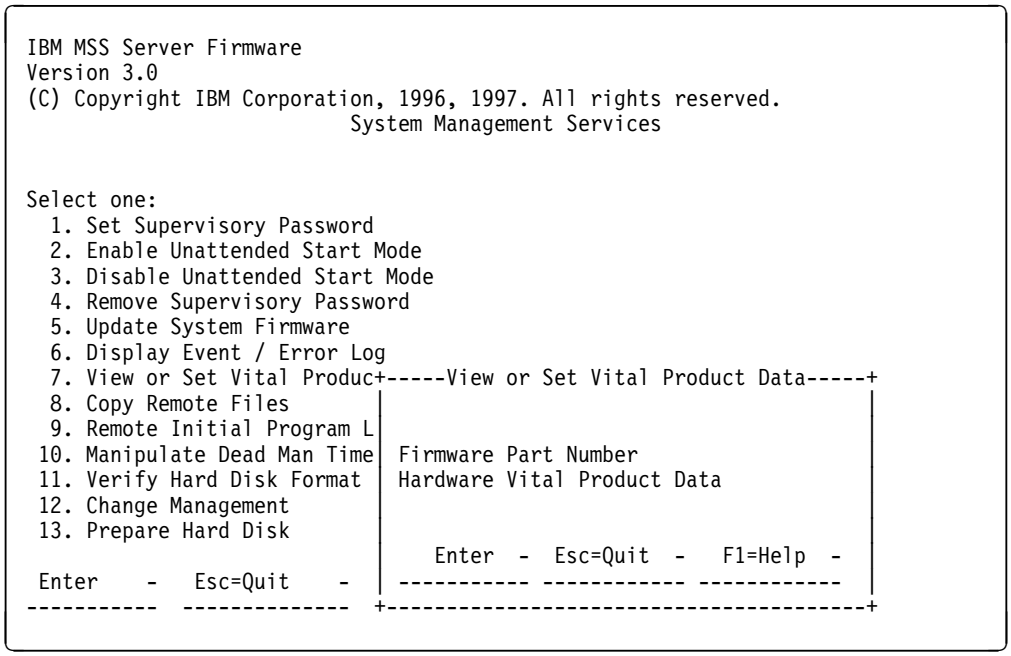


Figure 4-11. View or Set Vital Product Data Panel

4 Select **7. View or Set Vital Product Data** from the utilities panel.

5 The View or Set Vital Product Data panel appears (Figure 4-11). From this panel you can select the type of vital product data you want to view or set. You can modify only the Hardware Vital Product Data field; the Firmware Part Number is viewable only.

6 For each selection, a View or Set Part Number panel appears that contains the part number you selected. Version number and dates are provided for the firmware and System Management Services.

7 Select **Hardware Vital Product Data** if you want to view or change vital product data. VPD is stored in keyword format. The following is a list of the

keywords and their meanings. Depending on the configuration of your system, all of the keywords listed may not be present or have meaningful values. Vital product data fields are:

AT - Main logic card type
DS - Text description of card
FN - FRU number
PN - Manufacturing part number
ML - Maintenance level
MF - Manufacturing location
SN - Serial number
BF - Boot flash level and ID
NA - Burned in MAC Address in ASCII Format
ZB - Burned in MAC Address in Hex Canonical Format
TM - Machine type and model
F# - Feature Number
BS - Box serial number
RC - Recycle count
Z0 - Vendor ID

8 If you are viewing the VPD, press **Esc** when you are through. If you want to change the VPD, continue with step 9.

9 Press **F2**. A list of valid VPD files appears.

10 Select the appropriate file and press **Enter** to update it.

11 If you wish to view the new VPD, repeat steps 4 through 8.

Copying Remote Files

This utility allows you to copy remote files from another machine into the hard file. There are two methods of file transfer, TFTP from a server using the Ethernet port, or Xmodem over the active serial port.

1 Select **8. Copy Remote Files** from the utilities panel.

2 The Copy Remote Files panel appears (Figure 4-11 on page 4-14). From this panel you select the method of file transfer. Subsequent panels allow you to enter the names of the files that you want to copy.

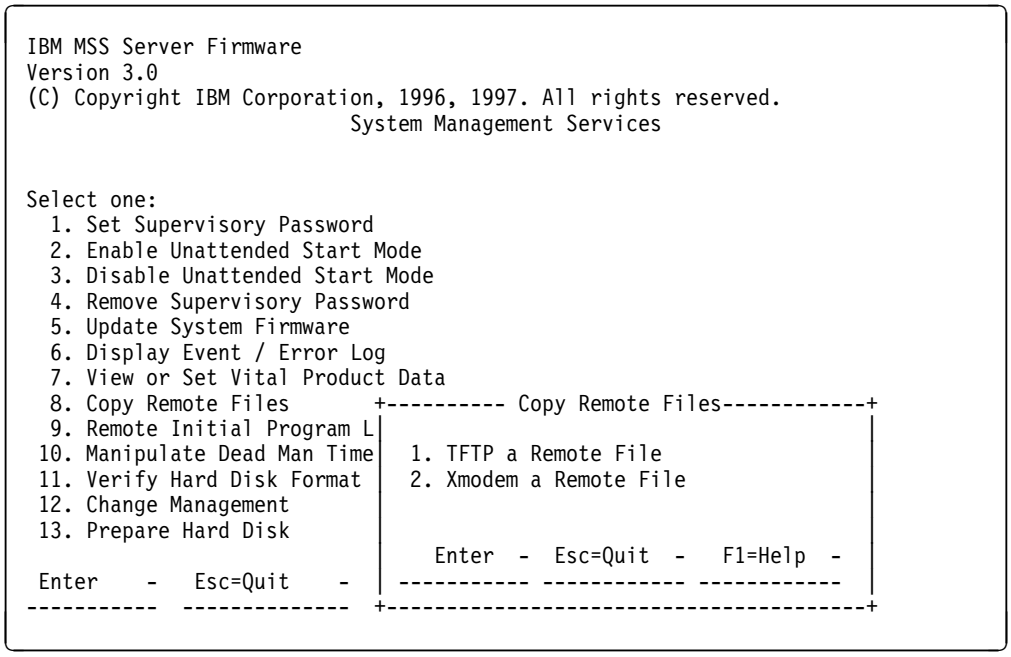


Figure 4-12. Copy Remote Files Panel

Setting Up Remote Initial Program Load

Before you can configure an MSS Server in the network, it must have an IP address that is recognized within your network and it must have the addresses of your ATM adapters.

This utility allows you to load this minimum information to install this device in your network so that you can send it a configuration file, or otherwise communicate with it. This utility allows you to Ping the MSS Server, after loading its minimum network parameters, to see if you can communicate with it.

1 Select **9. Remote Initial Program Load Setup** from the utilities panel.

2 The Network Parameters panel appears (Figure 4-13). From this panel you can select to enter the IP address of the MSS Server and the host, input adapter parameters, or Ping from the MSS Server to the host.

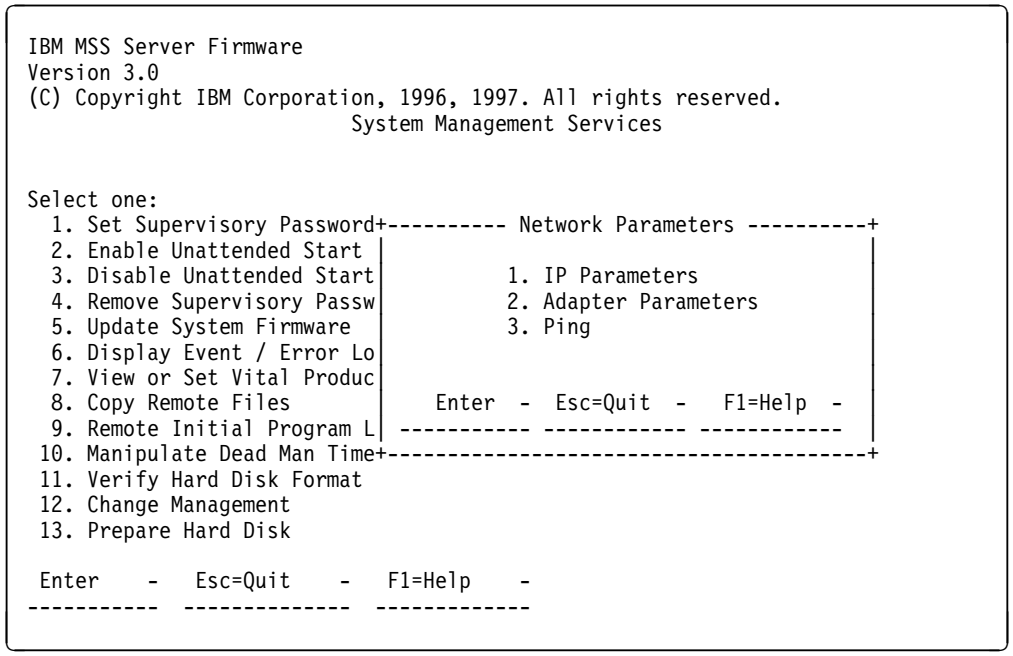


Figure 4-13. Setup Remote Initial Program Load Panel

- If you select **IP Parameters**, a panel appears on which you can enter:
  - Client IP Address (the IP address of the MSS Server)
  - Server IP Address
  - Gateway IP Address
  - Subnet Mask

  An 8210 comes from the factory with the following default IP addresses:

  Client 10.1.1.2
  Server 10.1.1.1
  Gateway 10.1.1.1
  Subnet mask 255.255.255.0

An A-MSS Server Module comes from the factory with the following default IP addresses:

Client	10.1.2.2
Server	10.1.2.3
Gateway	10.1.2.3
Subnet mask	255.255.255.0

3 If you select **Adapter Parameters**, a panel appears with the MAC address of the Ethernet port or a list of any configurable adapters.

4 The **Ping** option allows you to test connectivity.

Note: Do not Ping your current terminal connection via SLIP.

Manipulating the Dead Man Timer

This utility allows you to selectively enable or disable the dead man timer. The default is disabled.

1 Select **10. Manipulate Dead Man Timer** from the utilities panel.

2 A Dead Man Timer Options panel appears. From this panel you can enable or disable the timer.

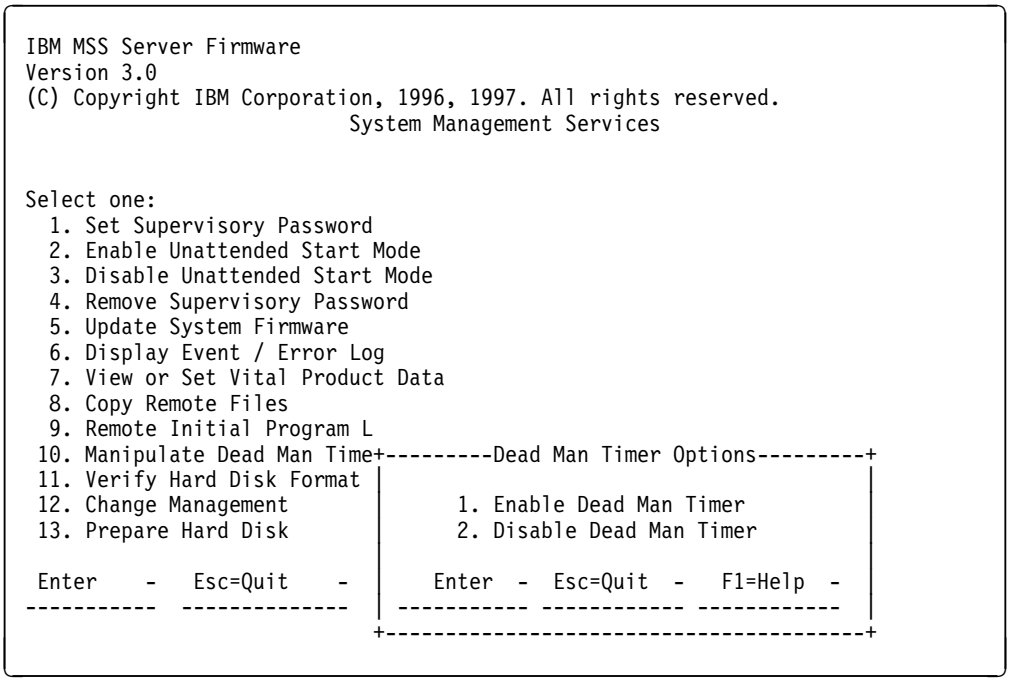


Figure 4-14. Manipulate Dead Man Timer Panel

If you have enabled the timer and the MSS Server locks up, the timer automatically resets the hardware after the time expires.

Verifying Hard Disk Format

This utility allows you to verify whether the hard disk is correctly formatted so that code images, configuration files, and dump data can be written to the hard disk as needed.

1 Select **11. Verify Hard Disk Format** from the utilities panel.

2 A Hard Disk Format panel appears, informing you whether or not the hard disk is correctly formatted.

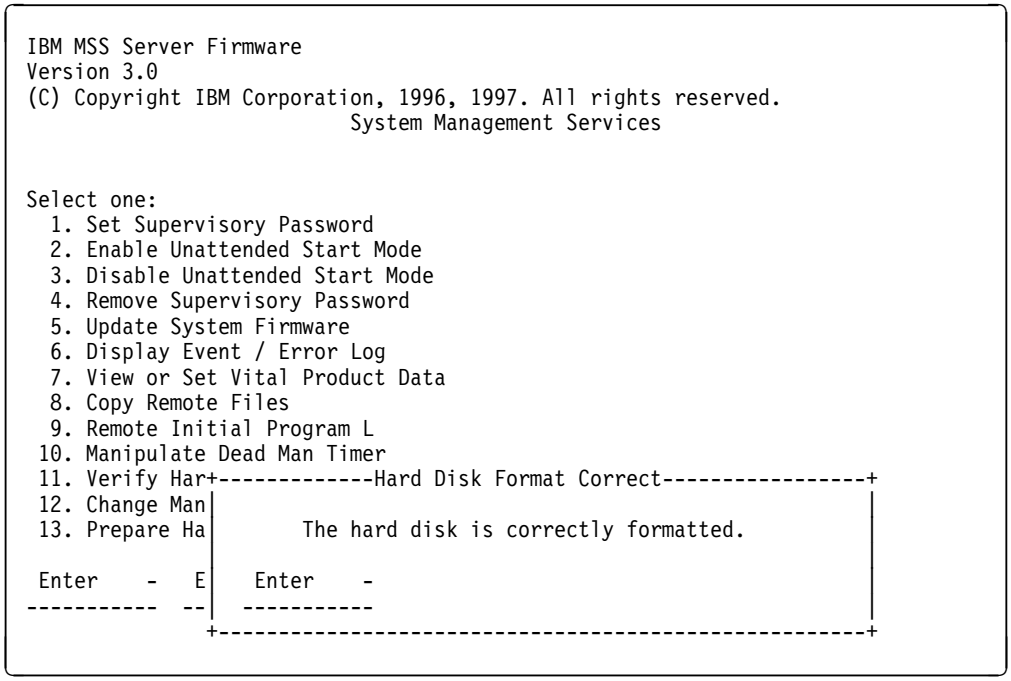


Figure 4-15. Verify Hard Disk Format Panel

Change Management

Change Management enables you to manipulate the MSS Server level of software code that will run on the MSS Server. See Appendix D, “Managing Operational Code and Configuration Files” for detailed information about change management.

Xmodem Software Selection

Xmodem is supported only from the Firmware prompt. To access the Firmware prompt, you must either interrupt the boot-up sequence or bring up the MSS Server in attended mode. The Change Management command is available from the Utilities option of the Main Menu. From that point, the MSS Server directs you as to what to transfer in and where to put the image.

Notes:

1. When the MSS Server is in firmware mode, there is no Active configuration or image. Therefore, you should use caution when specifying where to write new images or configurations.
2. When using Xmodem to transfer a multiple load module image (used in Version 2 in the form of several files ending in .ld), ***you must*** transfer each of the modules (.ld files) one by one to get the entire load module image.

   When an entire load image has transferred, the status of the bank will change from CORRUPT to AVAIL. Transfer file LML.ld first. Unless you see an information message `ERROR WRITING FILE` appear, assume each individual transfer has been successful.

When you are finished with file transfer, select **List software** on the Change Management menu. The status will have changed to AVAIL for that bank that has the new load image.

The following sample menus are associated with Xmodem download. These menus show the text that is displayed when you choose Change Management.

Examples:

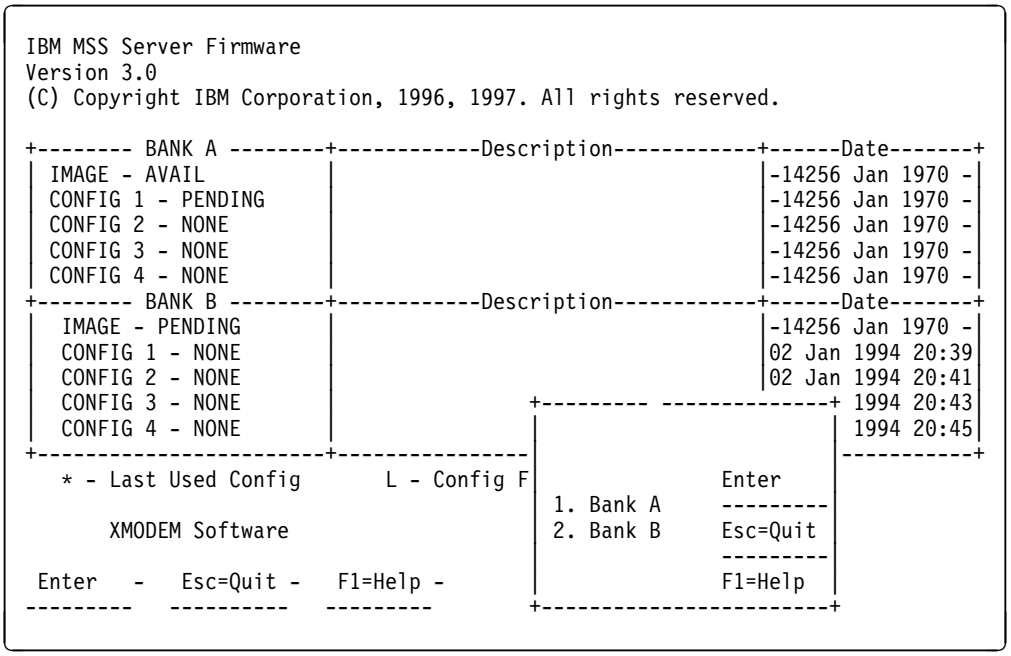
```
IBM MSS Server Firmware
Version 3.0
(C) Copyright IBM Corporation, 1996, 1997. All rights reserved.

                          Change Management Software Control

            Select one:
            1.  Add Description Data
            2.  Describe Software
            3.  Control Rebooting of Router
            4.  Control Dumping of Router
            5.  Copy Software
            6.  Erase Software
            7.  List Software
            8.  Lock Config File
            9.  Set Boot Information
            10. TFTP Software
            11. Unlock Config File
            12. XMODEM Software


            Enter   -   Esc=Quit -   F1=Help  -
           ----------   ----------   ----------
```

1 Select **5. Copy Software**.

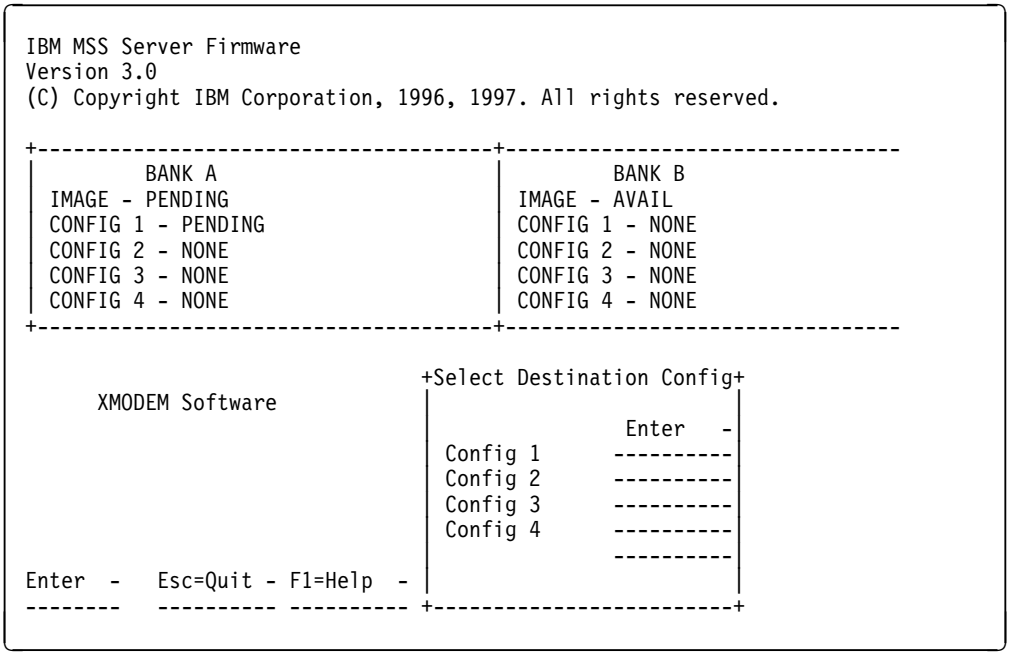
```
IBM MSS Server Firmware
Version 3.0
(C) Copyright IBM Corporation, 1996, 1997. All rights reserved.

                          Change Management Software Control


            1.  Add Description Data
            2.  Describe Software
            3.  Control Rebooting of Router
            4.  Control Dumping +--------------Select Type-----------------+
            5.  Copy Software   |                                           |
            6.  Erase Software  |             1. Config                     |
            7.  List Software   |             2. Load Image                 |
            8.  Lock Config File|                                           |
            9.  Set Boot Informa|      Enter  -  Esc=Quit  -   F1=Help  -   |
            10. TFTP Software   |   ----------- ------------ ------------   |
            11. Unlock Config Fi+-------------------------------------------+
            12. XMODEM Software


               Enter   -   Esc=Quit -   F1=Help  -
              ----------   ----------   ----------
```

2 Select either **Config** (for configuration file) or **Load Image** (for the operational software file).

The following figure is an example of the Load Image selection.



The following figure is an example of the Config selection.



Preparing the Hard Disk

This utility allows you to verify whether the hard disk is correctly formatted so that code images, configuration files, and dump data can be written to the hard disk as needed.

Note: This procedure takes approximately 45 minutes on the PCMCIA IDE hard file and approximately 10 minutes on the internal IDE hard file.

1 Select **13. Prepare Hard Disk** from the utilities panel.

2 A Prepare Hard Disk panel appears, warning you that your user data on the hard disk will be destroyed if you continue.

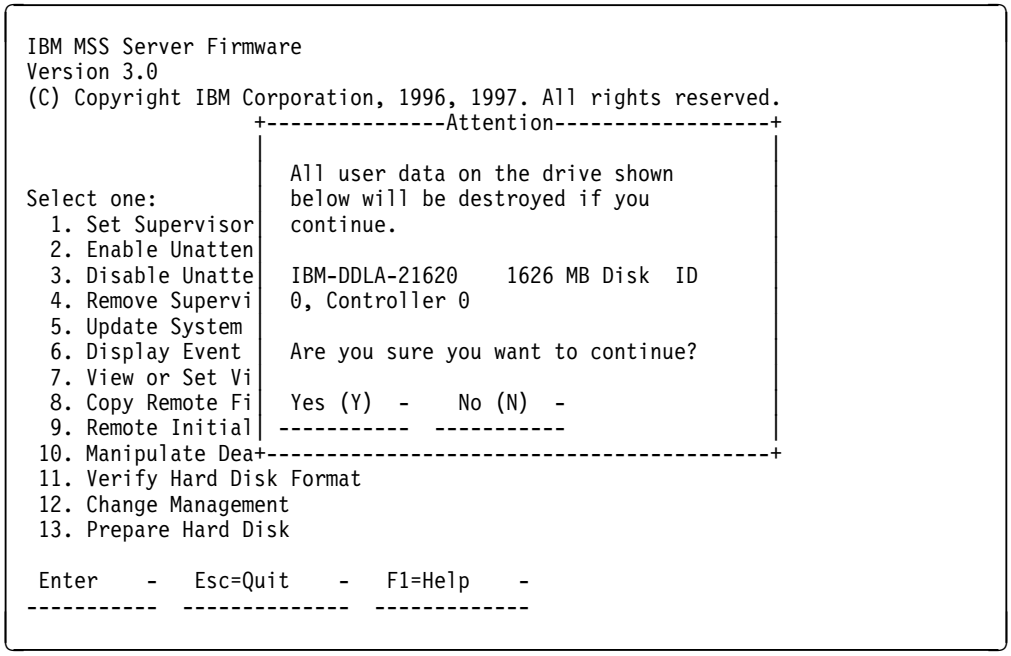


Figure 4-16. Prepare Hard Disk Panel

3 Type **Y** if you want to reformat the hard disk. Press **Enter**.

4 The Hard Disk Formatted panel appears. This panel informs you that the hard disk has been reformatted.

5 Type **N** if you do not want to reformat the hard disk. Press **Enter**.

Chapter 5. Using Operational Diagnostics

You can invoke operational diagnostics for the configured MSS Server through either the HTML interface or the command line interface. If the MSS Server is booted up and in config only mode (that is, it is not configured), you cannot invoke operational diagnostics. The preferred access method is the HTML interface, and it is recommended if you access the MSS Server through Telnet. You should use the command line interface in the following situations:

- You are using a workstation attached to the EIA 232 service port (serial port) of the MSS Server.
- You dialed in through a modem and your workstation does not support SLIP.
- You do not have a Web browser.

The content of the HTML interface diagnostics panels is similar to that of the command line interface. Words and choices are the same; only the methods you use to make your selections differ. Point and click to make your selections if you are using the HTML interface. Selections for the command line interface are numbered and enclosed in the less-than symbol (<) and the greater-than symbol (>) (for example, **<1. View Device Status>**). Type in the number of your choice and press **Enter** to make a selection. At any time, you can press **E** and **Enter** to return to the command line interface top-level prompt (*****).

Chapter 3, “Accessing the MSS Server” discusses what is required to access the MSS Server.

This chapter describes general procedures for invoking operational diagnostics and includes sample screens.

Overview of Diagnostic Functions and Status Information

Diagnostics are available to test each adapter. In some cases, you may also be able to test individual ports of multi-port adapters. These tests execute concurrently with normal operation on other adapters and ports.

You can use the following types of diagnostic pages:

- **Device List** to show a summary list of devices.
- **Device Status and Control** to allow you to disable and test a device.
- **Test Results** to present the results of the test for a device.
- **Test Options** to allow you to choose specific testing options for a device.
- **Setup for Loop Test** to prompt for the presence of diagnostic aids such as wrap plugs.
- The **Restore from Loop Test** to prompt you to remove diagnostic aids that have been installed prior to testing.

Many of the diagnostic pages have help information that provides definitions of the status fields and testing options.

These diagnostics operate in a multi-tasking environment that allows several diagnostic processes to be active at the same time. The Diagnostic Control Program controls which test processes are active and which one has access to the user interface.

When you make a selection from the Device Status and Control Page for a device, a separate testing process is started that runs independently of the other diagnostic menus. You can then go back to the Device List page or exit the diagnostic menus, returning later to view the results of the test.

When an active test process wants to report results or obtain information from you, the diagnostic status for the device will change to MESSAGE. When you select the device on the Device List page, the testing process will be given access to the console interface and the message will be displayed.

Note: It is necessary to refresh the Device List and Device Status and Control pages in order to see the changing status of active test processes.

Using the HTML Interface Operational Diagnostics

If you access the MSS Server through the HTML interface:

1. If you are using SLIP, ensure that SLIP is configured in your workstation. The default SLIP addresses for both the 8210 and the A-MSS Server Module are:

   Workstation 10.1.1.3
   MSS Server 10.1.1.2

   If you are using Telnet over the Ethernet connection, ensure that IP is configured in your workstation. The default IP addresses for the 8210 are:

   Client 10.1.1.2
   Server 10.1.1.1
   Gateway 10.1.1.1
   Subnet mask 255.255.255.0

   The default IP addresses for the A-MSS Server Module are:

   Client 10.1.2.2
   Server 10.1.2.3
   Gateway 10.1.2.3
   Subnet mask 255.255.255.0

2. Open your Web browser and give it the SLIP or IP address of the MSS Server. The MSS Server Home Page appears (Figure 5-1 on page 5-3).

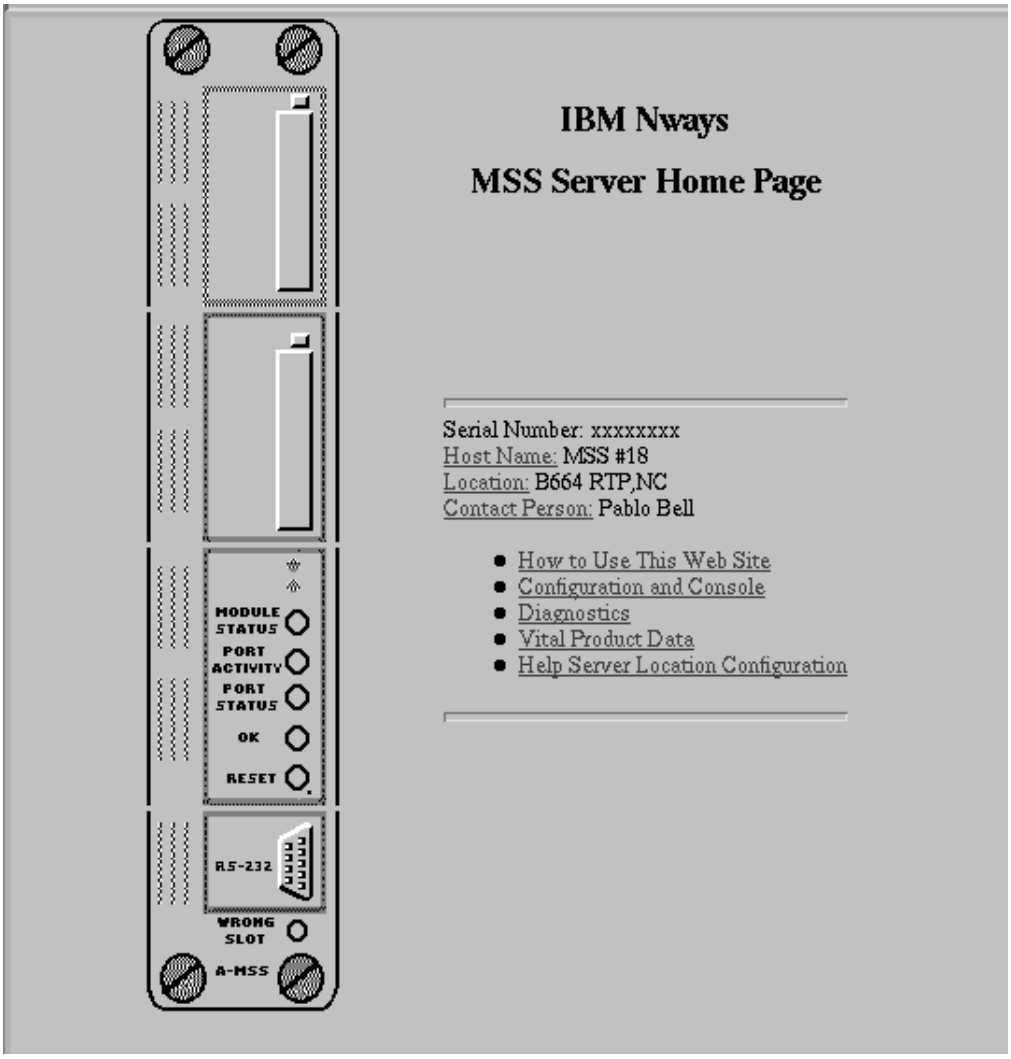


Figure 5-1. MSS Server Home Page

3 Select **Diagnostics**. The Diagnostic Menu appears (Figure 5-2 on page 5-4).

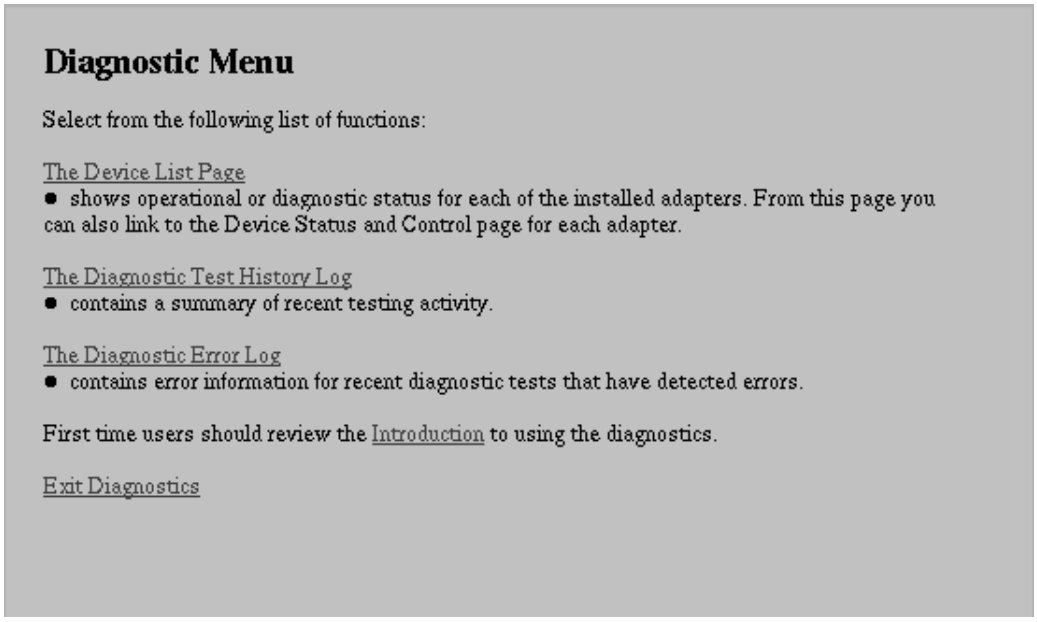


Figure 5-2. HTML Interface Diagnostics Menu

4 Select **View Device Status** and continue to point and click on your choices to test the ATM devices in the MSS Server, to enable or disable a device, and to view hardware test or error log data.

5 When you have finished running diagnostics, close by clicking **Exit diagnostics** on the Diagnostic Menu.

Using the Command Line Interface Operational Diagnostics

The following example shows how to access the MSS Server diagnostics through the command line interface:

1 At the asterisk (*****), type **diags** and press **Enter**.

2 The Diagnostic Menu appears (Figure 5-3 on page 5-5). To make your selection, type in the number of your choice and press **Enter**.

```
                        DIAGNOSTIC MENU

Select from the following list of functions:

<1. The Device List>
    shows operational and diagnostic status for each of the installed devices.
    From this page you can also link to the Device Status and Control page
    for each adapter.

<2. The Diagnostic Test History Log>
    contains a summary of recent diagnostic testing activity.

<3. The Diagnostic Error Log>
    contains error information for recent diagnostic tests that have
    detected errors.


First time users should review the <4.Introduction> to using the diagnostics.

Select (1-4 or E=Exit Diagnostics):
```

Figure 5-3. Operational Diagnostics Main Menu

3 Select <**1. The Device List** > to view a list of installed devices. (Status and test options for each device are from the Device List page.) The Device Status and Control panel (similar to the one in Figure 5-4) appears.

```
                           Device List

 For more information on each device select from the following list:

   Device       Location                                  Status
< 1. ATM SMF >   Slot 1      Port 1     Net # 0       ENABLED
< 2. ATM MMF >   Slot 2      Port 1     Net # 1       DISABLED









Some of the devices are note currently available for testing.  This can occur
when a test is not available for the device or when the device must be
configured in order to be tested,

Select (1-4 or D=Down B=Back  R=Refresh h=Help):
```

Figure 5-4. Sample of Device List Panel Showing Interfaces

The Device List is the starting point for running a test. It also provides a check to determine if all of the installed devices are being recognized by the MSS Server.

The Device List includes a summary status for each device. The devices that are testable or that have additional status available can be selected.

Selecting a device will then display the Device Status and Control page for that device.

The Status displayed for a device may have the following values:

ENABLED	Device is enabled for normal operation. For multi-port devices this means that at least one port is enabled.
ENABLE PENDING	Waiting for completion of Enable request.
Special	Device is in a special state that is explained on the Device Status and Control Page.
DISABLED	Device is Disabled. Diagnostic testing can now be performed. For multi-port Devices this means that all ports are disabled.
DISABLE PENDING	Waiting for completion of Disable request.
MESSAGE	Select the device to view and respond to the message.
TESTING	The device is being tested.
NOT CONFIGURED	The device is not configured for normal operation.
MIS CONFIGURED	The configuration does not match the physical device.
HARDWARE ERROR	A Hardware Error has been detected which prevents further use of the device.

4 If you select the ATM interface (<**2. ATM MMF**> on the Device List panel), the Device Status and Control panel for the ATM adapter appears (Figure 5-5).

```
                          Device Status and Control

155Mb/s ATM over multi-mode fiber, Slot 2,- Net # 1

 Operational Status   Diagnostic Status  Fault Status   Network Connection
      DISABLED           ACTIVE              OK              UP

Select from the following:
    Disable Device
<1. Enable Device >
<2. Run Default Test >
<3. Run Interactive test >
<4. Loop Test - stop on first error >
<5. Loop Test - Log all errors >
     Stop Test
<6. View Hardware Test Log >
<7. View Hardware Error Log >


----------------------------------------------------------------

Select (1-7 or B=Back R=Refresh H=Help):
```

Figure 5-5. Device Status and Control Panel (Device Disabled)

The Device Status and Control Page displays status and a menu of actions for the selected device. The status fields that are displayed are dependent

on the characteristics of the device. Table 5-1 on page 5-8 shows the status fields that are displayed for most devices and their meanings.

The menu items that are active on the Device Status and Control panel are dynamically determined depending on the state of the device (that is, whether it is enabled, disabled, or testing). See Table 5-2 on page 5-9 for more information about menu items.

In this example, the device is disabled. The Enable Device choice and all of the choices to start a test are active and can be selected. If the device were enabled, it would need to be disabled before testing.

When the Device Status and Control panel is displayed (and the status for the device is ENABLED), you can disable the device by selecting the Disable option.

When testing is complete, the device can be enabled using the diagnostic menus or using the MSS Server's **talk 5** commands.

Select **Refresh** periodically to update the status information for a device.

Table 5-1. Device Status Field Meanings

Operational Status	
ENABLED	The device is enabled for normal operation. For multi-port devices this means that at least one port is enabled.
ENABLED PENDING	Waiting for completion of Enable request.
See Note	The device is in a special state that is explained on the Page.
DISABLED	The device is Disabled. Diagnostic testing can now be performed. For multi-port Devices this means that all ports are disabled.
DISABLE PENDING	Waiting for completion of Disable request.
DIAGNOSTICS	A configured device is being used by the diagnostics.
NOT CONFIGURED	The device is not configured for normal operation.
MIS CONFIGURED	The configuration does not match the physical device.
HARDWARE ERROR	A hardware error has been detected that prevents further use of the device.
Diagnostic Status	
INACTIVE	Diagnostic for the device is not running.
TESTING	A testing process for the device is active and the device is being tested.
LOOP AND LOG	A testing process for the device is active and will loop and log any errors until stopped.
LOOP UNTIL ERROR	A testing process for the device is active and will loop until an error occurs or it is stopped.
MESSAGE	A testing process for the device is active and it is waiting for user input.
Fault Status	
OK	The last test of the device completed without error.
ISOLATED	A hardware failure has been detected and isolated to the device.
NON-ISOLATED	A problem has been detected, but the failure might be external to the device. This most often occurs with network adapters that have external cables, modems, or LAN connections. Running a diagnostic of the adapter with a wrap plug attached can usually determine if the adapter has failed.
UNKNOWN	No test results are currently available for the device.
Network Status	
UP	The network connection is established.
DOWN	A network connection cannot be detected.
TESTING	The MSS Server is attempting to determine if a network connection exists.
UNKNOWN	The state of a network connection cannot be determined at this time.
N/A	Network Status does not apply to this device.

While Table 5-2 displays all of the menu choices that can appear for each device, only those that are appropriate for the current state of the device will be active for a selection.

Table 5-2. Explanation of Menu Choices

Choice	Meaning
Enable Device	The device will be enabled for normal operation. This performs the same function as the **enable** or **test** commands available at the MSS Server's monitoring (talk 5) prompt (+).
Disable Device	The device is taken out of its normal operational state. If this menu option is available, then the device must be disabled before any diagnostic test can be started. This performs the same function as the **disable** command available at the MSS Server's monitoring (talk 5) console.
Run Default Test	This starts a test which assumes that the device is set up for normal operation. For communication adapters, this means that it has a cable attached and is connected to the network.
Run Interactive Test	This starts a test which will present an additional menu of options such as cable attachment and wrap plugs can be specified.
Stop Test	Stops a looping test. Depending on the length of each test loop, this could take up to a minute.
Loop Test - stop on first error	This starts a looping test that will stop when the first error is detected. A menu of additional test options may be presented before the loop is started.
Loop Test - Log all errors	This starts a looping test that will loop until a Stop Test request is made. All detected errors are logged. A menu of additional test options may be presented before the loop is started.
View Test History Log	Displays a history of recent diagnostic tests that have been executed.
View Hardware Error Log	Displays a list of errors detected by diagnostic tests.

5 Type **E** and press **Enter** to exit the diagnostic menus and return to the command line interface prompt (*****).

Appendix A. Hardware Error Codes

The error log that is displayed when you use the Display Event / Error Log firmware utility (see “Displaying the Event / Error Log” on page 4-13) contains error codes. This appendix contains explanations for those error codes.

Error Code	Physical Location	Software Subsystem	Explanation
00010000	System Board	Processor	Error occurred during processor test.
00011000	System Board	NVRAM	Non-volatile RAM Test Failure
00015001	System Board	Firmware Flash	Error occurred while erasing the system firmware.
00015002	System Board	Firmware Flash	Error occurred while updating the system firmware.
00015011	System Board	Main Flash array	Error occurred while erasing the system main flash array.
00015012	System Board	Main Flash array	Error occurred while updating the system main flash array.
00015500	System Board	Interrupts	System board interrupt test failure.
00015501	System Board	Interrupts	Error occurred during processor interrupt test.
00015502	System Board	Interrupts	Error occurred during real-time clock interrupt test.
00015503	System Board	Interrupts	Error occurred during timer interrupt test.
00015504	System Board	Interrupts	Error occurred during dead-man timer interrupt test.
00016000	System Board	RTC-NVRAM	CRC error.
00016002	System Board	RTC-NVRAM	Read/write failure.
00017001	System Board	RTC-NVRAM	Battery drained.
00017006	System Board	RTC-NVRAM	Security data missing or not valid.
00017007	System Board	Security	Maximum unsuccessful attempts to enter password was reached.
00018000	System Board	Firmware Flash	Firmware code image is corrupted.
000210y0	System Board	Memory	Memory error with SIMM slot y (where y=0 or 1); 0=SIMM A, 1=SIMM B.
00170000	IDE	IDE	Unable to allocate memory for IDE diagnostics.
001701xy	IDE	IDE	IDE device ID y on controller x not responding.
001702xy	IDE	IDE	Formatter device error occurred on IDE device ID y on controller x.
001703xy	IDE	IDE	Sector buffer error occurred on IDE device ID y on controller x.
001704xy	IDE	IDE	Controlling microprocessor error occurred on IDE device ID y on controller x.
001706xy	IDE	IDE	Two masters may be present on IDE controller x. This configuration is not valid.
001707xy	IDE	IDE	IDE device ID y on controller x is not responding
001708xy	IDE	IDE	IDE device ID y on controller x is not responding
2209E000	System Board	Thermal Sensor	Thermal sensor configuration error occurred.
2259E000	System Board	Thermal Sensor	Thermal sensor interrupt error occurred.
2269Exxx	System Board	Thermal Sensor	Thermal sensor reached maximum operating conditions. xxx=temperature over maximum conditions in degrees Celsius in hexadecimal
30001000	IDE	IDE	Error occurred while running the IDE diagnostics.

Error Code	Physical Location	Software Subsystem	Explanation
30002000	IDE	IDE	Error occurred while preparing the hard drive.
5abcdefg	System Board	PCMCIA	Error occurred during the PCMCIA test. abcdefg = detailed information
50001100	System Board	Firmware	The level of System Management Services does not match the level of system firmware.
710sdddd	155-Mbps MMF adapter	ATM diagnostics	Error occurred with ATM adapter in slot “s”. dddd=detailed status
720sdddd	155-Mbps SMF adapter	ATM diagnostics	Error occurred with ATM adapter in slot “s”. dddd=detailed status
740ddddd	8260 ATM Interface	ATM diagnostics	Error with the 8260 ATM interface.
750sdddd	FDDI Adapter	FDDI diagnostics	Error occurred with FDDI adapter in slot 's' dddd=detailed status
7msceddd	PCI slots		Adapters m=unique for adapter type s=subtest, c=slot id, e=error id, ddd=debug
80000000	System Board	8260 Interface	Echo Response Test with 8260 failed.
801000xy	System Board	Mailbox memory	Error testing mailbox memory x = indicates page 2 error y = indicates page 1 error
81xyzzzz	System Board	Memory	Error occurred while testing main flash array memory pages. x, y, zzzz = detailed information

Appendix B. Parts Listings

This appendix contains a reference drawing and a corresponding index for all field-replaceable units (FRUs). The index provides the part number, the quantity required (units), and a description of the part. Separate indexes list the FRUs for the A-MSS Server Module or the 8210 MSS Server.

This parts catalog contains reference drawings and a corresponding index for all field-replaceable parts. The index provides the part number, the quantity required (units), and a description of the part.

Listed below is additional information about the parts assembly index.

- SIMILAR ASSEMBLIES: If two assemblies contain a majority of identical parts, they are broken down on the same list. Common parts are shown by one index number. Parts peculiar to one or the other of the assemblies are listed separately and identified by description.

- AR: (As Required) in the Units column indicates that the quantity is not the same for all machines.

- NP: (Non-Procurable) in the Units column indicates that the part is non-procurable and that the individual parts or the next higher assembly should be ordered.

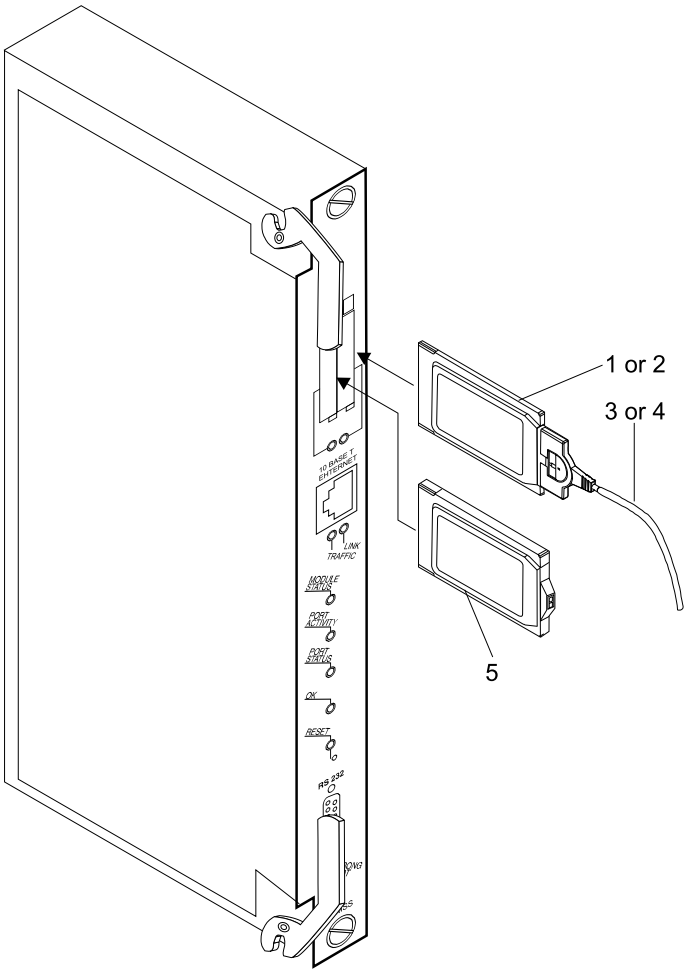
- NR: (Not Recommended) in the Units column indicates that the part is procurable but not recommended for field replacement, and that the next higher assembly should be ordered.

- R: (Restricted) in the Units column indicates the part has a restricted availability.

- INDENTURE: The indenture is marked by a series of dots located before the parts description. The indenture indicates the relationship of a part to the next higher assembly. For example:

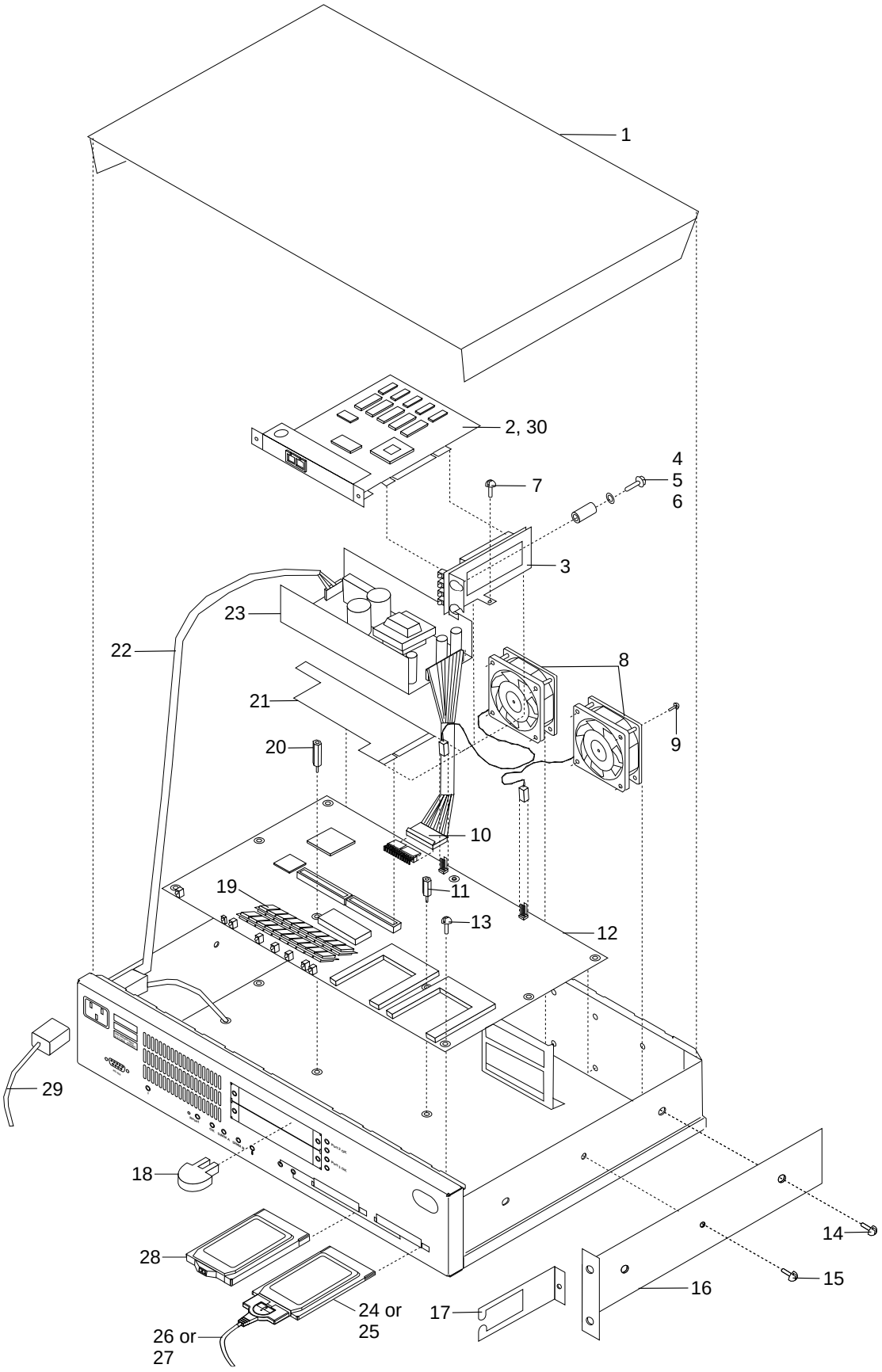
Indenture	Relationship of Parts
(No dot)	MAIN ASSEMBLY
(One dot)	• Detail parts of a main assembly
(One dot)	• Subassembly of the main assembly
(Two dots)	• • Detail part of a one-dot subassembly
(Two dots)	• • Subassembly of a one-dot subassembly
(Three dots)	• • • Detail part of a two-dot subassembly

Assembly 1: Final Assembly, A-MSS Server Module



Asm–Index	Part Number	Units	Description
1–2	02L1315	NP	Final Assembly - A-MSS Server Module (no memory, no PCMCIA devices)
–1	85H3572	1	PCMCIA Data/Fax/Voice Modem - US/Canada
–2	85H3549	AR	PCMCIA Data/Fax/ Modem Programmed for US/Canada
–	85H3550	AR	PCMCIA Data/Fax/ Modem Programmed for Austria
–	85H3551	AR	PCMCIA Data/Fax/ Modem Programmed for Australia
–	85H3552	AR	PCMCIA Data/Fax/ Modem Programmed for Belgium
–	85H3553	AR	PCMCIA Data/Fax/ Modem Programmed for Denmark
–	85H3554	AR	PCMCIA Data/Fax/ Modem Programmed for Finland
–	85H3555	AR	PCMCIA Data/Fax/ Modem Programmed for France
–	85H3556	AR	PCMCIA Data/Fax/ Modem Programmed for Germany
–	85H3557	AR	PCMCIA Data/Fax/ Modem Programmed for Hong Kong
–	85H3558	AR	PCMCIA Data/Fax/ Modem Programmed for Ireland
–	85H3559	AR	PCMCIA Data/Fax/ Modem Programmed for Italy
–	85H3560	AR	PCMCIA Data/Fax/ Modem Programmed for Japan
–	85H3561	AR	PCMCIA Data/Fax/ Modem Programmed for Korea
–	85H3562	AR	PCMCIA Data/Fax/ Modem Programmed for Luxenborg
–	85H3563	AR	PCMCIA Data/Fax/ Modem Programmed for Netherlands
–	85H3564	AR	PCMCIA Data/Fax/ Modem Programmed for New Zealand
–	85H3565	AR	PCMCIA Data/Fax/ Modem Programmed for Norway
–	85H3566	AR	PCMCIA Data/Fax/ Modem Programmed for Singapore
–	85H3567	AR	PCMCIA Data/Fax/ Modem Programmed for S. Africa
–	85H3568	AR	PCMCIA Data/Fax/ Modem Programmed for Spain
–	85H3569	AR	PCMCIA Data/Fax/ Modem Programmed for Sweden
–	85H3570	AR	PCMCIA Data/Fax/ Modem Programmed for Switzerland
–	85H3571	AR	PCMCIA Data/Fax/ Modem Programmed for UK
–3	85H3589	1	PCMCIA Data/Fax Modem Cable
–4	85H3590	1	PCMCIA Data/Fax/Voice Modem Cable
–5	02L1838	1	PCMCIA Flash Drive
–6	60G2950	AR	16 MB 72-Pin DRAM SIMM (not pictured)
–	55H7492	AR	32 MB 32-Pin DRAM SIMM (not pictured)

Assembly 2: Final Assembly, 8210 Nways MSS Server



Asm–Index	Part Number	Units	Description
2–1		NP	Final Assembly - 8210 MSS Server
–1		NP	Cover (for illustration only)
–2	85H3586	1	155 MM ATM Adapter
–	85H3587	1	155 SM ATM Adapter
–3	85H3582	1	Riser Card
–4	10H4437	2	Spacer (10H4437)
–5	1622319	2	Washer (M5, 1622319)
–6	1621813	2	Screw (M4 x 16)
–7	33G3907	1	Screw (M3 x 5)
–8	85H3579	2	Fan
–9	33G3907	8	Screw (M3 x 5)
–10	85H3584	1	DC Power Cable
–11	72H3640	1	Standoff spacer (12MM)
–12	85H3580	1	Processor Logic Card
–13	33G3907	AR	Screw (M3 x 5)
–14	92G8546	4	Screw (M4 x 8)
–15	42H1345	2	Screw (M4 x 6 Torx)
–16		NP	Rack mounting bracket (illustration only)
–17		NP	Cable mounting bracket (illustration only)
–18	85H3588	1	Wrap plug kit
–19	41H7107	AR	16 MB 72-Pin DRAM SIMM
–	55H7492	AR	32 MB 72-Pin DRAM SIMM
–20	92G6750	1	Standoff spacer (18MM)
–21	85H3581	1	PCI Logic Card
–22	85H3584	1	AC Power Cable
–23	85H3578	1	Power Supply
–24	85H3572	1	PCMCIA Data/Fax/Voice Modem - US/Canada
–25	85H3549	AR	PCMCIA Data/Fax/ Modem Programmed for US/Canada
–	85H3550	AR	PCMCIA Data/Fax/ Modem Programmed for Austria
–	85H3551	AR	PCMCIA Data/Fax/ Modem Programmed for Australia
–	85H3552	AR	PCMCIA Data/Fax/ Modem Programmed for Belgium
–	85H3553	AR	PCMCIA Data/Fax/ Modem Programmed for Denmark
–	85H3554	AR	PCMCIA Data/Fax/ Modem Programmed for Finland
–	85H3555	AR	PCMCIA Data/Fax/ Modem Programmed for France
–	85H3556	AR	PCMCIA Data/Fax/ Modem Programmed for Germany
–	85H3557	AR	PCMCIA Data/Fax/ Modem Programmed for Hong Kong
–	85H3558	AR	PCMCIA Data/Fax/ Modem Programmed for Ireland
–	85H3559	AR	PCMCIA Data/Fax/ Modem Programmed for Italy
–	85H3560	AR	PCMCIA Data/Fax/ Modem Programmed for Japan
–	85H3561	AR	PCMCIA Data/Fax/ Modem Programmed for Korea
–	85H3562	AR	PCMCIA Data/Fax/ Modem Programmed for Luxemburg
–	85H3563	AR	PCMCIA Data/Fax/ Modem Programmed for Netherlands
–	85H3564	AR	PCMCIA Data/Fax/ Modem Programmed for New Zealand
–	85H3565	AR	PCMCIA Data/Fax/ Modem Programmed for Norway
–	85H3566	AR	PCMCIA Data/Fax/ Modem Programmed for Singapore
–	85H3567	AR	PCMCIA Data/Fax/ Modem Programmed for S. Africa
–	85H3568	AR	PCMCIA Data/Fax/ Modem Programmed for Spain
–	85H3569	AR	PCMCIA Data/Fax/ Modem Programmed for Sweden
–	85H3570	AR	PCMCIA Data/Fax/ Modem Programmed for Switzerland
–	85H3571	AR	PCMCIA Data/Fax/ Modem Programmed for UK
–26	85H3589	1	PCMCIA Data/Fax Modem Cable

–27	85H3590	1	PCMCIA Data/Fax/Voice Modem Cable
–28	06H8956	1	PCMCIA Hard Drive
–29	10H5553	AR	Power cord (9 ft. 100-125V)
–	10H5554	AR	Power cord (6 ft. 100-125V)
–	10H5555	AR	Power cord (9 ft. 230-240V)
–	10H5556	AR	Power cord (6 ft. 200)
–	10H5557	AR	Power cord (9 ft. 200-250V)
–	10H5558	AR	Power cord (9 ft. 200-220V)
–	10H5559	AR	Power cord (9 ft. 230-240V)
–	10H5560	AR	Power cord (9 ft. 230-240V)
–	10H5561	AR	Power cord (9 ft. 230-240V)
–	10H5562	AR	Power cord (9 ft. 230-240V)
–	10H5563	AR	Power cord (9 ft. 200-220V)
–	10H5564	AR	Power cord (9 ft. 200-220V)
–	10H5565	AR	Power cord (9 ft. 230-240V)
–30	85H8383	1	Dual-Ring optical fiber FDDI adapter
–31	85H3583	1	EIA-232 internal cable (not pictured)

Appendix C. 8210 MSS Server Hardware Characteristics

This appendix describes physical characteristics of the 8210 MSS Server. Similar information about the A-MSS Server Module is not included because it fits into the 8260 or the 8265. The A-MSS Server Module is connected to the ATM network when it is installed in the 8260 or 8265.

Physical Specifications

Width	440 mm (17.3 in.) without rack-mounting flanges 480 mm (18.9 in.) with rack-mounting flanges
Depth	358 mm (14.1 in.)
Height	92.1 mm (3.63 in.) from the top of the 8210 MSS Server to the top of the next machine that is mounted in the rack
Weight	6.7 kg (14.7 lb) with two ATM Adapters

Service Clearance

The 8210 MSS Server can be rack- or surface-mounted. It should have at least 100 mm (4.0 in.) minimum clearance at the rear and 300 mm (11.8 in.) clearance at the front. The air flow for ventilation is from front to back.

Power Requirements

Electrical power	0.107 kVA
Starting current	less than 40 A
Leakage current	1.5 mA maximum

The ac power cord connector is in the front of the 8210 MSS Server. The 8260 or 8265 supplies power to the A-MSS Server Module.

Environmental Specifications

Power-on temperature	10°C—40°C (50°F—104°F)
Storage temperature	1°C—60°C (33°F—140°F)
Relative humidity	8%—80%
Max. wet bulb	27°C (81°F)
Heat output	46.5 Kcal/hr (184 BTU/hr)
Capacity of exhaust	0.566 m^3/min. (20 cubic ft/min.)
Noise level	44 dB

Over-Temperature Condition

If the temperature in the 8210 MSS Server approaches the maximum operating (power-on) temperature, the operational code issues a warning message. If the temperature in the 8210 MSS Server exceeds the maximum operating temperature and thermal shutdown is enabled, the over-temperature LED will come on, and the 8210 MSS Server will shut down. The 8210 MSS Server will restart when the temperature inside the 8210 MSS Server returns to the operating range.

An over-temperature condition could indicate that the cooling fans have malfunctioned or an abnormally high room temperature where the 8210 MSS Server is located.

Acoustic Characteristics

The following table is a declaration of the MSS Server noise emission characteristics.

Table C-1. Declaration of IBM Product Noise Emission Values

Type	Description	LwAd		LpAm		<LpA>m	
		Operating (bels)	Idle (bels)	Operating (dB)	Idle (dB)	Operating (dB)	Idle (dB)
8210	MSS Server	4.8	4.8	N/A	N/A	44	44

Notes:

LwAd is the declared (upper limit) sound power level for a random sample of machines.

LpAm is the mean value of the A-weighted sound pressure levels at the operator position (if any) for a random sample of machines.

<LpA>m is the mean value of the A-weighted sound pressure levels at the 1-meter (bystander) positions for a random sample of machines.

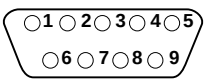
N/A Indicates “not applicable” (that is, having no defined operator position.)

All measurements were made in accordance with ANSI S12.10 and reported in conformance with ISO DIS 9296.

Pin Assignments for the EIA 232 Service Port

Both the 8210 MSS Server and the A-MSS Server Module have a standard, EIA 232 service port: a male 9-pin D-shell connector. It can be attached locally through a null-modem cable, or remotely through a modem attachment. The service port is provided so that you can access the MSS Server to perform configuration or maintenance. The line speed is 19.2 Kbps.

Figure C-1 shows the pin assignments for the service port connector. Connectors for the MSS Server and the A-MSS Server Module are identical.



1 - CD
2 - RX
3 - TX
4 - DTR
5 - GND
6 - DSR
7 - RTS
8 - CTS
9 - RI

Figure C-1. EIA 232 Service Port Pin Assignments

Pin Assignments for the Null Modem Cable

Figure C-2 shows the pin assignments for the null modem cable.

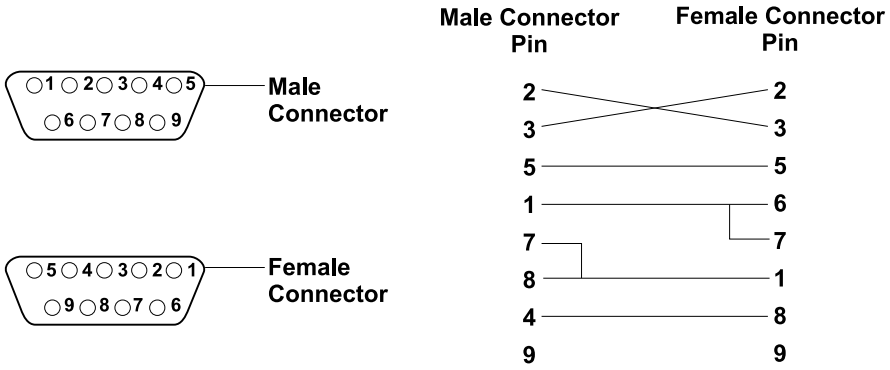


Figure C-2. Null Modem Cable Pin Assignments

Ethernet Service Port

In addition to the EIA 232 service port, the A-MSS Server Module has an additional service port: a 10BASE-T Ethernet port.

Appendix D. Managing Operational Code and Configuration Files

This appendix explains how to manage the operational code images and configuration files.

Reconfiguring

You might find it hard to detect problems caused by configuration errors. A configuration error can initially appear to be a hardware problem because the MSS Server will not start or data will not flow through a port. In addition, problems with configuration may not result in an error initially; an error may occur only when specific conditions are encountered or when heavy network traffic occurs.

If you cannot resolve a problem after making a few changes to your configuration or after restoring the active configuration file, it is recommended that you generate a new configuration. Too many changes to a configuration often compound the problem, whereas you can usually generate and test a new configuration within a few hours.

How Software Files Are Managed

To help you manage operational software upgrades and configurations, the MSS Server has a software change management feature. This utility enables you to determine which operational software file and which configuration file is active while the MSS Server is running.

How to View the Files

To use the change management tool in the command line interface to view the operational software image and the configuration files, follow these steps:

1. From the prompt for OPCON, which is an asterisk (*), type **talk 6**. The prompt `Config>` appears.
2. Enter **boot**. You will see the prompt `Boot config>`.
3. Enter **list** to display information about which load images and configuration files are available and active.

   Syntax: list

   Example: `Boot config>`**`list`**

```
+------ BankA -----------+--------- Description ----------+------ Date -------+
| IMAGE - AVAIL          |                                 | 01 Jan 1970       |
| CONFIG 1 - AVAIL       |                                 | 01 Jan 1970 00:26 |
| CONFIG 2 - AVAIL   *   |                                 | 01 Jan 1970 01:13 |
| CONFIG 3 - AVAIL       |                                 | 01 Jan 1970 00:58 |
| CONFIG 4 - AVAIL       |                                 | 01 Jan 1970 00:39 |
+------ BankB -----------+--------- Description ----------+------ Date -------+
| IMAGE - ACTIVE         |                                 | 01 Jan 1970       |
| CONFIG 1 - AVAIL       |                                 | 01 Jan 1970 00:54 |
| CONFIG 2 - AVAIL       |                                 | 01 Jan 1970 00:01 |
| CONFIG 3 - AVAIL       |                                 | 01 Jan 1970 00:14 |
| CONFIG 4 - ACTIVE  *   |                                 | 01 Jan 1970 00:24 |
+------ BankF -----------+--------- Description ----------+------ Date -------+
| IMAGE - AVAIL          |                                 | 01 Jan 1970       |
| CONFIG 1 - AVAIL       |                                 | 01 Jan 1970 00:54 |
| CONFIG 2 - AVAIL       |                                 | 01 Jan 1970 00:01 |
| CONFIG 3 - AVAIL       |                                 | 01 Jan 1970 00:14 |
| CONFIG 4 - AVAIL       |                                 | 01 Jan 1970 00:24 |
+------------------------+---------------------------------+-------------------+
  * - Last Used Config      L - Config File is Locked
```

Each bank represents one image of the operational code. The images in BANK A, BANK B, and BANK F are stored on the hard drive. The Configs represent the configuration files that are stored with each bank.

IMAGE refers to the status of the operational software and *CONFIG* refers to the status of the configuration files.

The possible IMAGE and CONFIG statuses are:

ACTIVE This file is currently loaded in active memory and is running on the MSS Server.

Note: The status of this file can be changed only by resetting the MSS Server. *If a config or an image is active, it is locked and cannot be overwritten or erased.*

AVAIL This is a good file that can be made active.

CORRUPT This file was damaged or was not loaded into the MSS Server completely.

PENDING This file will be loaded and become active the next time the MSS Server is reset.

NONE There is no image or configuration file loaded.

LOCAL This file will become active at the next reset. This reset will cause the currently ACTIVE file to become PENDING. LOCAL is a status that makes a file ACTIVE only for one reset of the MSS Server.

Only one bank at a time contains an ACTIVE image. Only one configuration file is ACTIVE and it must be within the ACTIVE bank.

How to Reset the MSS Server

Attention: A reset interrupts the function of the MSS Server for up to 90 seconds. Be sure that the network is prepared for the interruption.

As previously stated, PENDING and LOCAL files are not loaded into active memory until you reset the MSS Server.

You can reset the MSS Server using any one of these methods:

- Press the hardware Reset button.
- At the `Config only>` prompt, type **reload** and press **Enter**.

  Note: The `Config only>` prompt appears when no file is active. Lack of an active file indicates that an active configuration has become corrupted or that the MSS Server is not configured.
- At the OPCON prompt (*), type **reload** and press **Enter**.

File Transfer Using TFTP

Use this sequence of commands to transfer a file from a workstation or server to the MSS Server using TFTP. You will need to substitute your own values for the IP address and path, which are given as examples. The number of bytes received is also an example.

Note: You transfer the files to banks within the MSS Server. The banks represent the directories that you have created; you do not have to be concerned about transferring the files to a particular directory within the MSS Server.

TFTP File Transfer Using the Operating Software

Note: You cannot use the TFTP file transfer method in the operating software to migrate from Version 1 to Version 2 of the MSS Server code. (See "Migrating to a New Code level" on page D-5 for migration directions that explicitly lead you through the firmware method to migrate to a new level of code.)

1. From the OPCON prompt, which is an asterisk (*), type **talk 6** and press **Enter**. The `Config>` prompt appears.
2. Type **boot** and press **Enter**. The `Boot config>` prompt is displayed.
3. To get the MSS Server software code load:
   - Enter **tftp get load modules** (for MSS Server software V2 or higher).
   - Enter **tftp get load single image** (below MSS Server software V2).

   To get a configuration file, enter **tftp get config**

   You cannot overwrite a currently active bank image.
4. When prompted, specify the IP address of the TFTP server.
5. When prompted, specify:
   - The path/file name for a single image

     or
   - Just the path for load modules

   With Version 2, when you specify that you want load modules to transfer, all of the appropriate load modules in the specified directory will be transferred.

   All load modules must be in the same directory to enable the successful transfer of all the modules.
6. When prompted, enter **Y** to confirm the transfer or anything else to exit.

   The following example shows a V2 software code load:

```
* talk 6
Config> boot
Boot config> tftp get load modules
Specify the server IP address (dotted decimal): [1.2.3.4] 192.9.200.1
Specify the remote files directory: :(/u/bin/) /usr/601bin/204img/
Select the destination bank: (A,B): [A] a
TFTP SW load image
     get: /usr/601bin/204img/LML.ld
     from: 192.9.200.1
     to:   bank A.

Operation completed successfully.
```

TFTP File Transfer Using the Firmware

1. From the main firmware menu (System Management Services), select **4. Utilities**.
2. From the Systems Management Utilities menu, select **12. Change Management**.
3. From the Change Management Software Control menu, select **10. TFTP software**.
4. Select the type of software from the Select Type dialog box.
5. Select the bank to load from the Select Bank dialog box.
6. If you selected 2. Load Image, you will be prompted to select the type of load image (that is, single image or modules).
   - If the code load you want to transfer consists of an LML.ld file plus other load modules ending in .ld, select **modules**.
   - If you want to transfer a single image (the type that existed in MSS Server Version 1), select **single image**.
7. When prompted, type in either the directory path to the modules, or the path/filename for the single image. The modules should all be in one directory.
8. If you selected modules and the directory path that you entered has all read permissions correct for anybody to retrieve, successive message boxes will appear as each load module is transferred.

   If you selected single image, only one message box will appear to inform you of the file transfer.
9. Select the **Set Boot Information** option on the Change Management menu and then select:
   - The Bank to boot from
   - The Config to boot with
   - Permanent or once

File Transfer Using Xmodem

If you use Xmodem, you will get prompts similar to those provided by TFTP. These enable you to specify the bank for the image files or the bank and the config number for the configuration files that you transfer. The interface for transferring is designed so that you cannot overwrite any ACTIVE file. (Xmodem is available only from the firmware.)

For transfers via modem, each load module must be separately named and transferred individually.

Note: When using Xmodem to transfer a multiple load module image (used in Version 2 in the form of several files ending in .ld), ***you must*** transfer each of the modules (.ld files) one by one to get the entire load module image.

When an entire load image has transferred, the status of the bank will change from CORRUPT to AVAIL. Transfer file LML.ld first. Unless you see an information message `ERROR WRITING FILE` appear, assume each individual transfer has been successful.

Migrating to a New Code level

Note: In Version 1 of the MSS Server, the lower level code does not have any enhanced ability to retrieve the new operating code levels. If you attempt to use a **talk 6** operating code method (TFTP), the file transfer attempt will be unsuccessful.

To upgrade from any earlier version of operational code to a later level, perform the following steps:

1. Follow the instructions in “Updating System Firmware” on page 4-12 to update the system firmware to the Version 2 level.
2. From the Utilities menu, select **Change Management**, and then select the **Copy Software** option.
3. When prompted, select which type of load to do (a configuration file or a load image).
4. When prompted, select which bank to load.

   Note: Files to be retrieved from the server should all be in the same directory, and their permissions should allow anybody to retrieve them.
5. Select **2. Load Image**. You will then be prompted to select the type of load image (that is, single image or modules).
   - If the code load that you want to transfer consists of an LML.ld file plus other load modules ending in .ld, select **modules**.
6. When prompted for the directory path to remote load modules, enter the *pathname* to retrieve all load modules belonging to this load image.

Notes:

a. Information boxes appear as each load module is being transferred using TFTP. Some time will transpire as each transferred load module is written to the disk. An average load may take 10 to 12 minutes. When the entire load has been transferred, the previous menu is displayed.

b. The Version 2 operational code comes in the form of multiple load modules, headed by LML.ld. All load modules for a load must be in the same directory on the server for this transfer.

7 Select the Set Boot Information option on the Change Management menu and then select:

- The Bank to boot from
- The Config to boot with
- Permanent or once

Once you have Version 2 operational code, you will be able to use the **tftp get load modules** option under `boot config>` to get any further Version 2 or Version 1 load images.

If you were not able to use TFTP and instead use Xmodem to try to upgrade, select the Xmodem Software option instead of TFTP Software option. In the case of XMODEM file transfers, Xmodem does not retrieve a set of load modules. They must be transferred one by one.

Using the Configuration Program to Manage the Configuration Files

For optimal configuration management, it is recommended that you use the Configuration Program and its configuration database to manage all your MSS Server configuration files.

The design of change management facilitates good control of the configuration files. Keeping the ACTIVE file and the file that is stored in the configuration database the same assures that a copy of the ACTIVE file is always available.

When you use the Send option to send a new configuration to the MSS Server, the new configuration is written to the ACTIVE bank and overwrites the file located in the position just below the currently ACTIVE configuration. The new configuration is PENDING if a time is set for a reset. If the configuration file is sent without a specified time for the reset to occur, it gets AVAIL status.

For example, suppose that CONFIG 2 is ACTIVE. The new configuration file is written to CONFIG 3. It has a status of PENDING if a reset time is associated with it; if not, it has a status of AVAIL.

If the file has a status of PENDING, CONFIG 2 becomes AVAIL and CONFIG 3 becomes ACTIVE when a reset occurs. The next file that is sent from the Configuration Program will be placed in CONFIG 4. If a reset time is associated with the file, it will have the PENDING status and will become ACTIVE when the next reset occurs. If another file is then sent, it is placed in CONFIG 1 because the currently ACTIVE file is now in CONFIG 4. This arrangement results in a circular queue.

If the downloaded file has a status of AVAIL, a reset does not change its status. If another file is sent down, it overwrites that file because the ACTIVE file has not

changed and the newly downloaded file always occupies the location just behind the ACTIVE file.

Example of Sending a File from the Configuration Program

For example, suppose that this is the view of the software that is displayed by the List command:

```
BANK A
 IMAGE - ACTIVE
  CONFIG 1 - ACTIVE
  CONFIG 2 - AVAIL
  CONFIG 3 - NONE
  CONFIG 4 - NONE

BANK B
 IMAGE - AVAIL
  CONFIG 1 - AVAIL
  CONFIG 2 - AVAIL
  CONFIG 3 - AVAIL
  CONFIG 4 - NONE

BANK F
 IMAGE - AVAIL
  CONFIG 1 - AVAIL
  CONFIG 2 - AVAIL
  CONFIG 3 - AVAIL
  CONFIG 4 - AVAIL
```

The Configuration Program sends a config file to BANK A, CONFIG 2. If the configuration is marked in the Configuration Program to be loaded immediately, the MSS Server performs a reset immediately after it receives the new configuration. The Send command of the Configuration Program in this situation is composed of these two actions:

1. Send Config to CONFIG 2 as PENDING
2. Reset

After these two actions, the MSS Server configuration looks like this:

```
Boot Config> list

BANK A
 IMAGE - ACTIVE
  CONFIG 1 - AVAIL
  CONFIG 2 - ACTIVE
  CONFIG 3 - NONE
  CONFIG 4 - NONE

BANK B
 IMAGE - AVAIL
  CONFIG 1 - AVAIL
  CONFIG 2 - AVAIL
  CONFIG 3 - AVAIL
  CONFIG 4 - NONE

BANK F
 IMAGE - AVAIL
  CONFIG 1 - AVAIL
  CONFIG 2 - AVAIL
  CONFIG 3 - AVAIL
  CONFIG 4 - AVAIL
```

CONFIG 1 has become AVAIL and CONFIG 2 has become ACTIVE.

If the Configuration Program were now used to send down a new configuration to the MSS Server and the file were not marked to be loaded at any specified time, the view of the software in the MSS Server would look like this:

```
Boot Config> list

BANK A
 IMAGE - ACTIVE
  CONFIG 1 - AVAIL
  CONFIG 2 - ACTIVE
  CONFIG 3 - AVAIL
  CONFIG 4 - NONE

BANK B
 IMAGE - AVAIL
  CONFIG 1 - AVAIL
  CONFIG 2 - AVAIL
  CONFIG 3 - AVAIL
  CONFIG 4 - NONE

BANK F
 IMAGE - AVAIL
  CONFIG 1 - AVAIL
  CONFIG 2 - AVAIL
  CONFIG 3 - AVAIL
  CONFIG 4 - AVAIL
```

After this action, CONFIG 3 is AVAIL. The new configuration file has been loaded in this location.

Note: You should exercise caution here because any on-board configuration changes could result in overwriting the CONFIG 3 file. Because the configuration file in CONFIG 3 was sent down without any time specified for resetting the server, it is currently not in use. It can be overwritten either when another file is sent from

the Configuration Program or when a file is saved using the Write command from the command line interface. You can use the Copy command to move it to another location to protect it (see “Copy” on page D-11).

Using the Set Commands

Note: You must be the supervisory user to use the Set commands.

The Set commands allow you to perform the following tasks:

- Set load image
- Set configuration
- Set enable unattended mode
- Set disable unattended mode
- Set time and date

Set Load Image

To make an image file PENDING, type **set load image** or **set load** at the `Boot config>` prompt.

This command will display the current settings for load as the list command did. However, you can change the setting of an AVAIL file to PENDING. After a file is PENDING, it will be changed to ACTIVE when the MSS Server is next reset. After the reset, the current ACTIVE file becomes AVAIL.

```
Boot Config> set load

BANK A                          BANK B
 IMAGE - ACTIVE                  IMAGE - AVAIL
  CONFIG 1 - ACTIVE               CONFIG 1 - AVAIL
  CONFIG 2 - AVAIL                CONFIG 2 - AVAIL
  CONFIG 3 - NONE                 CONFIG 3 - NONE
  CONFIG 4 - NONE                 CONFIG 4 - NONE

You may type 'e' at any prompt to exit this command

Please specify the bank to load from (A or B).

BANK A                          BANK B
 IMAGE - ACTIVE                  IMAGE - AVAIL
  CONFIG 1 - ACTIVE               CONFIG 1 - AVAIL
  CONFIG 2 - AVAIL                CONFIG 2 - AVAIL
  CONFIG 3 - NONE                 CONFIG 3 - NONE
  CONFIG 4 - NONE                 CONFIG 4 - NONE

You will need to restart the MSS Server for these changes to take effect.
```

Set Configuration

This command will display the current settings for load as the List command did. However, you can change the current setting of a configuration file that is in an ACTIVE or PENDING bank from AVAIL to PENDING.

To use the Set Configuration command, type **set config image** or **set config** at the `Boot config>` prompt and follow the prompts.

Other Change Management Functions

These are the other change management commands:

- Describe load images
- Disable dumping
- Enable dumping
- Erase files
- Copy

Describe Load Images

At `Boot config>`, type **describe mss**. The Product ID, microcode version number, release number, maintenance number, PTF, Feature, and RPQ numbers and the date of the operational software image are displayed.

Disable Dumping

The MSS Server can be set up to dump the contents of memory to permanent storage in the unlikely event of a complete system failure. If dumping is enabled, using this selection will cause the MSS Server ***not*** to dump to disk.

To disable dumping, type **talk 6** or **t 6** at the * prompt, press **Enter**, and then type **disable dump memory** or **dis dump** at the `Config>` prompt. You will see the message:

```
System memory dump function disabled successfully.
```

Enable Dumping

This command enables the dumping of memory without intervention from anyone if the MSS Server has a catastrophic error. The MSS Server will dump memory onto the hard disk. Once a successful dump has been taken, the MSS Server attempts to restart. Depending upon the failure of the MSS Server, it cannot always restart. In this case, you should restart it manually and call a service person who will dial into the MSS Server to determine the nature and the causes of the failure.

Before you can enable dumping, you must first enable system rebooting. To enable system rebooting, enter the following commands at the `Config>` prompt.

```
enable reboot-system
enable dump-memory
```

Finally, to enable dumping, type **t 6** at the * prompt, press **Enter**, and then type **enable** or **ena** at the `Config>` prompt. You will see the message:

```
System memory function enabled successfully
```

The default state is to have dumping enabled.

Erase Files

The MSS Server has a DOS file system structure with user access files in the /sys0 and /sys1 banks. These banks contain the operational software load images and the configuration files. Note that the following rules apply to erasing files from the MSS Server:

- Image files that are not ACTIVE can be overwritten anytime
- ACTIVE image files ***cannot*** be erased
- ACTIVE configuration files ***cannot*** be erased

To erase a file, at the `Boot config>` prompt, type **erase**. Follow the prompts. If you select a file to erase that is BROKEN or NONE, the erase option is discontinued.c

Copy

The Copy command allows you to move a file from one location in the storage area to another. This command allows you to change the status as well. The file that you move always receives the status of the storage area that it is moved to. For example, suppose that:

- The configuration file in BANK A CONFIG 1 is AVAIL. The configuration file in BANK B CONFIG 1 is PENDING.
- You copy the configuration in BANK A CONFIG 1 to BANK B CONFIG 1.

In this case, the original configuration file in BANK A CONFIG 1 remains unchanged and AVAIL. The configuration that was in BANK B CONFIG 1 is over-written by a copy of the configuration file that is in BANK A CONFIG 1. This copy retains the status of the file that it overwrote, in this case, PENDING.

These are the prompts that you would use to perform this copy process.

```
Boot config> copy config

Copy FROM Bank number? A

Copy FROM Config number? 1

Copy TO Bank number? B

Copy TO Config number? 1
```

If you copy an image, the same rules apply except that image files can be copied only from Bank to Bank. These steps describe how the copy of an image affects the image that was previously in the Bank:

1. The copy overwrites the image that was previously in the Bank.
2. The copy acquires the status of the image that was previously in the Bank.

File Transfer

Table D-1 defines the ways in which you can transfer configuration files and operational software files to and from the MSS Server.

Table D-1. File Transfer

File Transfer Method	Type of Connection
TFTP Get command from the MSS Server to the workstation that has the binary configuration file, to download operational software images and configuration files to the MSS Server. Files sent using TFTP must be binary, or the MSS Server cannot use them. Use the Create command of the Configuration Program to save configuration files in binary format before downloading them to the MSS Server. After the MSS Server is operational in the network, you can use the TFTP Put command over IP to upload a file from the MSS Server to a workstation. The file will be uploaded in binary format. Both operational software and configuration files can be uploaded. Use the Read router configuration option of the Configuration Program to make an uploaded configuration file usable by the Configuration Program so that you can change some parameter values in it. **Note:** Using TFTP Put is a way to retrieve files from the MSS Server if the Retrieve option of the Configuration Program is not available.	1. SLIP connection (using the TFTP Get command to download files to the MSS Server). 2. IP connection of operational MSS Server over functioning network (using the TFTP Get and Put commands to download and upload files).
Xmodem in ProComm or an equivalent communications program from the workstation. This method uses ASCII terminal emulation and can download files to the MSS Server. The MSS Server cannot be operational in the network to use this method. Configuration and operational files must be in binary format to be used by the MSS Server. **Note:** This is a second way to retrieve files from the MSS Server if the Retrieve option of the Configuration Program is not available.	Serial connection through a modem (PCMCIA or an external modem) or through a null modem.
The Communications Option of the **Configuration Program** (actually, the protocol for this is SNMP). This method cannot be used until the MSS Server is operational in the network. The files are not binary, but are in a format that is internal to the Configuration Program. This function can send configuration files to the MSS Server and retrieve them from the server. **Note:** The Retrieve Option is available only in the version of the Configuration Program that runs in the AIX environment.	IP connection of operational MSS Server over functioning network.

Appendix E. Common Tasks

This appendix provides a series of questions and answers dealing with common MSS Server installation, operation, and maintenance tasks, with suggestions as to where to find further help in performing them.

Command Line Interface

Question: How do I access the command line interface (the operating code)?

Answer: From within the firmware menu system (the System Management Services panel): press **F9**. The * prompt is displayed after the system boots.

The command line interface is described in the *Multiprotocol Switched Services (MSS) Server Interface Configuration and Software User's Guide*.

Displaying a List of Active Hardware Interfaces

Question: How do I display a list of active hardware interfaces?

Answer:

1. Access the command line interface (the * prompt).
2. Type **talk 6** and press **Enter** twice to reach the `Config>` prompt.
3. Enter **list dev**.
4. Press **Ctrl-p** to return to the command line interface.

Displaying the Operational State of the Interfaces

Question: How do I see the state (for example, up, down, disabled) of an interface?

Answer:

1. Access the command line interface (the * prompt).
2. Type **talk 5** and press **Enter** twice to reach the + (monitoring) prompt.
3. Enter **configuration**.
4. Press **Ctrl-p** to return to the command line interface.

Verifying Connectivity

Question: How do I verify that a given IP address is online?

Answer:

1. Access the command line interface (the * prompt).
2. Type **talk 5** and press **Enter** twice to reach the + prompt.
3. Type **protocol** and press **Enter**.
4. Type **ip** and press **Enter**. The prompt changes to `IP>`.

5. Type **ping** *IP address value* and press **Enter**. Press **Enter** to stop the ping process.
6. Type **exit** at the `IP>` prompt and press **Enter**. The prompt changes to `+`.
7. Press **Ctrl-p** to return to the command line interface.

Viewing Vital Software Data

Question: How do I view vital software data?

Answer:

1. At the `*` prompt, type **talk 6** and press **Enter** twice. The `Config>` prompt appears.
2. Enter **boot**.
3. Enter **describe**. The vital software data is displayed.
4. Press **Ctrl-p** to return to the command line interface.

Viewing Vital Hardware Data

Question: How do I view vital hardware data?

Answer:

1. Access the firmware main menu: During boot-up, press **F1** at the `Prematurely terminate boot sequence` prompt.
2. Select **4. Utilities**.
3. Select **9. View or Set Vital Product Data**.
4. Select **Hardware Vital Product Data**. The vital hardware data is displayed.
5. Return to the firmware main menu.
6. Press **F9** to load the operating software.

Adding an Adapter

Question: How do I add an adapter when the MSS Server is being initially configured?

Answer: First, perform hardware installation of the adapter as described in the *Multiprotocol Switched Services (MSS) Server Service and Maintenance Manual*. Then:

1. Access the command line interface (`*` prompt).
2. Type **talk 6** and press **Enter** twice to reach the `Config>` prompt.
3. Enter **add device** *type of device*.

   For example, **add device atm**
4. Enter the device slot number (1–2).
5. Make a note of the interface number to which this port is assigned and the net number.

Note: The steps only create the interface. You still have to use the **net** command to configure characteristics unique to that interface. You also need to use the **protocol** command to configure protocols on the interface.

Running Quick Configuration

Question: How do I run the Quick Configuration program?

Answer: First, make sure each adapter has been "added" (see "Adding an Adapter" on page E-2). Then, at the `Config (only)` prompt, enter **qc**.

Disabling an Adapter Port

Question: How do I disable a configured adapter port?

Answer:

1. Access the command line interface (`*` prompt).
2. Type **talk 6** and press **Enter** twice to reach the `Config>` prompt.
3. Enter **list device**.
4. Make a note of the interface number of the adapter you wish to disable.
5. Enter **disable interface** *interface number*.
6. Enter **write** to save your changes.
7. Reboot the MSS Server to make the configuration changes active.

For details of this procedure, refer to the *Multiprotocol Switched Services (MSS) Server Interface Configuration and Software User's Guide*.

Enabling an Adapter Port

Question: How do I enable a configured adapter port that was disabled using **disable interface** (in "Disabling an Adapter Port")?

Answer:

1. Access the command line interface (`*` prompt).
2. Type **talk 6** and press **Enter** twice to reach the `Config>` prompt.
3. Enter **list device**.
4. Make a note of the interface number of the adapter you wish to enable.
5. Enter **enable interface** *interface number*.
6. Enter **write** to save your changes.
7. Reboot the MSS Server to make the configuration changes active.

For details of this procedure, refer to the *Multiprotocol Switched Services (MSS) Server Interface Configuration and Software User's Guide*.

Disabling an Adapter Port to Suspend Traffic

Question: How do I disable a configured adapter port to suspend traffic?

Answer:

1. Access the command line interface (* prompt).
2. Type **talk 5** and press **Enter** twice to reach the + prompt.
3. Enter the **configuration** command.
4. Make a note of the interface number of the adapter that you want to disable.
5. Enter **disable** *interface number*.

Enabling an Adapter Port to Resume Traffic

Question: How do I enable a configured adapter port (that was disabled using the **talk 5 disable** command in "Disabling an Adapter Port to Suspend Traffic") to resume traffic?

Answer:

1. Access the command line interface (* prompt).
2. Type **talk 5** and press **Enter** twice to reach the + prompt.
3. Enter the **configuration** command.
4. Make a note of the interface number of the adapter you wish to enable.
5. Enter **test** *interface number*.

   Note: If you use the **test** command to enable an interface that has been configured (in **talk 6**) as disabled, the next time that you reboot the MSS Server the interface will be disabled again.

   Therefore, you should also use the **talk 6 enable interface** command to ensure that the interface is enabled the next time a reboot does occur.

For details of this procedure, refer to the *Multiprotocol Switched Services (MSS) Server Interface Configuration and Software User's Guide*.

Deleting an Adapter from the Configuration

Question: How do I delete an adapter from the configuration?

Answer:

1. Access the command line interface (`*` prompt).
2. Type **talk 6** and press **Enter** twice to reach the `Config>` prompt.
3. Enter **list device**.
4. On a sheet of paper, write down the interface number of the adapter you wish to delete.

   Note: If you are removing a multi-port adapter, then you need to record the interface number of all interfaces configured for that adapter.
5. Enter **delete interface** *interface number*.
6. At the `Are you sure?` prompt, enter **y**.
7. Enter **write** to save your changes.
8. Reboot the MSS Server to make the configuration changes active.

For details of this procedure, refer to the *Multiprotocol Switched Services (MSS) Server Interface Configuration and Software User's Guide*.

Up-to-Date MSS Server Information

Question: How can I find out the most current information about the MSS Server?

Answer: Point your Web browser to:

`http://www.networking.ibm.com/820/820prod.html`

Appendix F. Safety Information

Danger: Before you begin to install this product, read the safety information in *Caution: Safety Information—Read This First*, SD21-0030. This booklet describes safe procedures for cabling and plugging in electrical equipment.

Gevaar: Voordat u begint met de installatie van dit produkt, moet u eerst de veiligheidsinstructies lezen in de brochure *PAS OP! Veiligheidsinstructies—Lees dit eerst,* SD21-0030. Hierin wordt beschreven hoe u electrische apparatuur op een veilige manier moet bekabelen en aansluiten.

Danger: Avant de procéder à l'installation de ce produit, lisez d'abord les consignes de sécurité dans la brochure *ATTENTION: Consignes de sécurité—A lire au préalable,* SD21-0030. Cette brochure décrit les procédures pour câbler et connecter les appareils électriques en toute sécurité.

Perigo: Antes de começar a instalar este produto, leia as informações de segurança contidas em *Cuidado: Informações Sobre Segurança—Leia Isto Primeiro,* SD21-0030. Esse folheto descreve procedimentos de segurança para a instalação de cabos e conexões em equipamentos elétricos.

危險：安裝本產品之前， 請先閱讀 "Caution: Safety Information–Read This First" SD21-0030 手冊中所提供的安全注意事項。 這本手冊將會說明使用電器設備的纜線及電源的安全程序。

Opasnost: Prije nego sto počnete sa instalacijom produkta, pročitajte naputak o pravilima o sigurnom rukovanju u Upozorenje: Pravila o sigurnom rukovanju - Prvo pročitaj ovo, SD21-0030. Ovaj privitak opisuje sigurnosne postupke za priključrivanje kabela i priključivanje na električno napajanje.

Upozornění: než zahájíte instalaci tohoto produktu, přečtěte si nejprve bezpečnostní informace v pokynech „Bezpečnostní informace“ č. 21-0030. Tato brožurka popisuje bezpečnostní opatření pro kabeláž a zapojení elektrického zařízení.

Fare! Før du installerer dette produkt, skal du læse sikkerhedsforskrifterne i *NB: Sikkerhedsforskrifter—Læs dette først* SD21-0030. Vejledningen beskriver den fremgangsmåde, du skal bruge ved tilslutning af kabler og udstyr.

 **Gevaar** Voordat u begint met het installeren van dit produkt, dient u eerst de veiligheidsrichtlijnen te lezen die zijn vermeld in de publikatie *Caution: Safety Information - Read This First*, SD21-0030. In dit boekje vindt u veilige procedures voor het aansluiten van elektrische appratuur.

 **VAARA:** Ennen kuin aloitat tämän tuotteen asennuksen, lue julkaisussa *Varoitus: Turvaohjeet—Lue tämä ensin*, SD21-0030, olevat turvaohjeet. Tässä kirjasessa on ohjeet siitä, miten sähkölaitteet kaapeloidaan ja kytketään turvallisesti.

 **Danger :** Avant d'installer le présent produit, consultez le livret *Attention : Informations pour la sécurité — Lisez-moi d'abord*, SD21-0030, qui décrit les procédures à respecter pour effectuer les opérations de câblage et brancher les équipements électriques en toute sécurité.

 **Vorsicht:** Bevor mit der Installation des Produktes begonnen wird, die Sicherheitshinweise in *Achtung: Sicherheitsinformationen—Bitte zuerst lesen,* IBM Form SD21-0030. Diese Veröffentlichung beschreibt die Sicherheitsvorkehrungen für das Verkabeln und Anschließen elektrischer Geräte.

Κίνδυνος: Πριν ξεκινήσετε την εγκατάσταση αυτού του προϊόντος, διαβάστε τις πληροφορίες ασφάλειας στο φυλλάδιο *Caution: Safety Information-Read this first,* SD21-0030. Στο φυλλάδιο αυτό περιγράφονται οι ασφαλείς διαδικασίες για την καλωδίωση των ηλεκτρικών συσκευών και τη σύνδεσή τους στην πρίζα.

 **Vigyázat:** Mielôtt megkezdi a berendezés üzembe helyezését, olvassa el a *Caution: Safety Information— Read This First,* SD21-0030 könyvecskében leírt biztonsági információkat. Ez a könyv leírja, milyen biztonsági intézkedéseket kell megtenni az elektromos berendezés huzalozásakor illetve csatlakoztatásakor.

 **Pericolo:** prima di iniziare l'installazione di questo prodotto, leggere le informazioni relative alla sicurezza riportate nell'opuscolo *Attenzione: Informazioni di sicurezza — Prime informazioni da leggere* in cui sono descritte le procedure per il cablaggio ed il collegamento di apparecchiature elettriche.

危険： 導入作業を開始する前に、安全に関する
小冊子SD21-0030 の「最初にお読みください」
(Read This First)の項をお読みください。
この小冊子は、電気機器の安全な配線と接続の
手順について説明しています。

위험: 이 제품을 설치하기 전에 반드시
"주의: 안전 정보-시작하기 전에"
(SD21-0030) 에 있는 안전 정보를
읽으십시오.

Fare: Før du begynner å installere dette produktet, må du lese sikkerhetsinformasjonen i *Advarsel: Sikkerhetsinformasjon — Les dette først*, SD21-0030 som beskriver sikkerhetsrutinene for kabling og tilkobling av elektrisk utstyr.

Uwaga:
Przed rozpoczęciem instalacji produktu należy zapoznać się z instrukcją:
"Caution: Safety Information - Read This First", SD21-0030.
Zawiera ona warunki bezpieczeństwa przy podłączaniu do sieci elektrycznej
i eksploatacji.

Perigo: Antes de iniciar a instalação deste produto, leia as informações de segurança *Cuidado: Informações de Segurança — Leia Primeiro*, SD21-0030. Este documento descreve como efectuar, de um modo seguro, as ligações eléctricas dos equipamentos.

ОСТОРОЖНО: Прежде чем инсталлировать этот продукт, прочтите Инструкцию по технике безопасности в документе "Внимание: Инструкция по технике безопасности -- Прочесть в первую очередь", SD21-0030. В этой брошюре описаны безопасные способы каблирования и подключения электрического оборудования.

Nebezpečenstvo: Pred inštaláciou výrobku si prečítajte
bezpečnosté predpisy v
Výstraha: Bezpeč osté predpisy - Prečítaj ako prvé,
SD21 0030. V tejto brožúrke sú opísané bezpečnosté
postupy pre pripojenie elektrických zariadení.

Pozor: Preden zaènete z instalacijo tega produkta
preberite poglavje: 'Opozorilo: Informacije
o varnem rokovanju-preberi pred uporabo,"
SD21-0030. To poglavje opisuje pravilne
postopke za kabliranje,

Peligro: Antes de empezar a instalar este producto, lea la información de seguridad en *Atención: Información de Seguridad — Lea Esto Primero,* SD21-0030. Este documento describe los procedimientos de seguridad para cablear y enchufar equipos eléctricos.

Varning — livsfara: Innan du börjar installera den här produkten bör du läsa säkerhetsinformationen i dokumentet *Varning: Säkerhetsföreskrifter— Läs detta först,* SD21-0030. Där beskrivs hur du på ett säkert sätt ansluter elektrisk utrustning.

危險：

開始安裝此產品之前，請先閱讀安全資訊。

注意：

請先閱讀 - 安全資訊 SD21-0030

此冊子說明插接電器設備之電纜線的安全程序。

Danger Notices

DANGER:
1 To avoid a shock hazard, do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.

PERIGO:
1 Para evitar perigo de choque, não conecte ou desconecte quaisquer cabos ou faça instalação, manutenção ou reconfiguração deste produto durante uma tempestade magnética.

危險
雷雨期間，請勿安裝、維修、重新架構本產品，
或連接及拔下任何電纜，以免遭到電擊。

OPASNO
Da se izbjegne električni udar nemojte priključivati, odnosno isključivati bilo koje kablove, a takodjer vršiti bilo koje elektroinstalaterske radove, mijenjati konfiguraciju ili obavljati tehničko servisiranje ovog proizvoda za vrijeme oluje.

NEBEZPEČÍ!
Za bouřky s výrobkem nijak nemanipulujte: nepřipojujte ani neodpojujte žádné kabely a neprovádějte žádnou instalaci, údržbu ani úpravy. Nebezpečí úrazu elektrickým proudem!

Fare!
1 Undgå elektrisk stød:
Produktet må hverken installeres, vedligeholdes eller omkonfigureres i tordenvejr. Det samme gælder for tilslutning eller afmontering af kabler.

VAARA:
1 Älä kytke tai irrota kaapeleita äläkä asenna tai huolla tätä laitetta tai muuta sen kokoonpanoa ukonilman aikana. Muutoin voit saada sähköiskun.

DANGER:
Pour éviter tout risque de choc électrique, ne manipulez aucun câble et n'effectuez aucune opération d'installation, d'entretien ou de reconfiguration de ce produit au cours d'un orage.

VORSICHT:
1 Aus Sicherheitsgründen bei Gewitter an diesem Gerät keine Kabel angeschließen oder lösen. Ferner keine Installations-, Wartungs oder Rekonfigurationsarbeiten durchführen.

ΚΙΝΔΥΝΟΣ

Λόγω του κινδύνου ηλεκτροπληξίας, αποφύγετε τη σύνδεση ή αποσύνδεση καλωδίων καθώς και την εγκατάσταση, συντήρηση ή αλλαγή διάρθρωσης αυτού του προϊόντος κατά τη διάρκεια καταιγίδας.

VESZÉLY!
Az áramütés elkerülése végett elektromos vihar közben ne dugja be és ne húzza ki e termék semmilyen kábelét, illetve ne végezzen azon szerelési, karbantartási vagy újrakonfigurálási munkát.

PERICOLO:
1 Per evitare scosse elettriche, non collegare o scollegare cavi o effettuare installazioni, riconfigurazioni o manutenzione di questo prodotto durante un temporale.

危険

感電の危険をさけるため、雷雨の間は、ケーブルの抜き差し、
あるいはこの製品の設置、保守、再構成をしないでください。

위 험

감전 쇼크의 위험을 피하기 위하여 천둥번개가 치는 동안에는 전원을 연결
하거나 또는 끊지 마시고 또한 본 제품의 설치, 수리 및 시스템 재구성을
하지 마시오.

FARE:
1 For å unngå elektrisk støt må ikke kabler kobles til eller fra. Du må heller ikke foreta installering, vedlikehold eller rekonfigurering av dette produktet under tordenvær.

NIEBEZPIECZEŃSTWO
W celu uniknięcia porażenia prądem nie wolno podłączać lub rozłączać żadnych kabli, ani przeprowadzać instalacji, konserwacji lub rekonfiguracji urządzenia znajdującego się pod napięciem.

PERIGO:
1 Para evitar possíveis choques eléctricos, não ligue nem desligue cabos, nem instale, repare ou reconfigure a máquina, durante uma trovoada.

ОСТОРОЖНО
Во избежание поражения электрическим током во время грозы запрещается присоединять и отсоединять кабели, инсталлировать, обслуживать или реконфигурировать данное изделие.

NEBEZPEČENSTVO!
Pri búrke s výrobkom nijako nemanipulujte: nepripájajte ani neodpájajte žiadne káble a nevykonávajte žiadnu inštaláciu, údržbu ani úpravy. Nebezpečenstvo úrazu elektrickým prúdom!

NEVARNOST
Da se izognete udaru električnega toka, ne priključevati oziroma izključevati nikakršnjih kablov ali izvajati instalacijo, vzdrževanje, ali rekonfiguracijo te naprave med nevihto.

PELIGRO:
1 Para evitar la posibilidad de descargas, no conecte o desconecte ningún cable, ni realice ninguna instalación, mantenimiento o reconfiguración de este producto durante una tormenta eléctrica.

VARNING — LIVSFARA
1 Vid åskväder ska du aldrig ansluta eller koppla ur kablar eller arbeta med installation, underhåll eller omkonfigurering av utrustningen.

危險：
1.爲避免雷擊的危險，請不要在暴風雨雷擊時連接或拆除電纜，
或從事安裝、

DANGER:
2 To avoid the possibility of electrical shock, switch power off and unplug the power cord from the outlet before detaching the power cord from the base unit.

PERIGO:
2 Para evitar a possibilidade de choque elétrico, desligue a força e retire o cabo de força da tomada antes de desligá-lo da unidade básica.

危險！

如要避免可能的電擊，請自基本單元拉掉電源線之前，
先關閉電源並自插座拉掉電源線。

Upozorenje !

Zbog izbjegavanja mogućeg električnog šoka treba isključiti napajanje
i odspojiti kabel od utičnice prije odvajanja kabela od glavnog uređaja.

NEBEZPEČÍ
Aby se předešlo úrazu elektrickým proudem, vypněte napájení a vytáhněte napájecí šňůru napřed ze zásuvky a teprve potom ze základní jednotky

Pas på!
2 Undgå risiko for elektrisk stød!
Sluk for strømmen, og træk netledningen ud af stikket, før du fjerner netledningen fra basisenheden.

VAARA:
2 Välttääksesi sähköiskun vaaran katkaise virta ja irrota verkkojohto pistorasiasta, ennen kuin irrotat verkkojohtoa perusyksiköstä.

DANGER
2 Pour éviter tout risque de choc électrique, mettez la machine hors tension et débranchez le cordon d'alimentation du socle de prise de courant avant de le débrancher de l'unité de base.

VORSICHT:
2 Aus Sicherheitsgründen das Gerät ausschalten und den Netzstecker ziehen, bevor das Netzkabel von der Grundeinheit gelöst wird.

Κίνδυνος

Για να αποφύγετε την πιθανότητα ηλεκτροπληξίας, σβήστε τη συσκευή και αποσυνδέστε το καλώδιο παροχής ρεύματος από την πρίζα πριν αποσυνδέσετε το καλώδιο παροχής ρεύματος από τη συσκευή.

VIGYÁZAT, ÉLETVESZÉLY!
Az áramütés elkerülésére, kapcsolja ki a feszültséget és húzza ki a hálózati csatlakozókábelt a fali aljzatból, mielőtt azt az alap egységből kihúzná!

PERICOLO:
2 Per evitare la possibilità di scosse elettriche, spegnere la macchina e scollegare il cavo di alimentazione dalla presa prima di staccarlo dall'unità base.

危険
感電の危険をさけるため、電源スイッチを切り、コンセントから
電源コードを抜いたあとでベース・ユニットの電源コードを
抜くようにしてください。

위험

번/개치는 동안 신호 케이블을 연결 또는 단절시키지 마시오.
또한 장비도 사용하지 마시오.

FARE:
2 For å unngå faren for elektrisk støt, må du slå av strømmen og koble nettkabelen fra stikkontakten før du fjerner den fra hovedenheten.

Niebezpieczeństwo!
Aby uniknąć porażenia prądem elektrycznym,
przed odłączeniem przewodu zasilającego modułu
głównego, należy wyłączyć zasilanie i wyciągnąć przewód
zasilający z gniazdka.

PERIGO:
2 Para evitar a possibilidade de choques eléctricos, desligue o interruptor da corrente eléctrica e retire o cabo de corrente eléctrica da tomada antes de desligar o cabo de corrente eléctrica da unidade base.

ОСТОРОЖНО
Во избежание возможного поражения электрическим током выключите питание и
выньте кабель из розетки прежде, чем отсоединять силовой кабель от основного узла.

NEBEZPEČENSTVO:

Aby ste sa vyhli možnému elektrickému šoku, vypnite zariadenie a odpojte prípojný kábel z elektrického rozvodu predtým ako odpojíte tento kábel zo základnej jednotky.

NEVARNOST
Da se izognete nevarnosti udara elektrièenega toka, izkljuèite sistem in iztaknite napajalni kabel iz vtiènice, šele nato izloèite napajalni kabel iz osnovne enote.

PELIGRO:
2 Para evitar la posibilidad de descargas, coloque el interruptor de encendido en la posición de apagado y desenchufe el cable de alimentación del tomacorriente antes de desconectar dicho cable de la unidad base.

VARNING — livsfara:
2 För att undvika elolycksfall ska du slå av strömmen och lossa nätkabeln från eluttaget innan du lossar den från basenheten.

危險：
2.爲避免電擊的可能性，在從機拆除電源線之，前請先將電源
關閉並從

DANGER:
4 To avoid shock hazard:

- The power cord must be connected to a properly wired and earthed receptacle.
- Any equipment to which this product will be attached must also be connected to properly wired receptacles.

PERIGO
4 Para evitar perigo de choque:

- O cabo de força deve estar conectado a tomadas com fios e aterramento adequados.
- Qualquer equipamento ao qual este produto seja ligado também deverá estar conectado a tomadas com fiação adequada.

危險！
如要避免電擊，則
o 電源線必須連接至確實鎖緊且接地的插座上。
o 本產品所要附加的任何設備，也必須連接至確實鎖緊的插座上。

OPASNO
Da se izbjegne električni udar:

- Mrežna žica mora se spojiti sa priključnicom koja je propisno priključena i zazemljena.
- Svaka oprema kojoj je neophodno priključiti ovaj proizvod mora se spojiti sa propisno uključenom priključnicom.

NEBEZPEČÍ!
Přívodní kabel smí být připojen pouze ke správně zapojené a uzemněné zásuvce.

- Také každé zařízení, ke kterému je tento výrobek připojen, smí být připojeno pouze ke správně zapojené zásuvce.
- V opačném případě hrozí nebezpečí úrazu elektrickým proudem.

FARE!
4 Undgå elektrisk stød:

- Netledningen skal tilsluttes en korrekt installeret stikkontakt med forbindelse til jord.
- Sørg for korrekt installation af stikkontakterne, både til produktet og til det udstyr, det tilsluttes.

VAARA:
4 Voit saada sähköiskun, jos et noudata seuraavia ohjeita:

- Tämän laitteen verkkojohdon saa kytkeä vain toimintakunnossa olevaan maadoitettuun pistorasiaan.
- Tähän laitteeseen liitettävät laitteet on kytkettävä toimintakunnossa olevaan maadoitettuun pistorasiaan.

DANGER
4 Pour éviter tout risque de choc électrique:

- Le cordon d'alimentation doit être branché sur une prise d'alimentation correctement câblée et mise à la terre.
- D'autre part, tout le matériel connecté à ce produit doit également être branché sur des prises d'alimentation correctement câblées et mises à la terre.

VORSICHT
4 Aus Sicherheitsgründen

- Gerät nur an eine Schutzkontaktsteckdose mit ordnungsgemäß geerdetem Schutzkontakt anschließen.
- Alle angeschlossenen Geräte ebenfalls an Schutzkontaktsteckdosen mit ordnungsgemäß geerdetem Schutzkontakt anschließen.

ΚΙΝΔΥΝΟΣ

Για να αποφύγετε τον κίνδυνο ηλεκτροπληξίας:

- Το καλώδιο παροχής ρεύματος πρέπει να είναι συνδεδεμένο σε μια σωστά καλωδιωμένη και γειωμένη πρίζα.
- Οποιεσδήποτε άλλες συσκευές με τις οποίες πρόκειται να συνδεθεί αυτή η συσκευή πρέπει επίσης να είναι συνδεδεμένες σε σωστά καλωδιωμένες πρίζες.

VESZÉLY!
Az áramütés elkerülése végett:

- A hálózati csatlakozózsinórt megfelelően bekötött és földelt dugaszolóaljzatba kell csatlakoztatni.
- Minden olyan berendezést megfelelően bekötött dugaszolóaljzatba kell csatlakoztatni, amelyhez a terméket kapcsolja.

PERICOLO:
4 Per evitare scosse elettriche:

- Il cavo di alimentazione deve essere collegato a una presa munita di terra di sicurezza e propriamente cablata.
- Tutte le unità esterne di questo prodotto, devono essere collegate a prese munite di terra di sicurezza e propriamente cablate.

危険

感電防止のため

- 電源ケーブルは、正しく配線された接地（アース）極付きコンセントに接続してください。
- この製品が接続される機器もすべて正しく配線されたコンセントに接続してください。

위 험

감전 쇼크의 위험을 피하기 위하여:

- 전원은 반드시 적정 규격의 전선을 사용하시고 접지선이 연결된 접속기와 연결 하십시오.
- 본 제품과 연결되는 모든 기기는 반드시 적정 규격의 전선으로 접지선이 연결된 접속기와 연결되어 있어야 합니다.

FARE:

4 For å unngå elektrisk støt:

- Nettkabelen må være plugget i en korrekt koblet og jordet stikkontakt.
- Alt utstyr som er koblet til dette produktet må være plugget i en korrekt koblet stikkontakt.

UWAGA

Aby uniknąć porażenia prądem elektrycznym:

- o Wtyczka musi być podłączona do prawidłowo zainstalowanego i uziemionego gniazdka.
- o Wszystkie inne urządzenia, z którym to urządzenie jest połączone, muszą być podłączone do prawidłowo zainstalowanych gniazdek.

PERIGO:

4 Para evitar choques eléctricos:

- O cabo de alimentação tem de estar ligado a uma tomada de corrente correctamente instalada e com ligação à terra.
- Todo o equipamento ligado a esta máquina também deve estar ligado a tomadas correctamente instaladas.

ОСТОРОЖНО

Во избежание поражения электрическим током:

- o Кабель питания должен быть присоединён к электрической розетке, каблированной и заземлённой надлежащим образом.
- o Всё оборудование, к которому будет подключено данное изделие, также должно быть присоединено к электрическим розеткам, каблированным надлежащим образом.

NEBEZPEČENSTVO!

Prívodný kábel môže byť pripojený iba k správne zapojenej a uzemnenej zásuvke.

- Rovnak každé zariadenie, ku ktorému je tento výrobok pripojený, môže byť pripojené iba k správne zapojenej zásuvke.
- V opačnom prípade hrozí nebezpečenstvo úrazu elektrickým prúdom.

NEVARNOST

Da se izognete udaru električnega toka:

- o Napajalni kabel mora biti priključen v pravilno instalirano in ozemljeno vtičnico.
- o Katerakoli druga oprema, na katero se veže ta sistem, mora biti ravno tako pravilno priključena v ustrezno vtičnico.

PELIGRO:

4 Para evitar peligro de descargas:

- El cable de alimentación debe estar conectado a una toma de corriente adecuadamente cableada y con toma de tierra.
- Cualquier equipo al que se conecte este producto debe estar también conectado a tomas de corriente adecuadamente cableadas.

VARNING — LIVSFARA

4 För att undvika elolycksfall:

- Nätkabeln måste anslutas till ett rätt kopplat jordat eluttag.
- Även annan utrustning som ska anslutas till den här produkten måste anslutas till jordat uttag.

危險：

爲避免雷擊的危險：
・電源線必須連接至一個佈線妥當且接地的插座。
・任何連接

DANGER:
5 Hazardous voltages exist inside this machine when it is powered on. Anytime you service this unit with the cover off, be sure to unplug the power cord.

PERIGO:
5 Existem voltagens perigosas no interior desta máquina quando ela está ligada. Toda vez que você for fazer a manutenção desta unidade com a tampa aberta, certifique-se de desconectar o cabo de força.

5

危險：

本機器電源開啓時有高壓電。
如需打開機蓋維修機器，請務
必先把電源線的插頭拔掉。

5

OPASNO
Unutar ovog uredjaja prilikom njegovog uključivanja u mrežu nastaje opasan napon. Svaki put kad radite s ovim uredjajem s otvorenim poklopcem morate biti sigurni da mrežna žica nije spojena s priključnicom.

5

NEBEZPEČÍ!
Když je zařízení připojeno k síti, je uvnitř nebezpečné napětí. Před každým zásahem do odkrytého zařízení je třeba se přesvědčit, že je přívodní kabel od sítě odpojen.

FARE!
5 Der er høj spænding i denne maskine, når den er tændt. Træk derfor altid netledningen ud, når enheden skal efterses.

VAARA: 5 Virran ollessa kytkettynä koneen sisällä on vaarallisia jännitteitä. Muista aina irrottaa verkkojohto, jos huollat konetta sen suojakannen ollessa irrotettuna.

DANGER:
5 Tension dangereuse à l'intérieur de la machine lorsque celle-ci est sous tension. Avant toute intervention à l'intérieur, débranchez le cordon d'alimentation.

VORSICHT:
5 Bei eingeschaltetem Gerät liegen im Innern gefährliche Spannungen an. Sicherstellen, daß bei Arbeiten an der geöffneten Maschine der Netzstecker gezogen ist.

5

Κίνδυνος:

Όταν η συσκευή είναι αναμμένη, υπάρχουν στο εσωτερικό της σημεία επικίνδυνα υψηλής τάσης. Αν χρειάζεται να αφαιρέσετε το κάλυμμα της συσκευής για συντήρηση, αποσυνδέστε το καλώδιο παροχής ρεύματος.

5

VESZÉLY!
Bekapcsolt állapotban a gépen belül veszélyes feszültségek lépnek fel.
Amikor a készüléket eltávolított fedél mellett javítja, feltétlenül húzza ki a
hálózati csatlakozózsinórt.

PERICOLO:
5 Quando la macchina è alimentata, vi sono tensioni pericolose all'interno. Ogni volta che si effettuano interventi di manutenzione, se il coperchio non è inserito, scollegare il cavo di alimentazione.

5

危険:

電源投入中は、内部に危険な電圧がかかっています。カバーを開けて
保守作業をする場合は、必ず電源コードを抜いてから行ってください。

5

위험:

기계를 켤때 위험한 전압이 흐를 수 있으니 조심하십시오.

5

FARE:
5 Det er farlig spenning inni maskinen når den er slått på. Hver gang du utfører service på maskinen mens dekselet er tatt av, må du huske på å trekke ut nettkabelen.

5

Uwaga wysokie napięcie!

Przed zdjęciem obudowy, należy wyłączyć przewód zasilający z gniazdka.

PERIGO:
5 Este equipamento, quando ligado, apresenta tensões perigosas no seu interior. Sempre que proceda a assistência nesta unidade com a cobertura retirada, certifique-se que o cabo de alimentação da unidade se encontra desligado.

5

Осторожно:

При включенном питании в устройстве имеется напряжение, опасное
для жизни. При обслуживании устройства со снятой крышкой отсоедините кабель питания.

5

NEBEZPEČENSTVO!

Keď je zariadenie pripojené na sieť, je vo vnútri nebezpečné napätie. Pred každým zásahom do odkrytého zariadenia je potrebné sa presvedčiť, že prívodný kábel je odpojený od siete.

5

Nevarnost:

Visoka napetost pri vključeni napravi!
Pri servisiranju odprte naprave, se prepričajte,
da je naprava izključena iz omrežja.

PELIGRO:

5 Aun cuando está apagada, hay voltajes peligrosos en esta máquina. Siempre que dé servicio a esta máquina sin la cubierta, asegúrese de desenchufar el cable de alimentación.

VARNING — LIVSFARA:

5 Farliga spänningar i maskinen när den är påslagen. Se till att nätkabeln är urkopplad innan du öppnar enheten.

5

危險：

當此機器的電源打開時，機器內部的電壓有危險性。因此每次
您要打開機器

Caution Notices

Caution:
The base unit weighs 6.7kg (l4.8 lbs). When you loosen the screws, support the unit firmly to ensure that it does not fall to the ground or onto other equipment in the rack.

Cuidado: Você deve segurar a unidade de base enquanto estiver removendo os parafusos para evitar que caiam no chão ou em outro equipamento abaixo dela no rack. A unidade pesa aproximadamente 6.7 kg (14.5 lb).

警告：

您在拆除螺钉时，必须支持基本部件，以避免它跌在地上，或在它之下其他停放在机架上的设备。这部件大约重 6.7公斤（14.5磅）。

OPREZ:
Potrebno je pridrzavati sistemsku jedinicu dok skidate vijke da bi sprijecili moguci pad na pod ili na druge uredaje smjestene u ormaru ispod nje. Sistemska jedinica je teska otprilike 6.7 kg (14.5 funti)

Při odstraňování šroubů podpírejte základní jednotku tak, aby nespadla na zem nebo na jiné zařízení pod stojanem. Tato jednotka váží asi 6.7 kg (14.5 lb).

Pas på!

Undgå at tabe basisenheden på gulvet eller ned i udstyr monteret under den i racket: Understøt basisenheden, mens du fjerner skruerne. Enheden vejer ca. 6,7 kg.

Varoitus:
Tue keskusyksikköä, kun irrotat ruuveja. Muutoin se voi pudota lattialle tai telineen muiden laitteiden päälle. Keskusyksikkö painaa noin 6,7 kiloa.

Attention :
L'unité de base pèse 6,7 kg. Lorsque vous en desserrez les vis, maintenez-la fermement pour éviter qu'elle ne tombe à terre ou sur un autre équipement de l'armoire.

ACHTUNG
Die Basiseinheit beim Lösen der Schrauben unbedingt festhalten.
Die Basiseinheit wiegt etwa 6,7 kg.

Προσοχή:

Η βάση της συσκευής ζυγίζει 6,7Kg. Όταν ξεβιδώνετε τις βίδες,
κρατάτε καλά τη συσκευή ώστε να μην πέσει στο έδαφος ή πάνω σε
άλλες συσκευές.

FIGYELMEZTETÉS!

Fogja meg jól az alap egységet a csavarok kicsavarásakor, hogy elkerülje annak a padlóra vagy
a keretben alatta lévő más berendezésre esését! Az egység tömege kb. 6,7 kg (14.5 lb).
(Lásd a "Biztonsági figyelmeztetések" A Függelékében a 3-as FIGYELMEZTETÉS fordítását!)

Attenzione

Occorre sostenere l'unità di base durante la rimozione delle viti per evitare che tale unità cada sul pavimento o su un'altra apparecchiatura posta sotto il rack. L'unità pesa approssimativamente 6,7 kg.

注意:
ねじを取り外している間は、装置が床の上に落下したり、あるいはラック内の他の機器の上に落下
したりしないように、必ず装置をささえておく必要があります。装置の最大重量は 6.7 kg です。

주의 :

나사들이 바닥이나 랙 안의 다른 장비에 떨어지지 않도록
장치에서 나사들이 제거되는 동안에 장치를 지지해야 합니다.
장치의 무게는 약 6.7kg (14.5lb) 입니다.

Advarsel:

Du må støtte opp hovedenheten mens du tar ut skruene så den ikke faller i gulvet eller ned på annet utstyr som er lenger ned i kabinettet. Enheten veier ca. 6,7 kg.

UWAGA:

Podczas wykręcania śrub jednostkę podstawową należy podtrzymywać,
aby nie upadła na podłogę lub inne urządzenia położone pod nią w stelażu.
Jednostka ma masę oko

A "Informacje o bezpieczeń

Cuidado:
Deve segurar a unidade de base enquanto remove os parafusos, de modo a evitar que a unidade caia no ch-o ou sobre outro equipamento que se encontre instalado abaixo dela, no bastidor. A unidade pesa aproximandamente 6,7 Kg.

Внимание:

Основной узел весит 6,7 кг. При откручивании винтов крепко поддерживайте узел, чтобы предотвратить его падение на землю или другое оборудование в стойке.

Výstraha:

Je potrebné podoprieť základnú systémovú jednotku počas odstraňovania skrutiek, aby sa predišlo pádu častí zariadenia na zem alebo na skriňu. Hmotnosť základnej systémovej jednotky je približne 6,7 kg (14,5lb).

Opozorilo:
Pred odstranitvijo vijakov je treba osnovno enoto podpreti, da ne pade na tla ali na drug del opreme v ogrodju. Enota tehta okoli 6.7 kg.

Precaución:
Debe sostener la unidad base mientras está quitando los tornillos para evitar que caiga al suelo o sobre otro de los equipos del bastidor. La unidad pesa 6,7 Kg. (14,5 lb). Consulte el apartado PRECAUCIÓN del Apéndice A "Información de Seguridad" para transformaciones

VARNING:
När du tar bort skruvarna måste du hålla i basenheten så att den inte faller ner på golvet eller på annan utrustning i racket. Enheten väger nästan 7 kg.

注意 :
當您要移動螺絲 寺, 必需要撐著此基本裝置以避免它掉落在地板上或架子下的其它設備。此基本裝置重約 6.7 公斤 (145 磅) 。

Appendix G. Notices

References in this publication to IBM products, programs, or services do not imply that IBM intends to make these available in all countries in which IBM operates. Any reference to an IBM product, program, or service is not intended to state or imply that only IBM's product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any of IBM's intellectual property rights may be used instead of the IBM product, program, or service. Evaluation and verification of operation in conjunction with other products, except those expressly designated by IBM, are the user's responsibility.

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United Kingdom Homologation Compliance Statement

STATEMENT OF COMPLIANCE

The United Kingdom Telecommunications Act 1984. This equipment is approved under General Approval Number NS/G/1234/J/100003

for indirect connections to the public telecommunications systems in the United Kingdom.

Electronic Emission Notices

Federal Communications Commission (FCC) Statement

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operations of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Properly shielded and grounded cables and connectors (IBM part number 55H8694 or its equivalent for the data/fax/voice modem, or IBM part number 72H4447 or equivalent for the data/fax modem) must be used in order to meet the FCC emission limits. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operations.

Industry Canada Class A Emission Compliance Statement

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Avis de conformité aux normes d'Industrie Canada

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

European Union (EU) Mark of Conformity Statement

This product is in conformity with the protection requirements of EU Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

Properly shielded and grounded cables and connectors (IBM part number 72H4447 or its equivalent for the data/fax modem) must be used in order to reduce the potential for causing interference to radio and TV communications and to other electrical or electronic equipment. IBM cannot accept responsibility for any interference caused by using other than recommended cables and connectors.

| **Warning:** This is a Class A product. In a domestic environment this product may cause radio interfer-
| ence in which case the user may be required to take adequate measures.

| **Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit**
| **von Geräten (EMVG) vom 30. August 1995 (bzw. der EMC EG Richlinie 89/336)**

| Dieses Gerät ist berechtigt in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen -
| CE - zu führen.

| Verantwortlich für die Konformitätserklärung nach Paragraph 5 des EMVG ist die
| IBM Deutschland Informationssysteme GmbH, 70548 Stuttgart.

| Informationen in Hinsicht EMVG Paragraph 3 Abs. (2) 2:

| Das Gerät erfüllt die Schutzanforderungen nach EN 50082-1 und EN 55022 Klasse A.

| EN 55022 Klasse A Geräte müssen mit folgendem Warnhinweis versehen werden:
| “Warnung: dies ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich
| Funkstörungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene
| Maßnahmen durchzuführen und dafür aufzukommen.”

| EN 50082-1 Hinweis:
| “Wird dieses Gerät in einer industriellen Umgebung betrieben (wie in EN 50082-2 festgelegt), dann kann
| es dabei eventuell gestört werden. In solch einem Fall ist der Abstand bzw. die Abschirmung zu der
| industriellen Störquelle zu vergrößern.”

| Anmerkung:
| Um die Einhaltung des EMVG sicherzustellen sind die Geräte, wie in den IBM Handbüchern angegeben,
| zu installieren und zu betreiben.

Japanese Voluntary Control Council for Interference (VCCI) Statement

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

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A

access method. The technique that is used to locate data stored on a physical medium. (A)

Advanced Peer-to-Peer Networking (APPN). (1) An extension to SNA featuring (a) greater distributed network control that avoids critical hierarchical dependencies, thereby isolating the effects of single points of failure; (b) dynamic exchange of network topology information to foster ease of connection, reconfiguration, and adaptive route selection; (c) dynamic definition of network resources; and (d) automated resource registration and directory lookup. APPN extends the LU 6.2 peer orientation for end-user services to network control and supports multiple LU types, including LU 2, LU 3, and LU 6.2.

Advanced Peer-to-Peer Networking (APPN) end node. A node that provides a broad range of end-user services and supports sessions between its local control point (CP) and the CP in an adjacent network node. It uses these sessions to dynamically register its resources with the adjacent CP (its network node server), to send and receive directory search requests, and to obtain management services. An APPN end node can also attach to a subarea network as a peripheral node or to other end nodes.

Advanced Peer-to-Peer Networking (APPN) network. A collection of interconnected network nodes and their client end nodes.

Advanced Peer-to-Peer Networking (APPN) network node. A node that can offer a broad range of end-user services, including:

- Distributed directory services, including registration of its domain resources to a central directory server
- Topology database exchanges with other APPN network nodes, enabling network nodes throughout the network to select optimal routes for LU-LU sessions based on requested classes of service
- Session services for its local LUs and client end nodes
- Intermediate routing services within an APPN network

Advanced Peer-to-Peer Networking (APPN) node. An APPN network node or an APPN end node.

application. A collection of software components used to perform specific types of user-oriented work on a computer.

APPN. Advanced Peer-to-Peer Networking.

architecture. A logical structure that encompasses operating principles including services, functions, and protocols.

attachment. A port or a pair of ports, optionally including an associated optical bypass, that are managed as a functional unit. A dual attachment includes two ports: a port A, and a port B. A single attachment includes a Port S.

attention (ATTN). An occurrence external to an operation that could cause an interruption of the operation.

available memory. In a personal computer, the number of bytes of memory that can be used after memory requirements for the operating system, device drivers, and other application programs have been satisfied.

B

BNN. Boundary network node.

boundary access node (BAN). A router that provides its attached LAN-based SNA peripheral nodes direct frame-relay access to a subarea boundary node (such as an IBM 3745 or an IBM 3746 Model 900).

boundary network node (BNN). In SNA, a subarea node that provides protocol support for adjacent peripheral nodes, for example, transforming network addresses to local addresses and *vice versa*, and providing session-level support for these peripheral nodes.

boundary node. Synonym for boundary network node.

broadcast. (1) Transmission of the same data to all destinations. (T) (2) Simultaneous transmission of the same data to more than one destination. (3) A packet delivery system where a copy of a given packet is given to all hosts attached to the network. Broadcast can be implemented in hardware (Ethernet, for example) or software. Contrast with *multicast.*

C

change management. The process of planning, administering, and distributing changes to network hardware and software components. This network management discipline is commonly accepted as a component of configuration management. See *configuration management*.

channel adapter. A communication controller hardware unit used to attach the controller to a data channel.

client. A functional unit that receives shared services from a server. (T).

community. An administrative relationship between Simple Network Management Protocol (SNMP) entities.

community name. An opaque string of octets identifying a community.

configuration. (1) The manner in which the hardware and software of an information processing system are organized and interconnected. (T) (2) The devices and programs that make up a system, subsystem, or network. (3) The task of defining the hardware and software characteristics of a system or subsystem. (4) See also *system configuration*.

configuration file. A file that specifies the characteristics of a system device or network related to a specific product.

configuration management. The monitoring and control of information required to identify physical and logical network resources, their states, and their interdependencies. Services include customization, network resource inventory, and assistance to other network management disciplines.

configuration parameters. Variables in a configuration definition, the values of which characterize the relationship of a product, such as a bridge, to other products in the same network.

connection. (1) In data communication, an association established between functional units for conveying information. (I) (A) (2) The path between two protocol functions, usually located in different machines, that provides reliable data delivery service.

connectivity. (1) The capability of a system or device to be attached to other systems or devices without modification. (T) (2) The capability to attach a variety of functional units without modifying them.

connector. A means of establishing electrical flow.

controller. A unit that controls input/output operations for one or more devices.

D

dependent LU. See *SSCP-dependent LU*.

dependent LU requester (DLUR). An APPN end node or an APPN network node that owns dependent LUs, but requests that a dependent LU server provide the SSCP services for those dependent LUs.

destination. Any point or location, such as a node, station, or particular terminal, to which information is to be sent.

diagnostics. The process of investigating the cause or the nature of a condition or problem in a product or system.

directory. (1) A table of identifiers and references to the corresponding items of data. (I) (A) (2) A database in an APPN node that lists names of resources (in particular, logical units) and records the CP name of the node where each resource is located.

DLUR. Dependent LU requester.

dual ring (FDDI dual ring). A pair of counter-rotating logical rings.

E

electromagnetic interference. A disturbance in the transmission of data on a network resulting from the magnetism created by a current of electricity.

electrostatic discharge (ESD). An undesirable discharge of static electricity that can damage equipment and degrade electrical circuitry.

emulation. (1) The use of a data processing system to imitate another data processing system, so that the imitating system accepts the same data, executes the same programs, and achieves the same results as the imitated system. Emulation is usually achieved by means of hardware or firmware. (T) (2) The use of programming techniques and special machine features to permit a computing system to execute programs written for another system.

error log. A data set or file in a product or system where error information is stored for later access.

Ethernet network. A baseband LAN with a bus topology in which messages are broadcast on a coaxial cable using a carrier sense multiple access/collision detection (CSMA/CD) transmission method.

F

faceplate. A wall-mounted or surface-mounted plate for connecting data and voice connectors to a cabling system.

FDDI network. (1) A collection of FDDI nodes interconnected to form a trunk ring, or a tree, or a trunk ring with multiple trees. This topology is sometimes called a dual ring of trees. (2) A collection of FDDI nodes interconnected to form a trunk, or a tree, or a trunk ring with multiple trees. This topology is sometimes called a dual ring of trees.

Federal Communications Commission (FCC). A board of commissioners appointed by the President under the Communications Act of 1934, having the power to regulate all interstate and foreign communications by wire and radio originating in the United States.

fiber optic cable. See *optical cable*.

fiber optics. The branch of optical technology concerned with the transmission of radiant power through fibers made of transparent materials such as glass, fused silica, and plastic. (E)

Note: Telecommunication applications of fiber optics use optical fibers. Either a single discrete fiber or a nonspatially aligned fiber bundle can be used for each information channel. Such fibers are often called optical fibers to differentiate them from fibers used in noncommunication applications.

file name. (1) A name assigned or declared for a file. (2) The name used by a program to identify a file.

frequency. The rate of signal oscillation, expressed in hertz.

H

hard disk. (1) A rigid magnetic disk such as the internal disks used in the system units of personal computers and in external hard disk drives. Synonymous with *fixed disk*. (2) A rigid disk used in a hard disk drive.

Note: The term hard disk is also used loosely in the industry for boards and cartridges containing microchips or bubble memory that simulate the operations of a hard disk drive.

help information. Information displayed to assist a user.

help window. A window that contains help information.

hexadecimal. (1) Pertaining to a selection, choice, or condition that has 16 possible different values or states. (I) (2) Pertaining to a fixed-radix numeration system, with radix of 16. (I) (3) Pertaining to a system of numbers to the base 16; hexadecimal digits range from 0 through 9 and A through F, where A represents 10 and F represents 15.

high-performance routing (HPR). An addition to the Advanced Peer-to-Peer Networking (APPN) architecture that enhances data routing performance and reliability, especially when using high-speed links.

I

interactive. Pertaining to a program or system that alternately accepts input and then responds. An interactive system is conversational, that is, a continuous dialog exists between user and system.

interface. (1) A shared boundary between two functional units, defined by functional characteristics, signal characteristics, or other characteristics, as appropriate. The concept includes the specification of the connection of two devices having different functions. (T) (2) Hardware, software, or both, that links systems, programs, or devices.

interference. (1) The prevention of clear reception of broadcast signals. (2) The distorted portion of a

received signal. (3) In optics, the interaction of two or more beams of coherent or partially coherent light.

Internet Protocol (IP). A protocol that routes data through a network or interconnected networks. IP acts as an interface between the higher logical layers and the physical network. However, this protocol does not provide error recovery, flow control, or guarantee the reliability of the physical network. IP is a connectionless protocol.

interrupt. (1) A suspension of a process, such as execution of a computer program caused by an external event, and performed in such a way that the process can be resumed. (A) (2) To stop a process in such a way that it can be resumed.

IP address. A 32-bit address assigned to devices or hosts in an IP internet that maps to a physical address. The IP address is composed of a network and host portion.

L

logical unit (LU). A type of network accessible unit that enables end users to communicate with each other and gain access to network resources.

M

management information base (MIB). A collection of objects that can be accessed by means of a network management protocol.

management station. The system responsible for managing all, or a portion of, a network. The management station talks to network management agents that reside in the managed node by means of a network management protocol such as Simple Network Management Protocol (SNMP).

microcode. (1) One or more microinstructions. (2) A code, representing the instructions of an instruction set, that is implemented in a part of storage that is not program-addressable. (3) To design, write, and also test one or more microinstructions.

Note: The term microcode represents microinstructions used in a product as an alternative to hard-wired circuitry to implement functions of a processor or other system component. The term microprogram means a dynamic arrangement of one or more groups of microinstruction for execution to perform a certain function.

multicast. (1) Transmission of the same data to a selected group of destinations. (T) (2) A special form of broadcast where copies of the packet are delivered to only a subset of all possible destinations. Contrast with *broadcast*.

N

network administrator. A person who manages the use and maintenance of a network.

network management. The process of planning, organizing, and controlling a communications-oriented system.

network node (NN). (1) In a network, a point at which one or more functional units connect channels or data circuits. (2) In a network topology, the point at an end of a branch. (3) A node that can define the paths or routes, control route selection, and handle directory services for APPN. (4) Synonym for *Advanced Peer-to-Peer Networking (APPN) network node*.

network status. The condition of the network.

NHRP. Next-Hop Routing Protocol.

O

operating system (OS). Software that controls the execution of programs and that may provide services such as resource allocation, scheduling, input/output control, and data management. Although operating systems are predominantly software, partial hardware implementations are possible. (T)

optical cable. A fiber, multiple fibers, or a fiber bundle in a structure built to meet optical, mechanical, and environmental specifications. (E)

optical fiber. Any filament made of dielectric materials that guides light, regardless of its ability to send signals. (E) See also *fiber optics*.

optical fiber cable. Synonym for *optical cable*.

optical transmitter. Hardware that converts an electrical logic signal to an optical signal.

optical wrap. Signal transmission, used primarily for testing, that routes the signal from the optical output of a device directly to the optical input.

P

parallel port. A port that transmits the bits of a byte in parallel along the lines of the bus, 1 byte at a time, to an I/O device. On a personal computer, it is used to connect a device that uses a parallel interface, such as a dot matrix printer, to the computer. Contrast with *serial port*.

parameter. (1) A variable that is given a constant value for a specified application and that may denote the application. (I) (A) (2) An item in a menu or for which the user specifies a value or for which the system provides a value when the menu is interpreted. (3) Data passed between programs or procedures.

physical connection. (1) A connection that establishes an electrical circuit. (2) The full-duplex physical layer association between adjacent PHY entities (in concentrators and stations) in an FDDI ring; for example, a pair of physical links. (3) An element of the service interface presented by an entity.

problem determination. The process of determining the source of a problem; for example, a program component, a machine failure, telecommunication facilities, user or contractor-installed programs or equipment, an environment failure such as a power loss, or user error.

procedure. A set of instructions that gives a service representative a step-by-step procedure for tracing a symptom to the cause of failure.

processor. In a computer, a functional unit that interprets and executes instructions. A processor consists of at least an instruction control unit and an arithmetic and logic unit. (T)

R

radio frequency (RF). (1) The rate of radio signal oscillation, expressed in hertz. (2) Any frequency in the range within which radio waves can be transmitted, from about 10 kHz to about 300 000 MHz.

receptacle. (1) Electrically, a fitting equipped to receive a plug and used to complete a data connection or electrical path. (2) In FDDI, an optoelectronic circuit that converts an optical signal to an electrical logic signal.

reconfiguration. (1) A change made to a given configuration of a computer system; for example, isolating and bypassing a defective functional unit, connecting two functional units by an alternative path. Reconfiguration is effected automatically or manually and can be used to maintain system integrity. (T) (2) The process of placing a processor unit, main storage, and channels offline for maintenance, and adding or removing components.

routing protocol. A technique for each router to find another router and to keep up to date about the best way to get to every network. Examples of routing protocols are: Routing Information Protocol (RIP), Hello, and Open Shortest Path First (OSPF).

S

serial port. On personal computers, a port used to attach devices such as display devices, letter-quality printers, modems, plotters, and pointing devices such as light pens and mice; it transmits data 1 bit at a time. Contrast with *parallel port*.

service clearance. The minimum space required to allow working room for the person installing or servicing a unit.

service representative. An individual who performs maintenance services for products or systems.

Simple Network Management Protocol (SNMP). (1) An IP network management protocol that is used to monitor routers and attached networks. (2) A TCP/IP-based protocol for exchanging network management information and outlining the structure for communications among network devices. SNMP is an application layer protocol. Information on devices managed is defined and stored in the application's Management Information Base (MIB).

SNA. Systems Network Architecture.

SNMP. Simple Network Management Protocol.

SSCP-dependent LU. An LU that requires assistance from a system services control point (SSCP) in order to initiate an LU-LU session. It requires an SSCP-LU session.

subnet mask. A bit template that identifies to the TCP/IP protocol code the bits of the host address that are to be used for routing for specific subnets.

subsystem. A secondary or subordinate system, or programming support, usually capable of operating independently of, or asynchronously with, a controlling system. (T)

switched virtual circuit (SVC). (1) An X.25 circuit that is dynamically established when needed. The X.25 equivalent of a switched line. (2) A virtual circuit that is requested by a virtual call. It is released when the virtual circuit is cleared. Contrast with permanent virtual circuit (PVC).

system configuration. A process that specifies the devices and programs that form a particular data processing system.

Systems Network Architecture (SNA). The description of the logical structure, formats, protocols, and operational sequences for transmitting information units through, and controlling the configuration and operation of, networks.

Note: The layered structure of SNA allows the ultimate origins and destinations of information, that is, the end users, to be independent of and unaffected by the specific SNA network services and facilities used for information exchange.

T

terminal emulation. The capability of a microcomputer or personal computer to operate as if it were a particular type of terminal linked to a processing unit and to access data.

threshold. A level, point, or value above which something is true or will take place and below which it is not true or will not take place.

U

unattended mode. A mode in which no operator is present or in which no operator station is included at system generation.

V

vital product data (VPD). Product identification information that describes the hardware and software components in the product. VPD is used to assist in asset and inventory control, performing problem determination, identifying service levels, and ensuring proper hardware and software compatibility levels.

W

workstation. (1) A functional unit at which a user works. A workstation often has some processing capability. (T) (2) Personal desktop computer consisting of a monitor, keyboard, and central processing unit. Workstations can have voice/data application program software enabled by CallPath for Workstations.

wrap plug. In a fiber optic channel link environment, a type of duplex connector used to wrap the optical output signal of a device directly to the input of the same device.

wrap test. A test that checks attachment or control unit circuitry without checking the mechanism itself by returning the output of the mechanism as input; for example, when unrecoverable communication adapter or machine errors occur, a wrap test can transmit a specific character pattern to or through the modem in a loop and then compare the character pattern received with the pattern transmitted. See also *optical wrap*.

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Multiprotocol Switched Services (MSS) Server
Service and Maintenance Manual

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