3746 Nways Multiprotocol Controller
Models 900 and 950

Network Node Processor Installation and Maintenance (Based on 6578)

GY27-0407-01

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Note: Before using this information and the product it supports, be sure to read the general information under “Notices” on page ix.

Second Edition (October 2001)

This edition applies to the network node processor based on 6578 Model RAU.

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例如，有一「危險」聲明以數字 1 開始，則該「危險」聲明的譯文將出現在「安全資訊」(Safety Information) 一書的「聲明」1 中。

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Prenez connaissance de toutes les consignes de type Attention et Danger avant de procéder aux opérations décrites par les instructions.

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For the **network node processor safety notices** see Appendix A, “Safety Information” on page A-1.

For *Safety Notices* refer to *IBM 3745 Communication Controller All Models*, *IBM 3746 Expansion Unit Model 900*, *IBM 3746 Nways Multiprotocol Controller Model 950*, *Safety Information*, GA33-0400.

Safety Notices for United Kingdom

1. The IBM 3746 Expansion Unit Model 900 and IBM 3746 Nways Multiprotocol Controller Model 950 are manufactured according to the International Safety Standard EN 60950 and as such are approved in the UK under the General Approval Number NS/G/1234/J/100003 for indirect connection to the public telecommunication network.
2. The network adapter interfaces housed within the IBM 3746 Expansion Unit Model 900 and IBM 3746 Nways Multiprotocol Controller Model 950 are approved separately, each one having its own independent approval number. These interface adapters, supplied by IBM, do not use or contain excessive voltages. An excessive voltage is one that exceeds 42.4 V peak ac or 60 V dc. They interface with the IBM 3746 Expansion Unit Model 900 and IBM 3746 Nways Multiprotocol Controller Model 950 using Safety Extra Low Voltages (SELV) only. In order to maintain the separate (independent) approval of the IBM adapters, it is essential that other optional cards, not supplied by IBM, do not use mains voltages or any other excessive voltages. Seek advice from a competent engineer before installing other adapters not supplied by IBM.

Service Inspection Procedures

The Service Inspection Procedures help service personnel check whether the 3745/3746 conforms to IBM safety criteria. They have to be used each time the 3745/3746 safety is suspected. The *Service Inspection Procedures* section is located at the beginning of the:

- *3745 Communication Controller Models 210 to 61A Maintenance Information Procedures*, SY33-2054
- *3745 Communication Controller Models 130 to 17A Maintenance Information Procedures*, SY33-2070
- *3746-950 Service Guide*, SY33-2108

- *3746-900 Service Guide*, SY33-2116.

For the network node processor, see the Service Inspection Procedures in “Safety Inspection Guide” on page A-3.

About This Guide

Who Should Use This Guide

The IBM personnel using this manual should be:

- Trained to service the network node processor, IBM 3745 Communication Controller, 3746-900, and 3746-950
- Familiar with the network node processor service documentation
- Familiar with the configuration of the 3745 Communication Controller, 3746-900, and 3746-950

How to Use This Guide

This manual provides procedures for installing and maintaining a network node processor. To ensure the most efficient installation:

- Read the instructions carefully before attempting to do them
- Complete each step before going to the next one
- Go through the chapters sequentially

How This Guide Is Organized

Chapter 1	Presents the procedures to install and connect the network node processor
Chapter 2	Presents the problem determination procedures for the network node processor
Chapter 3	Gives MAPs for the network node processor troubleshooting
Chapter 4	Presents the diagnostics and tests available on the network node processor and how to invoke them
Chapter 5	Gives the procedure for network node processor FRU exchange
Chapter 6	Gives the CE leaving procedure.
Appendix A	Provides safety notices for the network node processor
Appendix B	Provides 6578 specifications
Appendix C	Provides parameter worksheets for the network node processor.
Appendix D	Gives the locations of the controller expansion components
Appendix E	Provides network node processor external cable references
Appendix F	Provides network node processor aids for FRU location and removal, and for configuration and setup
Appendix G	Provides network node processor parts number
Appendix H	Gives the service and customer documentation bibliography
Glossary X	Gives a list of abbreviations.

Where to Find More Information

For a complete list of the network node processor, 3745, 3746-900, and 3746-950 customer and service information manuals, go to the end of this manual. In this *NNPIM*, references are made to the following publications:

3745 Communication Controller Models 210 to 61A Maintenance Information Procedures, SY33-2054

3745 Communication Controller Models 130 to 17A Maintenance Information Procedures, SY33-2070

3746-950 Service Guide, SY33-2108

3746-900 Service Guide, SY33-2116

Nways Multiprotocol Controller Models 900 and 950 Migration and Planning Guide, GA33-0349

3745 Communication Controller Models A and 3746 Expansion Unit Model 900: Migration and Planning Guide, GA33-0183

3745 Communication Controller Models A and 3746 Models 900 and 950: Overview, Installation, and Integration, GA27-4234

3745 Communication Controller Models A and 3746 Models 900 and 950: Serial Line Adapters, GA27-4235

3745 Communication Controller Models A and 3746 Models 900 and 950: Token Ring and Ethernet, GA27-4236

3745 Communication Controller Models A and 3746 Models 900 and 950: ESCON Channels, GA27-4237

3745 Communication Controller Models A and 3746 Models 900 and 950: Physical Planning, GA27-4238

3745 Communication Controller Models A and 3746 Models 900 and 950: Management Planning, GA27-4239

3745 Communication Controller Models A and 3746 Models 900 and 950: Multiaccess Enclosure Planning, GA27-4240

3745 Communication Controller Models A and 3746 Models 900 and 950: Protocol Introductions, GA27-4241

Additional Information on the Web

You can access the latest news and information about IBM network products, customer service and support, and microcode upgrades at:

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

Online Documentation from CD-ROM

Starting at EC H10000A and EC H10010A (and above) with the service processor is now shipped a CD-ROM that contains the LIC and a copy of the 3746 web site. You will find from this web page, marketing, PE, and all information about CCP products.

To access this page:

1. Insert the CD-ROM into the CD-ROM disk drive of the service processor.

2. From the MOSS-E primary menu, click **Information**
3. Double-click **CD-ROM documentation**
4. Then if you want to display the CCP documentation, click **Go to Documentation**

Service Personnel Definitions

Refer to one of the following manuals:

- *3745 Communication Controller Models 210 to 61A Maintenance Information Procedures*, SY33-2054
- *3745 Communication Controller Models 130 to 17A Maintenance Information Procedures*, SY33-2070
- *3746-950 Service Guide*, SY33-2108
- *3746-900 Service Guide*, SY33-2116.

Chapter 1. Installing and Setting Up your Network Node Processor

Network Node Processor Overview

The network node processor can be based on an 6578-RAU, 6563-U, 6275-56U/83U, 6278, 7585-P02, or 3172 Model 003.

In this manual only the network node processor based on 6578-RAU is addressed.

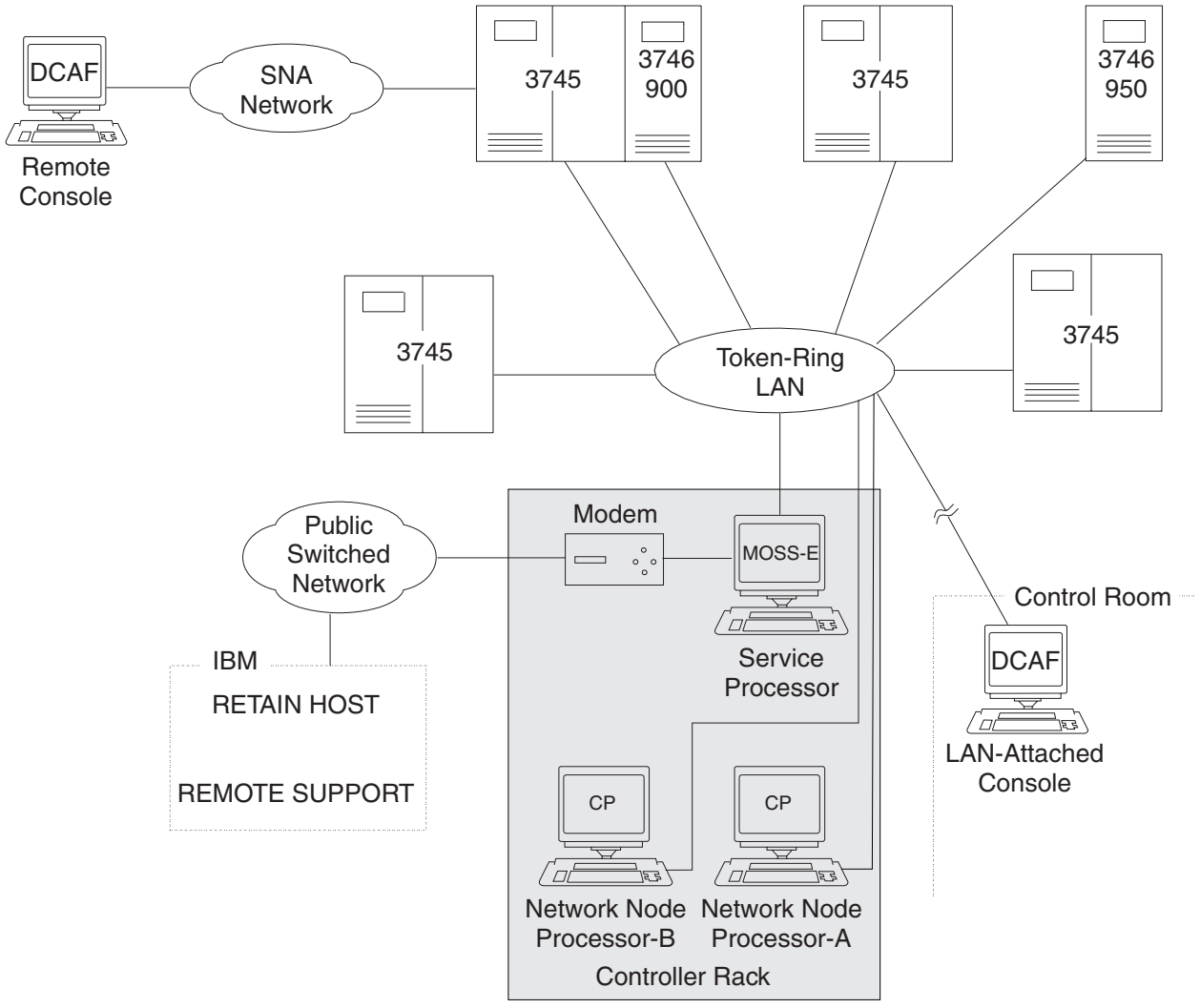


Figure 1-1. Network Node Processor Environment

Preparing Your Installation

Installation Time

The average time for installing the network node processor is 2.0 hours.

Note: Under the installation service code, only report the time spent on the procedures described in this manual. Other activities must be reported on another service code according to your general reporting instruction guide.

Getting Ready to Install

1. Before starting the installation, contact your remote support structure and open a Problem Management Record (PMR) to verify whether or not any microcode maintenance is recommended.
2. You have received two diskettes with the Network Node Processor. Using a felt-tipped pen, identify one diskette as **Normal** and the other as **Backup**.
3. Obtain from the customer the following **Parameter worksheet**: "Definition of Service LAN IP Addresses" on page C-1.

   This parameter worksheet is part of the *3745 Communication Controller Models A and 3746 Models 900 and 950: Planning Guide*, GA33-0457 Appendix A and must be filled in by the customer.

Attention

The network node processor is connected to a ***220-V*** power receptacle, if you connect other units on the ac outlet distribution box verify the voltage of these units.

Go To

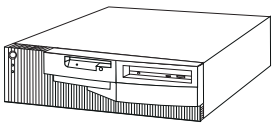
- **"Installing Your Network Node Processor (6578)" on page 1-3.**

Installing Your Network Node Processor (6578)

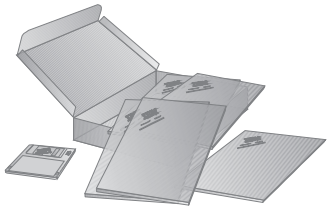
1. **Unpack** Your Network Node Processor.

   For installing a **NNP-A** or a **NNP-B**, you need the following items to complete this installation:

- □ Network Node Processor (6578) and Power Cord



- □ Publications and diskette



- Check that you have received:

  a. Two brackets (PN 58G5752)
  b. One plate (PN 58G5755)
  c. One label (PN 0782966)
  d. Four screws (PN 1621230), and four screws (PN 2665527)

2. Using label (PN 0782966), **identify** your Network Node Processor-A or Network Node Processor-B by sticking the appropriate label **A** on the front side of the unit (refer to Figure 1-2).

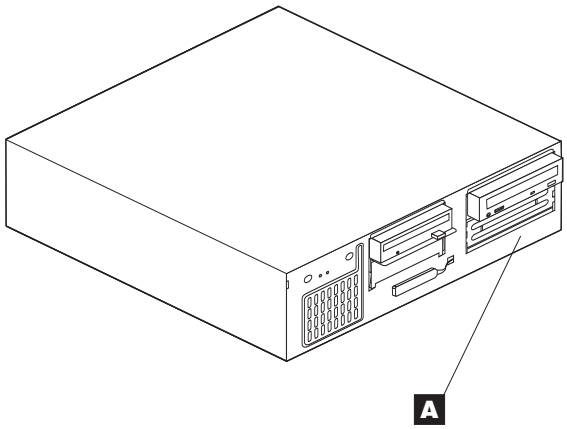


Figure 1-2. Installing Label on the Front Side of the Network Node Processor (6578)

Go To

If you are installing:

- **NNP-A**, go to “Installing the 6578 Network Node Processor - A” on page 1-5.
- **NNP-B**, go to “Installing the 6578 Network Node Processor - B” on page 1-8.

Installing the 6578 Network Node Processor - A

Note: The location of the NNP can be in different places in the controller expansion. It depends on the type of service processor and if other units are installed in this controller expansion. Go to Appendix D, “Controller Expansion Component Locations” and refer to Figure D-1 on page D-2 and Figure D-2 on page D-3 to determine with your customer where you can install the NNP.

1. Open the front and rear doors of the controller expansion. and locate the position to install the brackets used for the NNP-A (refer to Figure D-3 on page D-4). Install the left and right brackets **1** (PN 58G5752) and secure using four screws **2** (PN 2665527).

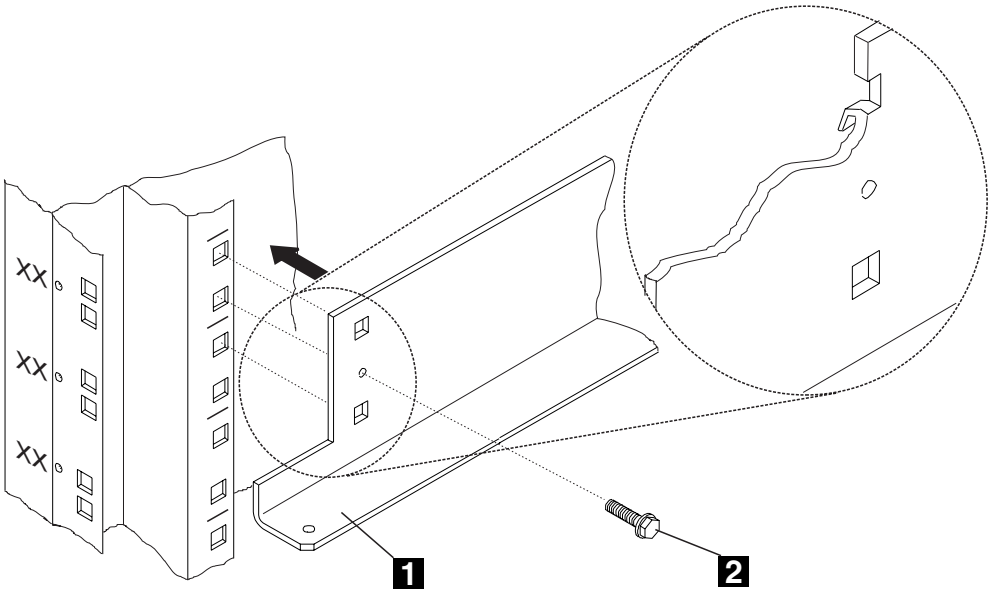


Figure 1-3. Installing the NNP-A Brackets

2. On the brackets installed for the network node processor, install plate **4** (PN 58G5755) using four screws **3** (PN 1621230).

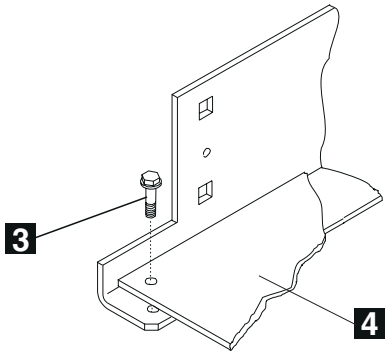


Figure 1-4. Installing Plate PN 58G5755

Installing the 6578 System Unit (NNP-A) in the Controller Expansion

Slide the network node processor unit in the controller expansion from the front side as shown in Figure 1-5, then go to “Connecting the 6578 (NNP-A)” on page 1-7.

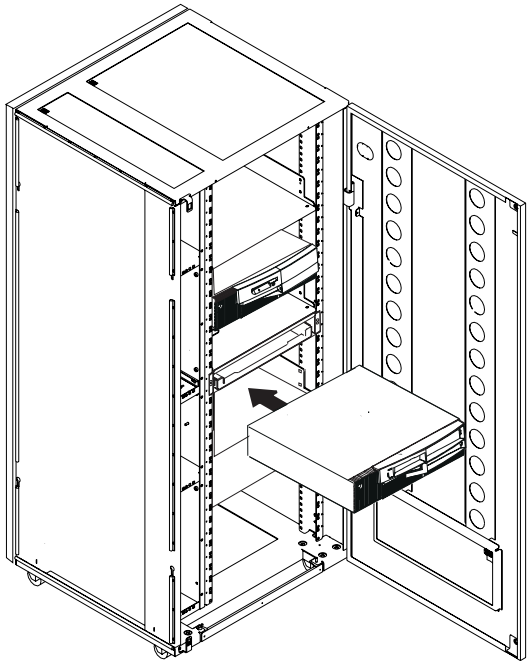


Figure 1-5. Installing the 6578 NNP-A Unit in the Controller Expansion (Front Side)

Connecting the 6578 (NNP-A)

1. Plug connector **1** of cable **A** (PN 6339098) to the token-ring card connector.
2. Using a sticker, identify the cable **A** as the “network node processor cable” and plug connector **2** to **any plug** of the 8228 from **1 to 8**.
3. Connect power cord **3** from J2 to the ac outlet of the NNP-A.

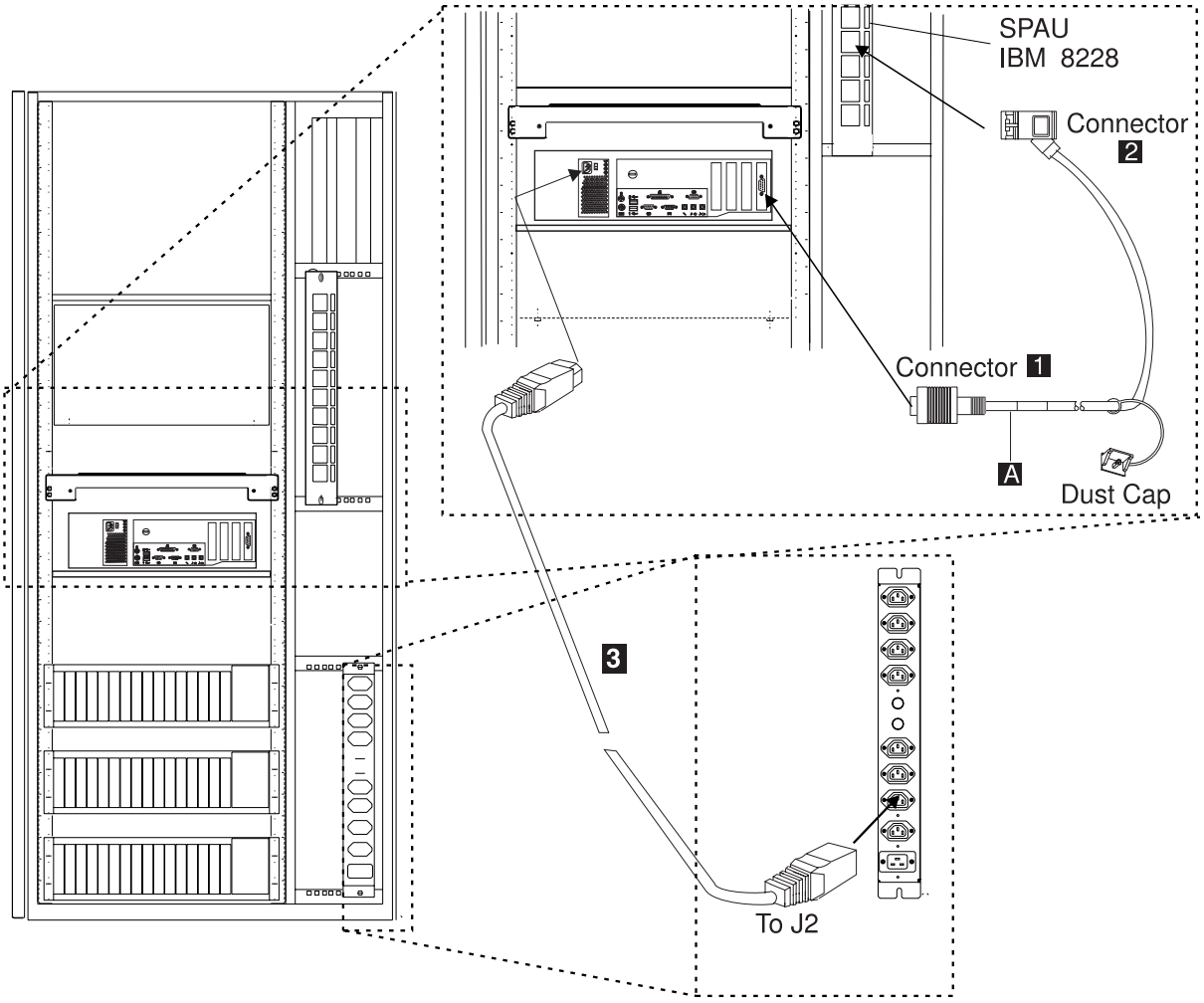


Figure 1-6. Connecting the 6578 NNP-A

Go To

Do you have to install a **NNP-B**?

- **Yes**, go to “Installing the 6578 Network Node Processor - B” on page 1-8.
- **No**, go to “Installing the Code on the Network Node Processor” on page 1-13.

Installing the 6578 Network Node Processor - B

Note: The location of the NNP can be in different places in the controller expansion. It depends on the type of service processor and network node processor-A, and if other units are installed in this controller expansion. Go to Appendix D, “Controller Expansion Component Locations” and refer to Figure D-1 on page D-2 and Figure D-2 on page D-3 to determine with your customer where the NNP can be installed.

1. Open the front and rear doors of the controller expansion and locate the position of the brackets used to install the NNP-B (if the service processor and the NNP-A are two 6578, refer to Figure D-3 on page D-4).
2. Install the left and right brackets **1** (PN 58G5752) and secure using four screws **2** (PN 2665527).

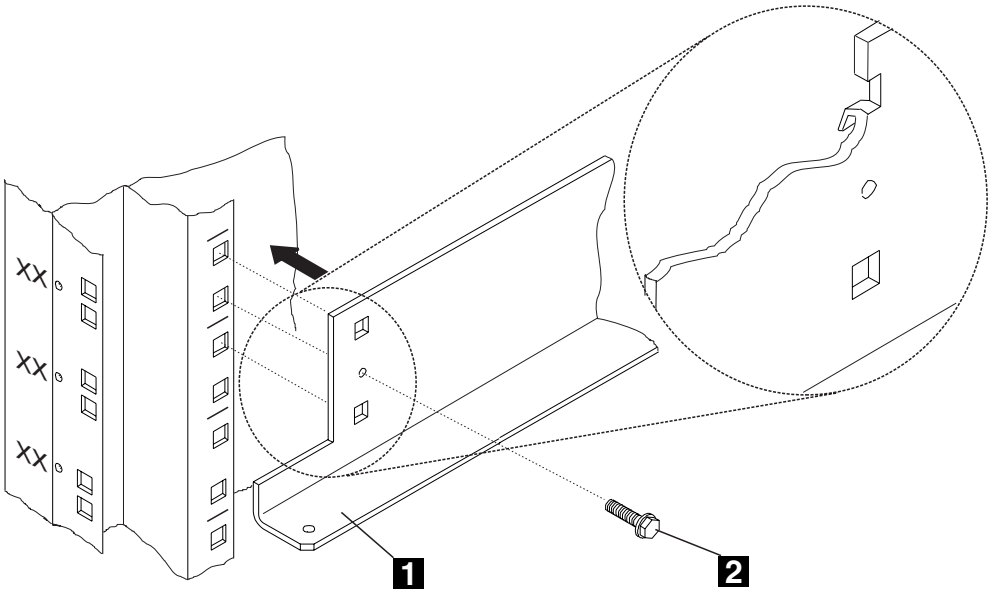


Figure 1-7. Installing the NNP-B Brackets

3. On the brackets installed for the network node processor, install plate **4** (PN 58G5755) using four screws **3** (PN 1621230).

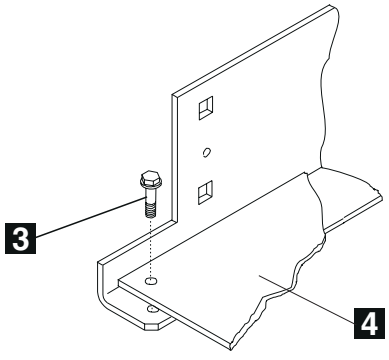


Figure 1-8. Installing Plate PN 58G5755

Installing the 6578 System Unit (NNP-B) in the Controller Expansion

Slide the network node processor unit in the controller expansion from the front side as shown in Figure 1-9.

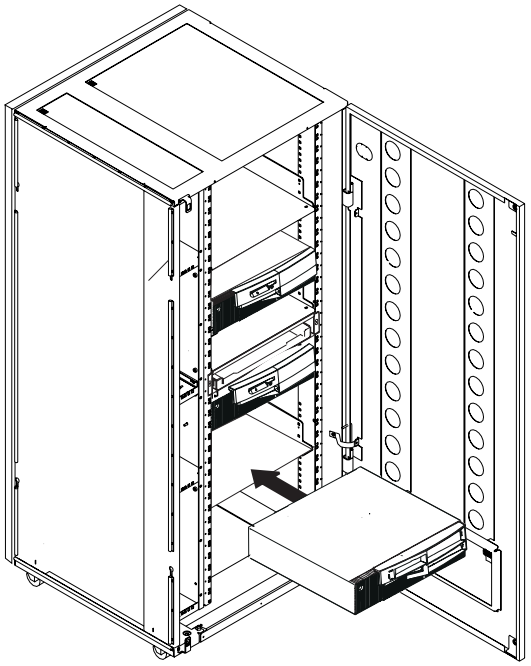


Figure 1-9. Installing the 6578 NNP-B Unit in the Controller Expansion (Front Side)

Go To

Do you have to install a second **ac outlet distribution box**?

- **Yes**, go to “Installing a Second ac Outlet Distribution Box” on page 1-10.
- **No**, go to “Connecting the 6578 Network Node Processor - B” on page 1-12.

Installing a Second ac Outlet Distribution Box

1. **Identify** the location to install the two captive nuts **A** (second hole from the left) , if already installed go to step 3, otherwise go to step 2.

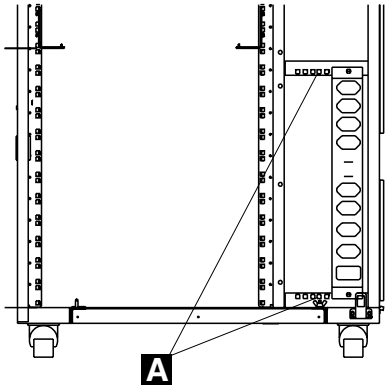


Figure 1-10. Locating the Captive Nuts

2. Refer to Figure 1-11 to **install** the two captive nuts (PN 58G5766).

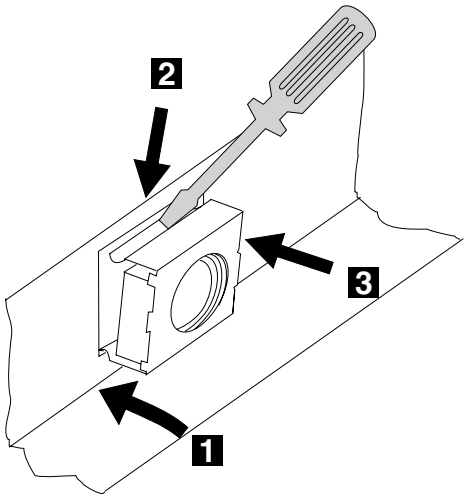


Figure 1-11. Installing the Captive Nuts

3. Refer to Figure 1-12 on page 1-11, using one lockwasher (PN 1622319), one starwasher (PN 1622347), and one screw (PN1673983), **connect** the ground jumper **A** (PN 63F2459) to the new ac outlet distribution box. Then, **install** the second ac outlet distribution box close to the first ac outlet distribution box and fasten using two screws **C** (PN 1621230).

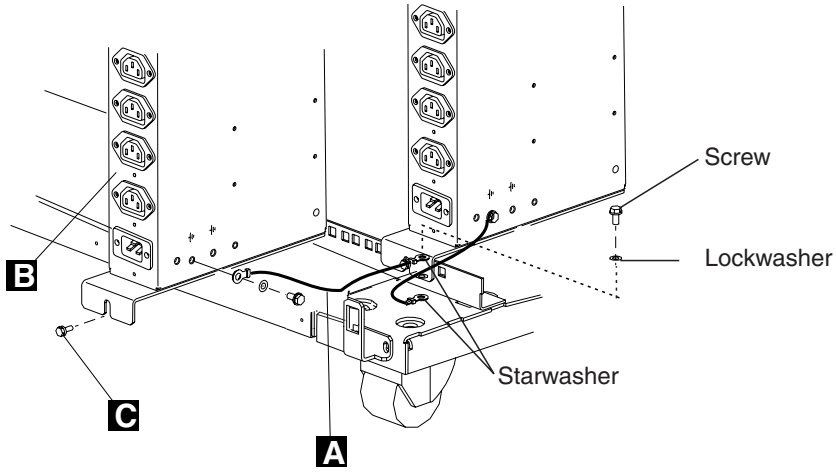


Figure 1-12. Installing the Second ac Outlet Distribution Box

4. Using the same washers and screw used to connect the first ac outlet distribution box, **connect** the other lead of the ground jumper **A** to the frame.
5. Plug the power cord **A** (country dependant) into location **IN** of the ac outlet distribution box. Then route and connect the other lead of the power cord to the customer's power socket.

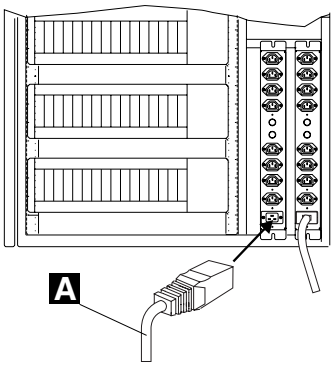


Figure 1-13. Power Cord Installation

6. Switch or ask the customer to switch ON the circuit breaker to be used for the ac outlet distribution box.
7. Verify that the phase is distributed as shown below: **if it is not, notify the customer and do not proceed until the problem is corrected**.

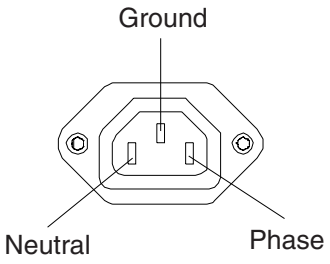


Figure 1-14. Power Distribution

Connecting the 6578 Network Node Processor - B

1. Plug connector **1** of cable **A** (PN 6339098) to the token-ring card connector.
2. Using a sticker, identify the cable **A** as the “network node processor cable” and plug connector **2** to **any plug** of the 8228 from **1 to 8**.
3. Connect power cord **3** from J5 to the ac outlet of the NNP-B.

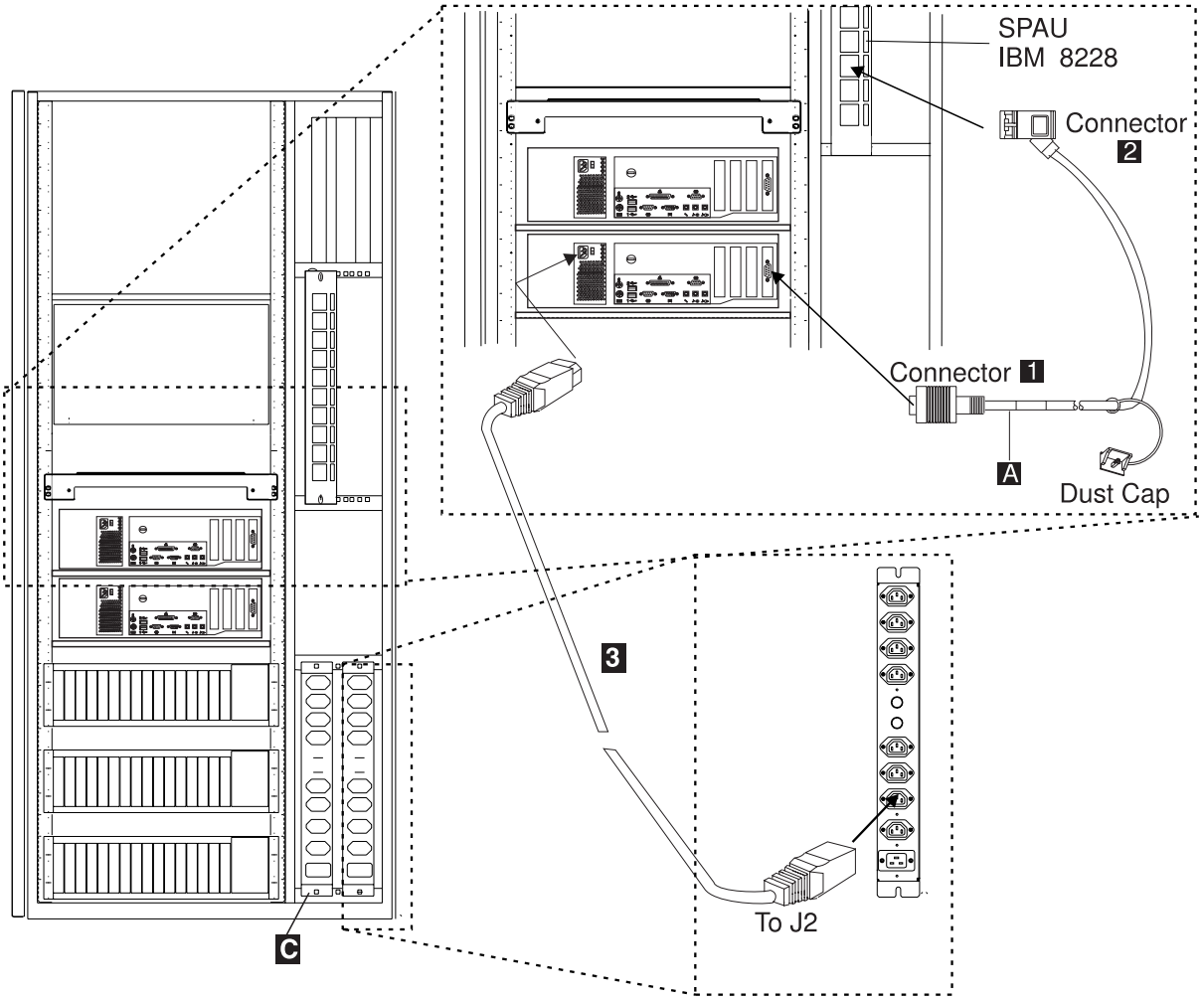


Figure 1-15. Connecting the NNP-B (6578)

Go to “Installing the Code on the Network Node Processor” on page 1-13.

Installing the Code on the Network Node Processor

Note: For any unexpected message or error concerning the network node processor:

- Go to “MAP: Entry Point for Problem Isolation” on page 2-1.

For any other message or error displayed on the control panel, go to:

- The **START** page of the *3745 Communication Controller Models 210 to 61A Maintenance Information Procedures*, SY33-2054, if you are working on a **3745 Model X1A**.
- The **START** page of the *3745 Communication Controller Models 130 to 17A Maintenance Information Procedures*, SY33-2070, if you are working on a **3745 Model 17A**.
- Or go to the **START** page of the *3746-950 Service Guide*, SY33-2108, if you are working on a **3746-950**.

1. Double-click the 3746-950 or 3746-900 icon where you are going to install the NNP.
2. From the 3746-9x0 menu, click **Network Node Processor (NNP) Management**.

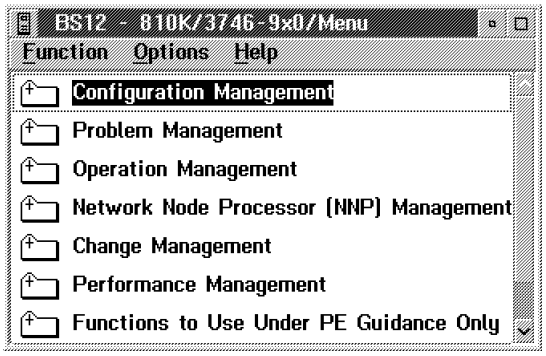


Figure 1-16. 3746-9x0 Menu

3. Double-click **(M) Install/Remove/Change/Restore LIC/NNP**.

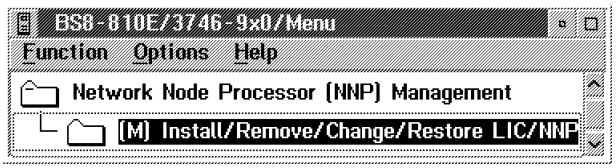


Figure 1-17. Network Node Processor Menu

If you are:

- Installing **NNP-A**, go to step 4 on page 1-14.
- Installing **NNP-B**, go to step 7 on page 1-16.
- Upgrading **NNP-A**, go to step 11 on page 1-18.
- Upgrading **NNP-B**, go to step 13 on page 1-18.

4. Select the NNP-A, then click **Install NNP**.

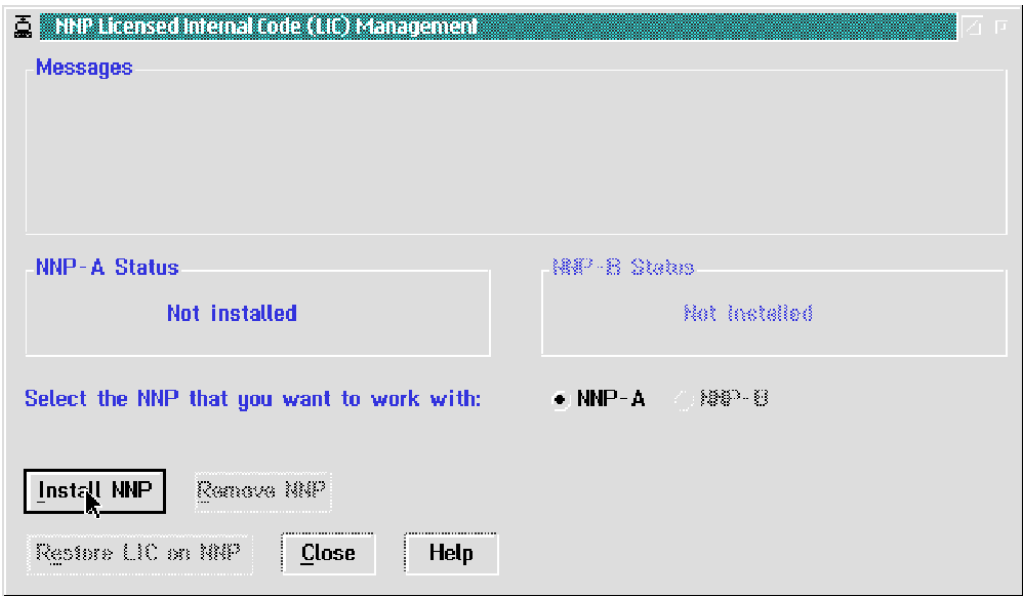


Figure 1-18. NNP-A LIC Management Menu

5. Read the information message, then click **OK**.

6. If necessary, modify the **IP address** for the **NNP-A** and **TIC3 2080** (IP address of the 3746) according to the values recorded by the customer on the worksheet **"Definition of Service LAN IP Addresses" on page C-1.** Otherwise, keep the default values and record the hostnames for later use, then click **OK**. A message will ask you if you have terminated the LAN address customization. If this is the case, click **Yes** (otherwise, follow the indications on this message box). If you have chosen Yes, a message box appears indicating the service LAN address customization has been successfully completed. Click **OK**.

   Notes:

   a. If the customer defines an IP configuration file the with CCM, the IP address and the subnet mask for TIC3 2080 must be defined in the same IP subnet.

   b. The hostnames cannot be modified, but they are used in the alerts and alarms sent to NetView.

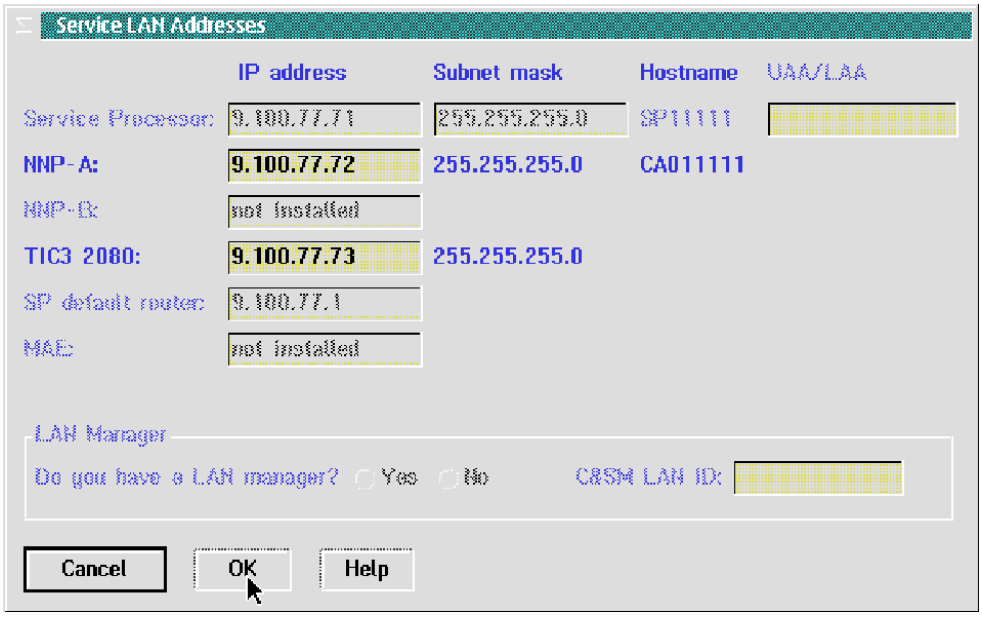


Figure 1-19. NNP-A/TIC3 2080 Service LAN IP Addresses Definition

Go to step **15 on page 1-18.**

7. Select the NNP-B, then click **Install NNP**.

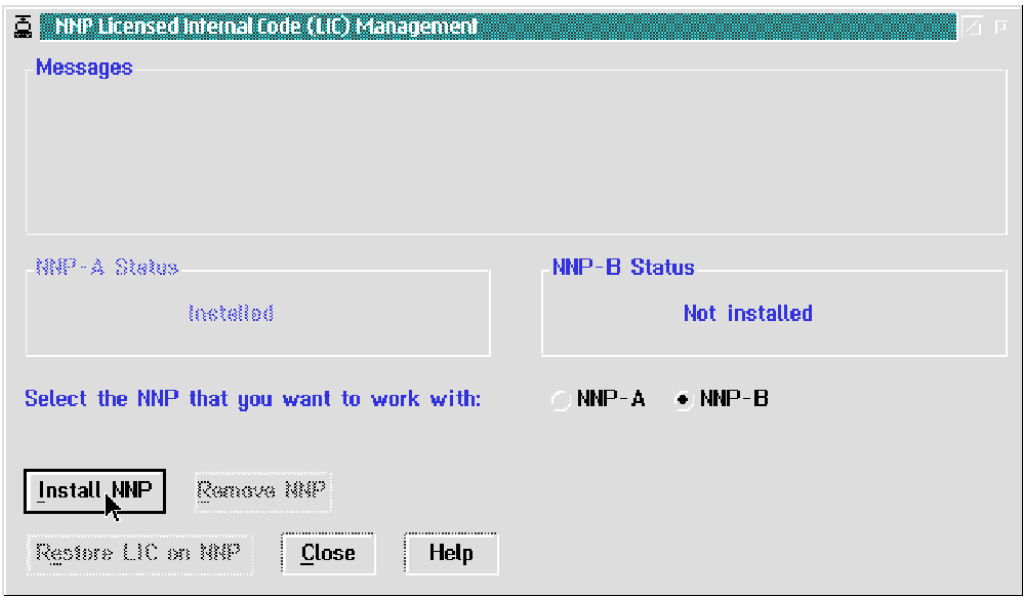


Figure 1-20. NNP-B LIC Management Menu

8. Click **OK**.

9. If necessary, modify the **IP address** for the **NNP-B** according to the values recorded by the customer on the worksheet **"Definition of Service LAN IP Addresses" on page C-1.** Otherwise, keep the default values and record the hostnames for later use.

10. Click **OK**. A message will ask you if you have terminated the LAN addresses customization. If this is the case, click **Yes** (otherwise, follow the prompts on this message box). If you have chosen *Yes*, a message box appears indicating the service LAN addresses customization has been successfully completed. Click **OK**.

    Note: The hostnames cannot be modified, but they are used in the alerts and alarms sent to NetView.

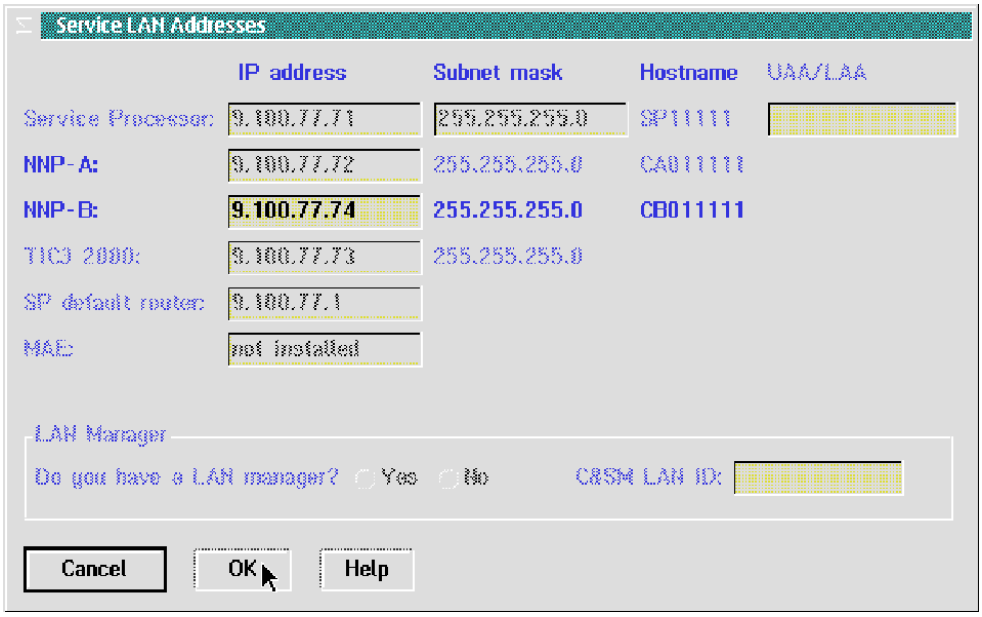


Figure 1-21. NNP-B Service LAN IP Addresses Definition

Go to step **15 on page 1-18.**

11. Select the NNP-A, then click **Restore LIC on-NNP**.

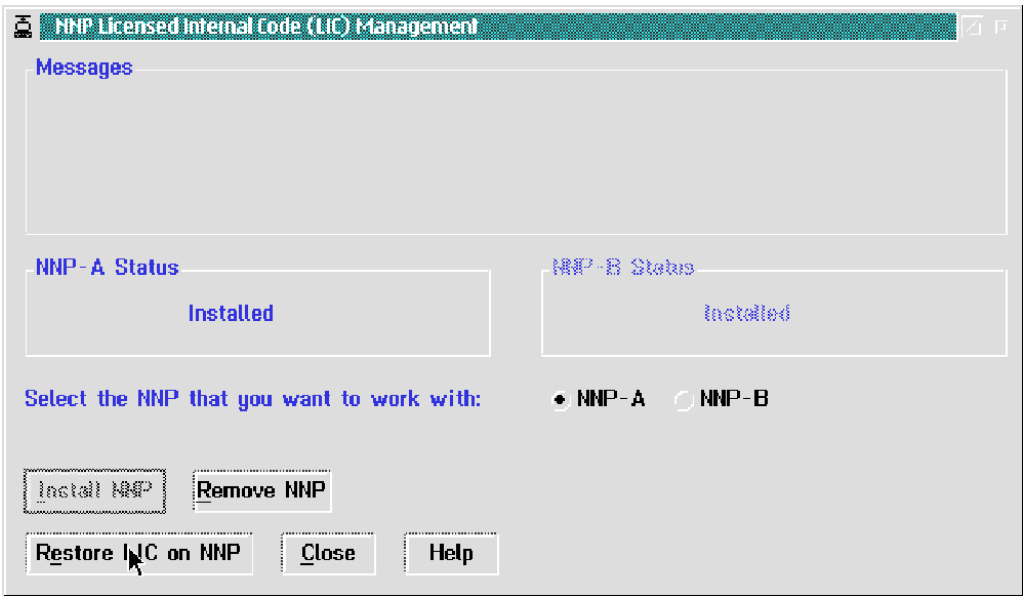


Figure 1-22. NNP-A LIC Management Menu

12. Go to step **15.**
13. Select the NNP-B, then click **Restore LIC on-NNP**.

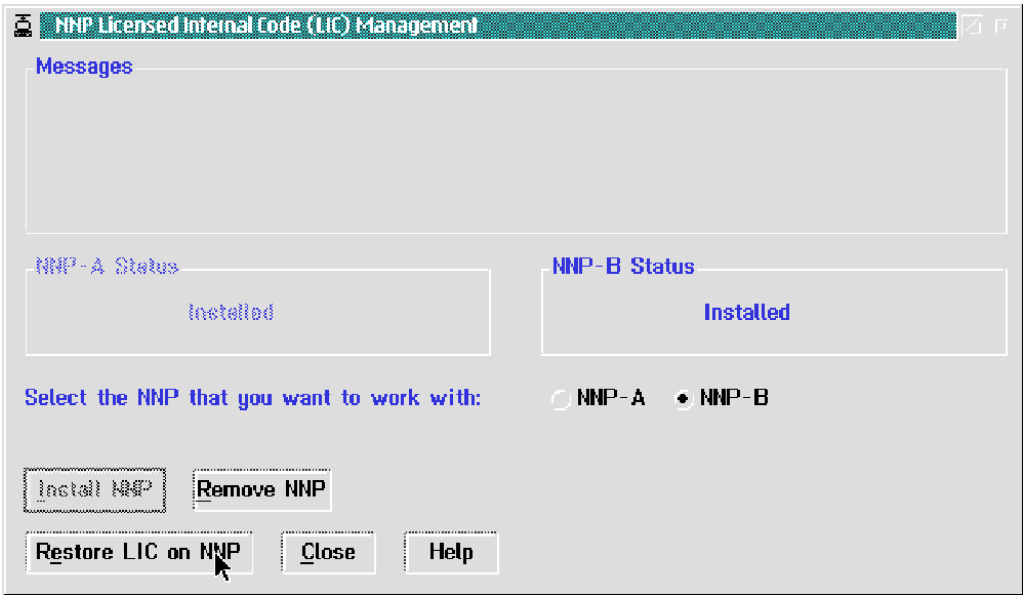


Figure 1-23. NNP-B LIC Management Menu

14. Continue with step **15.**
15. Click **OK**, then insert the **Network Node Processor installation diskette** in the diskette drive of the **service processor**, then click **OK**.
16. Select the type **6578**, then click **OK**.

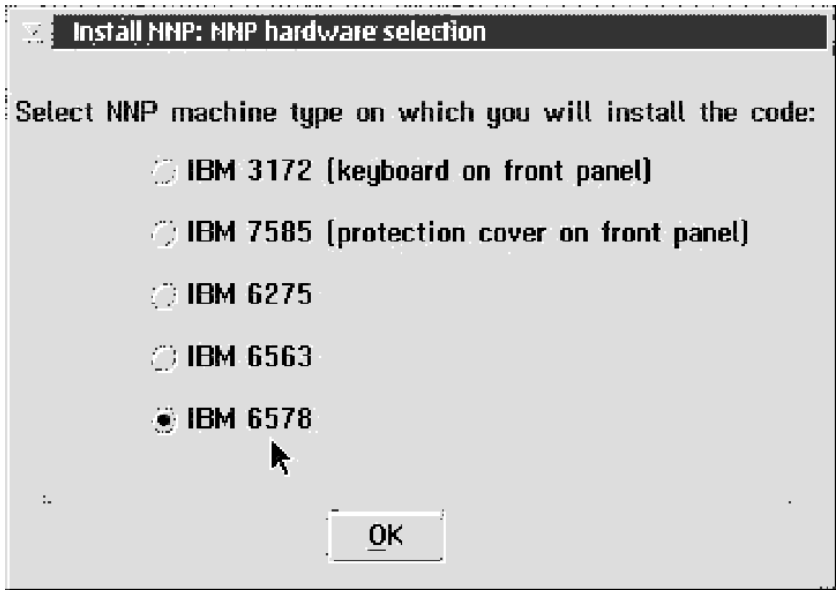


Figure 1-24. Network Node Processor Selection

17. When the process is completed, record the following procedures listed on Figure 1-25, then click **OK**.

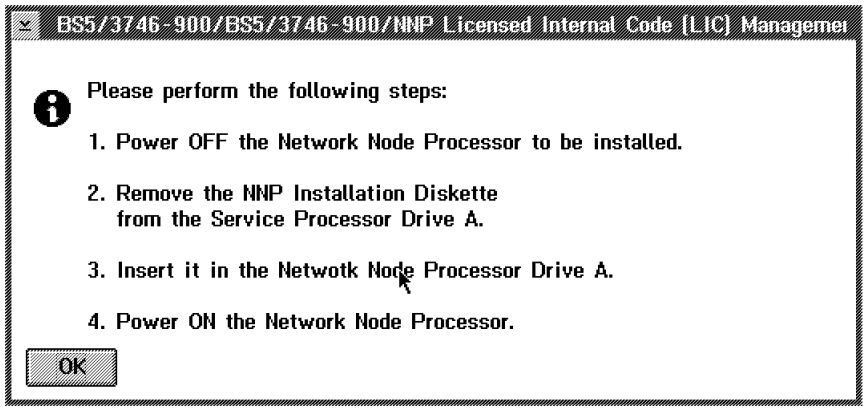


Figure 1-25. NNP-A Licensed Internal Code Management

18. To follow the progress of the installation, read the messages prompted in '**Messages**' box.

    Note: It takes about 20 minutes to complete the installation.

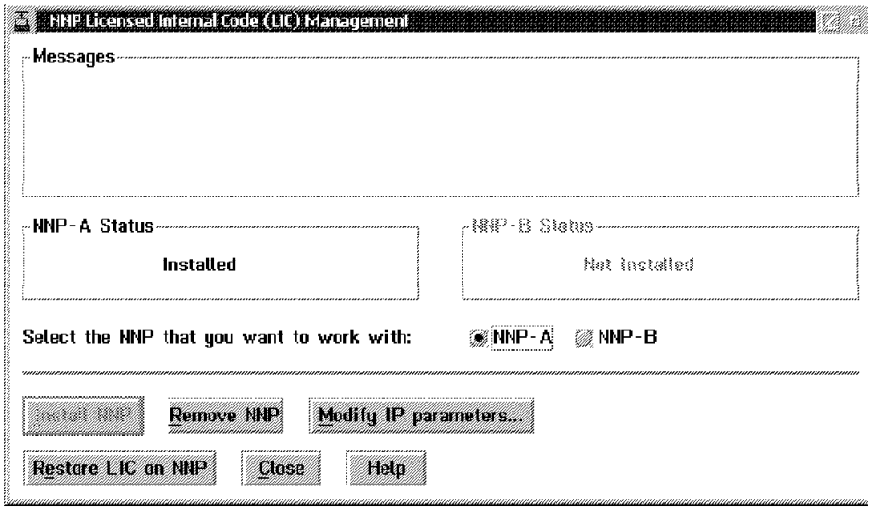


Figure 1-26. Network Node Processor LIC Management Menu

19. As indicated in the following information message, remove the Network Node Processor installation diskette, then click **OK**.

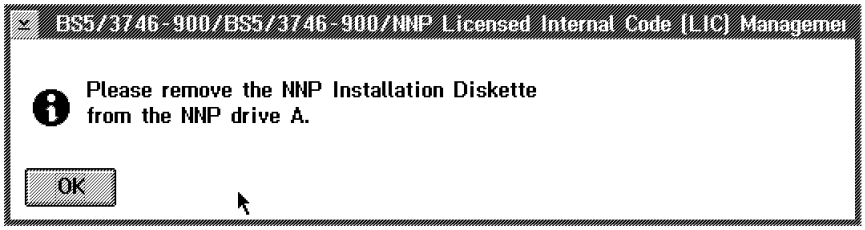


Figure 1-27. NNP-A Licensed Internal Code Management Information Message

20. The installation is completed, click **OK**, then click **Close**.

Completing Your Installation

End of Network Node Processor Installation

Return where you left the previous installation procedure using one of the following guide, if you are installing a:

- **3746-900**, return to the *3746-900 Installation Guide*, SY33-2114.
- **3746-950**, return to the *3746-950 Installation Guide*, SY33-2107.

Chapter 2. Network Node Processor Problem Determination

MAP: Entry Point for Problem Isolation

You are here because you have a problem on the network node processor.

001

Are you here for a network node processor power on problem?

Yes **No**

002

Go to "MAP: Network Node Processor Problem Determination" on page 2-7.

003

- Check that the suspected network node processor is powered ON.
- If not switch the power on button to the on position.

Is the network node processor powered ON?

Yes **No**

004

Is the network node processor connected to the ac outlet distribution box of a controller rack?

Yes **No**

005

Go to Step 011 on page 2-2.

006

Go to Step 008.

007

Problem solved. Go to Chapter 6, "CE Leaving Procedure."

008

Check that the ac power cable of the network node processor is well connect to:

- The rear of the network node processor
- On the ac outlet distribution box.

(Step **008** continues)

008 (continued)

Is the problem solved?
Yes **No**

009

Continue with Step 016.

010

Problem solved. Go to Chapter 6, "CE Leaving Procedure."

011

Check that the ac power cable of the network node processor is well connected to:

- The rear of the network node processor
- The ac wall socket

Is the problem solved?
Yes **No**

012

Connect a know working device, such as a lamp, into the ac wall socket.

Is the device work OK?
Yes **No**

013

The ac wall socket is defective. Inform the customer to have it repaired.

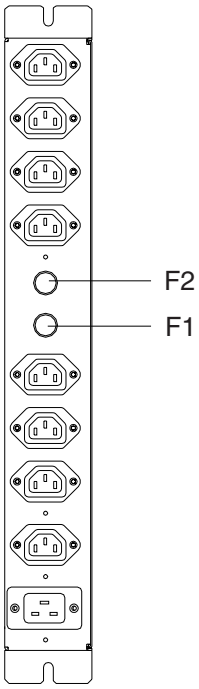
014

Suspect a power problem in the network node processor. Go to "MAP: Network Node Processor Troubleshooting" on page 3-1.

015

Problem solved. Go to Chapter 6, "CE Leaving Procedure."

016



Fuse Location on ac outlet distribution box

- On the ac outlet distribution box:
  - Fuse F1 controls the range of connectors J1 to J4
  - Fuse F2 controls the range of connectors J5 to J8
- Check if other units are connected to the same range of connectors than the suspected unit.

Are there other units connected to the same range than the suspected unit?

Yes **No**

017

Go to Step 026 on page 2-4.

018

Check that the other units have their power on/off switch to on.

Are other units powered ON?

Yes **No**

019

Go to Step 021.

020

Go to Step 029 on page 2-4.

021

Check the corresponding fuse.

Is the fuse OK?

Yes **No**

022

(Step **022** continues)

022 (continued)

- Switch to off all the units controlled by this fuse.
- Exchange the defective fuse.
- Switch on all the units controlled by this fuse.

Is the fuse blown again?

Yes **No**

023

Problem solved go to Chapter 6, "CE Leaving Procedure."

024

- Suspect a power problem in a unit powered through the ac outlet distribution box.
- Switch to off all the units controlled by this fuse.
- Exchange the fuse.
- Switch one by one the units controlled by this fuse to identify the unit that has a problem.
- Once you have identified the faulty unit, continue with Step 033 on page 2-5.

025

Suspect the ac wall socket.

026

Check the corresponding fuse.

Is the fuse OK?

Yes **No**

027

- Switch to off the network node processor controlled by this fuse.
- Exchange the defective fuse.
- Switch on the network node processor.

Is the fuse blown again?

Yes **No**

028

Problem solved go to Chapter 6, "CE Leaving Procedure."

029

Suspect a power problem in the network node processor. Go to "MAP: Network Node Processor Troubleshooting" on page 3-1.

030

Are all other units installed in the controller rack powered ON?

Yes **No**

031

Suspect the ac wall socket.

032

Suspect a power problem in the network node processor. Go to “MAP: Network Node Processor Troubleshooting” on page 3-1.

033

According to the defective unit type select, the action to be performed.

Unit Type	Action
Service Processor	Refer to the service processor documentation.
Network Node Processor	• If your network node processor is based on 6578 or 6563, go to "MAP: Network Node Processor Troubleshooting" on page 3-1. • If your network node processor is based on 6275, refer to the *Network Node Processor Installation and Maintenance (Based on 6275)*, SY33-2126. • If your network node processor is based on 3172, refer to the *3172 Interconnect Controller Maintenance Information Model 3*, SY27-0334 manual to identify the problem. • If your network node processor is based on 7585, refer to the *7585 P02 Industrial Computer Installation, Operation, Hardware Maintenance*, S76H-3792 manual to identify the problem.
Display	Exchange it. Refer to the corresponding *Service Processor Installation and Maintenance* manual on which the display is connected.
Optical Disk or CD-ROM	Exchange it. Refer to the corresponding *Service Processor Installation and Maintenance* manual on which the optical disk or the CD-ROM is connected.
Modem	Refer to the following modem documentation: • For the IBM 7855, refer to the *7855 Modem Model 10 Guide to Operation*, GA33-0160 • For the IBM 7857, refer to the *7857 Guide to Operation*, GA13-1839 • For the IBM 7858, refer to the *7858 Professional Modem Guide to Operation*, GA13-1981 • For other modems, refer to the corresponding documentation.
Other Units	Refer to the corresponding documentation shipped with the unit.

MAP: Network Node Processor Problem Determination

You are here because you suspected

- **A network node processor problem**
- **A connection problem between the network node processor and a 3746-900 or a 3746-950.**

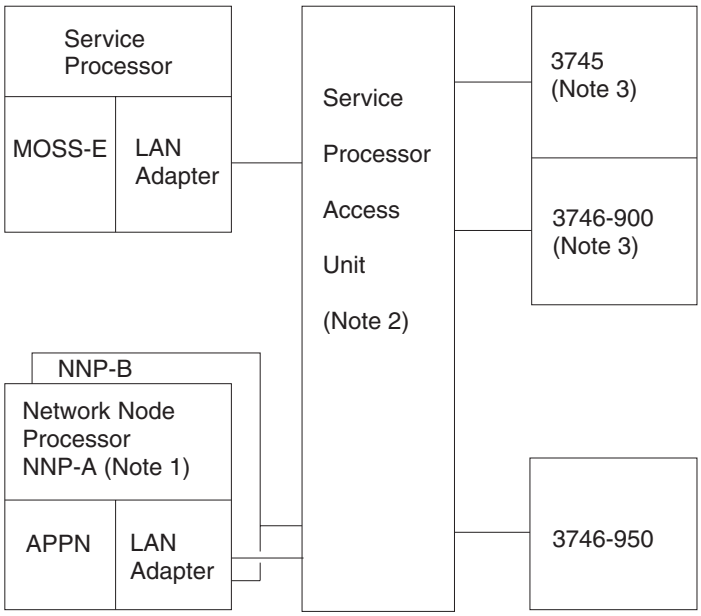


Figure 2-1. LAN Attached to the Service Processor

Notes:

1. The network node processor is an optional feature that is present only when APPN is installed. A backup network node processor can be also present. Until four network node processors can be installed on the same LAN.
2. Up to two service processor access units (8228) can be used depending on the number of network node processor used.
3. Only 3745, 3746-900, 3746-950, service processor and network node processor can be connected to the LAN when APPN is installed.

Note: To continue this procedure you must have a display and keyboard connected to the network node processor. See “How to Install a Display, Keyboard, and Mouse on Your Network Node Processor” on page 2-10.

001

Switch off the network node processor, then after few seconds, switch on the network node processor.

Is there something displayed on the network node processor attached display?

Yes **No**

002

(Step **002** continues)

002 (continued)

Go to "MAP: Network Node Processor Troubleshooting" on page 3-1.

003

Is the network node processor IML complete with the "Control Point APPN Menu" panel displayed?

Yes **No**

004

Is there a message SYSxx-xxxxx (OS/2 message) displayed on the panel?

Yes **No**

005

Go to "MAP: Network Node Processor Troubleshooting" on page 3-1.

006

Call support for assistance.

007

Is the keyboard locked?

Yes **No**

008

Go to Step 012.

009

- Check that the keyboard cable is properly plugged into the keyboard and into the rear of the network node processor.

Do you find the problem?

Yes **No**

010

Replace the system board. Go to Chapter 5, "Network Node Processor FRU Exchange" on page 5-1.

011

Go to Step 012.

012

(Step **012** continues)

012 (continued)

- Check that the network node processor LAN cable is correctly connected at the rear of the network node processor and in the service processor access unit.
- Check that all the LAN cables are correctly connected in the service processor access unit.

Did you find the problem?

Yes **No**

013

- Run diagnostics on the network node processor, and go to "Starting the IBM PC Enhanced Diagnostics Program" on page 4-4 to identify the problem. Then if you have to exchange a FRU, go to Chapter 5, "Network Node Processor FRU Exchange" on page 5-1.

014

Problem solved go to Chapter 6, "CE Leaving Procedure."

How to Install a Display, Keyboard, and Mouse on Your Network Node Processor

1 Have a display, keyboard, and mouse.

2 Power off the network node processor.

3 Connect the display, keyboard, and mouse at the rear of the network node processor.

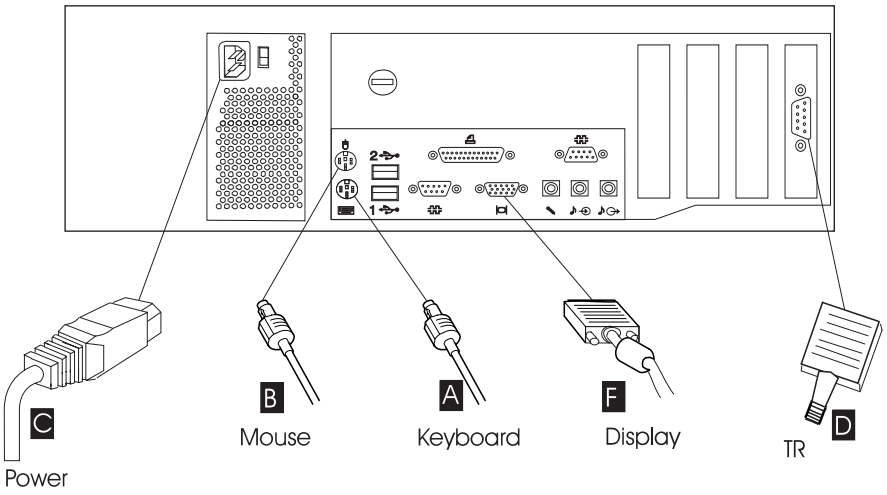


Figure 2-2. How to Connect Display, Keyboard, and Mouse on Network Node Processor

4 Connect the display power cable to a know working ac source.

5 Power on the network node processor and the display.

6 Return to the procedure where you came from.

Chapter 3. Network Node Processor Troubleshooting

MAP: Network Node Processor Troubleshooting

Note about POST error code

The zeros before and after the error code may be not present for some PS/2 models. Messages might appears on your screen as three-, four-, or five-characters messages. When this occurs, add two zeros after the last characters and one, two, or three zeros before the first character, so that you can look up the error as an eight-character message.

Example:

101 displayed means 00010100

1701 displayed means 00170100

16680 displayed means 01668000

Notes:

1. If you have both an error message and an incorrect audio response, diagnose the error message first.
2. If you cannot run the diagnostic tests, or you get a diagnostic error code when running a test, but did receive a POST error message, diagnose the POST error message first.
3. If you did not receive any error message, look for a description of your error symptoms in the first part of this index.
4. Check all power supply voltages before you replace the system board. (See “Power-Supply” on page 3-20.)
5. Check the hard-disk drive jumper settings before you replace a hard-disk drive. (See “Hard-Disk Drive Jumper Settings” on page 3-30.)

Important

- Some errors are indicated with a series of beep codes. See “Beep Symptoms” on page 3-15 for an explanation of the beep codes.
- The network node processor based on 6578 computer is default to come up quiet (No beep and no memory count and checkpoint code display) when no errors are detected by POST. To enable beep and memory count and checkpoint code display when a successful POST occurs:
  - Enable **Power on Status** in Setup. See “Network Node Processor Configuration/Setup Utility” on page F-8.
- The processor is a separate FRU from the system board; that is, the processor is not included with the system board FRU. See “Before Replacing a System Board” on page 3-22 before replacing the system board.

001

- Power-off the system.
- Check all cables and power cords.
- Make sure there are no diskettes in the drives.
- Set all display controls to the middle position.
- Power-on the system.

Note: If you get a POST error code, press the pause key (while the error code is on the screen). Write down any error codes that are displayed, then press F1 to continue.

DID YOU RECEIVE A POST ERROR CODE?

Yes **No**

002

Go to Step 006 on page 3-13.

003

Check your FIRST POST ERROR with the following list.

Symptom / Error	FRU / Action
000 SCSI Adapter not enabled.	1 **Verify adapter device and bus master fields are enabled in PCI configuration program. Refer to documentation shipped with computer.**
02X	**SCSI Adapter**
08X Check SCSI terminator installation.	1. **SCSI Cable** 2. SCSI Terminator 3. SCSI Device 4.SCSI Adapter
101 System board Interrupt failure.	**System Board**
102 System board timer error.	**System Board**
106	**System Board**
110 System board memory parity error.	1. **Memory Module** 2. System Board
111 I/O channel parity error.	1. **Reseat adapters.** 2. Any Adapter 3. System Board
114 Adapter ROM error.	1. **Adapter Module** 2. System Board
129 Internal cache test error.	1.**Processor** 2. L2 Cache Memory 3. System Board
151 Real-time clock failure.	**System Board**

Symptom / Error	FRU / Action
161 Bad CMOS battery.	1. **Run Configuration/Setup Utility.** 2. CMOS Backup Battery (See Appendix A, “Safety Information” on page A-1.) 3. System Board
162 Configuration mismatch.	1. **Run Setup and verify configuration.** 2. Had a device been added, removed, changed location? If not, suspect that device. 3. Power-on external devices first, then power-on computer. 4. CMOS Backup Battery (See Appendix A, “Safety Information.”) 5. System Board
162 And unable to run diagnostics.	1. **Diskette Drive** 2. System Board 3. Diskette Drive Cable
163 Clock not updating or invalid time set.	1. **Time and Date Set?** 2. CMOS Backup Battery (See Appendix A, “Safety Information” on page A-1.) 3. System Board
164 POST detected a base memory or extended memory size mismatch error.	1. **Run Setup. Check System Summary menu for memory size change. (See “Network Node Processor Configuration/Setup Utility” on page F-8.)** 2. Run the Extended Memory Diagnostic tests.
166 Boot Block Check Sum Error.	1. **Run Flash Recovery using Boot Block. See “Flash Recovery Boot Block” on page 3-33.** 2. System Board
167 Microprocessor installed that is not supported by the current POST/BIOS	1. **Run Setup. Check stepping level for the BIOS level needed, then perform the flash update.** 2. Processor
168 Alert on LAN error.	1. **Run Setup. Check to see that Ethernet and Alert on LAN are enabled.** 2. System Board
17X, 18X	**C2 Security**
175	1. **Run Configuration. (See “Network Node Processor Configuration/Setup Utility” on page F-8.)** 2. System Board
176	**Covers were removed from the computer.**
177 Corrupted Administrator Password.	**System Board**
178	**System Board**
183	**Enter the administrator password.**

Symptom / Error	FRU / Action
184 Password removed due to check-sum error.	**Enter new password.**
185 Corrupted boot sequence.	**Set configuration and reinstall the boot sequence.**
186	**System Board**
187	1. **Clear administration password.** 2. System Board
189	**More than three password attempts were made to access the computer.**
190 Chassis intrusion detector was cleared. This is information only, no action required. If this code does not clear:	**System Board**
1XX Not listed above.	**System Board**
201, 20X Memory data error.	1. **Run Enhanced Diagnostic Memory Test.** 2. Memory Module 3. System Board
225	**Unsupported Memory**
229 External cache test error.	1. **L2 Cache Memory** 2. System Board
262 POST detected a base or extended memory type error.	1. **Run Setup. Check System Summary menu for memory type change. (See "Network Node Processor Configuration/Setup Utility" on page F-8.)** 2. Run the extended Memory Diagnostic tests.
301	1. **Keyboard** 2. Keyboard Cable 3. System Board
303 With an 8603 error.	1. **Mouse** 2. Keyboard 3. Keyboard Cable 4. System Board
303 With no 8603 error.	1. **Keyboard** 2. Keyboard Cable 3. System Board
3XX Not listed above.	1. **Keyboard** 2. Keyboard Cable 3. System Board
5XX	1. **Video Adapter** (if installed) 2. System Board
601	1. **Diskette Drive A** 2. Diskette Drive Cable 3. System Board

Symptom / Error	FRU / Action
602	1. **Bad Diskette?** 2. Verify diskette and retry.
604 Able to run diagnostics.	1. **Run Setup and verify diskette configuration settings.** 2. Diskette Drive A/B 3. Diskette Drive Cable 4. System Board
605 POST cannot unlock the diskette drive.	1. **Diskette Drive** 2. Diskette Drive Cable 3. System Board
662	**Diskette drive configuration error or wrong diskette drive type; run Setup Configuration.**
6XX Not listed above.	1. **Diskette Drive** 2. System Board 3. External Drive Adapter 4. Diskette Drive Cable 5. Power Supply
762 Math coprocessor configuration error.	1. **Run Setup.** 2. Processor 3. System Board
7XX Not listed above.	1. **Processor** 2. System Board
962 Parallel port configuration error.	1. **Run Configuration.** 2. Parallel Adapter (if installed) 3. System Board
9XX	1. **Printer** 2. System Board
1047	**16-Bit AT Fast SCSI Adapter**
107X Check SCSI terminator installation.	1. **Check SCSI terminator installation.** 2. SCSI Cable 3. SCSI Terminator 4. SCSI Device 5. SCSI Adapter
1101 Serial connector error, possible system board failure.	**Run Enhanced Diagnostics.**
1101, **1102**, **1106**, **1108**, **1109**	1. **System Board** 2. Any Serial Device
1107	1. **Communications Cable** 2. System Board
1102 Card selected feedback error.	**Run Enhanced Diagnostics.**
1103 Port fails register check.	1. **Run Enhanced Diagnostics.** 2. System Board
1106 Serial option cannot be turned off.	1. **Run Enhanced Diagnostics.** 2. System Board
1107	1. **Serial Device Cable** 2. System Board

Symptom / Error	FRU / Action
1110 Register test failed.	1. **Run Enhanced Diagnostics.** 2. System Board
1116 Interrupt error.	**Run Enhanced Diagnostics.**
1117 Failed baud rate test.	**Run Enhanced Diagnostics.**
1162 Serial port configuration error.	1. **Run Configuration.** 2. Serial Adapter (if installed) 3. System Board
11XX Not listed above.	**System Board**
1201	1. **System Board** 2. Any Serial Device
1202, **1206**, **1208**, **1209**, **12XX**	1. **Dual Async Adapter/A** 2. System Board 3. Any Serial Device
1207	1. **Communications Cable** 2. Dual Async Adapter/A
13XX	**Game Adapter**
1402 Printer not ready.	Information only
1403 No-paper error, or interrupt failure.	Information only
1404 System board timeout failure.	**Run Enhanced Diagnostics.**
1405 Parallel adapter error.	**Run Enhanced Diagnostics.**
1406 Presence test error.	**Run Enhanced Diagnostics.**
14XX Not listed above. Check printer before replacing system board.	1. **See "Printer" on page 3-19.** 2. System Board
15XX	**SDLC Adapter**
1692 Boot sequence error.	**Run FDISK to ensure at least one active partition is set active.**
16XX	**36/38 Workstation Adapter**
1762 Hard-disk drive configuration error.	**Run Configuration/Setup Utility. (See "Network Node Processor Configuration/Setup Utility" on page F-8.)**
1780 (Disk Drive 0) **1781** (Disk Drive 1) **1782** (Disk Drive 2) **1783** (Disk Drive 3)	1. **See "Power-Supply" on page 3-20.** 2. Hard-Disk Drive 3. System Board 4. Hard-Disk Cable 5. Power Supply

Symptom / Error	FRU / Action
180X, 185X PCI configuration or resource error.	1. **Run Setup and verify PCI/ISA configuration settings.** 2. If necessary, set ISA adapters to "not available" to allow PCI adapters to properly configure. 3. Remove any suspect ISA adapters. 4. Rerun diagnostics. 5. PCI Adapter
1962 Boot sequence error.	**Possible hard-disk drive problem, see "Hard-Disk Drive Boot Error" on page 3-24.**
209X	1. **Diskette Drive** 2. Diskette Cable 3. 16-bit AT Fast SCSI Adapter
20XX Not listed above.	**BSC Adapter**
21XX	1. **SCSI Device** 2. 16-bit AT Fast SCSI Adapter 3. Alternate BSC Adapter
2401, 2402 If screen colors change.	**Display**
2401, 2402 If screen colors are OK.	1. **System Board** 2. Display
2409	**Display**
2410	1. **System Board** 2. Display
2462 Video memory configuration error.	1. **Check cable and connections.** 2. Run Setup and verify video configuration settings. 3. Video Memory Modules 4. Video Adapter (if installed) 5. System Board
3015, 3040 Check for missing wrap or terminator plug on the adapter.	1. **Network Attached?** 2. LF Translator 3. Cable Problem 4. PC Network Adapter
30XX	1. **PC Network Adapter** 2. LF Translator 3. Cable problem?
3115, 3140	1. **Network attached?** 2. LF Translator 3. Alternate PC Network-Adapter 4. Cable Problem
31XX	1. **Alternate PC Network Adapter** 2. LF Translator 3. Cable problem?
36XX	**GPIB Adapter**
38XX	**DAC Adapter**
4611, **4630**	1. **Multiport/2 Interface Board** 2. Multiport/2 Adapter

Symptom / Error	FRU / Action
4612, **4613 4640**, **4641**	1. **Memory Module Package** 2. Multiport/2 Adapter
4650	**Multiport Interface Cable**
46XX Not listed above.	1. **Multiport/2 Adapter** 2. Multiport/2 Interface Board 3. Memory Module
5600	**Financial System Controller Adapter**
5962 An IDE device (other than hard drive) configuration error.	1. **Run Configuration.** 2. CD-ROM Drive 3. CD-ROM Adapter 4. ZIP or other ATAPI device 5. System Board
62XX	1. **1st Store Loop Adapter** 2. Adapter Cable
63XX	1. **2nd Store Loop Adapter** 2. Adapter Cable
64XX	**Network Adapter**
71XX	**Voice Adapter**
74XX	**Video Adapter** (if installed)
76XX	**Page Printer Adapter**
78XX	**High Speed Adapter**
79XX	**3117 Adapter**
80XX	**PCMCIA Adapter**
84XX	1. **Speech Adapter** 2. Speech Control Assembly
8601, **8602**	1. **Pointing Device** (Mouse) 2. System Board
8603, **8604**	1. **System Board** 2. Pointing Device (Mouse)
86XX Not listed above.	1. **Mouse** 2. System Board
89XX	1. **PC Music Adapter** 2. MIDI Adapter Unit
91XX	1. **Optical Drive** 2. Adapter
96XX	1. **SCSI Adapter** 2. Any SCSI Device 3. System Board
10101, **10102**, **10104** **10105**, **10106**, **10107** **10108**, **10109**, **10111** **10112**, **10113**, **10114** **10115**, **10116**	1. **Have customer verify that correct operating system device drivers are installed and operational.** 2. Modem
10103, **10110**, **101171**	1. **System Board** 2. Data/Fax Modem

Symptom / Error	FRU / Action
10117 Not listed above.	1. **Check system speaker.** 2. Check PSTN cable. 3. External DAA (if installed) 4. Modem
10118	1. **Run Diagnostics and verify the correct operation of the modem slot.** 2. Modem
10119	1. **Diagnostics detected a non-IBM modem.** 2. Modem
10120	1. **Check PSTN Cable.** 2. External DAA (if installed) 3. Modem
10132, **10133**, **10134** **10135**, **10136**, **10137** **10138**, **10139**, **10140** **10141**, **10142**, **10143** **10144**, **10145**, **10146** **10147**, **10148**, **10149** **10150**, **10151**, **10152**	**Modem**
10153	1. **Data/Fax Modem** 2. System Board
101XX Not listed above.	1. **Modem Adapter/A** 2. Data/Fax Modem 3. System Board
10450, **10451**, **10490** **10491**, **10492**, **10499** Read/write error.	1. **Run Enhanced Diagnostics.** 2. Hard-Disk Drive 3. System Board
10452 Seek test error.	**Run Enhanced Diagnostics.**
10453 Wrong drive type?	Information only
10454 Sector buffer test error.	**Run Enhanced Diagnostics.**
10455, **10456** Controller error.	**Run Enhanced Diagnostics.**
10459 Drive diagnostic command error.	Information only
10461 Drive format error.	**Run Enhanced Diagnostics.**
10462 Controller seek error.	**Run Enhanced Diagnostics.**
10464 Hard Drive read error.	**Run Enhanced Diagnostics.**
10467 Drive non-fatal seek error.	**Run Enhanced Diagnostics.**
10468 Drive fatal seek error.	**Run Enhanced Diagnostics.**

Symptom / Error	FRU / Action
10469 Drive soft error count exceeded.	**Run Enhanced Diagnostics.**
10470, **10471**, **10472** Controller wrap error.	**Run Enhanced Diagnostics.**
10473 Corrupt data. Low-level format might be required.	Information only
10480	1. **Hard-Disk Drive** (ESDI) 2. Drive Cable 3. System Board
10481 ESDI drive D seek error.	**Run Enhanced Diagnostics.**
10482 Drive select acknowledgement bad.	**Run Enhanced Diagnostics.**
106X1	1. **Check Configuration.** 2. Ethernet Adapter
10635	1. **Power-off computer, wait ten seconds, then power-on the computer.** 2. Ethernet Adapter
10651, 10660	1. **Check Cables.** 2. Ethernet Adapter
106XX Not listed above.	**Ethernet Adapter**
107XX	1. **5.25-inch External Diskette Drive** 2. 5.25-inch Diskette Drive Adapter/A
109XX Check the adapter cables.	1. **ActionMedia Adapter/A** 2. System Board
112XX This adapter does not have cache.	1. **SCSI Adapter** 2. Any SCSI Device 3. System Board
119XX	**3119 Adapter**
121XX	1. **Modem Adapter** 2. Any Serial Device 3. System Board
136XX	1. **ISDN Primary Rate Adapter** 2. System Board
137XX	**System Board**
141XX	**Realtime Interface Co-Processor Portmaster Adapter/A**
143XX	1. **Japanese Display Adapter** 2. System Board
14710, **14711**	1. **System Board Video Adapter** 2. Adapter Video Memory
148XX	**Video Adapter**
14901, **14902** **1491X**, **14922**	1. **Video Adapter** (if installed) 2. System Board 3. Display (any type)

Symptom / Error	FRU / Action
14932	1. **External Display** 2. Video Adapter
161XX	**FaxConcentrator Adapter**
164XX	1. **120MB Internal Tape Drive** 2. Diskette Cable 3. System Board
16500	**6157 Tape Attachment Adapter**
16520, **16540**	1. **6157 Streaming Tape Drive** 2. 6157 Tape Attachment Adapter
166XX, 167XX	1. **Token Ring Adapter** 2. System Board
18001 to **18029**	1. **Wizard Adapter** 2. Wizard Adapter Memory
18031 to **18039**	**Wizard Adapter Cable**
185XXXX	1. **DBCS Japanese Display Adapter/A** 2. System Board
20001 to **20003**	1. **Image Adapter/A** **Image-I Adapter/A** 2. Memory Module DRAM, VRAM
20004	1. **Memory Module DRAM, VRAM** 2. Image Adapter/A Image-I Adapter/A
20005 to **20010**	1. **Image Adapter/A** **Image-I Adapter/A** 2. Memory Module DRAM, VRAM
200XX Not listed above.	1. **Image Adapter/A** **Image-I Adapter/A** 2. Memory Module DRAM, VRAM 3. System Board
20101 to **20103**	1. **Printer/Scanner Option** 2. Image Adapter/A 3. Memory Module DRAM, VRAM
20104	1. **Memory Module DRAM, VRAM** 2. Printer/Scanner Option 3. Image Adapter/A
20105 to **20110**	1. **Printer/Scanner Option** 2. Image Adapter/A 3. Memory Module DRAM, VRAM
Image Adapter/A Memory Test failure indicated by graphic of adapter.	**Replace memory module (shown in graphic).**
206XX	1. **SCSI-2 Adapter** 2. Any SCSI Device 3. System Board
208XX Verify there are no duplicate SCSI ID settings on the same bus.	**Any SCSI Device**

Symptom / Error	FRU / Action
210XXXX Internal bus, size unknown. **210XX**X**1** External bus, size unknown.	1. **SCSI Hard-Disk Drive** 2. SCSI Adapter or System Board 3. SCSI Cable 4. SCSI ID Switch (on some models)
212XX	1. **SCSI Printer** 2. Printer Cable
213XX	**SCSI Processor**
214XX	**WORM Drive**
215XXXC **215XX**XD **215XX**XE **215XX**XU If an external device and power-on LED is off, check external voltages.	1. **CD-ROM Drive I** **CD-ROM Drive II** **Enhanced CD-ROM Drive II** **Any CD-ROM Drive** 2. SCSI Cable 3. SCSI Adapter or System Board
216XX	**Scanner**
217XX If an external device and power-on LED is off, check external voltages.	1. **Rewritable Optical Drive** 2. SCSI Adapter or System Board 3. SCSI Cable
218XX Check for multi-CD tray, or juke box.	**Changer**
219XX	**SCSI Communications Device**
24201Y0, **24210**Y0 Be sure wrap plug is attached.	1. **ISDN/2 Adapter** 2. ISDN/2 Wrap Plug 3. ISDN/2 Communications Cable
273XX	**1M bps Micro Channel® Infrared LAN Adapter**
27501, **27503** **27506**, **27507**	1. **ServerGuard Adapter** 2. System Board
27502, **27504**, **27510** **27511**, **27533**, **27534** **27536**, **27537**	**ServerGuard Adapter**
27509	**Remove redundant adapters, run Auto Configuration program, then retest.**
27512	1. **WMSELF.DGS diagnostics file missing** 2. WMSELF.DGS diagnostics file incorrect
27535	1. **3V Lithium Backup Battery** 2. ServerGuard Adapter
27554	1. **Internal Temperature out of range** 2. ServerGuard Adapter
27555, **27556**	1. **ServerGuard Adapter** 2. Power Supply
27557	1. **7.2V NiCad Main Battery Pack** 2. ServerGuard Adapter
27558, **27559** **27560**, **27561**	1. **PCMCIA Type II Modem** 2. ServerGuard Adapter

Symptom / Error	FRU / Action
27562	1. **External Power Control not connected** 2. External Power Control 3. ServerGuard Adapter
27563, **27564**	1. **External Power Control** 2. ServerGuard Adapter
275XX	**Update Diagnostic Software**
27801 to **27879**	1. **Personal Dictation System Adapter** 2. System Board
27880 to **27889**	**External FRU** (Speaker, Microphone)
I999030X Hard disk reset failure.	**Possible hard-disk drive problem** (See "Hard-Disk Drive Boot Error" on page 3-24.)

DID YOU FIND YOUR POST ERROR CODE IN THE LIST?

Yes **No**

004

Error Range Is Not Listed

If the error code *range* presented is not listed in this index, it may be generated by a device that requires an additional service package. Refer to that service package.

005

- **Action:**
  - **Change the FRU suspected**, go to Chapter 5, "Network Node Processor FRU Exchange" on page 5-1.
  - **or perform the specified action.**

006

Check your network node processor symptom with the following list.

MISCELLANEOUS ERROR MESSAGES

Message/Symptom	FRU/Action
Changing colors.	**Display**
CMOS Backup Battery inaccurate.	1. **CMOS Backup Battery (see Appendix A, "Safety Information" on page A-1).** 2. System Board
Computer will **not** power-off. See "Power-Supply" on page 3-20.	1. Power Switch 2. System Board

Message/Symptom	FRU/Action
Computer will **not** RPL from server.	1. **Ensure Network is in startup sequence as first device or first device after diskette.** 2. Ensure Network adapter is enabled for RPL. 3. Network adapter (advise network administrator of a new MAC address)
Computer will **not** Wake On LAN.	1. **Check power supply and signal cable connections to network adapter.** 2. Ensure Wake On LAN® feature is enabled in Setup/Configuration. See "Network Node Processor Configuration/Setup Utility" on page F-8. 3. Ensure the network administrator is using correct MAC address. 4. Ensure no interrupt or I/O address conflicts. 5. Network adapter (advise network administrator of new MAC address).
Dead computer. See "Power-Supply" on page 3-20.	1. **Power Switch** 2. Power Supply 3. System Board
Diskette drive in-use light remains on or does not light when drive is active.	1. **Diskette Drive** 2. System Board 3. Diskette Drive Cable
Flashing cursor with an otherwise blank display.	1. **System Board** 2. Primary Hard-Disk Drive 3. Hard-Disk Drive Cable
Incorrect memory size during POST.	1. **Run the Memory tests.** 2. Memory Module 3. System Board
"Insert a Diskette" icon appears with a known-good diagnostics diskette in the first 3.5-inch diskette drive.	1. **Diskette Drive** 2. System Board 3. Diskette Drive Cable 4. Network Adapter
Intensity or color varies from left to right of characters and color bars.	1. **Display** 2. System Board
No power, or fan not running.	**See "Power-Supply" on page 3-20.**
Nonsystem disk or disk error-type message with a known-good diagnostic diskette.	1. **Diskette Drive** 2. System Board 3. Diskette Drive Cable
Other display symptoms not listed above (including blank or illegible display).	1. **See "Display" on page 3-18.** 2. System Board 3. Display
Power-on indicator or hard-disk drive in-use light not on, but computer works correctly.	1. **Power Supply** 2. System Board 3. LED Cables
Printer problems.	**See "Printer" on page 3-19.**

Message/Symptom	FRU/Action
Program loads from the hard disk with a known-good diagnostics diskette in the first 3.5-inch diskette drive.	1. **Check the Configuration/Setup Utility.** 2. Diskette Drive 3. Diskette Drive Cable 4. System Board 5. Power Supply
RPL computer cannot access programs from its own hard disk.	1. **If network administrator is using LCCM Hybrid RPL, check startup sequence: First device: network; Second device: hard disk.** 2. Hard-disk drive
RPL computer does not RPL from server.	1. **Check startup sequence.** 2. Check the "Token-Ring Adapter Card LED Status" on page 3-25.
Serial or parallel port device failure (system board port).	1. **External Device Self-Test OK?** 2. External Device 3. Cable 4. System Board
Serial or parallel port device failure (adapter port).	1. **External Device Self-Test OK?** 2. External Device 3. Cable 4. Alternate Adapter 5. System Board
Some or all keys on the keyboard do not work.	1. **Keyboard** 2. Keyboard Cable 3. System Board

Beep Symptoms

Beep symptoms are short tones or a series of short tones separated by pauses (intervals without sound). See the following example.

Beep Symptom	Description
1-2-X	• One beep • A pause (or break) • Two beeps • A pause (or break) • Any number of beeps
4	Four continuous beeps

Beep Symptom	FRU/Action
1-1-3 CMOS read/write error	1. **Run Setup.** 2. System Board
1-1-4 ROM BIOS check error	**System Board**
1-2-X DMA error	**System Board**
1-3-X	1. **Memory Module** 2. System Board

Beep Symptom	FRU/Action
1-4-4	1. **Keyboard** 2. System Board
1-4-X Error detected in first 64 KB of RAM.	1. **Memory Module** 2. System Board
2-1-1, 2-1-2	1. **Run Setup.** 2. System Board
2-1-X First 64 KB of RAM failed.	1. **Memory Module** 2. System Board
2-2-2	1. **Video Card** (if present) 2. System Board
2-2-X First 64 KB of RAM failed.	1. **Memory Module** 2. System Board
2-3-X	1. **Memory Module** 2. System Board
2-4-X	1. **Run Setup.** 2. Memory Module 3. System Board
3-1-X DMA register failed.	**System Board**
3-2-4 Keyboard controller failed.	1. **System Board** 2. Keyboard
3-3-4 Screen initialization failed.	1. **Video Adapter** (if installed) 2. System Board 3. Display
3-4-1 Screen retrace test detected an error.	1. **Video Adapter** (if installed) 2. System Board 3. Display
3-4-2 POST is searching for video ROM.	1. **Video Adapter** (if installed) 2. System Board
4	1. **Video Adapter** (if installed) 2. System Board
All other beep code sequences.	**System Board**
One long and one short beep during POST. Base 640-KB memory error or shadow RAM error.	1. **Memory Module** 2. System Board
One long beep and two or three short beeps during POST. (Video error)	1. **Display Adapter** (if installed) 2. System Board
Three short beeps during POST.	1. **See "System Board Memory" on page 3-37.** 2. System Board
Continuous beep.	**System Board**
Repeating short beeps.	1. **Keyboard key stuck?** 2. Keyboard Cable 3. System Board

No Beep Symptoms

Symptom/Error	FRU/Action
No beep during POST but computer works correctly.	**System Board**
No beep during POST.	1. **See "Undetermined Problems" on page 3-22.** 2. System Board 3. Memory Module 4. Any Adapter or Device 5. Power Cord 6. Power Supply

DID YOU FIND YOUR SYMPTOM IN THE LIST?

Yes **No**

007

Run the IBM PC Enhanced Diagnostics. See "Starting the IBM PC Enhanced Diagnostics Program" on page 4-4 to start the diagnostics and to "IBM PC Enhanced Diagnostic Error Codes" on page 4-9 for error code and action.

Did the Enhanced Diagnostics error free?

Yes **No**

008

Go to Step 010.

009

Go to "Undetermined Problems" on page 3-22.

010

- **Action:**
  - **Change the suspected FRU**, go to Chapter 5, "Network Node Processor FRU Exchange" on page 5-1.
  - **or perform the specified action.**

Display

If the screen is rolling, replace the display assembly. If that not correct the problem, replace the video adapter (if installed) or replace the system board.

If the screen is not rolling, perform the following steps to run the display self-test:

1. Power off the computer and display.
2. Disconnect the display signal cable.
3. Power on the display.
4. Turn the brightness and contrast controls to their maximum setting.
5. Check for the following conditions:
   - The screen should be white or light gray, with a black margin (test margin) on the screen.
   - You should be able to vary the screen intensity by adjusting the contrast and brightness controls.

     Note: The location of the test margin varies with the type of display. The test margin might be on the top, bottom, or one or both sides.

   If you do not see any test margin on the screen replace the display. If there is a test margin on the screen, replace the video adapter (if installed) or replace the system board.

   Note: During the first two or three seconds after the display is powered on, the following might occur while the display synchronizes with the computer.

   - Unusual patterns or characters
   - Static, crackling, or clicking sounds
   - A “power-on hum” on larger displays

   A noticeable odor might occur on new displays or displays recently removed from storage.

   These sounds, display patterns, and odors are normal; do not replace any parts.

   If you are unable to correct the problem, go to “Undetermined Problems” on page 3-22.

Keyboard

Note: If the keyboardless operation mode BIOS parameter is set to disabled, removing the keyboard or mouse as recommended can generate POST errors 301 and 8603 on the 6578.

001

– Power-off the computer.
– Disconnect the keyboard cable from the system unit.
– Power-on the computer and check the keyboard cable connector on the system unit for the voltages shown.
  All voltages are ± 5%.

Pin	Voltage (Vdc)
1	+5.0
2	Not Used
3	Ground
4	+5.0
5	+5.0
6	Not Used

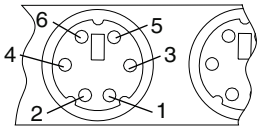


Figure 3-1. Keyboard Connector Voltages

ARE THE VOLTAGES CORRECT?

Yes **No**

002

Replace the system board.

003

On keyboards with a detachable cable, replace the cable. If the problem remains or if the cable is permanently attached to the keyboard, replace the keyboard. If the problem remains, replace the system board.

Printer

1. Make sure the printer is properly connected and powered on.
2. Run the printer self-test.

If the printer self-test does not run correctly, the problem is in the printer. Refer to the printer service manual.

If the printer self-test runs correctly, install a wrap plug in the parallel port and run the diagnostic tests to determine which FRU failed.

If the diagnostic test (with the wrap plug installed) do not detect a failure, replace the printer cable. If that does not correct the problem, replace the system board or adapter connected to the printer cable.

Power-Supply

If the power-on indicator is not on, if the power-supply fan is not running, or the computer will not power on, perform the following steps:

Check/Verify	FRU/Action
1. Verify that the voltage-selector switch is set for the correct voltage.	**Correct the voltage-selector switch setting.**
2. Check the following for proper installation. • Power Cord • On/Off switch connector • On/Off switch power supply connector • System board power supply connectors • Microprocessors connection	**Reseat.**
Check the power cord for proper continuity.	**Power Cord**
Check the power-on switch for continuity.	**Power-on switch**

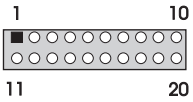
If the above are correct, check the following voltages (see “20-Pin Main Power Supply Connection”).

20-Pin Main Power Supply Connection

See “System Board Layout” on page F-5 for connector location.

Attention

These voltages must be checked with the power supply cables connected to the system board.



Pin	Signal	Function
1	3.3 V	+3.3 V dc
2	3.3 V	+3.3 V dc
3	COM	Ground
4	5 V	+5 V dc
5	COM	Ground
6	5 V	+5 V dc
7	COM	Ground
8	POK	Power Good
9	5VSB	Standby Voltage
10	12 V	+12 V dc

Pin	Signal	Function
11	3.3 V	+3.3 V dc
12	-12 V	-12 V dc
13	COM	Ground
14	PS-ON	DC Remote Enable
15	COM	Ground
16	COM	Ground
17	COM	Ground
18	not used	not used
19	5 V	+5 V dc
20	5 V	+5 V dc

If the voltages are not correct, and the power cord is good, replace the power supply.

Undetermined Problems

If an undetermined problem exists, check the power supply voltages (see “Power-Supply” on page 3-20). If the voltages are correct, return here and continue with the following steps.

1. Power-off the computer.
2. Remove or disconnect the following, if installed, one at a time:
   a. Non-IBM devices
   b. External devices (modem, printer, or mouse)
   c. Any adapters
   d. Memory modules

      Before removing or replacing memory modules, see “System Board Memory” on page 3-37.
   e. Extended video memory
   f. External Cache
   g. External Cache RAM
   h. Hard drive
   i. Diskette drive
3. Power-on the computer to retest the system.
4. Repeat steps 1 through 3 until you find the failing device or adapter.

If all devices and adapters have been removed, and the problem continues, replace the system board (see “Before Replacing a System Board”).

Before Replacing a System Board

The BIOS and Vital Product Data (VPD) for the network node processor must be installed on the new system board after it is installed in the network node processor. To do this, ***you must run the Flash Update Diskette.*** See “Flash (BIOS/VPD) Update Procedure” on page 3-33.

Always ensure the latest level of BIOS is installed on the computer. A down-level BIOS may cause false errors and unnecessary replacement of the system board.

The processor is a separate FRU from the system board and is not included with the system board FRU. If you are instructed to replace the system board, perform the following steps:

1. Remove the processor from the old system board and install it on the new system board.
2. Remove any of the following installed options on the old system board, and install them on the new system board.
   - External cache memory and cache tag RAM
   - Memory modules
   - Extended video memory
3. Ensure that the new system board jumper settings match the old system board jumper settings.
4. If the new system board does not correct the problem, reinstall the options on the old system board, reinstall the old system board, then replace the processor.

Devices List

Follow the instructions on the screen for the installed devices list.

> **Attention**
>
> A customized setup configuration (other than default settings) might exist on the computer you are servicing. Running the Configuration/Setup Utility program (see "Network Node Processor Configuration/Setup Utility" on page F-8) might alter those settings. Note the current configuration settings and verify that the settings are in place when service is complete.

If the number of diskette drives shown in the installed devices list is not correct, perform the following steps:

1. Restart the computer.
2. Run the Configuration/Setup Utility program to correct the drive information.
3. Run the diagnostic tests.
4. If you cannot correct the drive information, replace FRUs in the following order until the problem goes away:
   - Diskette drive
   - Diskette-drive cable
   - System board

If the number of hard-disk drives shown in the installed devices list is not correct, perform the following steps:

1. Check the hard-disk drive jumper settings. All supported hard-disk drives use jumpers or tabs to set drives as either primary or secondary. Refer to the jumper instructions that came with your hard-disk drives.
2. Check the voltages to the hard-disk drives (see "Power-Supply" on page 3-20).
3. Restart the computer and check the configuration.
   - If the first drive is missing, replace the primary drive.
   - If any other drive is missing, replace that drive.
   - If all drives are missing, replace the primary drive.
   - If the problem remains, replace the drive cable.
   - If the problem still remains, replace the system board.

If any other adapter or device is missing from the installed devices list, run the Configuration/Setup Utility program. Check to see if any adapter or device is set to a conflicting address with any other adapter or device. Also be sure that any adapter or device missing from the list is not set to "disabled."

Note: If the device is still missing from the list, run the diagnostics provided with that device.

Hard-Disk Drive Boot Error

A hard-disk drive boot error (error codes 1962 and I999030X) can be caused by the following problems:

Cause	Actions
The start-up drive is not in the boot sequence in configuration.	Check the configuration and ensure the start-up drive is in boot sequence.
No operating system installed on the boot drive.	Install an operating system on the boot drive.
The boot sector on the start-up drive is corrupted.	The drive must be formatted; perform the following steps: 1. Attempt to access and recover (back-up) the failing hard-disk drive. 2. Using the operating systems programs, format the hard-disk drive. 3. Go to "Preparing the Hard-Disk Drive for Use."
The drive is defective.	Replace the hard-disk drive.

When to Use the Low-Level Format Program

Notes:

1. The low-level format is not available on all diagnostic diskettes.
2. Before formatting the hard-disk drive, make a back-up copy of the files on the drive to be formatted.

Use the Low-Level Format program:

- When you are installing software that requires a low-level format
- When you get recurring messages from the test programs directing you to run the Low-Level Format program on the hard disk
- As a last resort before replacing a hard-disk drive

Preparing the Hard-Disk Drive for Use

When the Low-Level Format program is finished, restore to the hard disk all the files that you previously backed up.

1. Partition the remainder of the hard disk for your operating system. (The commands vary with the operating system. Refer to your operating-system manual for instructions.)
2. Format the hard disk using your operating system. (The commands vary with the operating system. Refer to your operating-system manual for instructions.)
3. Install the operating system.

You are now ready to restore the files.

Token-Ring Adapter Card LED Status

Use the table below to determine the status of the token-ring adapter card for diagnosing network problems.

Amber	Green	Explanation
Blinking	Blinking	The adapter is waiting for initialization (during POST).
Off	Off	The adapter initialization is in progress (during POST), or the computer is powered off.
Off	Blinking	The adapter did not detected any problems during its self-diagnostic tests and is waiting to open. If this LED state occurs after the adapter has been opened, this state indicates that the adapter has been closed under software control.
Off	On	The adapter is open and operating correctly.
On	Off	The adapter self-diagnostic tests failed or there is a problem with the adapter. Replace: • Adapter • System board
Blinking	Off	The adapter is closed due to an undetected error. One of the following exists: • The adapter open failed. • The adapter detect a wire fault. • The adapter failed the auto-removal test.
Blinking	On	The adapter has detected beaconing or hard error. If network is known good, check cable between computer and network receptacle. Replace: • Adapter • System board
On	On	The adapter has failed before running the self-diagnostic tests. Replace: • Adapter • System board

Note: See “Token-Ring Table Terms and Definitions” on page 3-26 for the definitions of terms in this table.

Token-Ring Table Terms and Definitions

Auto-removal The state in which a token-ring adapter port removes itself from the network to perform self-tests to verify that is not the cause of hard error. If the tests are successful, the port will reattach itself to the network.

Beaconing The state that a token-ring adapter port enters after it has detected a hard error. The error condition is reported to the other devices on the network. Beaconing can result in the port removing itself from the network (auto-removal) to determine whether it is the cause of the hard error.

Hard error An error condition on a network that requires removing the source of the error or reconfiguring the network before the network can resume reliable operation.

Initialization The first step taken to prepare the port for use after the computer has been booted. During initialization, the port runs a series of internal self-diagnostic tests.

Open The state in which the port has established connection with other devices on the ring.

Wire fault An error condition caused by a break or short circuit in the cable segment that connects the port to its access unit, such as an IBM 8230 Token-Ring Network Controller Access Unit.

Additional Service Information

The following additional service information supports the PC 300 type 6578.

Security Features

Security features in this section include:

- Passwords
- Vital Product Data
- Management Information Format (MIF)
- Alert on LAN

Passwords

The following list provides information about computer hardware and software-related passwords:

- Power-On Password
- Administrator Password
- Operating System Password

Power-on and administrator passwords are set in the Setup Utility program. See "Network Node Processor Configuration/Setup Utility" on page F-8 for information about running the Setup Utility.

Power-On Password

A power-on password denies access to the computer by an unauthorized user when the computer is powered on. When a power-on password is active, the password prompt appears on the screen each time the computer is powered on. The computer starts after the proper password is entered.

Removing a Power-On Password

To service a computer with an active and unknown power-on password, power-off the computer and perform the following steps:

Attention

This procedure will remove the administrator password. Also, this procedure will clear all setup parameters, privilege access, and boot sequence settings. Make sure these setting are recorded before performing this procedure.

1. Unplug the power cord and remove the top cover.
2. Refer to “System Board Layout” on page F-5 to find the password jumper.
3. Move the password jumper to connect the center pin and the pin on the opposite end of the connector.
4. Power-on the computer. The system senses the change in the position and erases the password.

   Note: It is necessary to move the jumper back to the previous position.
5. Remind the user to enter a new password when service is complete.

Administrator Password

The administrator password is used to restrict access to the Configuration/Setup Utility program. If the administrator password is activated, and you do not enter the administrator password, the configuration can be viewed but not changed.

Note: Type 6578 has Enhanced Security Mode. If Enhanced Security mode is enabled and there is no password given, the computer will act as if Enhanced Security is disabled.

If Enhanced Security is enabled and an administrator password is given, the administrator password must be entered to use the computer. If the administrator password is lost or forgotten, the system board in the computer must be replaced in order to regain access to the Configuration/Setup Utility program.

Administrator Password Control

The administrator password is set in the Setup Configuration. See “Network Node Processor Configuration/Setup Utility” on page F-8.

Operating System Password

An operating system password is very similar to a power-on password and denies access to the computer by an unauthorized user when the password is activated. The computer is unusable until the password is entered and recognized by the computer.

Vital Product Data

Each computer has a unique vital product data (VPD) code stored in the nonvolatile memory on the system board. After you replace the system board, the VPD must be updated. To update the VPD, see “Flash (BIOS/VPD) Update Procedure” on page 3-33.

Management Information Format (MIF)

Management Information Format (MIF) is a file used to maintain a list of the system unit serial number along with all serialized components; for example: system board, memory, and processor.

At the time of computer manufacture, the EPROM will be loaded with the serial numbers of the system and all major components. The customer will have access to the MIF file via the DMI MIF Browser that is installed with the preload and is also available on the SSCD provided with the system.

A company called Retain-a-Group is a central data warehouse offering serial number data management. Retain-a-Group acts as a focal point to law enforcement. The customer has the option to purchase serial number information and services from Retain-a-Group. It is the customer's responsibility to maintain the MIF file and to inform Retain-a-Group of any changes to the file.

Some customers may request their servicers to assist them in maintaining the MIF file when serialized components are replaced during hardware service. This assistance is between the customer and the servicer. The servicer can use the DMI MIF Browser to update the MIF information in the EPROM. It is anticipated that some servicers might charge for this service.

To update the EPROM using the DMI MIF Browser:

1. Click **Start** from the desktop, then **Programs**.
2. Select **IBM SystemView Agent**.
3. Select **Serial Number Information** icon.
4. Click the plus sign to expand.
5. Select the component you want to view or edit.
6. Double-click the component you want to change.
7. Enter new data in the **Value** field, then click **Apply**.

Alert on LAN

Alert on LAN provides notification of changes in the computer, even when the computer power is turned off. Working with DMI and Wake on LAN technologies, Alert on LAN helps to manage and monitor the hardware and software features of the computer. Alert on LAN generates notifications to the server of these occurrences:

- Computer disconnected from the network
- Computer unplugged from the power outlet
- All POST errors
- Operating system or POST hang condition

Alert on LAN events are configured to be Enabled or Disabled from the LAN server only, and not from the computer. See the LAN administrator for configuration status information.

Hard-Disk Drive Jumper Settings

IDE hard-disk drives for the 6578 use jumpers to set the drives as primary (master) or secondary (slave).

Attention

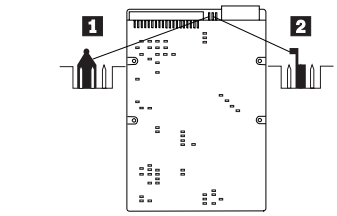
For drives not listed below, refer to the label on the hard-disk drive for the hard-disk drive settings.

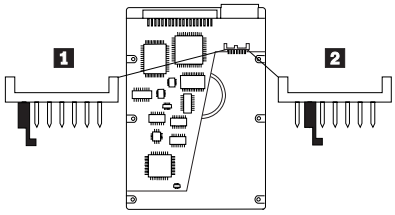
IDE Hard-Disk Drive Settings

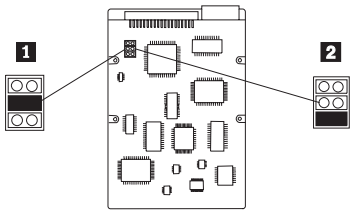
1 Primary (Master) Hard-Disk Drive

2 Secondary (Slave) Hard-Disk Drive

IDE Drives

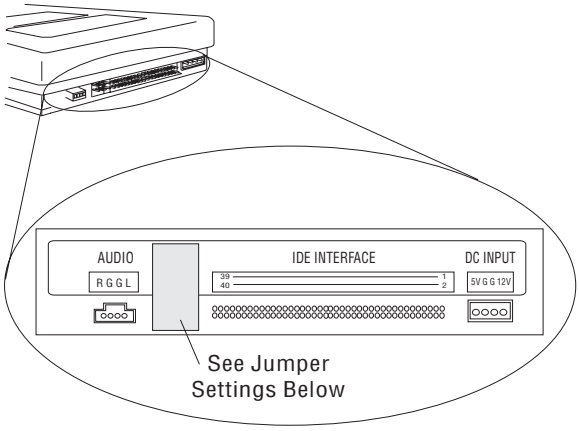






CD-ROM, PD/CD-ROM Drive Jumper Settings

CD-ROM and PD/CD-ROM drives use jumpers or tabs to set the drives as primary (master) or secondary (slave). Refer to the drive connector labels or the figures below for the drive settings.



CD-ROM, PD/CD-ROM Type	Primary (Master)	Secondary (Slave)
2X CD-ROM FRU 06H5906	: : ▮ : :	: ▮ : : :
4X CD-ROM FRU 06H7654	: : ▮ : :	: ▮ : : :
6X CD-ROM	: : ▮	: ▮ :
8X CD-ROM	: : ▮	: ▮ :
6X PD/CD-ROM	: : ▮	: ▮ :
16X Max CD-ROM	: : ▮	: ▮ :
24X Max CD-ROM	: : ▮	: ▮ :
32X Max CD-ROM	: : ▮	: ▮ :
40X Max CD-ROM	: : ▮	: ▮ :
48X Max CD-ROM	: : ▮	: ▮ :

BIOS Levels

An incorrect level of BIOS can cause false error and unnecessary FRU replacement. Use the following information to determine the current level of BIOS installed in the computer, the latest BIOS available for the computer, and where to obtain the latest level of BIOS.

- Current Level BIOS information.
  - Run the Configuration Utility to determine the level of BIOS installed.
- Sources for determining the latest level of BIOS available.
  1. IBM PC Company Home Page

     `http://www.ibm.com/pc/us/`

  2. PC PartnerInfo-Technical Database (CTSTIPS.NSF)
  3. HelpCenter®
  4. Levels 1 and 2 Support
  5. RETAIN
- Sources for obtaining the latest level of BIOS available.
  1. IBM PC Company Home Page

     `http://www.ibm.com/pc/us/`

  2. PC PartnerInfo-Technical Database (CTSTIPS.NSF)
  3. HelpCenter
  4. Levels 1 and 2 Support

To update (flash) the BIOS, see “Flash (BIOS/VPD) Update Procedure” on page 3-33.

Flash (BIOS/VPD) Update Procedure

Note: Refer to the information label located inside the system unit cover for any model-specific information.

1. Power-off the computer.
2. Insert the flash update diskette into drive A.
3. Power-on the computer.
4. When the Update Utility appears; select your country/keyboard, then press **Enter**.
5. If the computer serial number was previously recorded, the number is displayed with an option to update it. Press **Y** to update the serial number.
6. Type the 7-digit serial number of the computer you are servicing; then, press **Enter**.
7. Follow the instructions on the screen to complete the flash (BIOS/VPD) update procedure.

Flash Recovery Boot Block

Attention

If an interruption occurs during a Flash/BIOS upgrade, the BIOS might be left in an unusable state. The CMOS switch enables you to restart the system and recover the BIOS.

To perform a Flash/BIOS recovery using the CMOS switch:

1. Power-off the computer and remove the cover.
2. Move the system board CMOS switch to the **on** position. Refer to “System Board Layout” on page F-5 or the information label inside the computer for more information.
3. Insert the upgrade diskette into the diskette drive.
4. Power-on the computer. The IBM Logo will appear.
5. When the Flash Update Utility appears; select your country/keyboard, then press **Enter**.
6. If the computer serial number was previously recorded, the number is displayed with an option to update it. Press **Y** to update the serial number.
7. Type the 7-digit serial number of the computer you are servicing; then, press **Enter**.
8. Follow the instructions on the screen to complete the flash (BIOS/VPD) update procedure.
9. When you are instructed to reboot the computer, power-off the computer and move the CMOS switch to the **off** position. Then, replace the cover and power-on the computer.

Power Management

Power management reduces the power consumption of certain components of the computer such as the system power supply, processor, hard-disk drives, and some monitors. Advanced Power Management and Rapid Resume Manager are features of some personal computers.

Automatic Configuration and Power Interface (ACPI) BIOS

Being an ACPI BIOS system, the operating system is allowed to control the power management features of the computer and the setting for Advanced Power Management (APM) BIOS mode are ignored. Not all operating systems support ACPI BIOS mode.

Advanced Power Management

Energy-saving settings can be viewed and changed by using the Advanced Power Management menu in the Configuration/Setup Utility program.

Attention

If a device, such as a monitor, does not have power-management capabilities, it can be damaged when exposed to a reduced-power state. Before making energy-saving selections for the monitor, check the documentation supplied with the monitor to see if it supports Display Power Management Signaling (DPMS).

Automatic Hardware Power Management Features

Automatic Hardware Power Management can reduce the power states of the computer, processor, and monitor (if monitor supports DPMS) if they are inactive for a predetermined length of time.

There are three levels of specified time that the computer must be inactive before the power management options that are selected take effect. Select the amount of time that is offered within each level.

Level 1 Set time from 5 minutes to 4 hours.

Level 2 Set time from 10 minutes to 5 hours.

Level 3 Set time from 15 minutes to 6 hours.

At each level, you can define the amount of energy savings by specifying values for the following options:

- **System Power**:
  - Select **On** for the computer to remain on.
  - Select **Off** for the computer to shut down.
- **Processor Speed**:

  Set the microprocessor to be disabled, or to run at **1, 10, 25, or 50** percent of its internal clock speed.
- **Display**:

  Set display to be disabled or to be reduced at these power states:
  - **Standby**: Screen is blank, but can be restored immediately when any activity is detected.
  - **Suspend**: Monitor uses less power than in Standby mode. Screen image is restored after a few seconds when any activity is detected.

– **Off**: Monitor power is off. Press Monitor power button to restore power. On some monitors, you might have to press the power button twice.

Setting Automatic Hardware Power Management Features

1. Start the Configuration/Setup Utility program (see “Network Node Processor Configuration/Setup Utility” on page F-8).
2. Select **Advanced Power Management** from the Configuration/Setup Utility program menu.
3. Be sure **APM BIOS Mode** is set to **Enabled**. If it is not, press Left Arrow (←) or Right Arrow (→) to change the setting.
4. Select **Automatic Hardware Power Management**.
5. Set **Automatic Hardware Power Management** to **Enabled**.
6. Select values for the three levels of power management (system power, processor speed, and display), as necessary.
7. Set **Hard Disk** to **Enabled** or **Disabled**.

   Note: This does not apply to SCSI drives.
8. Press **Esc** twice to return to the Configuration/Setup Utility program menu.
9. Before you exit from the program, select **Save Settings** from the Configuration/Setup Utility program menu.
10. To exit from the Configuration/Setup Utility program, press **Esc** and follow the instructions on the screen.

Automatic Power-On Features

The Automatic Power-On features within the Advanced Power Management menu allow you to enable and disable features that turn the computer on automatically.

- **Serial Port Ring Detect:** With this feature set to **Enabled** and an *external* modem connected to serial port (COM1), the computer will turn on automatically when a ring is detected on the modem.
- **Modem Ring Detect:** With this feature set to **Enabled**, the computer will turn on automatically when a ring is detected on the internal modem.
- **Wake Up on Alarm:** You can specify a date and time at which the computer will be turned on automatically. This can be either a single event or a daily event.
- **Wake on LAN:** If the computer has a properly configured token-ring or Ethernet LAN adapter card that is Wake on LAN-enabled and there is remote network management software, you can use the IBM-developed Wake on LAN feature. When you set Wake on LAN to **Enabled**, the computer will turn on when it receives a specific signal from another computer on the local area network (LAN). For further information, see “Wake on LAN” on page 3-36.

Network Settings

This section applies only to computers linked to a network.

The Configuration/Setup Utility program includes settings that can be enabled and disabled to configure the network interface in the computer. These settings are:

- Flash over LAN (Update POST/BIOS over Network)

- Wake on LAN

Flash over LAN (Update POST/BIOS over Network)

Note: For local Flash (BIOS/VPD) update, see “Flash (BIOS/VPD) Update Procedure” on page 3-33.

This setting is used to enable or disable the Flash over LAN feature. When the feature is enabled, the system programs, in the computer, can be updated remotely from a network server. If the administrator password is set in the computer, it does not have to be entered by the server.

To access the Flash over LAN setting:

1. Start the Configuration/Setup Utility program. See “Network Node Processor Configuration/Setup Utility” on page F-8.
2. Select **System Security**.
3. Select **POST/BIOS Update** from the Configuration/Setup Utility program menu.
4. To enable Flash over LAN, select **Enabled**. To disable Flash over LAN, select **Disabled**.
5. Press **Esc** twice to return to the Configuration/Setup Utility program menu.
6. Before you exit from the program, select **Save Settings** from the Configuration/Setup Utility program menu.
7. To exit from the Configuration/Setup Utility program, press **Esc** and follow the instructions on the screen.

Wake on LAN

This setting is used to enable or disable the IBM-developed Wake on LAN feature. This feature makes it possible for the computer to be turned on remotely by a network server. Remote network management software must be used in conjunction with this feature.

To access the Wake on LAN setting:

1. Start the Configuration/Setup Utility program. See “Network Node Processor Configuration/Setup Utility” on page F-8.
2. Select **Advanced Power Management**.
3. Select **Automatic Power On** from the program menu.
4. Select **Wake on LAN** from the **Automatic Power On** menu.
5. To enable Wake on LAN, select **Enabled**. To disable Wake on LAN, select **Disabled**.
6. Press **Esc** until you return to the Configuration/Setup Utility program menu.
7. Before you exit from the program, select **Save Settings** from the Configuration/Setup Utility program menu.
8. To exit from the Configuration/Setup Utility program, press **Esc** and follow the instructions on the screen.

System Board Memory

The service processor based on 6578 supports the following memory modules.

DIMM sizes of 64 MB, 128 MB, and 256 MB are acceptable. Starting filling DIMM socket 0, then 1. Uses 3.3 V unbuffered 133 MHz. SDRAM Non-Registered DIMMMs only.

Computer Name	Module		
	Size	**Speed**	**Type**
PC 300 Type 6578	64 MB 128 MB 256 MB 512 MB Maximum	133 MHz	SDRAM ECC/Non-ECC Industry Standard

If a problem with memory modules is suspected, perform the memory test procedure. See “IBM PC Enhanced Memory Diagnostics” on page 4-5.

Chapter 4. Network Node Processor Diagnostics and Test Information

The following tools are available to help identify and resolve hardware-related problems:

- Power-on self-test (POST)
- POST Beep Codes
- Error Code Format
- Diagnostic Test Programs (IBM PC Enhanced Diagnostics)

Power-On Self-Test (POST)

Each time you power-on the system, it performs a series of tests that check the operation of the system and some options. This series of tests is called the *power-on self-test*, or *POST*. POST does the following:

- Checks some basic system-board operations
- Checks the memory operation
- Starts the video operation
- Verifies that the diskette drive is working
- Verifies that the hard-disk drive is working

If the POST finishes without detecting any problems, a single beep sounds and the first screen of your operating system or application program appears.

Note: The network node processor based on 6578 computer is default to come up quiet (no beep and no memory count and checkpoint code display) when no errors are detected by POST.

To enable beep and memory count and checkpoint code display when a successful POST occurs, enable **Power on Status** in setup. See “Network Node Processor Configuration/Setup Utility” on page F-8.

If the POST detects a problem, an error message appears on your screen. A single problem can cause several error messages to appear. When you correct the cause of the first error message, the other error messages probably will not appear on the screen the next time you turn on the system.

POST Beep Codes

The Power On Self-Test generates a beeping sound to indicate successful completion of POST or to indicate that the tests detect an error.

One beep and the appearance of text on the display indicates successful completion of the POST. More than one beep indicates that the POST detects an error.

Note:

The network node processor based on 6578 computer is default to come up quietly (no beep and no memory count and checkpoint code display) when no errors are detected by POST.

To enable beep and memory count and checkpoint code display when a successful POST occurs, enable **Power on Status** in setup. See “Network Node Processor Configuration/Setup Utility” on page F-8.

Error Code Format

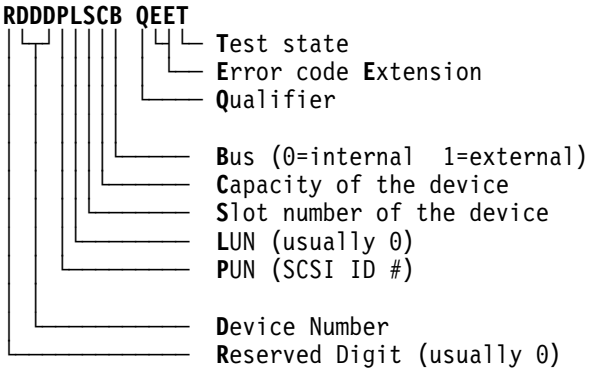
This section provides an explanation of the encoded non-SCSI and SCSI POST error codes.

Error messages are displayed on the screen as three, four, five, eight, twelve, or thirteen digits. An “X” in an error message can be any number or letter. The shorter POST errors are highlighted in the Symptom-to-FRU Index. Some digits will represent different information for SCSI errors versus non-SCSI errors.

The following figure shows which digits display the shorter POST errors. The figure also defines additional SCSI information.

Notes:

1. Non-IBM device error codes and documentation supersede this list.
2. Duplicate SCSI ID settings will cause misleading error symptoms or messages.



Diagnostics Test Programs

IBM PC Enhanced Diagnostics

The IBM PC Enhanced Diagnostics programs use a full range of diagnostic utilities to determine the operating condition of the computer's hardware components. The user interface is WaterGate's PC-Doctor, which serves as the control program for running the IBM PC Enhanced Memory Diagnostics and the suite of diagnostic tests provided by PC-Doctor (diagnostic diskette PN 10K8791).

Updates for the IBM PC Enhanced Diagnostics are available online at:

`http://www.pc.ibm.com/us/`

1. Select **Support**
2. Select **IBM IntelliStation Support**
3. Select **Downloadable Files**
4. Select **Diagnostics**

This diagnostic diskette includes:

- A new user interface (WaterGate Software's PC-Doctor)
  - This interface serves as the control program for running both the IBM PC Enhanced Memory Diagnostics and the suite of diagnostic tests provided by PC-Doctor.
- IBM PC Enhanced Memory Diagnostics
  - The memory diagnostic tests determine which memory module (SIMM or DIMM) is defective and report the socket where the failing module is located. The Memory diagnostics can run a quick and full test of the system. Diagnostics can also be run on a single SIMM or DIMM.

Note: See "IBM PC Enhanced Diagnostic Error Codes" on page 4-9 for the IBM PC Enhanced Diagnostics error codes.

Starting the IBM PC Enhanced Diagnostics Program

To start the program:

1. Shut down and power-off the system.
2. Wait 10 seconds.
3. Insert the IBM Enhanced Diagnostics Diskette into diskette drive A.
4. Power-on the system.

The initial diagnostics menu will be displayed.

Navigating through the Diagnostic Programs

Use either the mouse or the keyboard to navigate through the Enhanced Diagnostics program.

- Use the cursor movement keys to navigate within the menus.
- Use **Enter**to select a menu item.
- Use **Esc** to back up to the previous menu.
- For online help press F1.

Running Diagnostic Tests

There are four ways to run the diagnostic tests:

1. Using the cursor movement keys, highlight **Run Normal Test** or **Run Quick Test** from the Diagnostics Menu and then press **Enter**.

   This will automatically run a pre-defined group of tests from each test category. **Run Normal Test** runs a more extensive set of tests than does **Run Quick Test** and takes longer to execute.
2. Press **F5** to automatically run all selected tests in all categories. See “Test Selection.”
3. From within a test category, press **Ctrl-Enter** to automatically run only the selected tests in that category. See “Test Selection.”
4. Using the cursor movement keys, highlight a single test within a test category and then press **Enter**. This will run only that test.

Press **Esc** at any time to stop the testing process.

Test results, (N/A, PASSED, FAILED, ABORTED), are displayed in the field beside the test description and in the test log. See “Viewing the Test Log” on page 4-8.

Test Selection

To select one or more tests:

1. Open the corresponding test category.
2. Using the cursor movement keys, highlight the desired test.
3. Press **Space bar**.

   A selected test is marked with a chevron, **>>**. Pressing the space bar again de-selects a test and removes the chevron.
4. Repeat steps 2 and 3 above to select all desired tests.

IBM PC Enhanced Memory Diagnostics

The IBM PC Enhanced Memory Diagnostics provide the capability to identify a particular memory module (SIMM/DIMM) that fails during testing. See “System Board Layout” on page F-5 to locate the memory sockets.

Follow the steps below to locate the IBM PC Enhanced Memory Diagnostics test options.

1. Select the DIAGNOSTICS option on the toolbar and press **Enter**.
2. Highlight either the Memory Test-Full or Memory Test-Quick option and press **Enter**.

- Memory Test-Full

  The full memory test will take about 80 seconds per MB of memory and will detect marginal, intermittent, and solid (stuck) memory failures.

- Memory Test-Quick

  The quick memory test will take about 20 seconds per MB of memory and will detect solid (stuck) memory failures only.

Notes:

1. Either level of memory testing can be performed on all memory or a single SIMM/DIMM socket.
2. Only sockets containing a SIMM or DIMM can be selected for testing. Unpopulated sockets are noted by **.....** besides the test description.

Alert On LAN Test

The Alert On LAN test does the following:

- Determines if Alert On LAN is supported on the system.
- Checks the revision ID register.
- Verifies the EEPROM checksum.
- Validates that a software alert can be sent.

Asset ID Test

The Asset ID test does the following:

- Determines if Asset ID is supported on the system.
- Verifies the EEPROM areas.
- Performs an antenna detection test.

Test Results

IBM PC Enhanced Diagnostic test results will produce this error code format:

Function Code	Failure Type	DeviceID	Date	ChkDigits	Text

Function Code: Represents the feature or function within the PC.
Failure Type: Represents the type of error encountered.
DeviceID: Contains the component's unit-id that corresponds to either a fixed disk drive, removable media drive, serial or parallel port, processor, specific DIMM, or a device on the PCI bus.
Date: Contains the date on which the diagnostic test was run. Date is retrieved from CMOS and displayed using the YYYYMMDD format.
ChkDigits: Contains a 2-digit check-digit value to ensure that:
- Diagnostics were run on the specified date
- Diagnostics were run on the specified IBM computer
- The diagnostic error code is recorded correctly

Text: Description of the error.

Note: See "IBM PC Enhanced Diagnostic Error Codes" on page 4-9 for the IBM PC Enhanced Diagnostics error codes.

Hard File Smart Test

Use the Hard File Smart Test when the system management tool has detected a hard file SMART alert.

The Smart test does the following:

- Interrogates IDE devices for support of the SMART instruction set.
- Issues a ENABLE SMART command to make sure SMART functionality is active.
- Checks the SMART RETURN STATUS command to determine if any thresholds have been exceeded.

If thresholds have been exceeded, an error message is shown, and the test fails. If no SMART is supported by the drive, the test returns with N/A.

IBM Fixed Disk Optimized Test

The IBM Fixed Disk Optimized Test provide the capability to identify particular areas of a hard file that fails during testing. This test also provide a method of correcting certain types of errors.

To select the Fixed Disk Optimized Test:

1. Select the diagnostic option on the toolbar and press Enter.
2. Select the Fixed Disk Optimized Test
3. Select Hard Drives - NORMAL TEST to run a complete hard file test.
4. Select Hard Drives - PRESENCE TEST to run a test to check the drive controller and report any SMART information that the drive has detected.

Quick and Full Erase - Hard Drive

The IBM PC Enhanced Diagnostics Program offers two hard drive format utilities:

- Quick Erase Hard Drive
- Full Erase Hard Drive

The Quick Erase Hard Drive provides a DOS utility that performs the following:

- Destroys the Master Boot Record (MBR) on the hard drive.
- Destroys all copy of the FAT Table on all partitions (both the master and backup).
- Destroys the partition table.
- Provides messages that warn the user that this is a non-recoverable process.

The Full Erase Hard Drive provides a DOS utility that performs the following:

- Performs all the steps in Quick Erase.
- Provides a DOS utility that writes random data to all sectors of the hard drive.
- Provide an estimate of time to completion along with a visual representation of completion status.
- Provides messages that warn the user that this is a non-recoverable process.

Note: Make sure customer backs up all data before using the Quick or Full Erase function.

To select the Quick Erase or Full Erase Hard Drive utility:

1. Select the UTILITY option on the toolbar and press enter.
2. Select either the QUICK ERASE or FULL ERASE HARD DISK option and then, follow the instructions.

Asset EEPROM Backup

When replacing a system board, this utility allows the backup of all Asset information from the EEPROM to diskette. This utility also restores data to the EEPROM from diskette after replacement of the system board.

To run this utility:

- Select **Utility**.
- Select **Asset EEPROM Backup**.
- Follow instructions on screen.

Viewing the Test Log

Errors reported by the diagnostic test will be displayed by the program as a failed test.

To view details of a failure or to view a list of test results, do the following from any test category screen:

- Press **F3** to activate the log file.
- Press **F3** again to save the file to diskette or F2 to print the file.

SIMM/DIMM Memory Errors

SIMM/DIMM error messages issued by the IBM PC Enhanced Diagnostics:

Message	Failure Found	Recommended Actions
2xx-1y	A memory error was detected in SIMM socket Y.	Replace the SIMM in the socket identified by the last digit of the error code. Rerun the test. If the same error code occurs again, replace the system board.
2xx-2y	A memory error was detected in DIMM socket Y.	Replace the DIMM in the socket identified by the last digit of the error code. Rerun the test. If the same error code occurs again, replace the system board or where memory is on the processor card, replace the processor card.
Corrupt BIOS	Information in BIOS is not as expected. Not able to find expected DMI information from BIOS. Memory controller chipset vendor ID does not match expected value.	Reflash the BIOS. Replace the system board.
Test aborted by user	User stopped test.	Restart test.
Note: "Y" is the SIMM/DIMM socket number. See “System Board Layout” on page F-5 to locate memory socket.		

IBM PC Enhanced Diagnostic Error Codes

See the following Diagnostic Error Codes when using the IBM PC Enhanced Diagnostics test. See “Diagnostics Test Programs” on page 4-3 for information about the IBM PC Enhanced Diagnostics program.

In the following index, “X” can represent any number.

Diagnostic Error Code	FRU/Action
000-000-XXX BIOS Test Passed	**No action**
000-002-XXX BIOS Timeout	1. **Flash the system.** 2. System board
000-024-XXX BIOS Addressing test failure	1. **Flash the system.** 2. System board
000-025-XXX BIOS Checksum Value error	1. **Flash the system.** 2. Boot block 3. System board
000-026-XXX FLASH data error	1. **Flash the system.** 2. Boot block 3. System board
000-027-XXX BIOS Configuration/Setup error	1. **Run Setup.** 2. Flash the system. 3. Boot block 4. System board
000-034-XXX BIOS Buffer Allocation failure	1. **Reboot the system.** 2. Flash the system. 3. Run memory test. 4. System board
000-035-XXX BIOS Reset Condition detected	1. **Flash the system.** 2. System board
000-036-XXX BIOS Register error	1. **Flash the system.** 2. Boot block 3. System board
000-038-XXX BIOS Extension failure	1. **Flash the system.** 2. Adapter card 3. System board
000-039-XXX BIOS DMI data error	1. **Flash the system.** 2. System board
000-195-XXX BIOS Test aborted by user	1. **Information** 2. Restart the test, if necessary.
000-196-XXX BIOS test halt, error threshold exceeded	1. **Press F3 to review the log file. See “Viewing the Test Log” on page 4-8.** 2. Restart the test to reset the log file.

Diagnostic Error Code	FRU/Action
000-197-XXX BIOS test warning	1. **Make sure the component that is called out is enabled and connected.** 2. Rerun test. 3. Component that is called out in warning statement 4. Component under test
000-198-XXX BIOS test aborted	1. **If a component is called out, make sure that it is enabled and connected.** 2. Flash the system and retest. 3. Go to "Undetermined Problems" on page 3-22.
000-199-XXX BIOS test failed, cause unknown	1. **Go to "Undetermined Problems" on page 3-22.** 2. Flash the system and retest. 3. Replace component under function test.
000-250-XXX BIOS APM failure	1. **Flash the system.** 2. System board
000-270-XXX BIOS ACPI failure	1. **Flash the system.** 2. System board
001-000-XXX System Test Passed	**No action**
001-00X-XXX System Error	**System board**
001-01X-XXX System Error	**System board**
001-024-XXX System Addressing test failure	**System board**
001-025-XXX System Checksum Value error	1. **Flash the system.** 2. System board
001-026-XXX System FLASH data error	1. **Flash the system.** 2. System board
001-027-XXX System Configuration/Setup error	1. **Run Setup.** 2. Flash the system. 3. System board
001-032-XXX System Device Controller failure	**System board**
001-034-XXX System Device Buffer Allocation failure	1. **Reboot the system.** 2. Flash the system. 3. Run memory test. 4. System board
001-035-XXX System Device Reset condition detected	**System board**
001-036-XXX System Register error	**System board**
001-038-XXX System Extension failure	1. **Adapter card** 2. System board

Diagnostic Error Code	FRU/Action
001-039-XXX System DMI data structure error	1. **Flash the system.** 2. System board
001-040-XXX System IRQ failure	1. **Power-off/on system and retest.** 2. System board
001-041-XXX System DMA failure	1. **Power-off/on system and retest.** 2. System board
001-195-XXX System Test aborted by user	1. **Information** 2. Restart the test, if necessary.
001-196-XXX System test halt, error threshold exceeded	1. **Press F3 to review the log file. See "Viewing the Test Log" on page 4-8.** 2. Restart the test to reset the log file.
001-197-XXX System test warning	1. **Make sure the component that is called out is enabled and connected.** 2. Rerun test. 3. Component that is called out in warning statement 4. Component under test
001-198-XXX System test aborted	1. **If a component is called out, make sure that it is enabled and connected.** 2. Flash the system and retest. 3. Go to "Undetermined Problems" on page 3-22.
001-199-XXX System test failed, cause unknown	1. **Go to "Undetermined Problems" on page 3-22.** 2. Flash the system and retest. 3. Replace component under function test.
001-250-XXX System ECC error	**System board**
001-254-XXX **001-255-XXX** **001-256-XXX** **001-257-XXX** System DMA error	**System board**
001-260-XXX **001-264-XXX** System IRQ error	**System board**
001-268-XXX System IRQ1 failure	1. **Device on IRQ1** 2. System board
001-269-XXX System IRQ2 failure	1. **Device on IRQ2** 2. System board
001-270-XXX System IRQ3 failure	1. **Device on IRQ3** 2. System board
001-271-XXX System IRQ4 failure	1. **Device on IRQ4** 2. System board
001-272-XXX System IRQ5 failure	1. **Device on IRQ5** 2. System board

Diagnostic Error Code	FRU/Action
001-273-XXX System IRQ6 (diskette drive) failure	1. **Diskette Cable** 2. Diskette drive 3. System board
001-274-XXX System IRQ7 failure	1. **Device on IRQ7** 2. System board
001-275-XXX System IRQ8 failure	1. **Device on IRQ8** 2. System board
001-276-XXX System IRQ9 failure	1. **Device on IRQ9** 2. System board
001-277-XXX System IRQ10 failure	1. **Device on IRQ10** 2. System board
001-278-XXX System IRQ11 failure	1. **Device on IRQ11** 2. System board
001-279-XXX System IRQ12 failure	1. **Device on IRQ12** 2. System board
001-280-XXX System IRQ13 failure	1. **Device on IRQ13** 2. System board
001-281-XXX System IRQ14 (hard-disk drive) failure	1. **Hard-disk drive Cable** 2. Hard-disk drive 3. System board
001-282-XXX System IRQ15 failure	1. **Device on IRQ15** 2. System board
001-286-XXX **001-287-XXX** **001-288-XXX** System Timer failure	**System board**
001-292-XXX System CMOS RAM error	1. **Run Setup and retest.** 2. System board
001-293-XXX System CMOS Battery	1. **Battery** 2. System board
001-298-XXX System RTC date/time update failure	1. **Flash the system.** 2. System board
001-299-XXX System RTC periodic interrupt failure	**System board**
001-300-XXX System RTC Alarm failure	**System board**
001-301-XXX System RTC Century byte error	1. **Flash the system.** 2. System board
005-000-XXX Video Test Passed	**No action**
005-00X-XXX Video error	1. **Video card, if installed** 2. System board
005-010-XXX **005-011-XXX** **005-012-XXX** **005-013-XXX** Video Signal failure	1. **Video card, if installed** 2. System board

Diagnostic Error Code	FRU/Action
005-016-XXX Video Simple Pattern test failure	1. **Video Ram** 2. Video card, if installed 3. System board
005-024-XXX Video Addressing test failure	1. **Video card, if installed** 2. System board
005-025-XXX Video Checksum Value error	1. **Video card, if installed** 2. System board
005-027-XXX Video Configuration/Setup error	1. **Run Setup.** 2. Video drivers update 3. Video card, if installed 4. System board
005-031-XXX Video Device Cable failure	1. **Video cable** 2. Monitor 3. Video card, if installed 4. System board
005-032-XXX Video Device Controller failure	1. **Video card, if installed** 2. System board
005-036-XXX Video Register error	1. **Video card, if installed** 2. System board
005-038-XXX System BIOS extension failure	1. **Video card, if installed** 2. System board
005-040-XXX Video IRQ failure	1. **Video card, if installed** 2. System board
005-195-XXX Video Test aborted by user	1. **Information** 2. Restart the test, if necessary.
005-196-XXX Video test halt, error threshold exceeded	1. **Press F3 to review the log file. See "Viewing the Test Log" on page 4-8.** 2. Restart the test to reset the log file.
005-197-XXX Video test warning	1. **Make sure component that is called out is enabled and connected.** 2. Rerun test. 3. Component that is called out in warning statement 4. Component under test
005-198-XXX Video test aborted	1. **If a component is called out, make sure that it is enabled and connected.** 2. Flash the system and retest. 3. Go to "Undetermined Problems" on page 3-22.
005-199-XXX Video test failed, cause unknown	1. **Go to "Undetermined Problems" on page 3-22.** 2. Flash the system and retest. 3. Replace component under function test.
005-2XX-XXX **005-3XX-XXX** Video subsystem error	1. **Video card, if installed** 2. System board

Diagnostic Error Code	FRU/Action
006-000-XXX Diskette interface Test Passed	**No action**
006-0XX-XXX Diskette interface error	1. **Diskette Drive Cable** 2. Diskette drive 3. System board
006-195-XXX Diskette interface Test aborted by user	1. **Information** 2. Restart the test, if necessary.
006-196-XXX Diskette interface test halt, error threshold exceeded	1. **Press F3 to review the log file. See "Viewing the Test Log" on page 4-8.** 2. Restart the test to reset the log file.
006-197-XXX Diskette interface test warning	1. **Make sure component that is called out is enabled and connected.** 2. Rerun test. 3. Component that is called out in warning statement 4. Component under test
006-198-XXX Diskette interface test aborted	1. **If a component is called out, make sure that it is enabled and connected.** 2. Flash the system and retest. 3. Go to "Undetermined Problems" on page 3-22.
006-199-XXX Diskette interface test failed, cause unknown	1. **Go to "Undetermined Problems" on page 3-22.** 2. Flash the system and retest. 3. Replace component under function test.
006-25X-XXX Diskette interface Error	1. **Diskette Drive Cable** 2. Diskette drive 3. System board
011-000-XXX Serial port Interface Test Passed	**No action**
011-001-XXX Serial port Presence	1. **Remove external serial device, if present.** 2. Run setup, enable port. 3. System board
011-002-XXX **011-003-XXX** Serial port Timeout/Parity error	**System board**
011-013-XXX **011-014-XXX** Serial port Control Signal/Loopback test failure	**System board**
011-015-XXX Serial port External Loopback failure	1. **Wrap plug** 2. System board
011-027-XXX Serial port Configuration/Setup error	1. **Run Setup, enable port.** 2. Flash the system. 3. System board

Diagnostic Error Code	FRU/Action
011-03X-XXX **011-04X-XXX** Serial port failure	**System board**
011-195-XXX Serial port Test aborted by user	1. **Information** 2. Restart the test, if necessary.
011-196-XXX Serial port test halt, error threshold exceeded	1. **Press F3 to review the log file. See "Viewing the Test Log" on page 4-8.** 2. Restart the test to reset the log file.
011-197-XXX Serial port test warning	1. **Make sure component that is called out is enabled and connected.** 2. Rerun test. 3. Component that is called out in warning statement 4. Component under test
011-198-XXX Serial port test aborted	1. **If a component is called out, make sure that it is enabled and connected.** 2. Flash the system and retest. 3. Go to "Undetermined Problems" on page 3-22.
011-199-XXX Serial port test failed, cause unknown	1. **Go to "Undetermined Problems" on page 3-22.** 2. Flash the system and retest. 3. Replace component under function test.
011-2XX-XXX Serial port signal failure	1. **External serial device** 2. System board
014-000-XXX Parallel port Interface Test Passed	**No action**
014-001-XXX Parallel port Presence	1. **Remove external parallel device, if present.** 2. Run setup, enable port. 3. System board
014-002-XXX **014-003-XXX** Parallel port Timeout/Parity error	**System board**
014-013-XXX **014-014-XXX** Parallel port Control Signal/Loopback test failure	**System board**
014-015-XXX Parallel port External Loopback failure	1. **Wrap plug** 2. System board
014-027-XXX Parallel port Configuration/Setup error	1. **Run Setup, enable port.** 2. Flash the system. 3. System board
014-03X-XXX **014-04X-XXX** Parallel port failure	**System board**
014-195-XXX Parallel port Test aborted by user	1. **Information** 2. Restart the test, if necessary.

Diagnostic Error Code	FRU/Action
014-196-XXX Parallel port test halt, error threshold exceeded	1. **Press F3 to review the log file. See "Viewing the Test Log" on page 4-8.** 2. Restart the test to reset the log file.
014-197-XXX Parallel port test warning	1. **Make sure component that is called out is enabled and connected.** 2. Rerun test. 3. Component that is called out in warning statement 4. Component under test
014-198-XXX Parallel port test aborted	1. **If a component is called out, make sure that it is enabled and connected.** 2. Flash the system and retest. 3. Go to "Undetermined Problems" on page 3-22.
014-199-XXX Parallel port test failed, cause unknown	1. **Go to "Undetermined Problems" on page 3-22.** 2. Flash the system and retest. 3. Replace component under function test.
014-2XX-XXX **014-3XX-XXX** Parallel port failure	1. **External parallel device** 2. System board
015-000-XXX USB port Interface Test Passed	**No action**
015-001-XXX USB port Presence	1. **Remove USB Devices and retest.** 2. System board
015-002-XXX USB port Timeout	1. **Remove USB Devices and retest.** 2. System board
015-015-XXX USB port External Loopback failure	1. **Remove USB Devices and retest.** 2. System board
015-027-XXX USB port Configuration/Setup error	1. **Flash the system.** 2. System board
015-032-XXX USB port Device Controller failure	**System board**
015-034-XXX USB port buffer allocation failure	1. **Reboot the system.** 2. Flash the system 3. Run memory test. 4. System board
015-035-XXX USB port Reset condition detected	1. **Remove USB Devices and retest.** 2. System board
015-036-XXX USB port Register error	**System board**
015-040-XXX USB port IRQ failure	1. **Run setup and check for conflicts.** 2. Flash the system 3. System board
015-195-XXX USB port Test aborted by user	1. **Information** 2. Restart the test, if necessary.

Diagnostic Error Code	FRU/Action
015-196-XXX USB port test halt, error threshold exceeded	1. **Press F3 to review the log file. See "Viewing the Test Log" on page 4-8.** 2. Restart the test to reset the log file.
015-197-XXX USB port test warning	1. **Make sure component that is called out is enabled and connected.** 2. Rerun test. 3. Component that is called out in warning statement 4. Component under test
015-198-XXX USB port test aborted	1. **If a component is called out, make sure that it is enabled and connected.** 2. Flash the system and retest. 3. Go to "Undetermined Problems" on page 3-22.
015-199-XXX USB port test failed, cause unknown	1. **Go to "Undetermined Problems" on page 3-22.** 2. Flash the system and retest. 3. Replace component under function test.
018-000-XXX PCI Card Test Passed	**No action**
018-0XX-XXX PCI Card Failure	1. **PCI card** 2. Riser card, if installed 3. System board
018-195-XXX PCI Card Test aborted by user	1. **Information** 2. Restart the test, if necessary.
018-196-XXX PCI Card test halt, error threshold exceeded	1. **Press F3 to review the log file. See "Viewing the Test Log" on page 4-8.** 2. Restart the test to reset the log file.
018-197-XXX PCI Card test warning	1. **Make sure component that is called out is enabled and connected.** 2. Rerun test. 3. Component that is called out in warning statement 4. Component under test
018-198-XXX PCI Card test aborted	1. **If a component is called out, make sure that it is enabled and connected.** 2. Flash the system and retest. 3. Go to "Undetermined Problems" on page 3-22.
018-199-XXX PCI Card test failed, cause unknown	1. **Go to "Undetermined Problems" on page 3-22.** 2. Flash the system and retest. 3. Replace component under function test.
018-250-XXX PCI Card Services error	1. **PCI card** 2. Riser card, if installed 3. System board

Diagnostic Error Code	FRU/Action
020-000-XXX PCI Interface Test Passed	**No action**
020-0XX-XXX PCI Interface error	1. **PCI card** 2. Riser card, if installed 3. System board
020-195-XXX PCI Test aborted by user	1. **Information** 2. Restart the test, if necessary.
020-196-XXX PCI test halt, error threshold exceeded	1. **Press F3 to review the log file. See "Viewing the Test Log" on page 4-8.** 2. Restart the test to reset the log file.
020-197-XXX PCI test warning	1. **Make sure component that is called out is enabled and connected.** 2. Rerun test. 3. Component that is called out in warning statement 4. Component under test
020-198-XXX PCI test aborted	1. **If a component is called out, make sure that it is enabled and connected.** 2. Flash the system and retest. 3. Go to "Undetermined Problems" on page 3-22.
020-199-XXX PCI test failed, cause unknown	1. **Go to "Undetermined Problems" on page 3-22.** 2. Flash the system and retest. 3. Replace component under function test.
020-262-XXX PCI system error	1. **PCI card** 2. Riser card, if installed 3. System board
025-000-XXX IDE interface Test Passed	**No action**
025-00X-XXX **025-01X-XXX** IDE interface failure	1. **IDE signal cable** 2. Check power supply 3. IDE device 4. System board
025-027-XXX IDE interface Configuration/Setup error	1. **IDE signal cable** 2. Flash the system. 3. IDE device 4. System board
025-02X-XXX **025-03X-XXX** **025-04X-XXX** IDE Interface failure	1. **IDE signal cable** 2. Check power supply 3. IDE device 4. System board
025-195-XXX IDE interface Test aborted by user	1. **Information** 2. Restart the test, if necessary.
025-196-XXX IDE interface test halt, error threshold exceeded	1. **Press F3 to review the log file. See "Viewing the Test Log" on page 4-8.** 2. Restart the test to reset the log file.

Diagnostic Error Code	FRU/Action
025-197-XXX IDE interface test warning	1. **Make sure component that is called out is enabled and connected.** 2. Rerun test. 3. Component that is called out in warning statement 4. Component under test
025-198-XXX IDE interface test aborted	1. **If a component is called out, make sure that it is enabled and connected.** 2. Flash the system and retest. 3. Go to "Undetermined Problems" on page 3-22.
025-199-XXX IDE interface test failed, cause unknown	1. **Go to "Undetermined Problems" on page 3-22.** 2. Flash the system and retest. 3. Replace component under function test.
030-000-XXX SCSI interface Test Passed	**No action**
030-00X-XXX **030-01X-XXX** SCSI interface failure	1. **SCSI signal cable** 2. Check power supply 3. SCSI device 4. SCSI adapter card, if installed 5. System board
030-027-XXX SCSI interface Configuration/Setup error	1. **SCSI signal cable** 2. Flash the system. 3. SCSI device 4. SCSI adapter card, if installed 5. System board
030-03X-XXX **030-04X-XXX** SCSI interface error	1. **SCSI signal cable** 2. Check power supply 3. SCSI device 4. SCSI adapter card, if installed 5. System board
030-195-XXX SCSI interface Test aborted by user	1. **Information** 2. Restart the test, if necessary.
030-196-XXX SCSI interface test halt, error threshold exceeded	1. **Press F3 to review the log file. See "Viewing the Test Log" on page 4-8.** 2. Restart the test to reset the log file.
030-197-XXX SCSI interface test warning	1. **Make sure component that is called out is enabled and connected.** 2. Rerun test. 3. Component that is called out in warning statement 4. Component under test
030-198-XXX SCSI interface test aborted	1. **If a component is called out, make sure that it is enabled and connected.** 2. Flash the system and retest. 3. Go to "Undetermined Problems" on page 3-22.

Diagnostic Error Code	FRU/Action
030-199-XXX SCSI interface test failed, cause unknown	1. **Go to "Undetermined Problems" on page 3-22.** 2. Flash the system and retest. 3. Replace component under function test.
035-000-XXX RAID interface Test Passed	**No action**
035-0XX-XXX RAID interface Failure	1. **RAID signal cable** 2. RAID device 3. RAID adapter card, if installed 4. System board
035-195-XXX RAID interface Test aborted by user	1. **Information** 2. Restart the test, if necessary.
035-196-XXX RAID interface test halt, error threshold exceeded	1. **Press F3 to review the log file. See "Viewing the Test Log" on page 4-8.** 2. Restart the test to reset the log file.
035-197-XXX RAID interface test warning	1. **Make sure component that is called out is enabled and connected.** 2. Rerun test. 3. Component that is called out in warning statement 4. Component under test
035-198-XXX RAID interface test aborted	1. **If a component is called out, make sure that it is enabled and connected.** 2. Flash the system and retest. 3. Go to "Undetermined Problems" on page 3-22.
035-199-XXX RAID interface test failed, cause unknown	1. **Go to "Undetermined Problems" on page 3-22.** 2. Flash the system and retest. 3. Replace component under function test.
071-000-XXX Audio port Interface Test Passed	**No action**
071-00X-XXX **071-01X-XXX** **071-02X-XXX** **Audio port error**	1. **Run Setup.** 2. Flash the system. 3. System board
071-03X-XXX Audio port failure	1. **Speakers** 2. Microphone 3. Audio card, if installed 4. System board
071-04X-XXX Audio port failure	1. **Run Setup.** 2. Audio card, if installed 3. System board
071-195-XXX Audio port Test aborted by user	1. **Information** 2. Restart the test, if necessary.

Diagnostic Error Code	FRU/Action
071-196-XXX Audio port test halt, error threshold exceeded	1. **Press F3 to review the log file. See "Viewing the Test Log" on page 4-8.** 2. Restart the test to reset the log file.
071-197-XXX Audio port test warning	1. **Make sure component that is called out is enabled and connected.** 2. Rerun test. 3. Component that is called out in warning statement 4. Component under test
071-198-XXX Audio port test aborted	1. **If a component is called out, make sure that it is enabled and connected.** 2. Flash the system and retest. 3. Go to "Undetermined Problems" on page 3-22.
071-199-XXX Audio port test failed, cause unknown	1. **Go to "Undetermined Problems" on page 3-22.** 2. Flash the system and retest. 3. Replace component under function test.
071-25X-XXX Audio port failure	1. **Speakers** 2. Audio card, if installed 3. System board
080-000-XXX Game Port interface Test Passed	**No action**
080-XXX-XXX Game Port interface Error	1. **Remove the game port device and retest the system.**
080-195-XXX Game Port interface Test aborted by user	1. **Information** 2. Restart the test, if necessary.
080-196-XXX Game Port interface test halt, error threshold exceeded	1. **Press F3 to review the log file. See "Viewing the Test Log" on page 4-8.** 2. Restart the test to reset the log file.
080-197-XXX Game Port interface test warning	1. **Make sure component that is called out is enabled and connected.** 2. Rerun test. 3. Component that is called out in warning statement 4. Component under test
080-198-XXX Game Port interface test aborted	1. **If a component is called out, make sure that it is enabled and connected.** 2. Flash the system and retest. 3. Go to "Undetermined Problems" on page 3-22.
080-199-XXX Game Port interface test failed, cause unknown	1. **Go to "Undetermined Problems" on page 3-22.** 2. Flash the system and retest. 3. Replace component under function test.

Diagnostic Error Code	FRU/Action
086-000-XXX Mouse Port interface Test Passed	**No action**
086-001-XXX Mouse Port interface Presence	1. **Mouse** 2. System board
086-032-XXX Mouse Port interface Device controller failure	1. **Mouse** 2. System board
086-035-XXX Mouse Port interface Reset	1. **Mouse** 2. System board
086-040-XXX Mouse Port interface IRQ failure	1. **Run Setup.** 2. Mouse 3. System board
086-195-XXX Mouse Port interface Test aborted by user	1. **Information** 2. Restart the test, if necessary.
086-196-XXX Mouse Port interface test halt, error threshold exceeded	1. **Press F3 to review the log file. See "Viewing the Test Log" on page 4-8.** 2. Restart the test to reset the log file.
086-197-XXX Mouse Port interface test warning	1. **Make sure component that is called out is enabled and connected.** 2. Rerun test. 3. Component that is called out in warning statement 4. Component under test
086-198-XXX Mouse Port interface test aborted	1. **If a component is called out, make sure that it is enabled and connected.** 2. Flash the system and retest. 3. Go to "Undetermined Problems" on page 3-22.
086-199-XXX Mouse Port interface test failed, cause unknown	1. **Go to "Undetermined Problems" on page 3-22.** 2. Flash the system and retest. 3. Replace component under function test.
089-000-XXX Microprocessor Test Passed	**No action**
089-XXX-XXX Microprocessor failure	1. **Microprocessors** 2. System board
089-195-XXX Microprocessor Test aborted by user	1. **Information** 2. Restart the test, if necessary.
089-196-XXX Microprocessor test halt, error threshold exceeded	1. **Press F3 to review the log file. See "Viewing the Test Log" on page 4-8.** 2. Restart the test to reset the log file.
089-197-XXX Microprocessor test warning	1. **Make sure component that is called out is enabled and connected.** 2. Rerun test. 3. Component that is called out in warning statement 4. Component under test

Diagnostic Error Code	FRU/Action
089-198-XXX Microprocessor test aborted	1. **If a component is called out, make sure that it is enabled and connected.** 2. Flash the system and retest. 3. Go to "Undetermined Problems" on page 3-22.
089-199-XXX Microprocessor test failed, cause unknown	1. **Go to "Undetermined Problems" on page 3-22.** 2. Flash the system and retest. 3. Replace component under function test.
170-000-XXX Voltage Sensors Test Passed	**No action**
170-0XX-XXX Voltage Sensors failure	1. **Flash system** 2. System board
170-195-XXX Voltage Sensors Test aborted by user	1. **Information** 2. Restart the test, if necessary.
170-196-XXX Voltage Sensors test halt, error threshold exceeded	1. **Press F3 to review the log file. See "Viewing the Test Log" on page 4-8.** 2. Restart the test to reset the log file.
170-197-XXX Voltage Sensors test warning	1. **Make sure component that is called out is enabled and connected.** 2. Rerun test. 3. Component that is called out in warning statement 4. Component under test
170-198-XXX Voltage Sensors test aborted	1. **If a component is called out, make sure that it is enabled and connected.** 2. Flash the system and retest. 3. Go to "Undetermined Problems" on page 3-22.
170-199-XXX Voltage Sensors test failed, cause unknown	1. **Go to "Undetermined Problems" on page 3-22.** 2. Flash the system and retest. 3. Replace component under function test.
170-250-XXX **170-251-XXX** Voltage Sensors Voltage limit error	1. **Power supply** 2. System board
170-254-XXX Voltage Sensors Voltage Regulator Module error	1. **Voltage Regulator Module (VRM)** 2. Microprocessor 3. System board
175-000-XXX Thermal Sensors Test Passed	**No action**
175-0XX-XXX Thermal Sensors failure	1. **Flash system** 2. System board
175-195-XXX Thermal Sensors Test aborted by user	1. **Information** 2. Restart the test, if necessary.

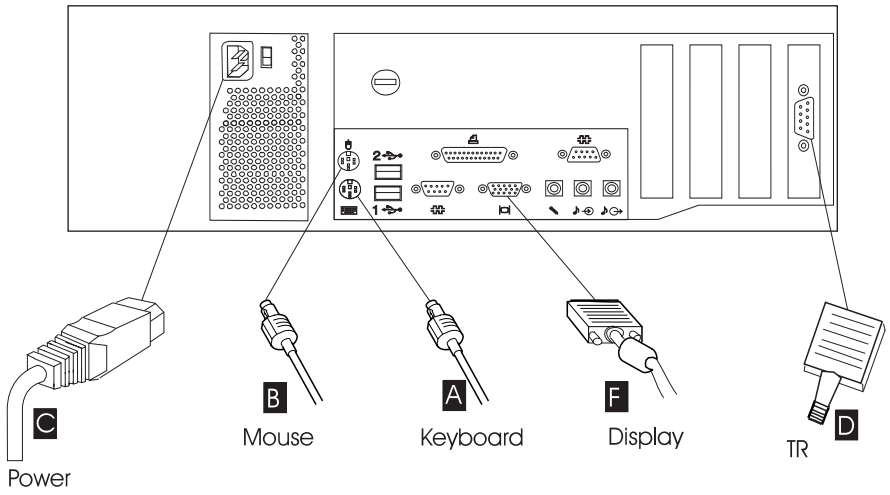
Diagnostic Error Code	FRU/Action
175-196-XXX Thermal Sensors test halt, error threshold exceeded	1. **Press F3 to review the log file. See "Viewing the Test Log" on page 4-8.** 2. Restart the test to reset the log file.
175-197-XXX Thermal Sensors test warning	1. **Make sure component that is called out is enabled and connected.** 2. Rerun test. 3. Component that is called out in warning statement 4. Component under test
175-198-XXX Thermal Sensors test aborted	1. **If a component is called out, make sure that it is enabled and connected.** 2. Flash the system and retest. 3. Go to "Undetermined Problems" on page 3-22.
175-199-XXX Thermal Sensors test failed, cause unknown	1. **Go to "Undetermined Problems" on page 3-22.** 2. Flash the system and retest. 3. Replace component under function test.
175-250-XXX **175-251-XXX** Thermal Sensors limit error	1. **Check fans** 2. Check Power supply 3. Microprocessor 4. System board
185-000-XXX Asset Security Test Passed	**No action**
185-XXX-XXX Asset Security failure	1. **Assure Asset Security Enabled** 2. Flash system 3. System board
185-278-XXX Asset Security Chassis Intrusion	1. **C2 Cover Switch** 2. System board
201-000-XXX System Memory Test Passed	**No action**
201-XXX-XXX System Memory error	1. **Replace the memory module called out by the test** 2. System board
202-000-XXX System Cache Test Passed	**No action**
202-XXX-XXX System Cache error	1. **Cache, if removable** 2. System board 3. Microprocessor
206-000-XXX Diskette Drive Test Passed	**No action**
206-XXX-XXX Diskette Drive error	1. **Diskette Drive Cable** 2. Check power supply voltages 3. Diskette drive 4. System board
215-000-XXX CD-ROM Drive Test Passed	**No action**

Diagnostic Error Code	FRU/Action
215-XXX-XXX CD-ROM Drive error	1. **CD-ROM Drive Cable** 2. Check power supply voltages 3. CD-ROM drive 4. System board
217-000-XXX Hard-Disk Drive Test Passed	**No action**
217-25X-XXX **217-26X-XXX** Hard-Disk Drive (IDE) error	1. **Hard-Disk Drive Cable** 2. Check power supply voltages 3. Hard-Disk drive (IDE) 4. System board
217-28X-XXX **217-29X-XXX** Hard-Disk Drive (SCSI) error	1. **Hard-Disk Drive Cable** 2. Check power supply voltages 3. Hard-Disk drive (SCSI) 4. SCSI adapter card 5. System board
220-000-XXX Hi-Capacity Cartridge Drive Test Passed	**No action**
220-XXX-XXX Hi-Capacity Cartridge Drive error	**Remove the Hi-Capacity Cartridge Drive and retest the system.**
301-000-XXX Keyboard Test Passed	**No action**
301-XXX-XXX Keyboard error	1. **Keyboard** 2. Check and test Mouse 3. System board
302-000-XXX Mouse Test Passed	**No action**
302-XXX-XXX Mouse error	1. **Mouse** 2. Check and test Keyboard 3. System board
303-000-XXX Joystick Test Passed	**No action**
303-XXX-XXX Joystick error	**Remove the joystick and retest the system.**
305-000-XXX Monitor DDC Test Passed	**No action**
305-250-XXX Monitor DDC self test failure	1. **Run Setup to enable DDC.** 2. Cable 3. Monitor 4. Video card 5. System board
415-000-XXX Modem Test Passed	**No action**
415-XXX-XXX Modem error	**Remove the modem and retest the system.**

Chapter 5. Network Node Processor FRU Exchange

Removing and Installing Network Node Processor FRU

1. Switch off the display and the network node processor using their respective power on/off switch located on the front panel.
2. On the rear of the network node processor disconnect all the cables present.

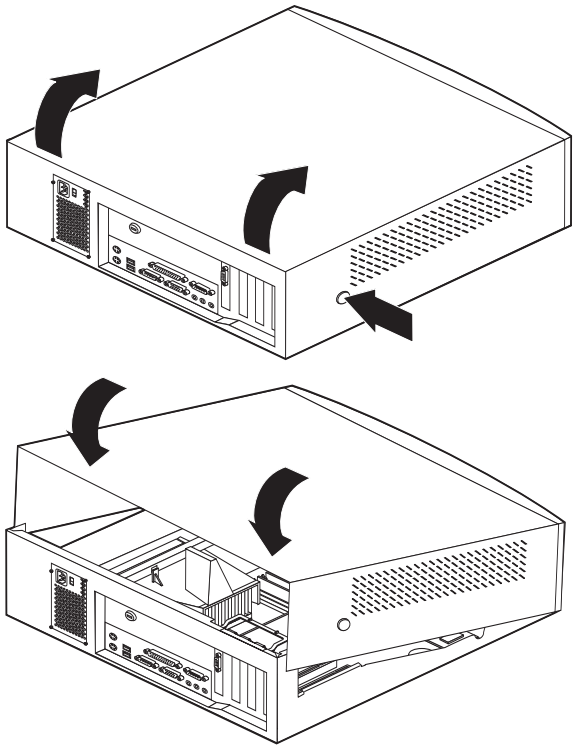


3. If your network node processor is installed in the controller expansion go to step 4. Otherwise, go to step 5.
4. Slide out the network node processor from the rack and install it on a table to continue the FRU removal.

Attention

Be careful, the weight of the processor is about 8.4 kg (18 lb).

5. Open the network node processor using the following steps:
   a. Remove the three cover thumb screws.



b. Slide cover toward the rear of the chassis about 1 inch (2 cm) to clear the front panel.
c. Lift the cover up.

6. Some FRUs need a special procedure or attention. Use the following table to select the appropriate procedure.

   Note: Each time you change a FRU, check the presence of jumpers. Install the jumpers on the new FRU as they were on the defective FRU.

Network Node Processor FRU to Exchange	**Action**
Battery	Go to “Battery Exchange” on page 5-3.
Board	Go to “Board Exchange” on page 5-3.
Processor	Go to “Processor Exchange” on page 5-5.
Hard-Disk Drive	Go to “Hard-Disk Drive Exchange” on page 5-6.
CD-ROM	Go to “CD-ROM Drive Exchange” on page 5-7.
Diskette Drive	Go to “Diskette Drive Exchange” on page 5-8.
Display or Token-Ring Adapter Card	Go to “Token-Ring Adapter Card Exchange” on page 5-9.
Other FRUs	Go to “Other FRUs Exchange” on page 5-9.

Battery Exchange

Safety

See Appendix A, “Safety Information” on page A-1.

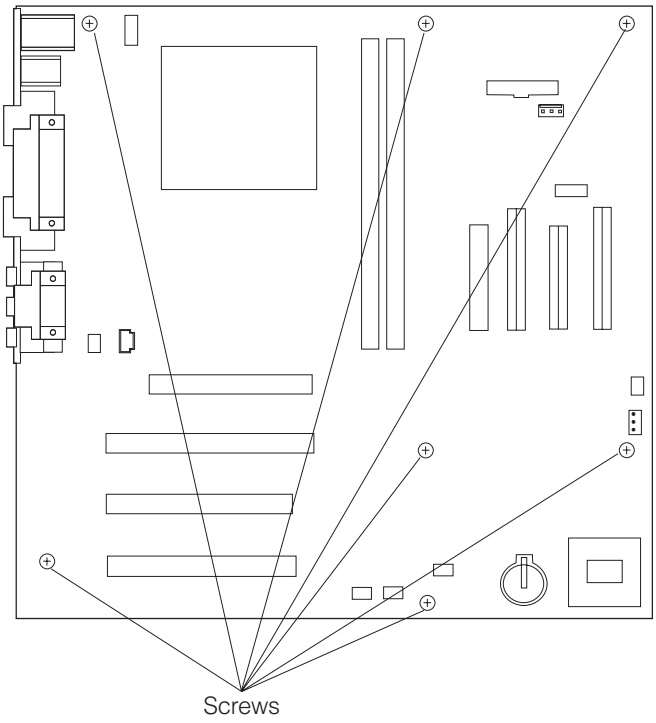
1. Locate the battery on the board (see “System Board Layout” on page F-5 for details).
2. Note the orientation of the battery on the system board and remove it.
3. Install the new battery.
4. Reinstall network node processor cover.
5. Go to “After FRU Exchange” on page 5-10.

Board Exchange

A new system board comes without microprocessor, no memory options on it. You must transfer all such components from the system board being removed.

Note: Be sure to have read “Before Replacing a System Board” on page 3-22.

1. Remove the system board using the following steps:
   a. Remove the network node processor top cover (see “Cover Removal” on page F-2 for details).
   b. Remove the token-ring adapter card (Slot 4).
   c. Remove the display adapter card (Slot 1).
   d. Remove the plastic cover of the processor.
   e. Remove the diskette and hard-disk drive (see “Diskette / Hard Drive Removal” on page F-3, for details).
   f. Remove the seven cables connector coming from diskette, disk, CD-ROM, fan, and panel.
   g. Remove the seven screws that secure the board.



h. Remove the board from the network node processor box.

2. Unpack the new system board.
3. Remove the processor from the old system board and install it on the new system board.
4. Remove the memory from the old system board, install them on the new system board.
5. Ensure that the new system board jumper/switch settings match the old system board jumper/switch settings.
6. Reinstall the system board using the steps 1a on page 5-3 to 1h in reverse order.
7. Reinstall the network node processor top cover.
8. Go to “After FRU Exchange” on page 5-10.

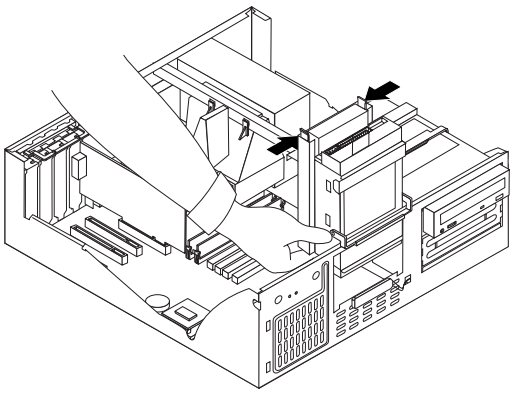
Processor Exchange

1. Locate the processor on the board (for details see “System Board Layout” on page F-5).
2. Remove the plastic air baffle from the top of the processor.
3. Note the orientation of the processor on the system board and remove it.
4. Unpack and install the new processor on the system board.

   Note: If the processor is not installed correctly, the system board and the processor can be damaged.
5. Install the plastic air baffle on the top of the processor to prevent processor overheating.
6. Reinstall the network node processor top cover.
7. Go to “After FRU Exchange” on page 5-10.

Hard-Disk Drive Exchange

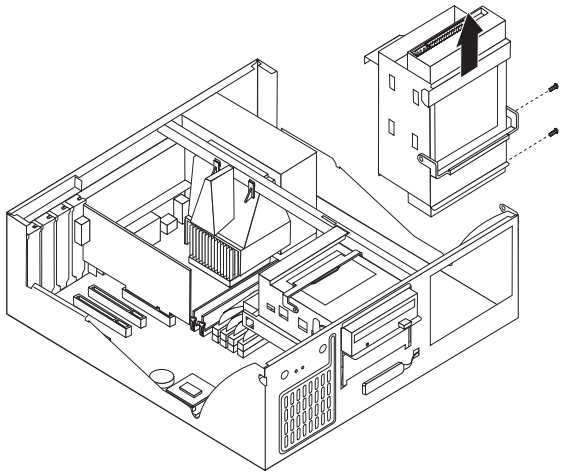
1. Swing the 3 1/2-in. drive cage up, and latch it to the vertical position.
2. Press the two side rail tabs and push the hard drive from the bottom. Pull the hard disk drive out.



3. Unpack the new hard-disk drive.
4. Check the jumper settings on the new hard-disk drive and set them to correspond to the old hard-disk drive settings. Otherwise, see “Hard-Disk Drive Jumper Settings” on page 3-30.
5. Replace the drive cage into its horizontal position, being careful to place the cage latch back to its regular horizontal position. This is necessary so that the machine cover will fit correctly.
6. Reinstall the network node processor top cover.
7. Go to “After FRU Exchange” on page 5-10.

CD-ROM Drive Exchange

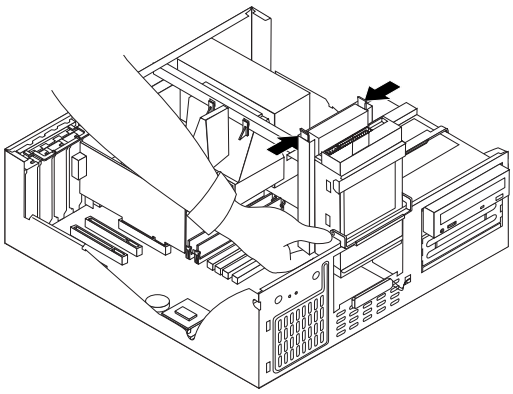
1. Swing the 5 1/4-in. drive cage up and out.



2. Remove the two screws that hold the CD-ROM drive in place. Lift the CD-ROM drive out of the cage.
3. Unpack the new CD-ROM drive.
4. Check the jumper settings on the new CD-ROM drive and set them to correspond to the old CD-ROM drive settings. Otherwise see “CD-ROM, PD/CD-ROM Drive Jumper Settings” on page 3-31.
5. Install and secure the new CD-ROM drive using the two screws previously removed.
6. Replace the drive cage into its horizontal position, being careful to place the cage latch back to its regular horizontal position. This is necessary so that the machine cover will fit correctly.
7. Replug the cables previously removed.
8. Reinstall the network node processor top cover.
9. Go to “After FRU Exchange” on page 5-10.

Diskette Drive Exchange

1. Swing the 3 1/2-in. drive cage up, and latch it to the vertical position.
2. Press the two side rail tabs and push the diskette drive from the bottom. Pull the diskette drive out.

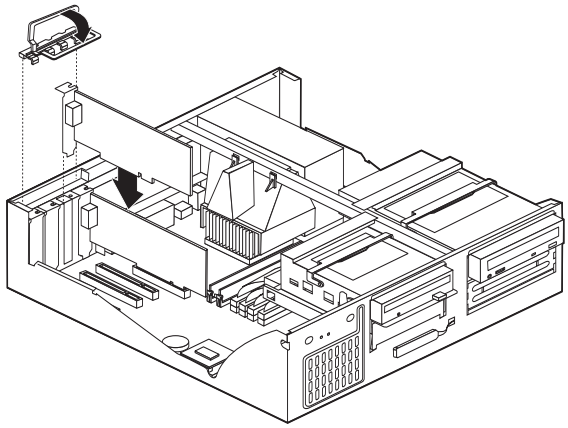


3. Unpack the new diskette drive.
4. Replace the drive cage into its horizontal position, being careful to place the cage latch back to its regular horizontal position. This is necessary so that the machine cover will fit correctly.
5. Reinstall the network node processor top cover.
6. Go to “After FRU Exchange” on page 5-10.

Token-Ring Adapter Card Exchange

The service processor has four expansion slots used to connect adapters to the peripheral component interconnect (PCI) bus.

1. Locate the token-ring adapter card that must be exchanged.
2. Unplug the cable from the rear of the adapter card.
3. Remove the screw that maintains the retainer on the rear of the computer.
4. Unplug the adapter card from the system board.
5. Remove the new adapter card from its static-protective package.
6. Remove the metal I/O bracket from the adapter slot.
7. Install the adapter in the appropriate slot on the system board.



8. Install the adapter slot cover latch. Pivot the latch back to a horizontal position.

   Note: If you are installing a Wake on LAN-supported network adapter, attach the Wake on LAN cable that came with the adapter to the Wake on LAN connector on the system board. If you also want to take advantage of the Alert on LAN feature of the computer, you must install the network adapter in PCI slot 1.

9. Install the retainer and secure it with the screw previously removed.
10. Plug the cable previously removed to the rear of the adapter card.
11. Reinstall the network node processor top cover.
12. Go to “After FRU Exchange” on page 5-10.

Other FRUs Exchange

1. Locate the FRU to exchange.
2. With the help of figures given in “Computer Exploded View” on page F-1, remove the FRU.
3. Unpack and install the new FRU.
4. Reinstall the network node processor cover.
5. Go to “After FRU Exchange” on page 5-10.

After FRU Exchange

Important

To continue this procedure you must have:

- A display, keyboard, and mouse connected to the network node processor See “How to Install a Display, Keyboard, and Mouse on Your Network Node Processor” on page 2-10.
- The token-ring cable connected at the rear of the network node processor and into the service processor access unit (8228).

Use the following table to find the procedure that you need to follow after exchanging an FRU.

Network Node Processor FRU to Exchange	Action
Battery **Board**	Go to “After Battery or Board Exchange” on page 5-11.
Token-Ring Adapter	Go to “After Token-Ring Adapter Card Exchange” on page 5-12.
Hard-Disk Drive	Go to “After Hard-Disk Drive Exchange” on page 5-14.
Other FRUs	Go to “After Other FRUs Exchange” on page 5-16.

After Battery or Board Exchange

Perform the following steps after a battery or board exchange.

1. Power ON the network node processor and its attached display.
2. Press the **F1** key to invoke the **Configuration/Setup Utility** after the POST completion.
3. Use “Network Node Processor Configuration Reference Based on 6578-RAU” on page F-8 to check this configuration and to correct it, if necessary.
4. If you performed some modifications, a message at the end of configuration asks you if you want to save your changes. Select **Yes** and press **Enter**.
5. If you have changed the board, continue with step 6. If you have changed the battery, go to Chapter 6, “CE Leaving Procedure.”
6. Run the diagnostics on the network node processor (see “Starting the IBM PC Enhanced Diagnostics Program” on page 4-4).
7. Is the diagnostic error free?

   No Restart the problem determination.
   Yes Return the network node processor to the customer, then go to Chapter 6, “CE Leaving Procedure.”

After Token-Ring Adapter Card Exchange

Perform the following steps after a token-ring adapter card exchange.

1. Insert the Token-Ring Adapter Card Configuration diskette (PN 10K8634) in the network node processor.
2. Power ON the network node processor and the attached display.
3. Wait until the following panel appears:

```
 PC DOS 7.0 Startup Menu

    1- IBM Token-Ring PCI Adapter Configuration using LANAIDC
    2- IBM Token-Ring Adapter Extended Diagnostics for 4/16 Mbps
    3- IBM Token-Ring Adapter Extended Diagnostics for 100 Mbps

Enter a choice: 1  Time remaining: xx

 Hit any key to continue with LANIDC from diskette or remove diskette
 and reboot system normally
```

4. Press any key on the keyboard. The following lines are added at the previous panel.

```
 Enter LANAID parameters - reboot your machine when done

   Examples: /View
             /Help

 LANAIDC >
```

5. Enter **/VIEW**.
6. A panel indicating the current settings appears:

```
             Current Adapter Setting

 Adapter Number:      1
 Adapter MAC Address: xx x xx xx x xx
 Microcode Level      yyyyyy zzzzzz
 I/O Address:         7400
 Interrupt:           10
 Latency Timer:       48
 Remote IPL:          Disabled*  (Note)
 Expansion ROM:       Enabled*   (Note)

 * Changes to RIPL and EXPROM will not be reflected until reboot

LANAIDC>
```

   Note: If the ***Remote IPL*** parameter and the ***Expansion ROM*** parameter are not set as described above, use the following commands to correct them:

   /RIPL=N to disable the ***Remote IPL*** feature.

   /EXPROM=Y to enable the ***Expansion ROM*** feature.

7. Remove the diskette.
8. Power OFF the network node processor.
9. Power ON the network node processor.
10. Press **F1** to invoke the **Configuration/Setup** utility after POST completion.

11. Use “Network Node Processor Configuration Reference Based on 6578-RAU” on page F-8 to check this configuration and to correct it if necessary.
12. If you performed some modifications, a message at the end of the configuration asks you if you want to save your changes. Select **Yes** and press **Enter**.
13. Go to Chapter 6, “CE Leaving Procedure.”

After Hard-Disk Drive Exchange

Perform the following steps after a hard-disk drive exchange.

1. Insert the Diagnostic Diskette.
2. Power on the network node processor and its attached display.
3. Do ***not*** press **F1** when the icon appears.
4. Several messages appear. Wait until the following panel appears.

```
Diagnostics - Interactive Tests - Hardware Infos - Utility - quit - F1=Help

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 Diagnostic tests that check the functionality of your P compact.
 Use the Cursor keys and ESC to move in menus. Press ENTER to select.
```

5. Select **Diagnostics** in the title bar and press **Enter**.
6. The following panel appears:

```
Diagnostics - Interactive Tests - Hardware Infos - Utility - quit - F1=Help

  Run Normal Test
  Run Quick Test
  CPU/Coprocessor
  System Board
  Video Adapter
  Serial Ports
  Parallels Ports
  Fixed Disks
  Diskette Drives
  Other Devices
  Interactive tests
  ZIP Drive
  CD-ROM/DVD Drive
  Memory Tests - Full
  Memory Tests - Quick
  Fixed Disk Optimized Test

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 Use the Cursor keys and ESC to move in menus. Press ENTER to select.
```

7. Select the **Fixed Disks** option, then press **Enter**.
8. The following panel appears:

```
            FIXED DISK TEST CATEGORY (6/15)

                        Disk 0     Disk1    Disk2    Disk3
                        13579 MB
 Controller            >>
 Hi-Low                >>
 Funnel Seek           >>
 Track to Track Seek   >>
 Random Seek           >>
 Linear Verify         >>
 Random Verify         >>
 SMART                 >>

               Start Track    0
               End Track9999

           Default   ProPf  PC: 1      lagleft:6936
Clear All - Run Screen - Run All - Options - Next Cat - Prev Cat
```

9. Select the **Clear All** option to remove all the chevrons >>.
10. With the arrow keys and the space bar select the test that you want to run on the disk. At each selection, a chevron >> appears.
11. Select the **Run Screen** option at the bottom of the panel. All the tests previously selected are started.

    When the hard disk has been successfully tested, the Fixed Disk Test Category panel appears again. The test result appears in front of each selected test.
12. Is the diagnostic error free?

    No Restart the problem determination.
    Yes You must restore the network node processor hard disk after its replacement. Continue with step 13.
13. Press **Esc** for exit from the test panel.
14. Select **Quit** in the title bar, then press **Enter**.
15. Select **Exit Diags**, then press **Enter**.
16. Turn on the service processor console to load the licensed internal code on the NNP, using the following procedure:
    a. Return to the MOSS-E View panel.
    b. Double-click the **3746-900** or **3746-950** icon.
    c. On the 3746-9x0 Menu, select the **Network Node Processor (NNP) Management** option.
    d. On the Network Node Processor (NNP) management panel double-click the **Install/Change/Restore LIC/NNP** option.
    e. The 3746-900/NNP Licensed Internal Code (LIC) Management panel appears.
    f. Select **NNP (A or B)**, then click **Restore LIC on NNP**.
    g. On the next panel click **OK**.
    h. Follow the prompts to insert the Network Node Processor Installation Diskette in the ***service processor***, then click **OK**.

i. Follow the prompts to insert the Network Node Processor Installation Diskette in the ***network node processor***, then click **OK**.

j. The 3746-900/NNP Licensed Internal Code (LIC) Management panel appears with a message for waiting (installation duration is about 30 minutes).

k. When installation is complete, a message warns you to remove the Network Node Processor Installation Diskette from the ***network node processor***. Click **OK**.

l. A new message indicates that the NNP LIC restoration operation is successfully completed. Click **OK**.

m. When the 3746-900/NNP Licensed Internal Code (LIC) panel appears, click **Close** to return to the MOSS-E View panel.

17. Go to Chapter 6, "CE Leaving Procedure."

After Other FRUs Exchange

1. Run the diagnostics on the network node processor (see "Starting the IBM PC Enhanced Diagnostics Program" on page 4-4).
2. Is the diagnostic error-free?

   No Restart the problem determination.
   Yes Return the network node processor to the customer, then go to Chapter 6, "CE Leaving Procedure."

Chapter 6. CE Leaving Procedure

Check List

1 If you have installed a display and keyboard on the network node processor continue with step **2** , otherwise go to step 8

2 See “Network Node Processor Configuration/Setup Utility” on page F-8 and check that:

a. In panel **3** the following option:

```
Mouse          (Not Installed)
```

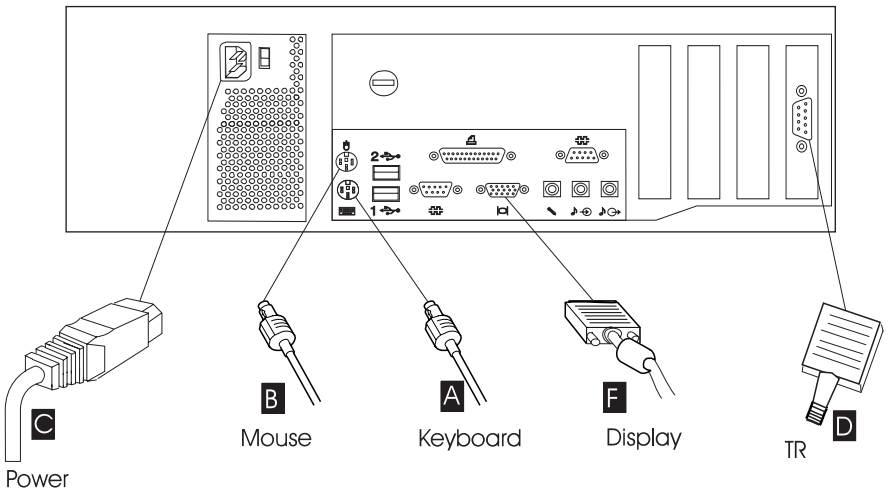
b. In panel **4** the following option:

```
Keyboardless Operation Mode (Enabled)
```

3 Leave the Configuration/Setup utility using the prompts.

4 Power off the network node processor and the display.

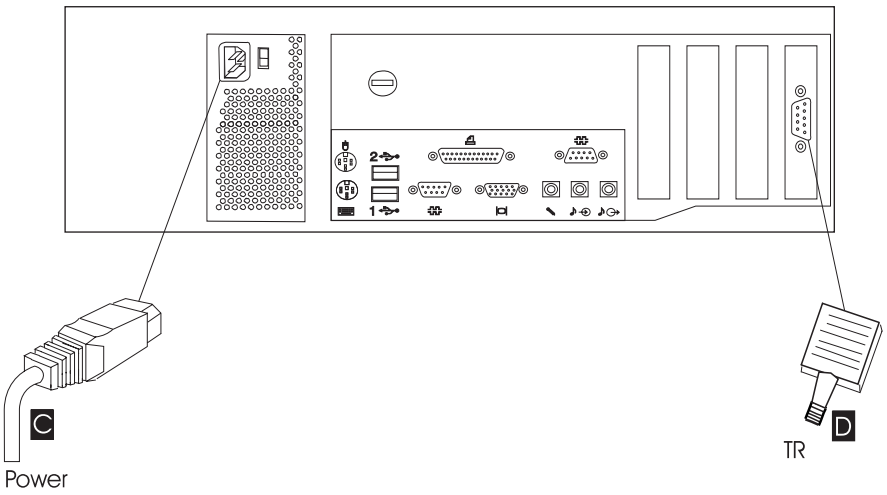
5 Disconnect all the cables from the rear of the network node processor.



6 If the network node processor was installed in a controller expansion continue with step 7. Otherwise go to step 8.

7 Slide the network node processor into the controller expansion.

8 At the rear of the network node processor reconnect the token-ring and the power cables previously removed.



9 Power ON the network node processor and check that the IML is complete and linked with the service processor.

10 At the beginning of the problem determination, did you modify the Remote Support Facility parameters, using the procedure described in the *Maintenance Information Procedure* for 3745 and 3746-900, or in the *Service Guide* for 3746-950?

Yes Continue with step 11.
No Go to step 12 on page 6-3.

11 Modify the Remote Support Facility parameters by performing the following steps:

a On the MOSS-E VIEW panel, double-click the service processor icon.

b The Service Processor Menu panel appears.

c Click **Configuration Management**.

d Double-click **Manage Remote Operations**.

e On the Remote Operation Management panel, select **Remote Operations Authorization** and click **OK**.

f On the Remote Support Facility panel, select the two following options:

- **Enable Remote Support Facility**
- **Generate Alerts**

and click **OK**.

g Click **Cancel** to return to Service Processor Menu, then click **Function** and **Exit** to return to the MOSS-E View panel.

h On the MOSS-E VIEW panel, click **Program** in the action bar.

i Click **Log off MOSS-E**.

j Continue with step 12 on page 6-3.

12 You should use the following list to ensure that the machine is in a suitable condition for customer operation and that call information is recorded.

a If you have worked on the 3745 or 3746 previously, make sure that you have restored it to the correct status for customer application (MOSS online, 3746 online, FRU active in CDF-E).

b Ask the customer to restart his application.

c If you have a problem, call support for assistance.

Appendix A. Safety Information

The following appendix contains the safety information that you need to be familiar with before servicing an IBM mobile computer.

General Safety

Follow these rules to ensure general safety:

- Observe good housekeeping in the area of the machines during and after maintenance.
- When lifting any heavy object:
  1. Ensure you can stand safely without slipping.
  2. Distribute the weight of the object equally between your feet.
  3. Use a slow lifting force. Never move suddenly or twist when you attempt to lift.
  4. Lift by standing or by pushing up with your leg muscles; this action removes the strain from the muscles in your back. ***Do not attempt to lift any objects that weigh more than 16 kg (35 lb) or objects that you think are too heavy for you.***
- Do not perform any action that causes hazards to the customer, or that makes the equipment unsafe.
- Before you start the machine, ensure that other service representatives and the customer's personnel are not in a hazardous position.
- Place removed covers and other parts in a safe place, away from all personnel, while you are servicing the machine.
- Keep your tool case away from walk areas so that other people will not trip over it.
- Do not wear loose clothing that can be trapped in the moving parts of a machine. Ensure that your sleeves are fastened or rolled up above your elbows. If your hair is long, fasten it.
- Insert the ends of your necktie or scarf inside clothing or fasten it with a nonconductive clip, approximately 8 centimeters (3 inches) from the end.
- Do not wear jewelry, chains, metal-frame eyeglasses, or metal fasteners for your clothing.

  Remember: Metal objects are good electrical conductors.
- Wear safety glasses when you are: hammering, drilling soldering, cutting wire, attaching springs, using solvents, or working in any other conditions that might be hazardous to your eyes.
- After service, reinstall all safety shields, guards, labels, and ground wires. Replace any safety device that is worn or defective.
- Reinstall all covers correctly before returning the machine to the customer.

Electrical Safety

Observe the following rules when working on electrical equipment.

Caution

Use only approved tools and test equipment. Some hand tools have handles covered with a soft material that does not insulate you when working with live electrical currents.

Many customers have, near their equipment, rubber floor mats that contain small conductive fibers to decrease electrostatic discharges. Do not use this type of mat to protect yourself from electrical shock.

- Find the room emergency power-off (EPO) switch, disconnecting switch, or electrical outlet. If an electrical accident occurs, you can then operate the switch or unplug the power cord quickly.
- Do not work alone under hazardous conditions or near equipment that has hazardous voltages.
- Disconnect all power before:
  - Performing a mechanical inspection
  - Working near power supplies
  - Removing or installing main units
- Before you start to work on the machine, unplug the power cord. If you cannot unplug it, ask the customer to power-off the wall box that supplies power to the machine and to lock the wall box in the off position.
- If you need to work on a machine that has ***exposed*** electrical circuits, observe the following precautions:
  - Ensure that another person, familiar with the power-off controls, is near you.

    Remember: Another person must be there to switch off the power, if necessary.
  - Use only one hand when working with powered-on electrical equipment; keep the other hand in your pocket or behind your back.

    Remember: There must be a complete circuit to cause electrical shock. By observing the above rule, you may prevent a current from passing through your body.
  - When using testers, set the controls correctly and use the approved probe leads and accessories for that tester.
  - Stand on suitable rubber mats (obtained locally, if necessary) to insulate you from grounds such as metal floor strips and machine frames.

  Observe the special safety precautions when you work with very high voltages; these instructions are in the safety sections of maintenance information. Use extreme care when measuring high voltages.
- Regularly inspect and maintain your electrical hand tools for safe operational condition.
- Do not use worn or broken tools and testers.
- ***Never assume*** that power has been disconnected from a circuit. First, ***check*** that it has been powered-off.
- Always look carefully for possible hazards in your work area. Examples of these hazards are moist floors, nongrounded power extension cables, power surges, and missing safety grounds.

- Do not touch live electrical circuits with the reflective surface of a plastic dental mirror. The surface is conductive; such touching can cause personal injury and machine damage.
- Do not service the following parts ***with the power on*** when they are removed from their normal operating places in a machine:
  - Power supply units
  - Pumps
  - Blowers and fans
  - Motor generators

  and similar units. (This practice ensures correct grounding of the units.)
- If an electrical accident occurs:
  - **Use caution; do not become a victim yourself.**
  - **Switch off power.**
  - **Send another person to get medical aid.**
- Asset ID allows the computer to be scanned by various radio frequency emitting devices supplied by independent companies. Asset ID is intended for use only with radio frequency equipment that meets ANSI/IEEE C95.1 1992 RF Radiation Limits.

Safety Inspection Guide

The intent of this inspection guide is to assist you in identifying potentially unsafe conditions on these products. Each machine, as it was designed and built, had required safety items installed to protect users and service personnel from injury. This guide addresses only those items. However, good judgment should be used to identify potential safety hazards due to attachment of non-IBM features or options not covered by this inspection guide.

If any unsafe conditions are present, you must determine how serious the apparent hazard could be and whether you can continue without first correcting the problem.

Consider these conditions and the safety hazards they present:

- Electrical hazards, especially primary power (primary voltage on the frame can cause serious or fatal electrical shock).
- Explosive hazards, such as a damaged CRT face or bulging capacitor
- Mechanical hazards, such as loose or missing hardware

The guide consists of a series of steps presented in a checklist. Begin the checks with the power off, and the power cord disconnected.

Checklist:

1. Check exterior covers for damage (loose, broken, or sharp edges).
2. Power-off the computer. Disconnect the power cord.
3. Check the power cord for:
   a. A third-wire ground connector in good condition. Use a meter to measure third-wire ground continuity for 0.1 ohm or less between the external ground pin and frame ground.
   b. The power cord should be the appropriate type as specified in the parts listings.
   c. Insulation must not be frayed or worn.
4. Remove the cover.
5. Check for any obvious non-IBM alterations. Use good judgment as to the safety of any non-IBM alterations.

6. Check inside the unit for any obvious unsafe conditions, such as metal filings, contamination, water or other liquids, or signs of fire or smoke damage.
7. Check for worn, frayed, or pinched cables.
8. Check that the power-supply cover fasteners (screws or rivets) have not been removed or tampered with.

Handling Electrostatic Discharge-Sensitive Devices

Any computer part containing transistors or integrated circuits (ICs) should be considered sensitive to electrostatic discharge (ESD). ESD damage can occur when there is a difference in charge between objects. Protect against ESD damage by equalizing the charge so that the machine, the part, the work mat, and the person handling the part are all at the same charge.

Notes:

1. Use product-specific ESD procedures when they exceed the requirements noted here.
2. Make sure that the ESD protective devices you use have been certified (ISO 9000) as fully effective.

When handling ESD-sensitive parts:

- Keep the parts in protective packages until they are inserted into the product.
- Avoid contact with other people.
- Wear a grounded wrist strap against your skin to eliminate static on your body.
- Prevent the part from touching your clothing. Most clothing is insulating and retains a charge even when you are wearing a wrist strap.
- Use the black side of a grounded work mat to provide a static-free work surface. The mat is especially useful when handling ESD-sensitive devices.
- Use the ESD ground cord, FRU 25F9727, to protect the computer against ESD.
- Select a grounding system, such as those listed below, to provide protection that meets the specific service requirement.

  Note: The use of a grounding system is desirable but not required to protect against ESD damage.

  – Attach the ESD ground clip to any frame ground, ground braid, or green-wire ground.
  – Use an ESD common ground or reference point when working on a double-insulated or battery-operated system. You can use coax or connector-outside shells on these systems.
  – Use the round ground-prong of the AC plug on AC-operated computers.

Grounding Requirements

Electrical grounding of the computer is required for operator safety and correct system function. Proper grounding of the electrical outlet can be verified by a certified electrician.

Safety Notices (Multilingual Translations)

The caution and danger safety notices in this section are provided in the following languages:

- English
- Brazilian/Portuguese
- Chinese
- French
- German
- Italian
- Korean
- Spanish

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.

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.**

When possible, use one hand to connect or disconnect signal cables to prevent a possible shock from touching two surfaces with different electrical potentials.

Electrical current from power, telephone, and communications cables is hazardous. To avoid shock hazard, connect and disconnect cables as described following when installing, moving, or opening covers of this product or attached devices.

To Connect	To Disconnect
1. Turn Everything OFF.	1. Turn Everything OFF.
2. First, attach all cables to devices.	2. First, remove power cord(s) from outlet.
3. Attach signal cables to receptacles.	3. Remove signal cables from receptacles.
4. Attach power cord(s) to outlet.	4. Remove all cables from devices.
5. Turn device ON.	

NOTE: In the UK, by law, the telephone cable must be connected after the power cord.	NOTE: In the UK, the power cord must be disconnected after the telephone cable.

Caution:
When replacing the battery, use only IBM Part Number 33F8354 or an equivalent type battery recommended by the manufacturer. If your system has a module containing a lithium battery, replace it only with the same module type made by the same manufacturer. The battery contains lithium and can explode if not properly used, handled, or disposed of.

Do not:

- **Throw or immerse into water**
- **Heat to more than 100°C (212°F)**
- **Repair or disassemble**

Dispose of the battery as required by local ordinances or regulations.

Caution:
When a CD-ROM drive is installed, note the following.

Use of controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.

Removing the covers of the CD-ROM drive could result in exposure to hazardous laser radiation. There are no serviceable parts inside the CD-ROM drive. Do not remove the CD-ROM drive covers.

DANGER

Some CD-ROM drives contain an embedded Class 3A or Class 3B laser diode. Note the following.

Laser radiation when open. Do not stare into the beam, do not view directly with optical instruments, and avoid direct exposure to the beam.

≥32 kg (70.5 lbs) **≥55 kg (121.2 lbs)**

Caution:
Use safe lifting practices when lifting your machine.

Caution:
Electrical current from power, telephone, and communication cables can be hazardous. To avoid personal injury or equipment damage, disconnect the attached power cords, telecommunications systems, networks, and modems before you open the server covers, unless instructed otherwise in the installation and configuration procedures.

PERIGO

Para evitar choques elétricos, não conecte ou desconecte nenhum cabo, nem efetue instalação, manutenção ou reconfiguração deste produto durante uma tempestade com raios.

Para evitar choques elétricos:

- **O cabo de alimentação deve ser conectado a um receptáculo corretamente instalado e aterrado.**
- **Todos os equipamentos aos quais este produto será conectado devem também ser conectados a receptáculos corretamente instalados.**

Quando possível, utilize uma das mãos para conectar ou desconectar cabos de sinal, para evitar um possível choque ao tocar duas superfícies com potenciais elétricos diferentes.

A corrente elétrica proveniente de cabos de alimentação, de telefone e de comunicação é perigosa. Para evitar choques elétricos, conecte e desconecte os cabos conforme descrito a seguir, ao instalar, movimentar ou abrir tampas deste produto ou de dispositivos conectados.

Para Conectar	**Para Desconectar**
1. DESLIGUE tudo.	1. DESLIGUE tudo.
2. Conecte primeiro todos os cabos nos dispositivos.	2. Remova primeiro o(s) cabo(s) de alimentação das tomadas.
3. Conecte os cabos de sinal nos receptáculos.	3. Remova os cabos de sinal dos receptáculos.
4. Conecte o(s) cabo(s) de alimentação nas tomadas.	4. Remova todos os cabos dos dispositivos.
5. LIGUE o dispositivo.	

cuidado:
Ao substituir a bateria, utilize apenas o Número de Peça IBM 33F8354 ou um tipo de bateria equivalente recomendado pelo fabricante. Se seu sistema possuir um módulo com uma bateria de lítio, substitua-o apenas pelo mesmo tipo de módulo, produzido pelo mesmo fabricante. A bateria contém lítio e pode explodir se não for utilizada, manuseada e descartada de forma adequada.

Não:

- **Jogue ou coloque na água**
- **Aqueça a mais de 100°C (212°F)**
- **Conserte nem desmonte.**

Descarte a bateria conforme requerido pelas disposições e regulamentações locais.

cuidado:
Quando uma unidade de CD-ROM estiver instalada, observe o seguinte.

A utilização de controles ou ajustes ou a execução de procedimentos diferentes daqueles especificados nesta publicação pode resultar em exposição perigosa à radiação.

A remoção das tampas da unidade de CD-ROM pode resultar em exposição a radiação perigosa de laser. Não existem peças que possam ser consertadas no interior da unidade de CD-ROM. Não remova as tampas da unidade de CD-ROM.

PERIGO

Algumas unidades de CD-ROM contém um diodo de laser da Classe 3A ou da Classe 3B. Observe o seguinte.

Radiação de laser quando aberto. Não olhe diretamente para o feixe de laser, não olhe diretamente com instrumentos óticos, e evite exposição direta ao raio.

≥32 kg (70,5 lbs) **≥55 kg (121,2 lbs)**

cuidado:
Utilize práticas seguras para levantamento de peso ao levantar sua máquina.

cuidado:
A corrente elétrica proveniente de cabos de alimentação, de telefone e de comunicação é perigosa. Para evitar ferimentos pessoais ou danos aos equipamentos, desconecte os cabos de alimentação, sistemas de telecomunicação, redes e modems antes de abrir as tampas do servidor, a menos que receba outras instruções nos procedimentos de instalação e configuração.

声明 1

危险！

为避免电击危险，请不要在暴风雨期间连接或断开任何电缆，或是进行此产品的安装、维护或重新配置操作。

为避免电击危险：

- 电源线必须连接到适当的电线及接地插座。
- 此产品将要连接的所有设备也必须连接到正确接线的插座上。

如果可能，请使用一只手连接或断开连接信号电缆，以避免在接触两个具有不同电势的表面时遭到电击。

电源线、电话线以及通信电缆中的电流非常危险。为避免电击，请在安装、移动或打开本产品或连接设备的外盖时，按照下述步骤连接或断开电缆。

要连接电缆	要断开电缆
1. 关闭所有设备。	1. 关闭所有设备。
2. 首先将所有电缆与设备连接。	2. 首先从电源插座拔下电源线。
3. 将信号线连接到插座。	3. 从插座拔下信号电缆。
4. 将电源线连接到电源插座。	4. 从设备上拔下所有电缆。
5. 打开设备。	

声明 2

注意！

当更换电池时，仅可使用 IBM 部件号为 33F8354 的产品或由制造商推荐的同等电池。如果系统中有包含锂电池的模块，则只能使用由相同制造商制造的相同类型模块更换。该电池含有锂，如果使用、操作或处理不当会发生爆炸。

不要：

- 将其投入或浸于水中
- 加热超过100°C (212°F)
- 修理或拆卸

应按照当地法规和条例对此电池进行处理。

声明 3

注意 ！

在已安装 CD-ROM 驱动器的情况下，请注意下面的内容。

不遵循此处指定的控制、调整、或操作过程的操作将可能导致危险的辐射泄漏。

取下 CD-ROM 驱动器的外盖会导致危险的激光辐射泄漏。CD-ROM 驱动器内没有可以使用的部件。请不要取下 CD-ROM 驱动器的外盖。

声明 4

危险 ！

一些 CD-ROM 驱动器中包含内置的 3A 类或 3B 类激光二极管。请注意下述内容。

打开驱动器会产生激光辐射。请不要凝视激光束，请不要使用光学仪器直接观看激光束，同时也要避免人体直接暴露在激光束下。

声明 5

32 kg (70.5 磅)

55 kg (121.2 磅)

注意！

搬运机器时，请进行安全搬运操作。

声明 10

注意！

电源线、电话线以及通信电缆中的电流非常危险。为避免人身伤害或设备损坏，除非在安装和配置过程中特别指明，请在打开服务器外盖前断开已连接的全部电源线、电信系统、网络及调制解调器。

• 聲明 1

危險

為了避免雷擊，在閃電期間，請勿連接或拔掉本裝置上的任何電纜線，或請勿安裝、維修或重新架構本產品。

為了避免雷擊：

- 電源線必須連接到接線及接地正確的插座。
- 本產品所連接的設備也必須連接到接線正確的插座。

儘可能使用單手來連接或拔掉信號電纜，以避免因接觸兩不同電位的平面，而受到電擊。

電源、電話及通信電纜上均有電流流通。為了避免電擊，在安裝、移動本產品，或開啓本產品的蓋子或與本產品連接之裝置的蓋子時，請依照下列「連接」及「拔掉」電纜線的步驟操作。

連接	拔掉
1. 關掉所有開關。 2. 首先，將所有電纜線連接到裝置。 3. 將信號電纜連接到信號插座。 4. 將電源線連接到電源插座。 5. 開啓裝置電源。	1. 關掉所有開關。 2. 首先，自電源插座拔掉電源線。 3. 拔掉信號插座上的所有信號電纜。 4. 拔掉裝置上的所有電纜線。

• 聲明 2

注意：
更換電池時，只可使用 IBM 零件編號 33F8354 的電池，或廠商建議的相當類型的電池。如您系統中的模組含有鋰電池，更換時，請使用相同廠商製造的相同模組類型。如未正常使用、處理或捨棄含有鋰的電池時，可能會造成爆炸。

嚴禁：.

- 丟入或浸入水中
- 加熱超過攝氏100 度（華氏 212 度）
- 修補或拆解

處理廢棄電池時，請遵照當地法令規章處理。

• 聲明 3

注意：
安裝光碟機時，請注意下列事項：

不依此處所指示的控制、調整或處理步驟，恐有遭致輻射之虞。

移開光碟機蓋子，恐有遭致雷射輻射之虞。光碟機中沒有需要維修的部分。請勿移開光碟機的蓋子。

• 聲明 4

危險

光碟機含有內嵌式 Class 3A 或 Class 3B 雷射二極體時，請注意下列事項：

開啓時會產生雷射輻射。請勿凝視光束，不要使用光學儀器直接觀察，且應避免直接暴露在光束下。

• 聲明 5

>= 32 公斤(70.5 磅)

>= 55 公斤(121.2 磅)

注意：
提昇機器時，請使用安全提昇措施。

• 聲明 10

注意：
電源、電話及通信電纜上均有電流流通。在安裝及架構之時，若非專家指導，為了避免人員受傷、設備受損，在開啓伺服器蓋子之前，請切斷電源線、電信系統、網路及數據機。

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.

Pour éviter tout risque de choc électrique :

- **Les cordons d'alimentation du présent produit et de tous les appareils qui lui sont connectés doivent être branchés sur des socles de prise de courant correctement câblés et mis à la terre.**

Afin d'éviter tout risque de choc électrique provenant d'une différence de potentiel de terre, n'utilisez qu'une main, lorsque cela est possible, pour connecter ou déconnecter les cordons d'interface.

Le courant électrique passant dans les câbles de communication, ou les cordons téléphoniques et d'alimentation peut être dangereux. Pour éviter tout risque de choc électrique, lorsque vous installez ou que vous déplacez le présent produit ou des périphériques qui lui sont raccordés, reportez-vous aux instructions ci-dessous pour connecter et déconnecter les différents cordons.

Connexion	**Déconnexion**
1. Mettez les unités hors tension. 2. Commencez par brancher tous les cordons sur les unités. 3. Branchez les câbles d'interface sur les prises. 4. Branchez les cordons d'alimentation sur un socle de prise de courant. 5. Mettez les unités sous tension.	1. Mettez les unités hors tension. 2. Commencez pas débrancher les cordons alimentation des socles de prise de courant. 3. Débranchez les câbles d'interface des prises. 4. Débranchez tous les câbles des unités.

attention:
Remplacez la pile usagée par une pile de référence identique exclusivement - voir la référence IBM - ou par une pile équivalente recommandée par le fabricant. Si votre système est doté d'un module contenant une pile au lithium, vous devez le remplacer uniquement par un module identique, produit par le même fabricant. La pile contient du lithium et présente donc un risque d'explosion en cas de mauvaise manipulation ou utilisation.

- **Ne la jetez pas à l'eau.**
- **Ne l'exposez pas à une température supérieure à 100 °C.**
- **Ne cherchez pas à la réparer ou à la démonter.**

Pour la mise au rebut, reportez-vous à la réglementation en vigueur.

attention:
Si une unité de CD-ROM est installée, prenez connaissance des informations suivantes :

Pour éviter tout risque d'exposition au rayon laser, respectez les consignes de réglage et d'utilisation des commandes, ainsi que les procédures décrites dans le présent document.

Pour éviter une exposition directe au rayon laser, n'ouvrez pas l'unité de CD-ROM. Vous ne pouvez effectuer aucune opération de maintenance à l'intérieur.

DANGER

Certaines unités de CD-ROM contiennent une diode laser de classe 3A ou 3B. Prenez connaissance des informations suivantes :

Rayonnement laser lorsque le carter est ouvert. Évitez de regarder fixement le faisceau ou de l'observer à l'aide d'instruments optiques. Évitez une exposition directe au rayon.

≥32 kg ≥55 kg

attention:
Ce produit pèse un poids considérable. Faites-vous aider pour le soulever.

attention:
Le courant électrique circulant dans les câbles de communication et les cordons téléphoniques et d'alimentation peut être dangereux. Pour votre sécurité et celle de l'équipement, avant de retirer les carters du serveur, mettez celui-ci hors tension et déconnectez ses cordons d'alimentation, ainsi que les câbles qui le relient aux réseaux, aux systèmes de télécommunication et aux modems (sauf instruction contraire mentionnée dans les procédures d'installation et de configuration).

VORSICHT

Aus Sicherheitsgründen bei Gewitter an diesem Gerät keine Kabel anschließen oder lösen. Ferner keine Installations-, Wartungs- oder Rekonfigurationsarbeiten durchführen.

Aus Sicherheitsgründen:

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

Signalkabel möglichst einhändig anschließen oder lösen, um einen Stromschlag durch Berühren von Oberflächen mit unterschiedlichem elektrischem Potential zu vermeiden.

Elektrische Spannungen von Netz-, Telefon- und Datenübertragungsleitungen sind gefährlich. Um einen Stromschlag zu vermeiden, nur nach den Anweisungen arbeiten, die für Installation, Transport oder Öffnen von Gehäusen dieses Produkts oder angeschlossenen Einheiten gelten.

Kabel anschließen

1. Alle Geräte ausschalten und Netzstecker ziehen.
2. Zuerst alle Kabel an Einheiten anschließen.
3. Signalkabel an Anschlußbuchsen anschließen.
4. Netzstecker an Steckdose anschließen.
5. Gerät einschalten.

Kabel lösen

1. Alle Geräte ausschalten.
2. Zuerst Netzstecker von Steckdose lösen.
3. Signalkabel von Anschlußbuchsen lösen.
4. Alle Kabel von Einheiten lösen.

Achtung:
Eine verbrauchte Batterie nur durch eine Batterie mit der IBM Teilenummer 33F8354 oder durch eine vom Hersteller empfohlene Batterie ersetzen. Wenn Ihr System ein Modul mit einer Lithium-Batterie enthält, ersetzen Sie es immer mit dem selben Modultyp vom selben Hersteller. Die Batterie enthält Lithium und kann bei unsachgemäßer Verwendung, Handhabung oder Entsorgung explodieren.

Die Batterie nicht

- **mit Wasser in Berührung bringen.**
- **über 100 C erhitzen.**
- **reparieren oder zerlegen.**

Die örtlichen Bestimmungen für die Entsorgung von Sondermüll beachten.

Achtung:
Wenn ein CD-ROM-Laufwerk installiert ist, beachten Sie folgendes. Steuer- und Einstellelemente sowie Verfahren nur entsprechend den Anweisungen im vorliegenden Handbuch einsetzen. Andernfalls kann gefährliche Laserstrahlung auftreten.

Das Entfernen der Abdeckungen des CD-ROM-Laufwerks kann zu gefährlicher Laserstrahlung führen. Es befinden sich keine Teile innerhalb des CD-ROM-Laufwerks, die vom Benutzer gewartet werden müssen. Die Verkleidung des CD-ROM-Laufwerks nicht öffnen.

VORSICHT

Manche CD-ROM-Laufwerke enthalten eine eingebaute Laserdiode der Klasse 3A oder 3B. Die nachfolgend aufgeführten Punkte beachten.

Laserstrahlung bei geöffneter Tür. Niemals direkt in den Laserstrahl sehen, nicht direkt mit optischen Instrumenten betrachten und den Strahlungsbereich meiden.

≥32 kg ≥55 kg

Achtung:
Beim Anheben der Maschine die vorgeschriebenen Sicherheitsbestimmungen beachten.

Achtung:
An Netz-, Telefon- und Datenleitungen können gefährliche elektrische Spannungen anliegen. Um eine Gefährdung des Benutzers oder Beschädigung des Geräts zu vermeiden, ist der Server auszuschalten. Die Verbindung zu den angeschlossenen Netzkabeln, Telekommunikationssystemen, Netzwerken und Modems ist vor dem Öffnen des Servergehäuses zu unterbrechen (sofern in Installations- und Konfigurationsanweisungen nicht anders angegeben).

PERICOLO

Per evitare il pericolo di scosse elettriche durante i temporali, non collegare o scollegare cavi, non effettuare l'installazione, la manutenzione o la riconfigurazione di questo prodotto.

Per evitare il pericolo di scosse elettriche:

- **collegare il cavo di alimentazione ad una presa elettrica correttamente cablata e munita di terra di sicurezza;**
- **collegare qualsiasi apparecchiatura collegata a questo prodotto ad una presa elettrica correttamente cablata e munita di terra di sicurezza.**

Quando possibile, collegare o scollegare i cavi di segnale con una sola mano per evitare il rischio di scosse derivanti dal contatto con due superfici a diverso potenziale elettrico.

La corrente elettrica circolante nei cavi di alimentazione, del telefono e di segnale è pericolosa. Per evitare scosse elettriche, collegare e scollegare i cavi come descritto quando si effettuano l'installazione, la rimozione o l'apertura dei coperchi di questo prodotto o durante il collegamento delle unità.

Per collegare	**Per scollegare**
1. SPEGNERE tutti i dispositivi.	1. SPEGNERE tutti i dispositivi.
2. Collegare prima tutti i cavi alle unità.	2. Rimuovere prima il(i) cavo(i) di alimentazione dalla presa elettrica.
3. Collegare i cavi di segnale alle prese.	3. Rimuovere i cavi di segnale dalle prese.
4. Collegare il(i) cavo(i) di alimentazione alla presa elettrica.	4. Rimuovere tutti i cavi dalle unità.
5. ACCENDERE le unità.	

ATTENZIONE:
Quando si sostituisce la batteria, utilizzare solo una batteria IBM o batterie dello stesso tipo o di tipo equivalente consigliate dal produttore. Se il sistema di cui si dispone è provvisto di un modulo contenente una batteria al litio, sostituire tale batteria solo con un tipo di modulo uguale a quello fornito dal produttore. La batteria contiene litio e può esplodere se utilizzata, maneggiata o smaltita impropriamente.

Evitare di:

- **Gettarla o immergerla in acqua**
- **Riscaldarla ad una temperatura superiore ai 100° C**
- **Cercare di ripararla o smaltirla**

Smaltire secondo la normativa in vigore (D.Lgs 22 del 5/2/97) e successive disposizioni nazionali e locali.

ATTENZIONE:
Quando è installata un'unità CD-ROM, notare quanto segue:

L'utilizzo di controlli, regolazioni o l'esecuzione di procedure non descritti nel presente manuale possono provocare l'esposizione a radiazioni pericolose.

L'apertura di un'unità CD-ROM può determinare l'esposizione a radiazioni laser pericolose. All'interno dell'unità CD-ROM non vi sono parti su cui effettuare l'assistenza tecnica. Non rimuovere i coperchi dell'unità CD-ROM.

PERICOLO

Alcune unità CD-ROM contengono all'interno un diodo laser di Classe 3A o Classe 3B. Prestare attenzione a quanto segue:

Aprendo l'unità vengono emesse radiazioni laser. Non fissare il fascio, non guardarlo direttamente con strumenti ottici ed evitare l'esposizione diretta al fascio.

≥32 kg ≥55 kg

ATTENZIONE:
Durante il sollevamento della macchina seguire delle norme di di sicurezza.

ATTENZIONE:
La corrente circolante nei cavi di alimentazione, del telefono e di segnale è pericolosa. Per evitare situazioni pericolose per le persone o danneggiamenti all'apparecchiatura, scollegare i cavi di alimentazione, i sistemi di telecomunicazioni, le reti e ed i modem prima di aprire i coperchi del servente se non diversamente indicato nelle procedure di installazione e configurazione.

경고문 1

위험

전기 충격을 피하려면 날씨가 나쁠 때(예: 눈 또는 비가 오거나 천둥 번개가 칠 때)는 케이블을 연결하거나 끊지 않도록 하고 이 제품의 설치, 유지보수 또는 재구성 등의 작업을 수행하지 않도록 하십시오.

전기 충격을 피하려면 다음과 같아야 합니다.

– 고압선은 적절한 배선 및 접지 상태의 콘센트로 연결되어야 합니다.

– 이 제품이 접속될 모든 장비도 적절한 배서 상태의 콘센트로 연결되어야 합니다.

다른 전위를 가진 두 표면을 만졌을 때 발생할 수 있는 전기 충격을 피하려면 한 손으로 신호선을 연결하거나 끊으십시오.

전원, 전화 및 통신 케이블로부터 흘러 나오는 전류는 위험합니다. 전기 충격을 피하려면 이 제품이나 접속 장치를 설치, 이동 및 덮개를 열 때 다음 설명에 따라 케이블을 연결하고 끊도록 하십시오.

연결하려면	연결해제하려면
1. 모든 스위치를 켠다.	1. 모든 스위치를 끈다.
2. 먼저 모든 케이블을 장치에 연결한다.	2. 먼저 모든 케이블을 장치에 제거한다.
3. 신호선을 콘센트에 연결한다.	3. 신호선을 콘센트에서 제거한다.
4. 전원을 콘센트에 연결한다.	4. 장치에서 모든 케이블을 제거한다.
5. 장치 스위치를 켠다.	

경고문 2

주의:

배터리를 교체할 때는 IBM 부품 번호 &PN. 또는 제조업체에서 추천하는 동등한 유형의 배터리를 사용하십시오. 시스템에 리튬 배터리를 포함하는 모듈이 있으면 이것은 동일한 제조업체에서 생산된 동일한 모듈 유형으로만 교체하십시오. 배터리에는 리튬이 포함되어 있으므로 제대로 사용, 처리 또는 처분하지 않으면 폭발할 수 있습니다.

다음을 주의하십시오.

– 던지거나 물에 담그지 않도록 하십시오.
– 100°C(212°F) 이상으로 가열하지 않도록 하십시오.
– 수리하거나 분해하지 않도록 하십시오.

지역 법령이나 규정의 요구에 따라 배터리를 처분하십시오.

경고문 3

주의:

CD-ROM 드라이브가 설치되어 있으면 다음 사항을 명심하십시오.

여기에서 지정하지 않은 방식으로 CD-ROM 드라이브를 제어 또는 조절하거나 다른 절차로 사용하면 위험한 방사능 노출이 발생할 수 있습니다.

CD-ROM 드라이브의 덮개를 제거하면 위험한 레이저 방사능이 노출될 수 있습니다. CD-ROM 드라이브 내에는 정비할 수 있는 부품이 없습니다. CD-ROM 드라이브 덮개를 제거하지 않도록 하십시오.

경고문 4

위험

일부 CD-ROM 드라이브에는 클래스 3A 또는 3B 레이저 2극 진공관(다이오드)이 들어 있습니다. 다음 사항을 명심하십시오.

열면 레이저 방사능이 노출됩니다. 광선을 주시하거나 광학 기계를 직접 쳐다보지 않도록 하고 광선에 노출되지 않도록 하십시오.

경고문 5

32kg(70.5 파운드)

55kg(121.2 파운드)

주의:

기계를 들 때는 안전하게 들어 올리십시오.

경고문 10

주의:

전원, 전화 및 통신 케이블로부터 흘러 나오는 전류는 위험합니다. 설치 및 구성 절차에 다른 지시가 없으면, 다치거나 장비 손상이 생기지 않게 하기 위해 서버 덮개를 열기 전에 접속된 전선, 원격 통신 시스템, 네트워크 및 모뎀의 연결을 끊으십시오.

PELIGRO

Para evitar una posible descarga eléctrica, no conecte ni desconecte los cables ni lleve a cabo ninguna operación de instalación, de mantenimiento o de reconfiguración de este producto durante una tormenta eléctrica.

Para evitar una posible descarga:

- **El cable de alimentación debe conectarse a un receptáculo con una instalación eléctrica correcta y con toma de tierra.**
- **Los aparatos a los que se conecte este producto también deben estar conectados a receptáculos con la debida instalación eléctrica.**

Cuando sea posible, utilice una sola mano para conectar o desconectar los cables de señal a fin de evitar una posible descarga al tocar dos superficies con distinto potencial eléctrico.

La corriente eléctrica de los cables de comunicaciones, teléfono y alimentación puede resultar peligrosa. Para evitar una posible descarga, siga las indicaciones de conexión y desconexión de los cables siempre que tenga que instalar, mover o abrir las cubiertas de este producto o de los dispositivos acoplados.

Instrucciones de conexión	**Instrucciones de desconexión**
1. Apague todos los componentes (OFF). 2. En primer lugar, conecte todos los cables a los dispositivos. 3. Conecte los cables de señal a los receptáculos. 4. Conecte los cables de alimentación a las tomas. 5. Encienda el dispositivo (ON).	1. Encienda todos los componentes (ON). 2. En primer lugar, retire los cables de alimentación de las tomas. 3. Retire los cables de señal de los receptáculos. 4. Retire todos los cables de los dispositivos.

percaución:
Al cambiar la batería, utilice únicamente la batería IBM Número de pieza 33F8354 o un tipo de batería equivalente recomendado por el fabricante. Si el sistema tiene un módulo que contiene una batería de litio, sustitúyalo únicamente por el mismo tipo de módulo del mismo fabricante. La batería contiene litio y puede explotar si no se utiliza, manipula o desecha correctamente.

Lo que no debe hacer

- **Tirar o sumergir el producto en agua.**
- **Exponer el producto a una temperatura superior a 100°C.**
- **Reparar o desmontar el producto.**

Cuando quiera desechar la batería, siga las disposiciones y reglamentaciones locales.

percaución:
Cuando instale una unidad de CD-ROM, tenga en cuenta la siguiente información.

Si se llevan a cabo controles o ajustes o se utilizan métodos que no se atengan a lo aquí especificado, se puede producir una exposición peligrosa a las radiaciones.

Si se retiran las cubiertas de la unidad de CD-ROM, se puede producir una peligrosa exposición a radiaciones de láser. Dentro de la unidad de CD-ROM no existen piezas reparables. No retire las cubiertas de la unidad de CD-ROM.

PELIGRO

Algunas unidades de CD-ROM tienen incorporado un diodo de láser de Clase 3A o de Clase 3B Tenga en cuenta la siguiente información.

Cuando la unidad está abierta se generan emisiones de rayos láser. No dirija la mirada al haz, no lo observe directamente con instrumentos ópticos y evite la exposición directa.

≥32 kg ≥55 kg

percaución:
Alce la máquina con cuidado; el sobrepeso podría causar alguna lesión.

percaución:
La corriente eléctrica de los cables de comunicaciones, de teléfono y de alimentación puede resultar peligrosa. Para evitar posibles lesiones o daños del aparato, desconecte los cables de alimentación, los sistemas de telecomunicaciones, las redes y los módems antes de abrir las cubiertas del servidor, salvo que se indique lo contrario en las instrucciones de las operaciones de instalación y configuración.

Appendix B. Specifications 6578

The model specifications was determined in controlled acoustical environments according to procedures specified by the American National Standards Institute (ANSI) S12.10 and ISO 7779, and are reported in accordance with ISO 9296. Actual sound pressure levels in you location might differ from the average values stated because of room reflections and other nearby noise sources. The declared sound power levels indicate an upper limit, below which a large proportion of machines will operate.

Feature	Description
Size	Depth: 425 mm (16.7 in.) Height: 140 mm (5.5 in.) Width: 425 mm (16.7 in.)
Weight	Minimum configuration as shipped: 9.45 kg (20 lb) Maximum configuration as shipped: 11.3 kg (25 lb)
Environment	Air temperature: • System on: 10° to 35°C (50° to 95°F) • System off: 10° to 43°C (50° to 110°F) Humidity: • System on: 8% to 80% • System off: 8% to 80% Maximum altitude: 2134 m (7,000 ft)
Heat Output	Approximate heat output in BTUs per hour: • Minimum: 240 BTU (75 watts) • Maximum: 705 BTU (207 watts)
Electrical Input	Sine-wave input (47 to 63 Hz) required. Input voltage range: • Minimum: 90 V ac • Maximum: 265 V ac Input kVA (approximately): • Minimum: 0.08 kVA • Maximum (as shipped): 0.30 kVA
Airflow	Approximately 0.5 cubic meters/minute (18 CFM)
Acoustical Noise Emission Values	Average sound pressure levels: At operator position: • 43 dB operating • 38 dB idle At bystander position (1 meter): • 37 dB operating • 33 dB idle Declared (upper limit) sound power levels: • 5.1 bels operating • 4.8 bels idle

Appendix C. Parameter Worksheet

The worksheet in this appendix lists the MOSS-E parameters needed during the NNP installation.
When applicable, default parameter values are included (in parentheses) in the tables.

Definition of Service LAN IP Addresses

For details, refer to chapter 'Service LAN IP Addresses (MOSS-E)' in *3745 Communication Controller Models A and 3746 Models 900 and 950: Planning Guide*, GA33-0457.

Table C-1. For the Service Processor	
IP address	(192.9.200.1)
Subnet mask	(255.255.255.240)

Table C-2. For the Network Node Processor-A	
IP address	(192.9.200.2)
Subnet mask	(255.255.255.240)

Table C-3. For the Network Node Processor-B	
IP address	(192.9.200.3)
Subnet mask	(255.255.255.240)

Table C-4. For the 3746 NN	
IP address	(192.9.200.4)
Subnet mask	(255.255.255.240)

Appendix D. Controller Expansion Component Locations

If you want more information about:	Refer to
• Positioning the units in the front side of the controller expansion	• Figure D-1 on page D-2
• Positioning the units in the rear side of the controller expansion	• Figure D-2 on page D-3
• Installing captive nuts and brackets for 6578	• Figure D-3 on page D-4
• Installing captive nuts for LCBs	• Figure D-4 on page D-5
• Installing captive nuts for 8229s	• Figure D-5 on page D-6
• Installing captive nuts and brackets for MAE	• Figure D-6 on page D-7
• Installing brackets for processor type 6578	• Figure D-7 on page D-8
• Example of units installation (SP & NNP type 6578)	• Figure D-8 on page D-9
• Example of units installation (SP & NNP type 6578 + MAE)	• Figure D-9 on page D-9
• Example of units installation (SP type 6275 NNP type 6578)	• Figure D-10 on page D-10
• Example of units installation (SP type 6275 NNP type 6578 + MAE)	• Figure D-11 on page D-10
• Example of units installation (SP type 7585 NNP type 6578)	• Figure D-12 on page D-11
• Example of units installation (SP type 7585 NNP type 6578 + MAE)	• Figure D-13 on page D-11
• Example of units installation (SP Type 3172 NNP type 6578)	• Figure D-14 on page D-12
• Connecting the units to the ac Outlet Distribution Box.	• Figure D-15 on page D-12

Use this drawing to setup the **units** on the **front side** of the controller expansion, for the units that can be installed on the rear, refer to Figure D-2 on page D-3.

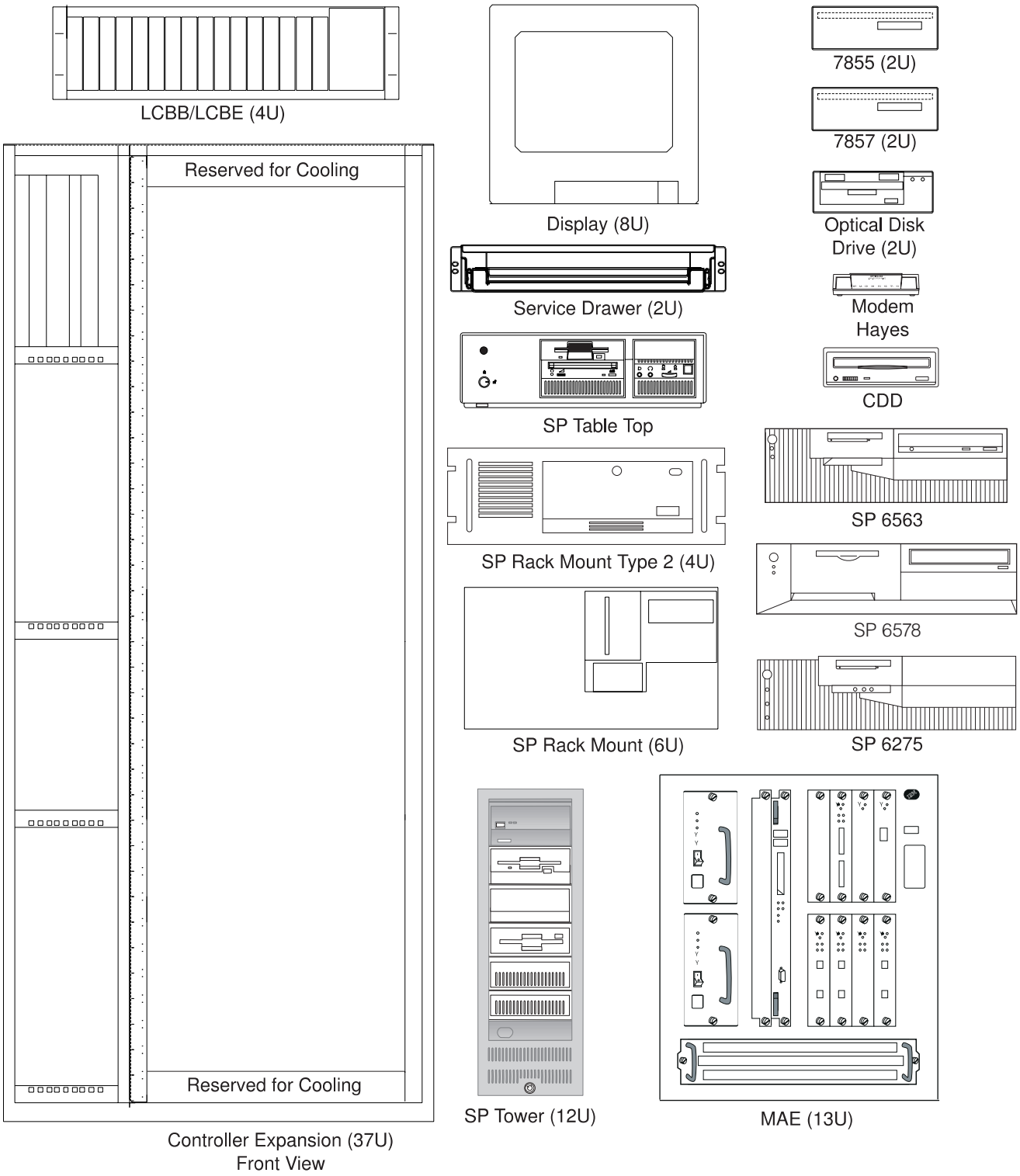


Figure D-1. Controller Expansion Inventory Chart (Front View)

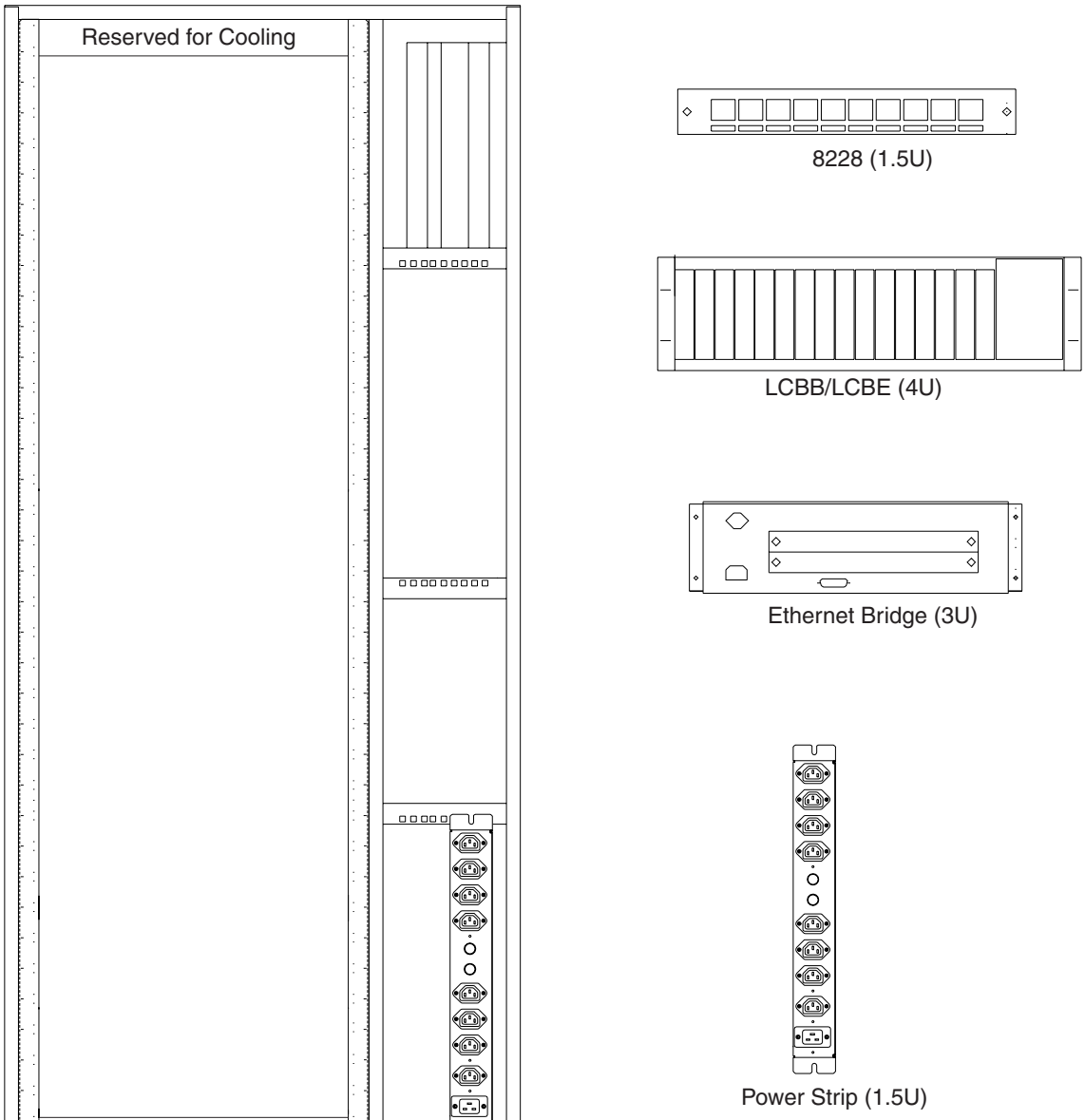


Figure D-2. Controller Expansion Inventory Chart (Rear View)

Notes:

1. The units dimensions are scaled to the size of the controller expansion diagram. The values represent the size used to setup the units in the controller expansion, it is not the size of the units themselves.
2. The attachment holes along each side of the controller expansion are divided into units of measure called EIA units. Each EIA unit (U) equals 44.5 millimeters (1.75 inches).
3. The controller expansion is 37 U high but only 35 are usable, one U must be reserved at the top and at the bottom for proper cooling.

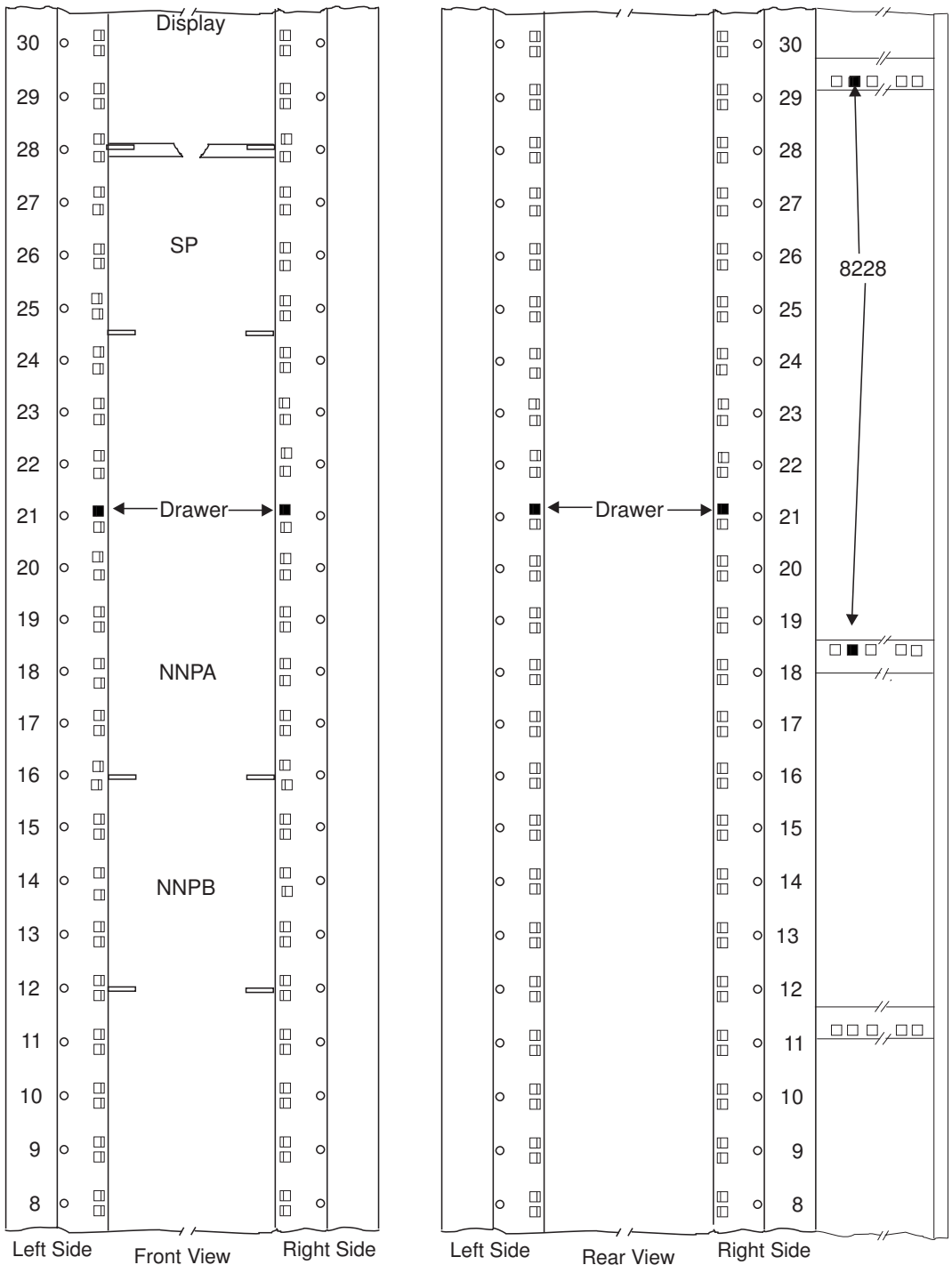


Figure D-3. Installing Captive Nuts and Brackets for the Display, Drawer, SP and NNP Type 7585, 6578, or 6563

Note: This symbol '■' identifies the locations to install the captive nuts.

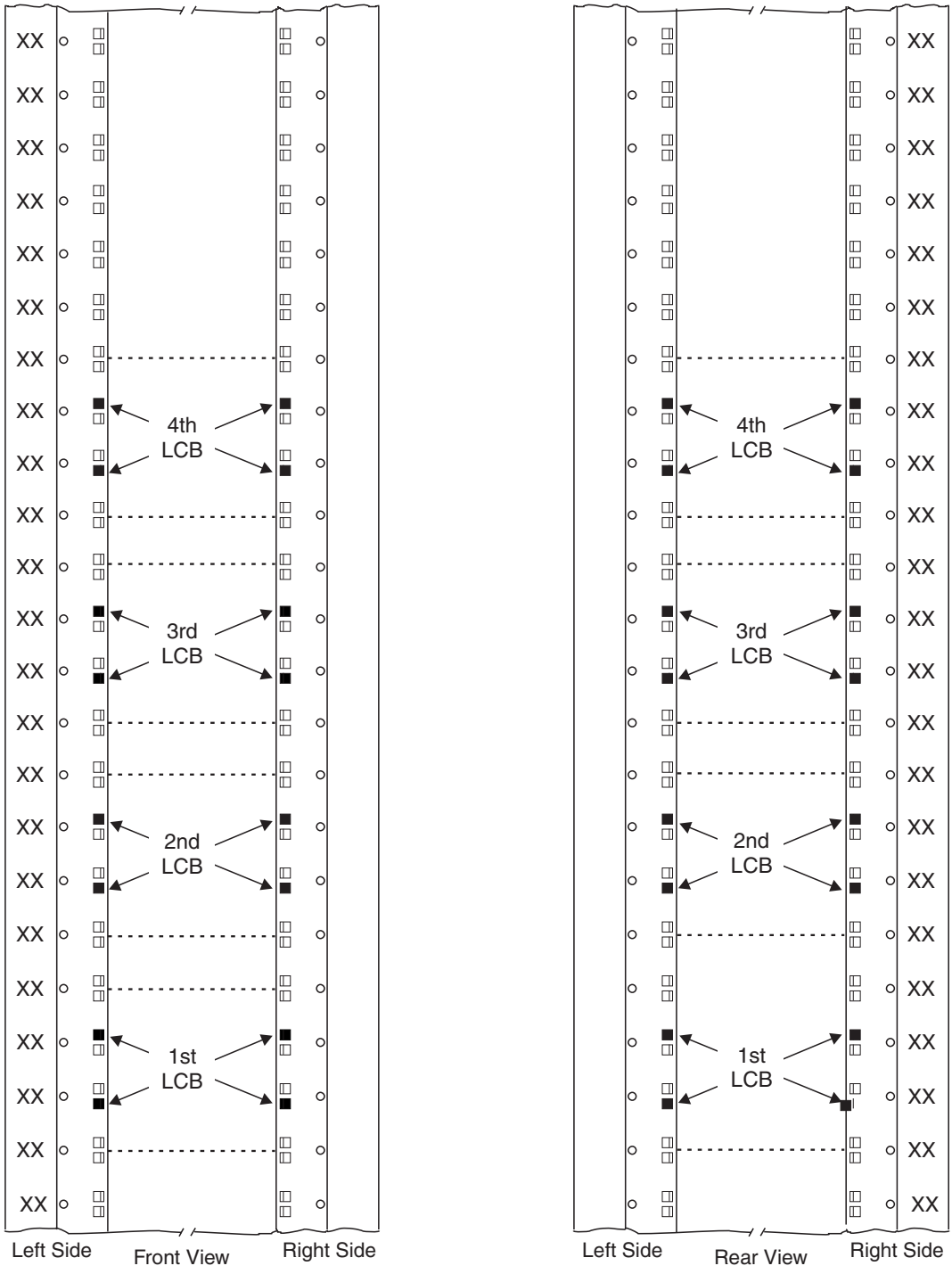


Figure D-4. Installing Captive Nuts for LCBs

Note: This symbol '■' identifies the locations to install the captive nuts.

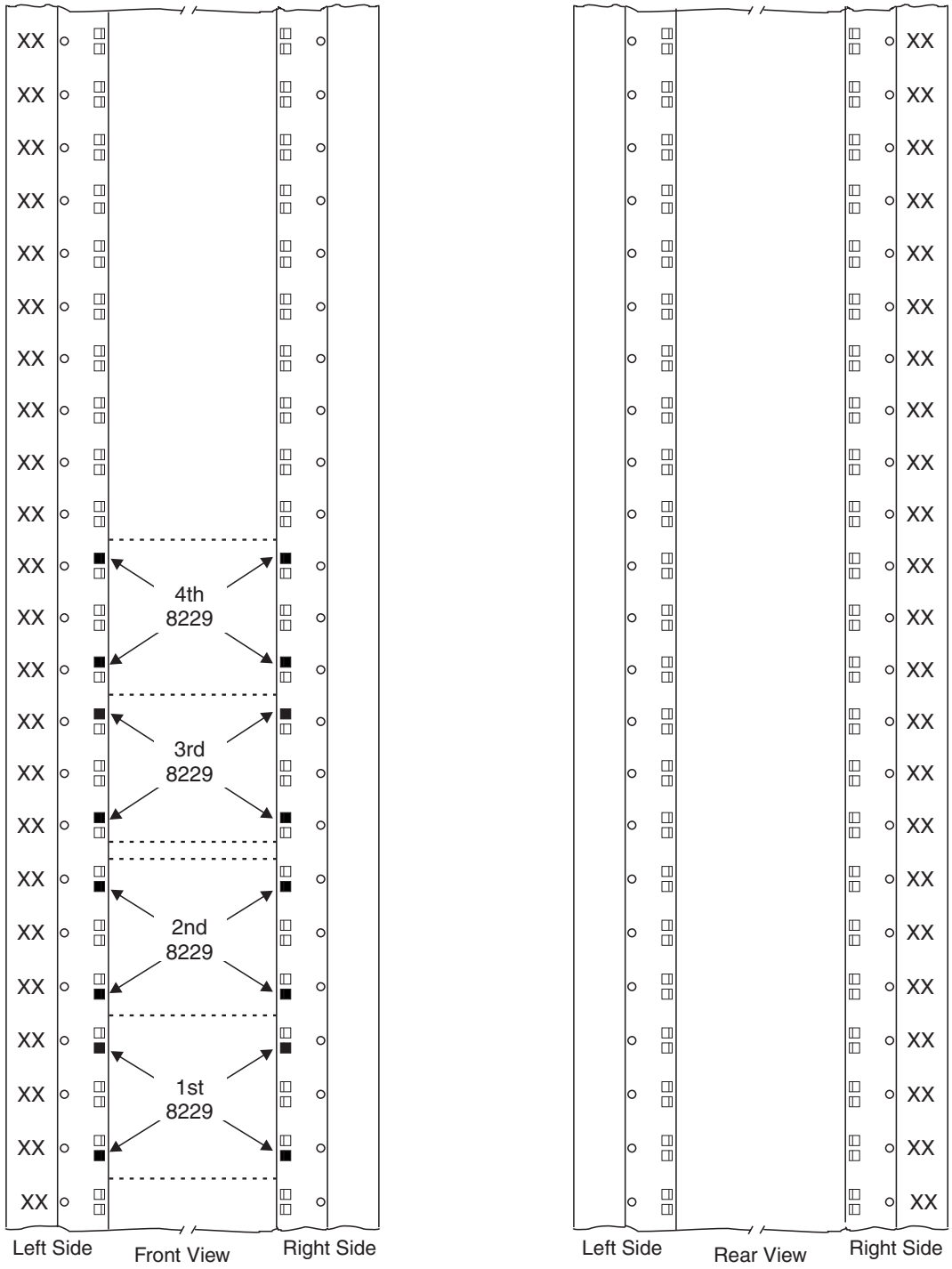


Figure D-5. Installing Captive Nuts for 8229s

Note: This symbol '■' identifies the locations to install the captive nuts.

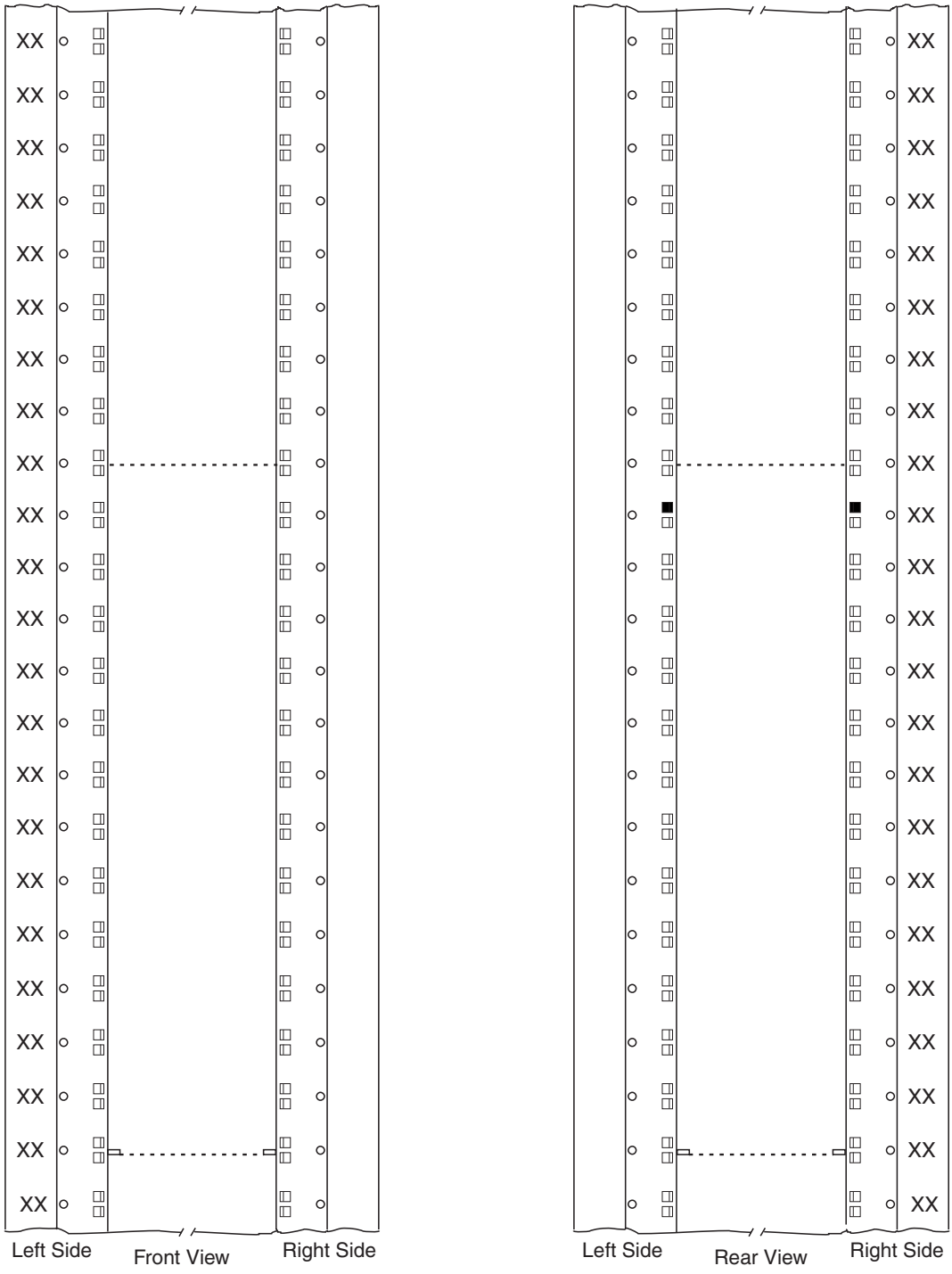


Figure D-6. Installing Captive Nuts and Brackets for MAE

Note: This symbol '■' identifies the locations to install the captive nuts.

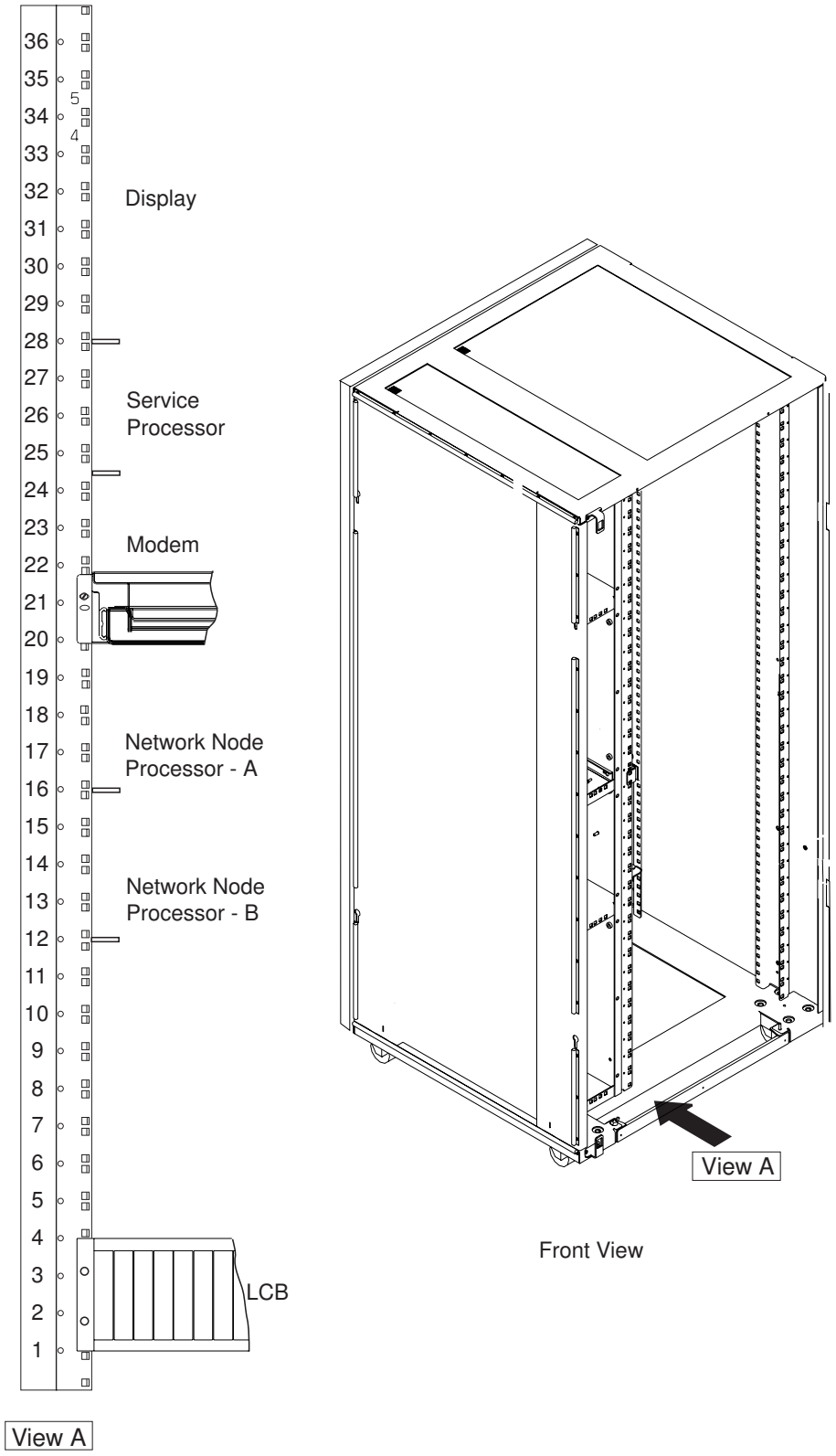


Figure D-7. Installing Brackets (PN 58G5752) for Processor Type 6578

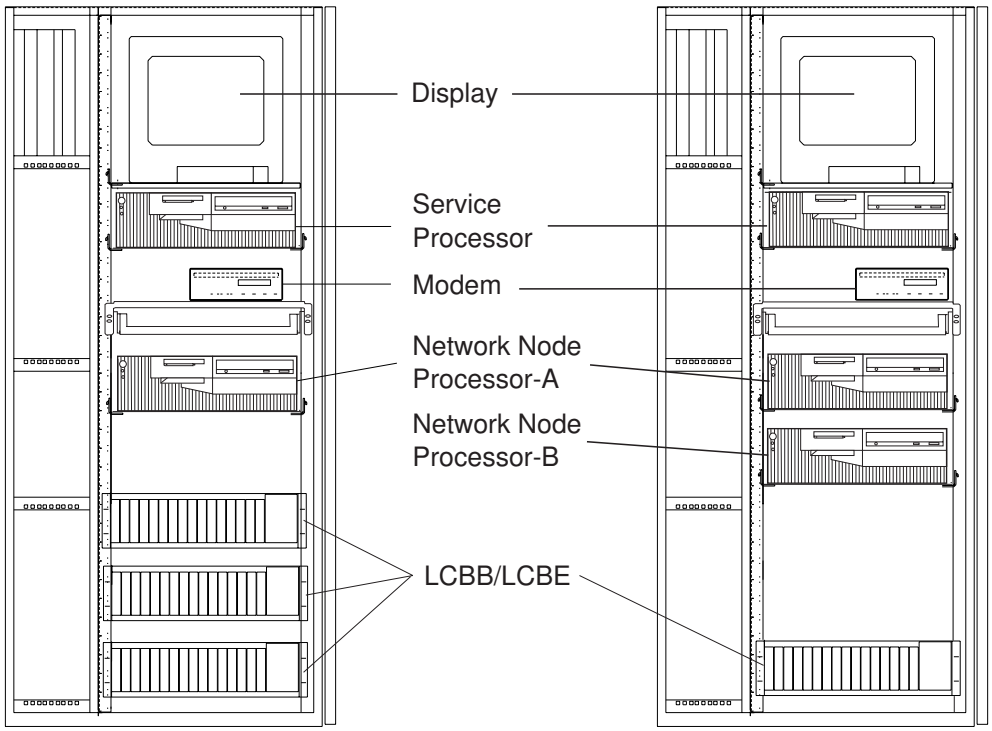


Figure D-8. Units Installation in the Controller Expansion (SP and NNP Type 6578)

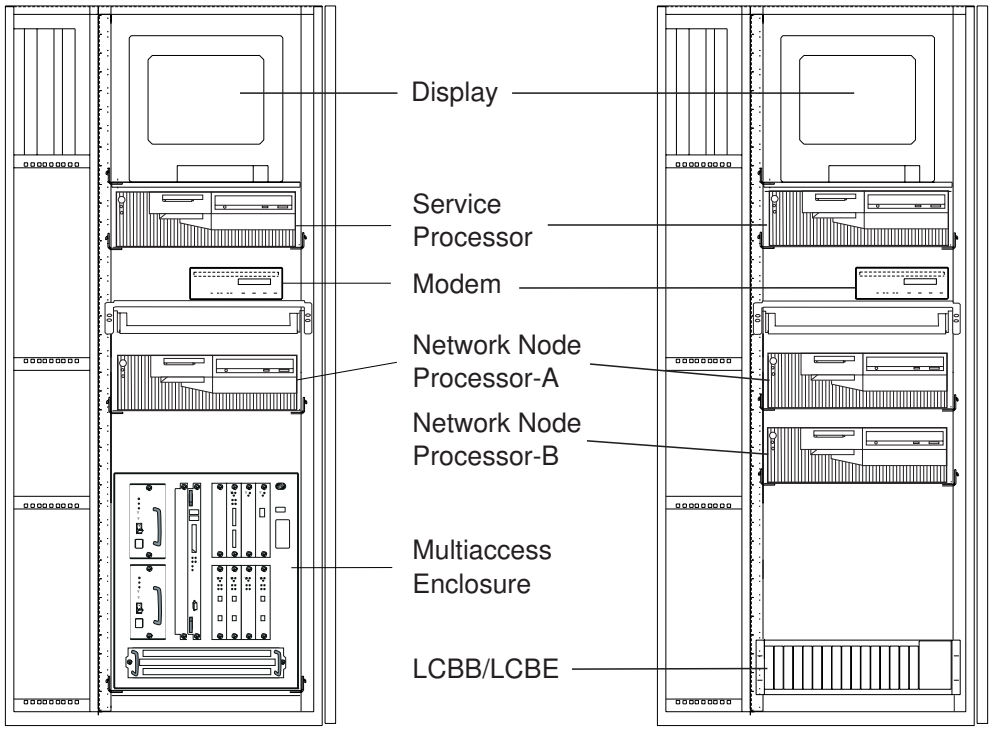


Figure D-9. Units Installation in the Controller Expansion (SP and NNP Type 6578 + MAE)

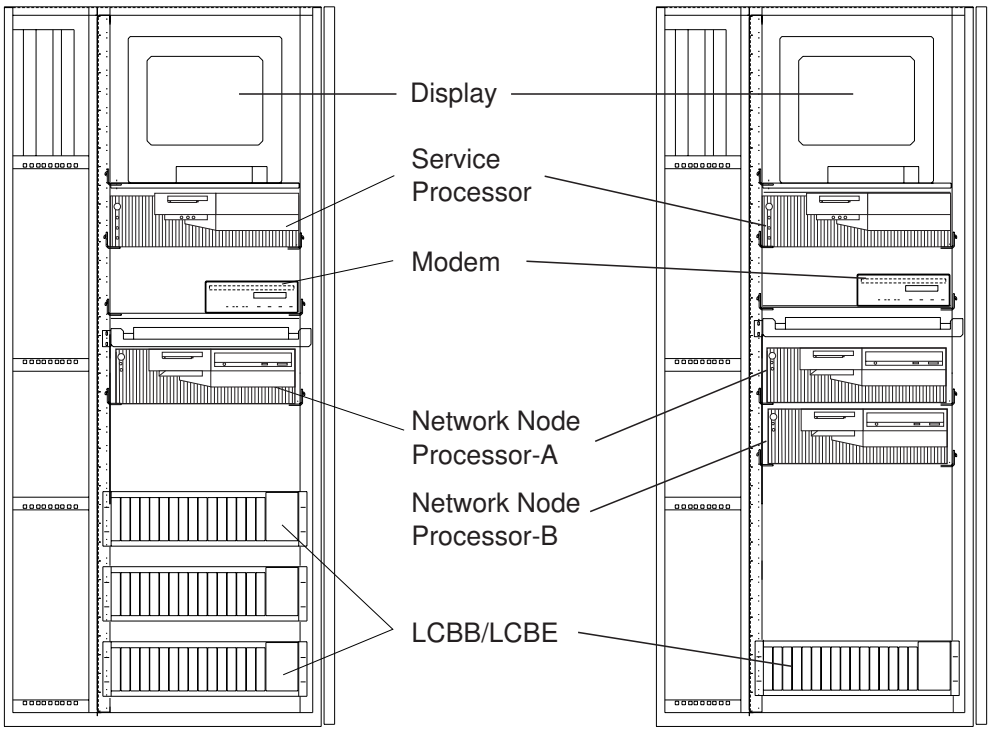


Figure D-10. Units Installation in the Controller Expansion (SP Type 6275 NNP Type 6578)

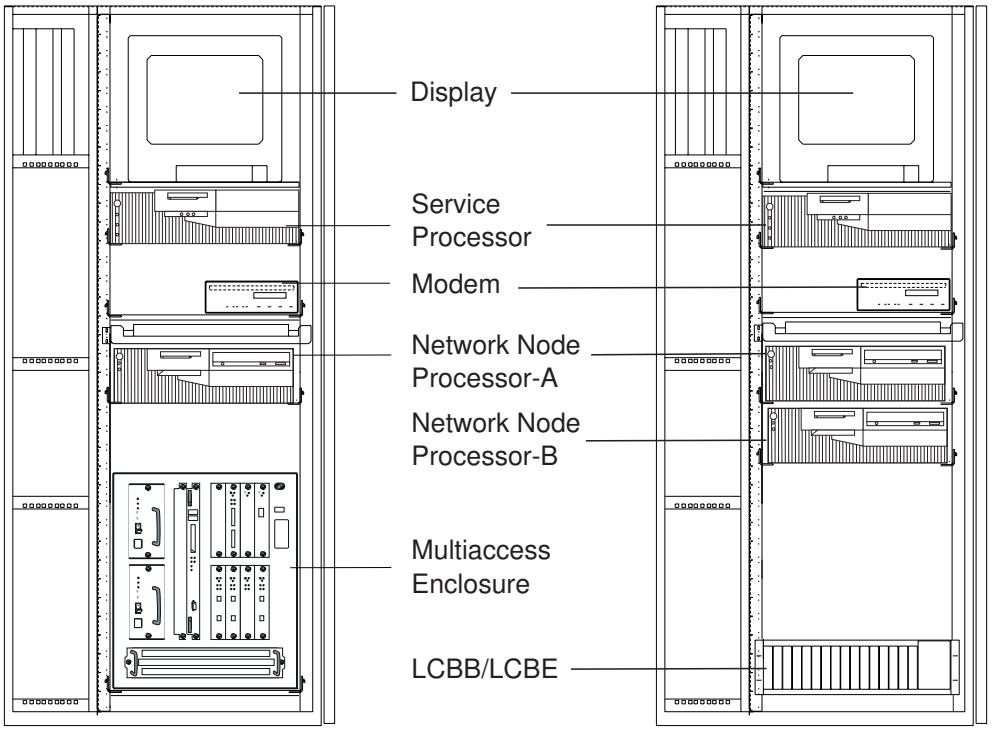


Figure D-11. Units Installation in the Controller Expansion (SP Type 6275 NNP Type 6578 + MAE)

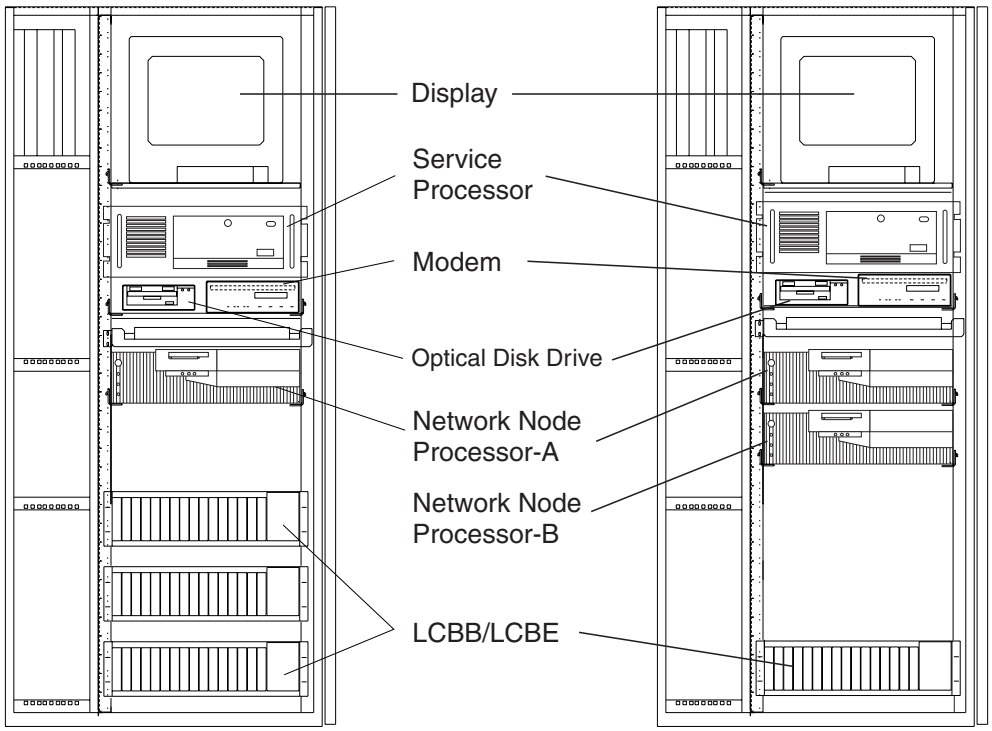


Figure D-12. Units Installation in the Controller Expansion (SP Type 7585 NNP Type 6578)

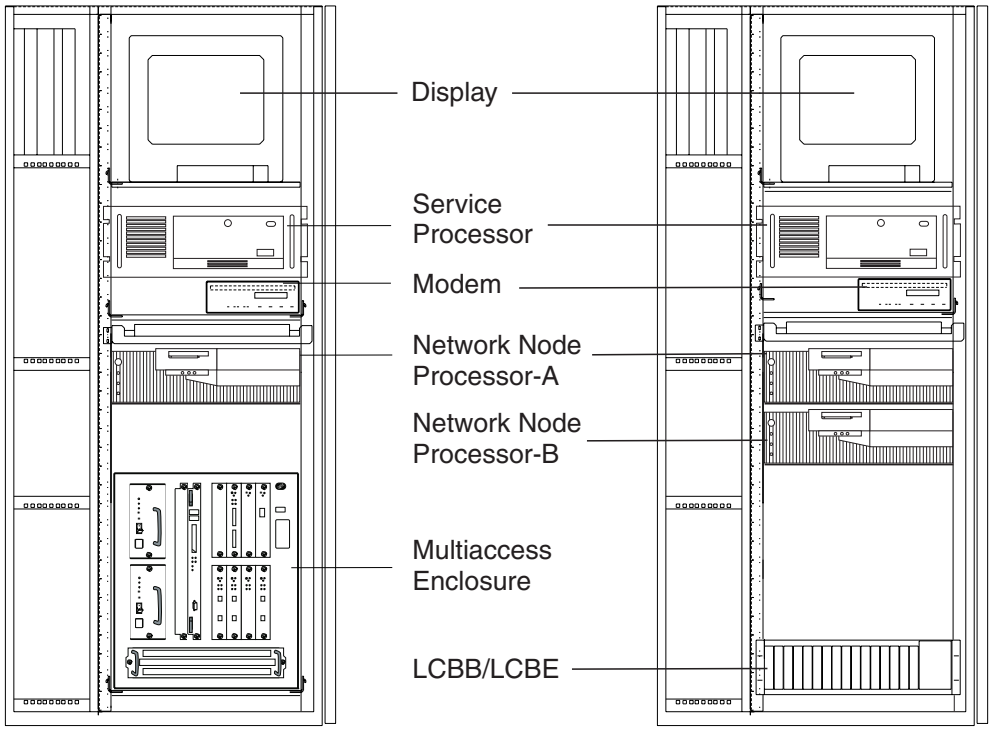


Figure D-13. Units Installation in the Controller Expansion (SP Type 7585 NNP Type 6578 + MAE)

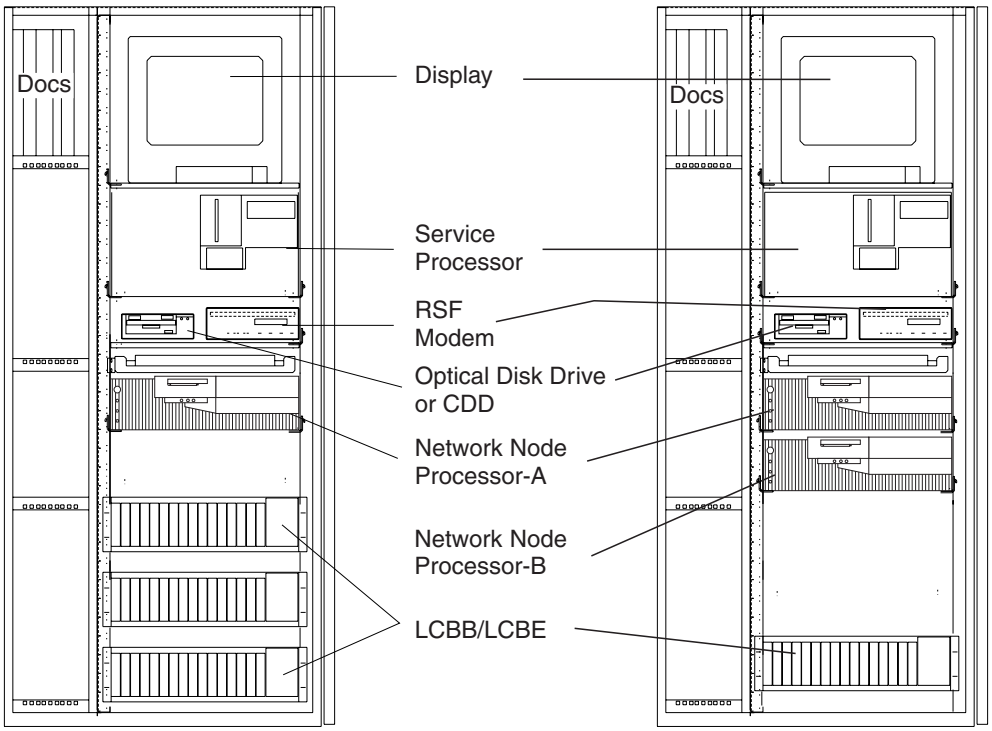


Figure D-14. Units Installation in the Controller Expansion (SP Type 3172 NNP Type 6578)

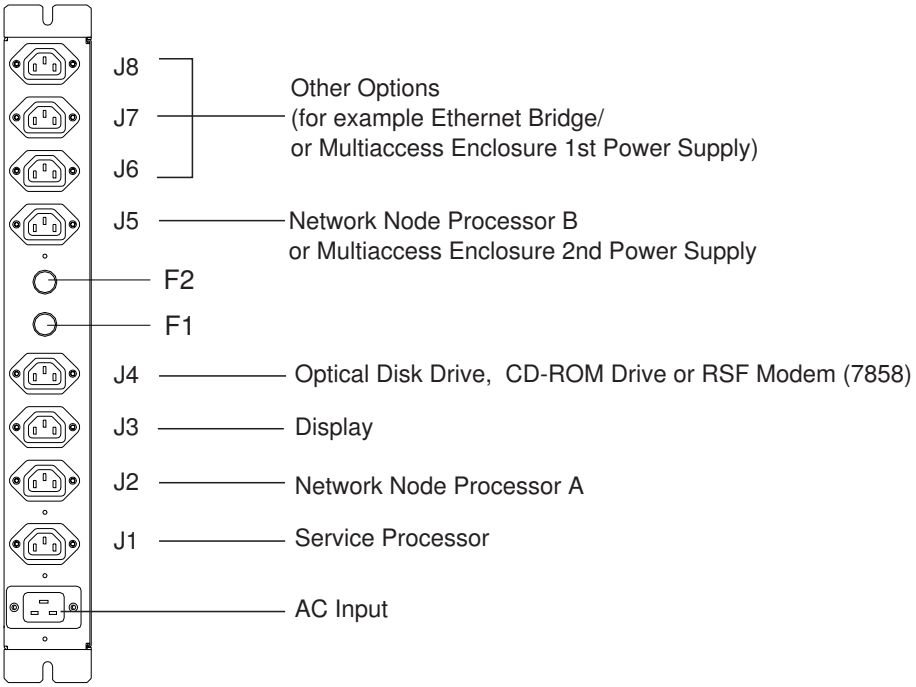


Figure D-15. Connecting the Units to the ac Outlet Distribution Box

Appendix E. Network Node Processor External Cable References

Network Node Processor Cables for the 3746-900

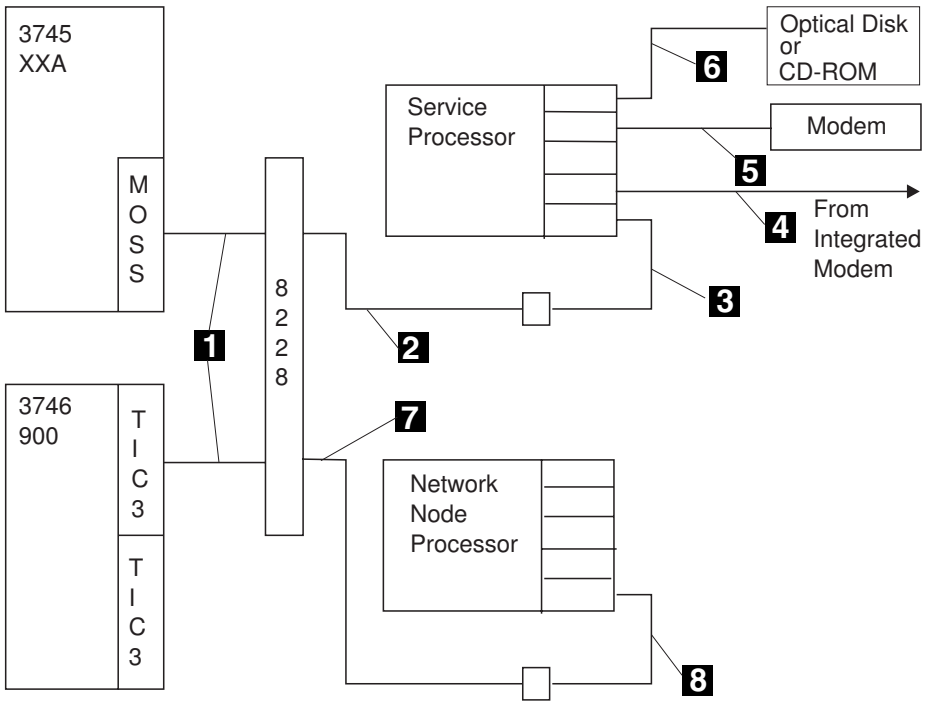


Figure E-1. Network Node Processor Cables for 3746-900

Notes:

1. For cable 1 refer to the appropriate *External Cable References* manual.
2. For cable 2, 3, 4, 5, and 6 refer to the appropriate *Service Processor Installation and Maintenance* manual.
3. For cable 7 and 8 see "Cable from the Network Node Processor Processor to the 8228" on page E-3.

Service Processor and Network Node Processor Cables for the 3746-950

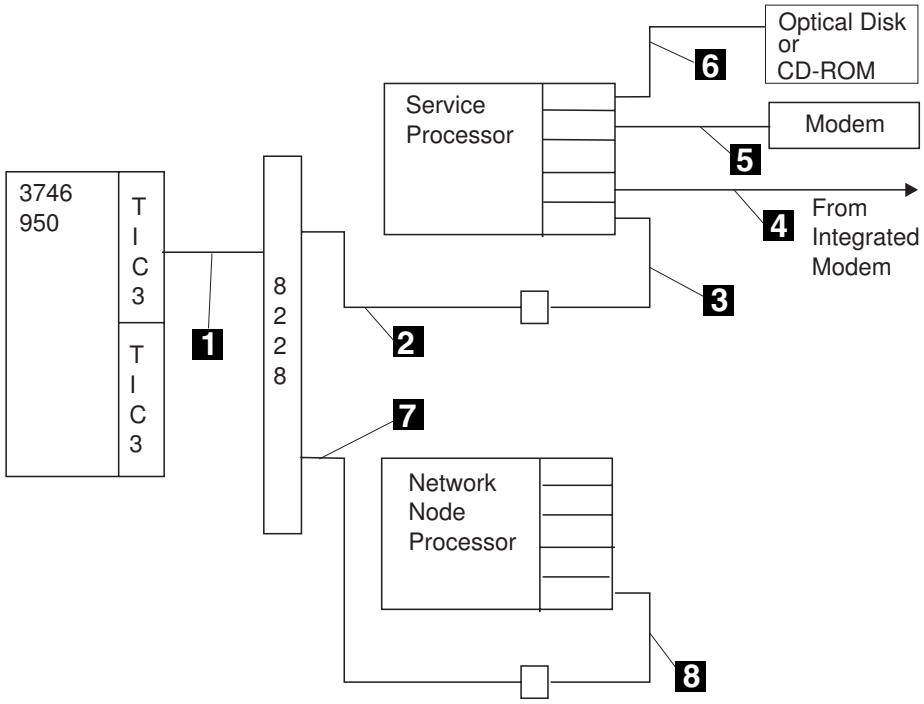


Figure E-2. Service Processor and Network Node Processor Cables for 3746-950

Notes:

1. For cable 1 refer to the appropriate *External Cable References* manual.
2. For cable 2, 3, 4, 5, and 6 refer to the appropriate *Service Processor Installation and Maintenance* manual.
3. For cable 7 and 8 see "Cable from the Network Node Processor Processor to the 8228" on page E-3.

Cable from the Network Node Processor Processor to the 8228

See Figure E-1 on page E-1 and Figure E-2 on page E-2 reference **7** for details. This cable is a standard LAN cable.

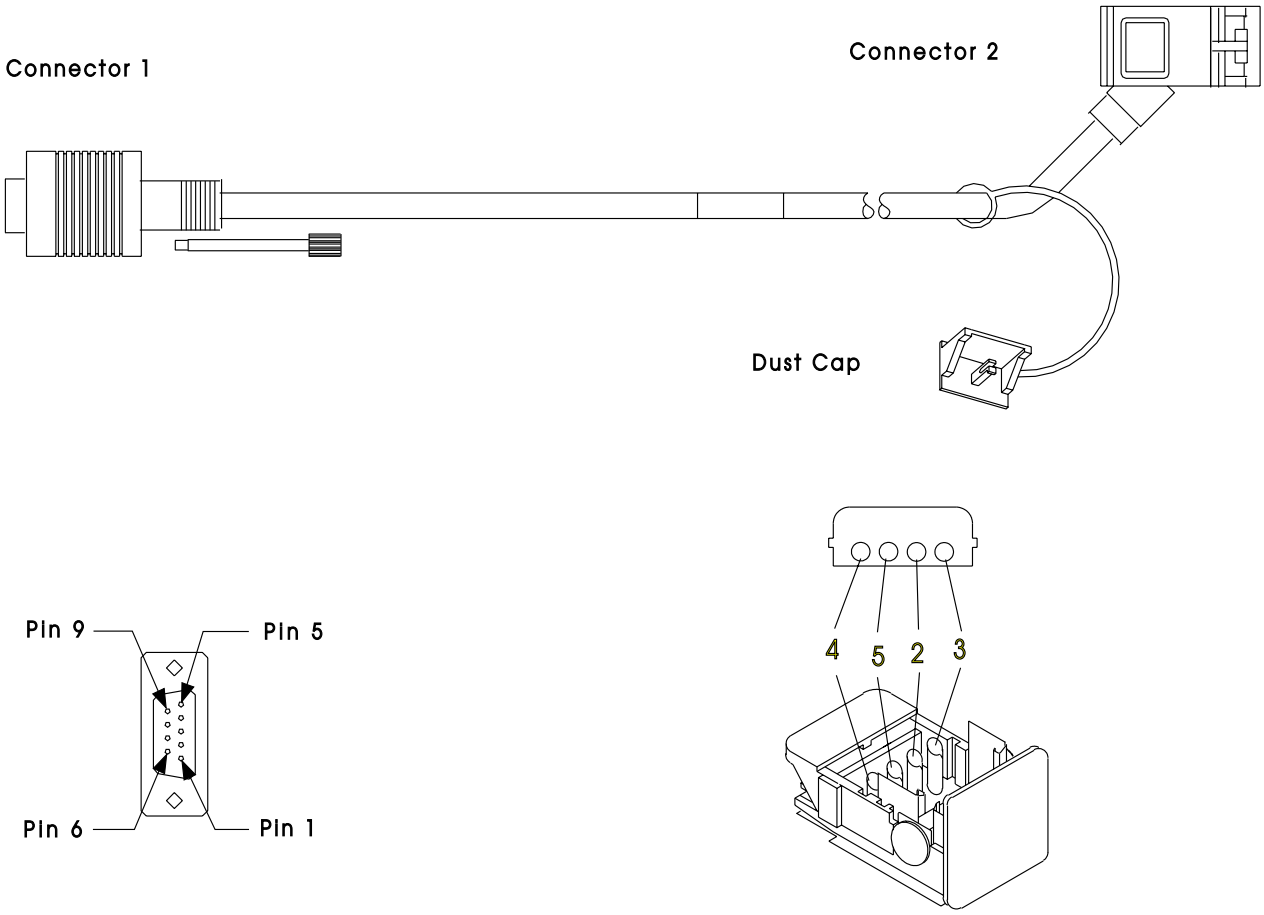


Figure E-3. LAN Cable

Interchange Circuit for Standard LAN Cable

Table E-1. LAN Cable Pin Assignment

Wire Nbr	Wire Color	Connector 1 Position	Connector 2 Position
1	SHIELD	GND	SHIELD
2	ORN	9	ORN
3	BLACK	5	BLACK
4	RED	1	RED
5	GREEN	6	GREEN

Table E-2. Cable from a network node processor to a 8228

Cable Type	Length, m (ft)	Feature Code	Cable PN
Standard Fixed	2.4 m (8)	9088	6339098

Note: Some new network node processor LAN adapter cards (with a RJ45 connector) need an additional adapter cable **8** (PN 60G1066) to connect the standard LAN cable.

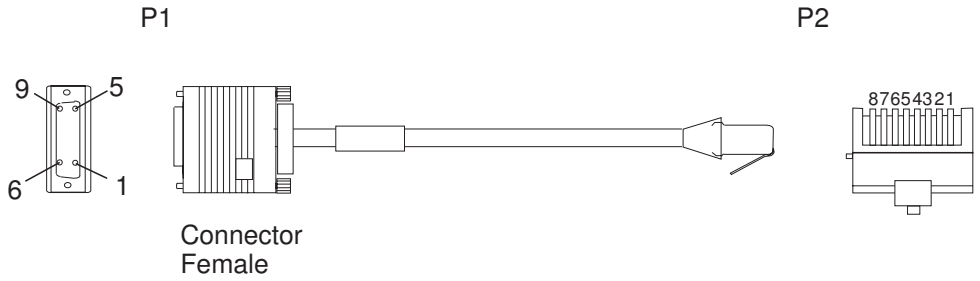


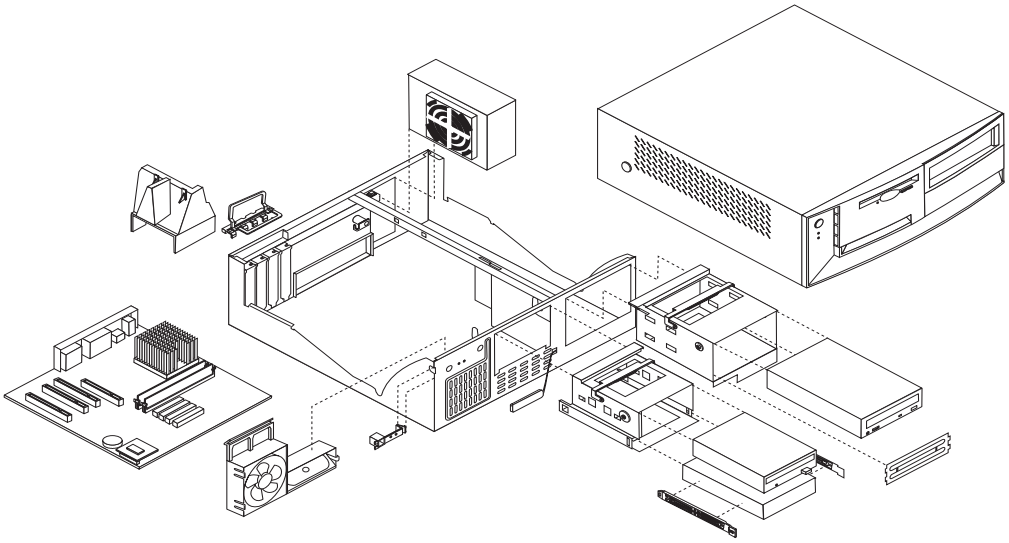
Figure E-4. Adapter Cable (PN 60G1066)

Table E-3. Adapter Cable Pin Assignment

9 Pin D Connector (P1)	**RJ45 Connector (P2)**	**Wire color**
9	6	ORN
5	3	BLK
1	4	RED
6	5	GRN

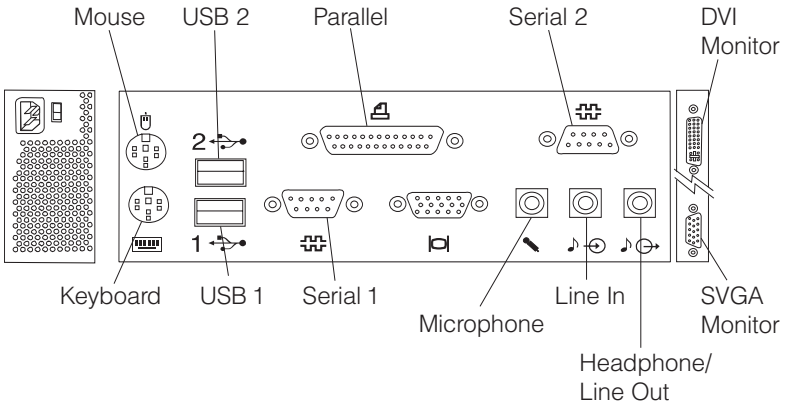
Appendix F. Network Node Processor Aids

Computer Exploded View



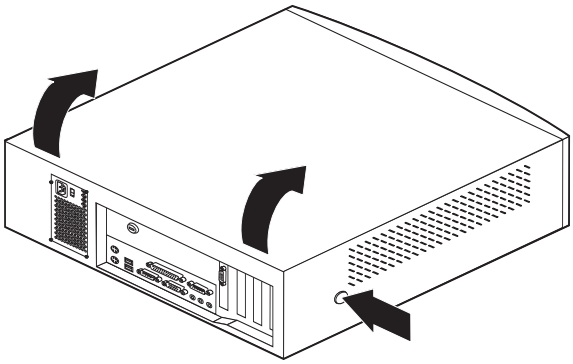
Input/output connectors and removal/service procedures for the cover, front panel, front bezel, diskette/hard disk drive bracket, CD-ROM drive, power supply, and system board are on the following pages.

Input/Output Connectors



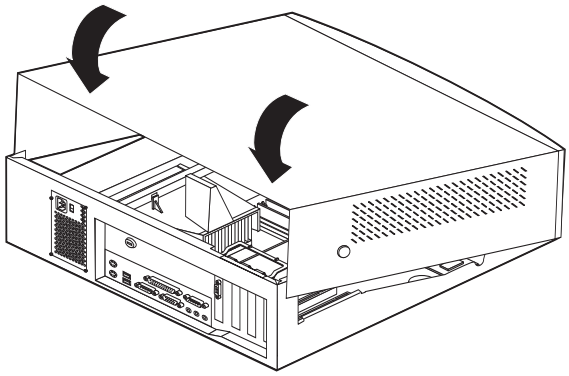
Cover Removal

Note: The front panel is integrated with the top cover.



To remove the top cover. firmly press the cover latch buttons on both sides, pull up the back end of the cover, and swing the cover towards the front of the service processor.

Cover Replacement



To replace the top cover, pivot the cover from the front, and move it down over the service processor until the cover snaps into place.

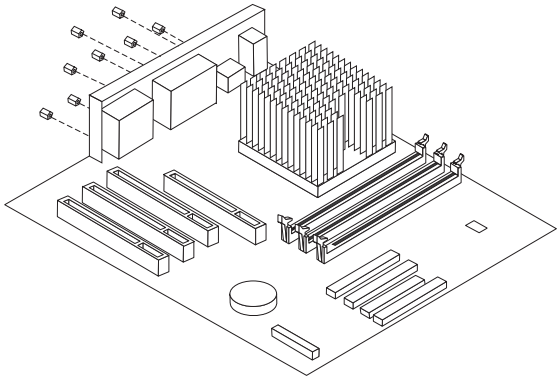
Front Bezel

To remove the front blank bezel:

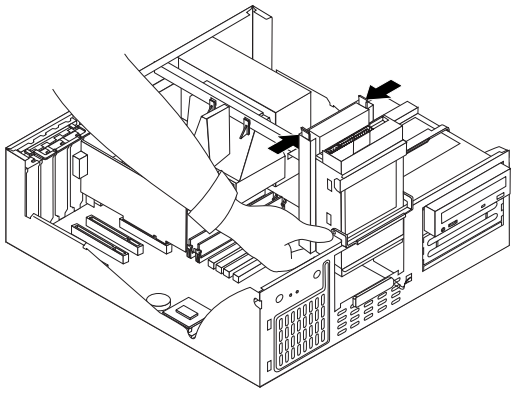
1. Remove the top cover and front panel.
2. Unlatch the tabs of the bezel and remove it from the panel.

EMC Shield

Remove the eight screws that hold the EMC shield in place.



Diskette / Hard Drive Removal



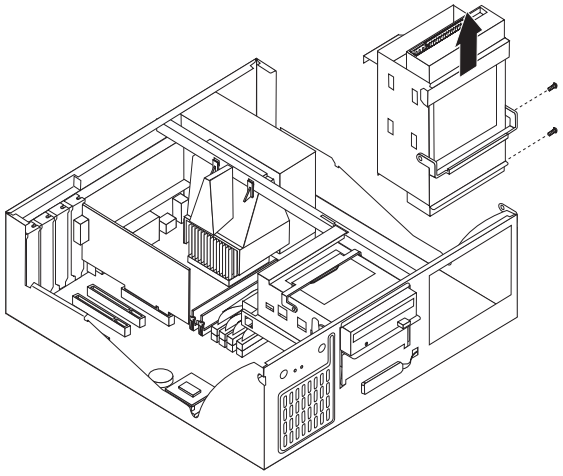
To remove the diskette or hard drive:

1. Swing the 3.5-in. drive cage up, and latch it to the vertical position.
2. Press the two side rail tabs and push the diskette or the hard drive from the bottom. Pull the diskette or the hard drive out.

CD-ROM Drive Removal

To remove the CD-ROM drive:

1. Swing the 5.25-in. drive cage up and out.



2. Remove the two screws that hold the CD-ROM drive in place. Lift the CD-ROM drive out of the cage.

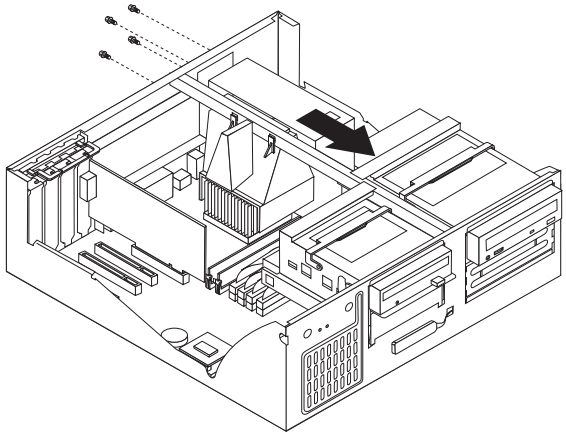
Note: When connecting the CD-ROM Audio Cable, make sure the cable is routed along the system board near the PCI adapter slots. Continue routing the cable along the system board between the power connector and primary IDE connector and then up to the CD-ROM drive. Do not route the CD-ROM cable near the system board I/O connectors.

Power Supply Removal

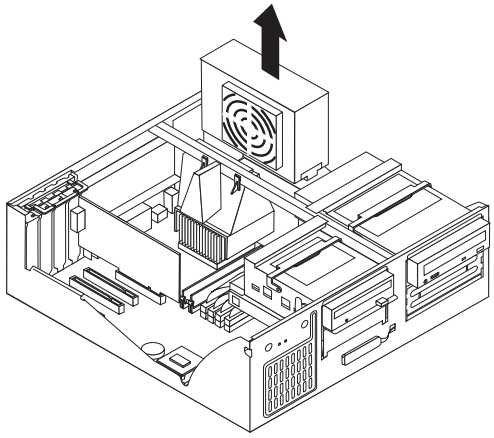
Note: Make sure the power supply voltage switch is set to the proper operating voltage: 115 or 230.

To remove the power supply:

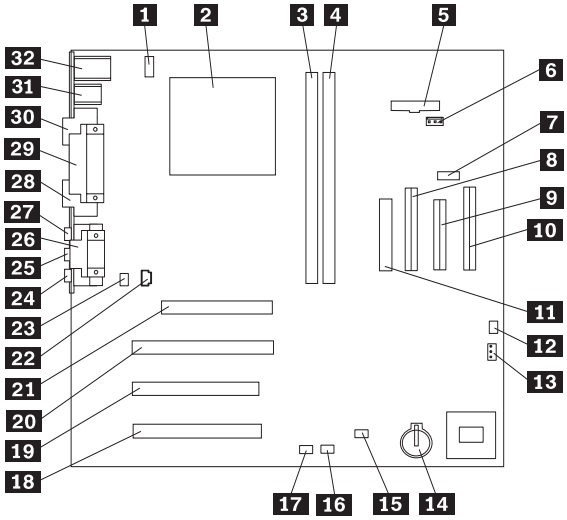
1. Remove the top cover.
2. Remove the air duct.
3. Disconnect the power supply connectors.
4. Remove the four screws that hold the power supply to the back of the chassis.



5. The power supply is attached to the base of the chassis by a latch on the front. Slide the power supply forward to dislatch it from the chassis.
6. Lift out the power supply.



System Board Layout



System Board Locations

1	#2 fan connector
2	Microprocessor
3	DIMM 0
4	DIMM 1
5	Power LED connector
6	RFID connector
7	Front USB connector
8	Secondary IDE connector
9	Diskette connector
10	Primary IDE connector
11	Power connector
12	CMOS clear/recovery jumper
13	#1 Fan connector
14	Battery

15	SCSI adapter LED connector
16	Alert on LAN
17	Wake on LAN
18	PCI slot 3
19	PCI slot 2
20	PCI slot 1
21	AGP connector
22	CD-ROM audio
23	Speaker Connector
24	Audio output
25	Audio input
26	Serial port 2
27	Microphone input
28	Monitor port
29	Parallel port
30	Serial port 1
31	USB connectors
32	Mouse and keyboard connectors

System Board Switch Settings

The following table contains the switch setting information. (D) indicates the default setting.

Diskette Write Access Switch (SW1-1)

Diskette Access	SW1-1
Write enabled	Off (D)
Write protected	On

Clear CMOS Switch (SW1-2)

Clear CMOS	SW1-2
Normal mode	Off (D)
CMOS clear	On

Reserved Switch (SW1-3)

Reserved	SW1-3
Reserved	Off

Reserved Switch (SW1-4)

Reserved	SW1-4
Reserved	Off

Processor Speed Settings

Processor speed for the PC 6578 is fixed and is determined by the processor. There are no settings required.

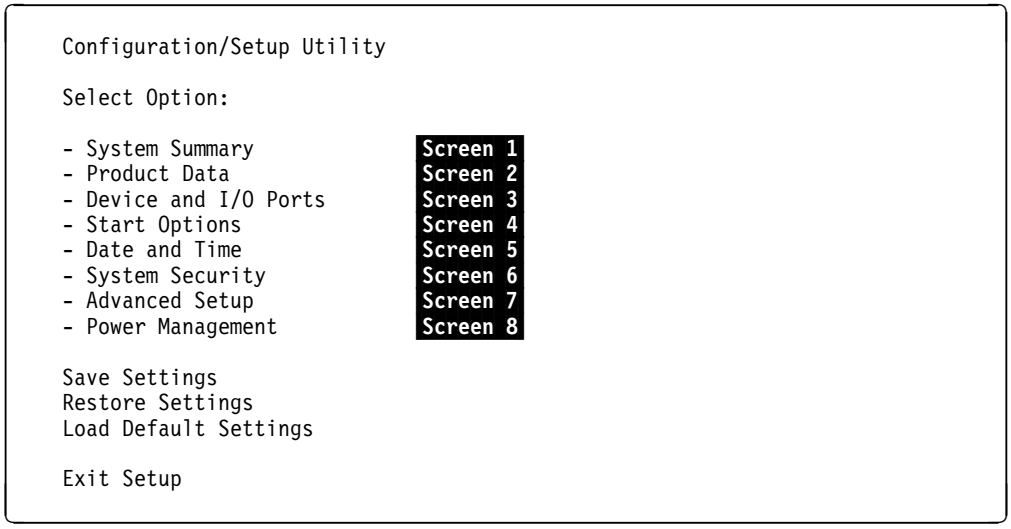
Network Node Processor Configuration/Setup Utility

Note: Before continuing this procedure you ***must*** have installed a display and a keyboard on your Network Node Processor. See "How to Install a Display, Keyboard, and Mouse on Your Network Node Processor" on page 2-10.

1. Power OFF/ON the Network Node Processor
2. Press the **F1** key to invoke the configuration/Setup utility after POST completion, and continue with the "Network Node Processor Configuration Reference Based on 6578-RAU."

Network Node Processor Configuration Reference Based on 6578-RAU

The following panel appears. From the panel, select the different options. New panels appear, allowing you to check the settings and to modify them by following the prompts.



Screen 1

```
          System Summary

Processor         Pentium III
Processor Speed   933/133 MHz
System Memory     256 MB
Memory Bus Speed  133 MHz
Video Controller Active Intel® 815 Chipset Video BI
Audio Support     Enabled
Diskette Drive A  1.44 MB 3.5"
IDE Hard-Disk Drive 0 20 GB
IDE Hard-Disk Drive 1 Not Installed
IDE CD-ROM Drive 2  Installed
IDE Hard-Disk Drive 3 Not Installed
```

Screen 2

```
          Product Data

Machine type/ Model          6578RAU
Flash EEPROM Revision Level  PIKT31AUS
Boot Block Revision Level    PI31A
System Board Identifier      xxxxxxx
System Serial Number         xxxxxxx
System UUID                  xxxxxxx
BIOS Date                    12/11/00
```

Screen 3 and sub-screens

```
         Device and I/O Ports

  Mouse                     (Installed)
  Diskette Drive A:         (1.44 MB 3.5")

- Serial Port Setup...
- USB Setup...
- Parallel Port Setup...
- Video Setup...
- IDE Drives Setup...
- Audio Setup...
- Network Setup...
```

```
         Serial Port Setup

Serial Port A Address           (3F8h)
Serial Port A IRQ               (IRQ 4)
Serial Port B Address           (2F8h)
Serial Port B IRQ               (IRQ 3)
```

```
         USB Setup

USB Support                     (Disabled)
USB Keyboard/Mouse Support      (Autodetect)
```

```
         Parallel Port Setup

Parallel Port                   (378h)
Parallel Port Mode              (Extended)
Parallel Port Extended Mode     (ECP)
Parallel Port Extended Mode DMA (DMA3)
Parallel Port IRQ               (IRQ 7)
```

```
         Video Setup

Active Video                    Intel® 815 Chipset Video BI
Shared System                   (1MB)
Select Active Video             (PCI)
Palette Spooning                (Disabled)
Video interrupt                 (Enabled)
```

```
          IDE Drives Setup

  - IDE Hard Disk Drive 0
  - IDE Hard Disk Drive 1
  - IDE CD-ROM Drive 2
  - IDE Hard Disk Drive 3
```

```
          IDE Hard Disk Drive 0

  Size                  20 GB
  IDE Performance       (High Performance)
  IDE Read Prefetch     (Disabled)
```

```
          IDE CD-ROM    Drive 2

  IDE Performance       (High Performance)
```

```
          Audio Setup...

  Audio Support         (Enabled)
```

```
          Network Setup...

  Mac Address                               Not Available
  Preboot Execution Environment Base Code   (Disabled)
  PCI Boot Entry Vector Startup             (Disabled)
```

Screen 4 and sub-screen

```
          Start Options

  Startup Sequence

  Keyboard Numlock State     (ON)
  Keyboard Speed             (Fast)
  Disketteless Operation     (Disabled)
  Keyboardless Operation Mode(Enabled)
  Power On Self-Test         (Quick)   (Note)
  Power On Logos             (Enabled )
  Option Key Display         (Enabled )
  Network Boot prompt        (Disabled)
  Power On Status            (Disabled)
  Virus detection            (Disabled)
```

Note: If you want a complete testing of the computer at power ON set this parameter to **Enhanced**.

```
          Startup Sequence

  Main Startup Sequence...
    First Startup Device     (Diskette Drive 0)
    Second Startup Device    (Hard Disk 0)
    Third Startup Device     (Disabled)
    Fourth Startup Device    (Disabled)

  Automatic Startup Sequence (Enabled)
    First Startup Device     (Hard Disk 0)
    Second Startup Device    (Disabled)
    Third Startup Device     (Disabled)
    Fourth Startup Device    (Disabled)

  POST Error                 (Disabled)
```

Screen 5 and Sub-screen

```
          Date and Time

    Time                 (HH/MM/SS)
    Date MM/DD/YYYY      (MM/DD/YYYY)
```

Screen 6 and Sub-screen

```
          System Security

  - Advanced Security DISABLED
  - Security Profile by Device
  - Remote Administration
  - Power-On Password
  - Administrator Password
    Adapter ROM Security        (No)
    Asset ID                    (Disabled)
```

```
    Security Profile by Device

  IDE Controller             (Enabled)
  Diskette Drive Access      (Enabled)
  Diskette Write Protect     (Disabled)

  Password to request before booting:
- Removable Media Devices  (User)
- Hard Disk Devices        (User)
- Network Device           (User)
```

```
   Remote Administration
 Information:
 If the password Prompt is set to "ON" it will be reset
 when Remote Administration is set to ENABLE

- Remote Administration           (Enabled)
- Network Boot Integrity Services (Disabled)
```

```
          Power-On Password

  Enter your new Power-on password twice.

  Enter Power-on Password        (       )
  Enter Power-on Password Again  (       )

  Change Power-on Password
  Delete Power-on Password

  Password Prompt                (Dual)
```

```
          Administrator Password

  Enter your new Administrator password twice.

  Enter Administrtor Password          (       )
  Enter Administrator Password Again   (       )

  Change Administrator Password
  Delete Administrator Password

  Required Administrator password Flashing  (No)
  Power-on Password changeable by user      (No)
  Require Power-on Password on Warm Boot    (No)
```

Screen 7 and Sub-screens

```
          Advanced Setup

  Warning:

  Items on the following menus control advanced Hardware
  features if they are configured incorrectly, the system
  might malfunction.

  - PCI Control
  - Plug and Play Control
  - Processor Control
```

```
              PCI Control

   PCI Parity            (Enabled)
```

```
           Plug and Play Control

   Plug and Play Operating System (No)
```

```
         Processor Control

   Processor 0 ID       0686
     Microcode Revision (MM/DD/YYYY) 05/05/2000
   Processor Serial Number Access    (Disabled)
```

Screen 8 and sub-screens

```
        Power Management

  ACPI BIOS Mode               (IRQ 9)
  ACPI Standby Mode            (S3)
  - APM
  - Automatic Power On
```

```
                APM
APM BIOS Mode                          (Disabled)

  Automatic Hardware Power Management  (Disabled)
    Time to Low Power                  (30 min)
         System Power                  (ON)
         Display                       (Suspend)
           Time to Display 'OFF'       (1 hr)
    IDE Drives                         (Enabled)

    - Low Power Entry Activity Monitor
    - Low Power Exit Activity Monitor
```

```
           Low Power Entry Activity Monitor

    PS/2 Keyboard/Mouse                (Enabled)
    Diskette, Serial and Parallel Port (Enabled)
    IDE Hard Drive                     (Enabled)
    IDE CD-ROM                         (Enabled)
```

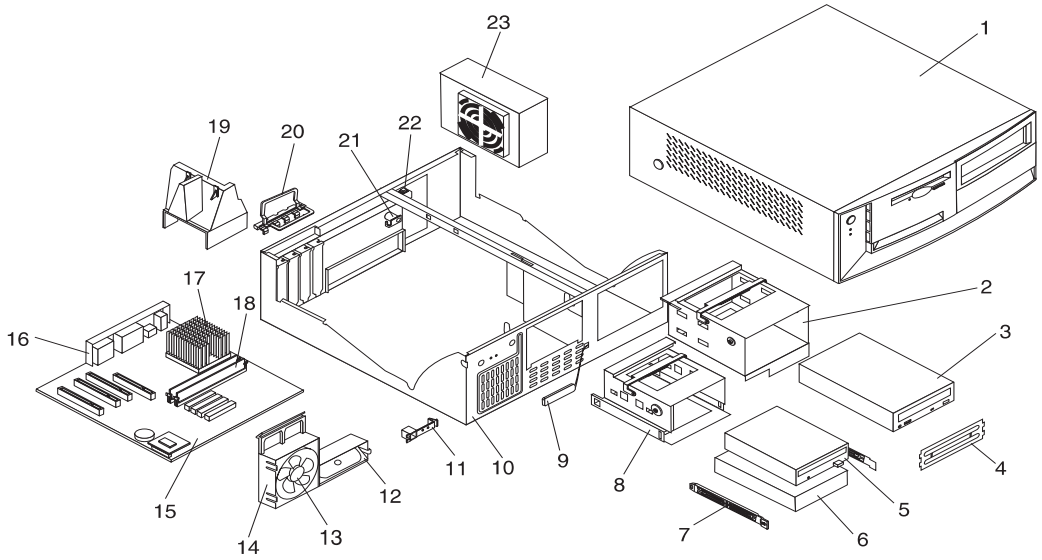
```
          Low Power Exit Activity Monitor

    PS/2 Keyboard   (Enabled)
    PS/2 Mouse      (Enabled)
    Serial Port A   (Enabled)
    Serial Port B   (Enabled)
    LAN             (Enabled)
```

```
          Automatic Power On
Wake on LAN

  Serial Port A Ring Detect     (Disabled)
   Startup Sequence              Primary

  Modem Ring Detect             (Disabled)
   Startup Sequence              Primary

  Wake Up on Alarm              (Disabled)
    Alarm day of month           01 (Note)
    Alarm Time                   01:00    (Note)
    Alarm day of week            Monday   (Note)
    Startup Sequence             Primary

  PCI Wake Up                   (Disabled)
    Startup Sequence             Primary
```

Note: May be another value.

```
          Wake on LAN

  Wake on LAN              (Enabled)
    Startup Sequence       (Automatic)
```

Appendix G. Network Node Processor Part Numbers (Based on 6578)


23
1
19
20
21
22
17
18
2
16
3
4
11
10
9
8
5
12
15
14
13
7
6

Parts Listing

Index	System (Type 6578)	FRU No.
1	Top Cover Assembly	09N5727
2	5.25-in. DASD Bracket	09N5746
3	CD-ROM Drive - 40x	09N0879
4	Bezel Kit	09N5723
5	3.5-in. 1.44MB Diskette Drive	75H9550
	3.5-in. 1.44MB Diskette Drive (Japan)	75H9552
6	10.1 GB EIDE Hard Disk Drive	36L8681
	20.4 GB EIDE Hard Disk Drive	09N0705
7	DASD Rail Kit	19K5331
8	3.5-in. DASD Bracket	09N5736
9	RFID Antenna	03K9654
10	Chassis Assembly	09N5728
11	Control Panel Assembly	37L5092
12	Apeaker with Cable Assembly	01K4909
13	92mm Fan Assembly with Grommets	33L2594
14	Fan/Speaker Bracket	09N5763
15	System Board (no processor, no memory)	09K9982
16	Planar EMC shield Kit	09N5770
17	Pentium® III 667MHz	10K0863
	Pentium III 733MHz	10K0864
	Pentium III 800MHz	10K1196
	Pentium III 933MHz	19K7537
18	Memory 64MB SDRAM	33L3072
	Memory 128MB SDRAM	33L3074
19	Air Baffle Duct	09N5735
20	I/O Cam Bracket	09N5734
21	Keylock Assembly	09K9829
22	C2 Switch	09K9827
23	155W Power Supply	00N7685
	155W Power Supply (Japan)	00N7687
	155 Power Supply (China)	00N7689
	5.25-in. DASD Bracket Handle	09N5747
	3.5-in. DASD Bracket Handle	09N5748
	Cable Hard Disk Drive (ATA)	37L4525
	SCSI Signal Cable Assembly (3 Drop)	33L2598
	Foot (4)	03K9655
	Cable Diskette Drive	33L2596
	Mouse (2 Button)	10L6145
	Miscellaneous Hardware Kit	09N5764
	ATA-66 Cable Assembly (2 Drop)	37L5098
	CD-ROM Audio Cable	75H9219
	Dual USB Cable	09N5729
	Lithium Battery	33F8354
	EMC Shield for 5.25-in. Bay	20L3073
	Nameplate	09N5733
	Roulette Ethernet Adapter	19K4885

Appendix H. Bibliography

Customer Documentation for the 3746 Model 950

Table H-1 (Page 1 of 5). Customer Documentation for the 3746 Model 950

This customer documentation has the following formats:

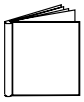
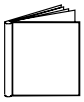
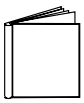
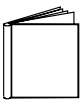
Finding Information		
		3745 Models A and 3746 Books All of the books in the 3745 Models A and 3746 library are available on the CD-ROM that contains the Licensed Internal Code (LIC) for the machine.
Preparing for Operation		
	GA33-0400	***IBM 3745 Communication Controller All Models***[1] ***IBM 3746 Expansion Unit Model 900*** ***IBM 3746 Nways Multiprotocol Controller Model 950*** ***Safety Information***[2] Provides general safety guidelines.
Evaluating and Configuring		
	GA33-0180	***IBM 3745 Communication Controller Models A and 170***[3] ***IBM 3746 Nways Multiprotocol Controller*** ***Models 900 and 950*** ***Overview*** Gives an overview of connectivity capabilities within SNA, APPN, and IP networking.
	GA27-4234	***IBM 3745 Communication Controller Models A***[2] ***IBM 3746 Nways Multiprotocol Controller*** ***Models 900 and 950*** ***Planning Series:*** ***Overview, Installation, and Integration*** Provides information for: • Overall 3746 planning • Installation and upgrade scenarios • Controller and service processor network integration • Related MOSS-E and CCM worksheets for these tasks.

Table H-1 (Page 2 of 5). Customer Documentation for the 3746 Model 950



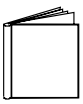
GA27-4235

IBM 3745 Communication Controller Models A[2]
IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Planning Series:
Serial Line Adapters

Provides information for:

- Serial line adapter descriptions
- Serial line adapter line weights and connectivity
- Types of SDLC support
- Configuring X.25 lines
- Performance tuning for frame-relay, PPP, X.25, and NCP lines.
- ISDN adapter description and configuration.



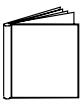
GA27-4236

IBM 3745 Communication Controller Models A[2]
IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Planning Series:
Token Ring and Ethernet

Provides information for:

- Token-ring adapter description and configuration
- Ethernet adapter description and configuration.



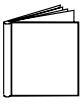
GA27-4237

IBM 3745 Communication Controller Models A[2]
IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Planning Series:
ESCON Channels

Provides information for:

- ESCON adapter descriptions
- ESCON configuration and tuning information
- ESCON configuration examples.



GA27-4238

IBM 3745 Communication Controller Models A[2]
IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Planning Series:
Physical Planning

Provides information for:

- 3746 and MAE physical planning details
- 3746 and MAE cable information
- Explanation of installation sheets
- 3746 plugging sheets.

Table H-1 (Page 3 of 5). Customer Documentation for the 3746 Model 950

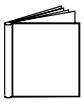
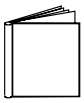
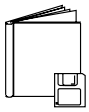
	GA27-4239	***IBM 3745 Communication Controller Models A²*** ***IBM 3746 Nways Multiprotocol Controller*** ***Models 900 and 950*** ***Planning Series:*** ***Management Planning*** Provides information for: • Overview for 3746 • 3746 APPN/HPR, IP router, and X.25 • NetView Performance Monitor (NPM), remote consoles, and RSF • MAE APPN/HPR management.
	GA27-4240	***IBM 3745 Communication Controller Models A²*** ***IBM 3746 Nways Multiprotocol Controller*** ***Models 900 and 950*** ***Planning Series:*** ***Multiaccess Enclosure Planning*** Provides information for: • MAE adapters details • MAE ESCON planning and configuration • ATM and ISDN support.
	GA27-4241	***IBM 3745 Communication Controller Models A²*** ***IBM 3746 Nways Multiprotocol Controller*** ***Models 900 and 950*** ***Planning Series:*** ***Protocol Descriptions*** Provides information for: • Overview and details about APPN/HPR and IP.
	On-line information	***IBM 3745 Communication Controller Models A²*** ***IBM 3746 Nways Multiprotocol Controller*** ***Models 900 and 950*** ***Planning Series:*** ***Controller Configuration and Management Worksheets*** Provides planning worksheets for ESCON, Multiaccess Enclosure, serial line, and token-ring definitions.

Table H-1 (Page 4 of 5). Customer Documentation for the 3746 Model 950

Operating and Testing



SA33-0356

IBM 3746 Nways Multiprotocol Controller Model 950

User's Guide[2]

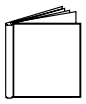
Explains how to:

- Carry out daily routine operations on Nways controller
- Install, test, and customize the Nways controller after installation
- Configure user's workstations to remotely control the service processor using:
  - DCAF program
  - Telnet client program
  - Java Console support.

On-line information

Controller Configuration and Management Application

Provides a graphical user interface for configuring and managing a 3746 APPN/HPR network node and IP Router, and its resources.
It is also available as a stand-alone application, using an OS/2 workstation.
Defines and explains all the 3746 Network Node and IP Router configuration parameters through its on-line help.

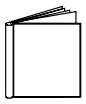


SH11-3081

IBM 3746 Nways Multiprotocol Controller Models 900 and 950

Controller Configuration and Management: User's Guide[2]

Explains how to use CCM and gives examples of the configuration process.



GA33-0479

IBM 3745 Communication Controller Models A
IBM 3746 Nways Multiprotocol Controller Models 900 and 950

NetView Console
APPN Command Reference Guide

Explains how to use the RUN COMMAND from the NetView S/390 Program and gives examples.

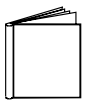
Managing Problems

On-line information

Problem Analysis Guide

An on-line guide to analyze alarms, events, and control panel codes on:

- IBM 3745 Communication Controller Models A[3]
- IBM 3746 Nways Multiprotocol Controller Models 900 and 950.



SA33-0175

IBM 3745 Communication Controller Models A[3]
IBM 3746 Expansion Unit Model 900
IBM 3746 Nways Multiprotocol Controller Model 950

Alert Reference Guide

Provides information about events or errors reported by alerts for:

- IBM 3745 Communication Controller Models A[3]
- IBM 3746 Nways Multiprotocol Controller Models 900 and 950.

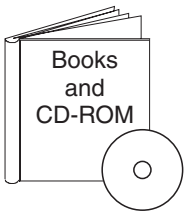
Table H-1 (Page 5 of 5). Customer Documentation for the 3746 Model 950

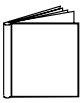
[1] Models 130 to 61A.
[2] Documentation shipped with the 3746-950
[3] 3745 Models 17A to 61A.

Service Documentation for the IBM 3746 Model 950

Table H-2 (Page 1 of 4). Service Documentation for the 3746 Model 950

This service documentation has the following formats:



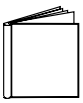


SY33-2107

IBM 3746 Nways Multiprotocol Controller Model 950

Installation Guide[1]

Provides instructions for installing or relocating the Nways Controller.

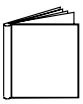


SY33-2108

IBM 3746 Nways Multiprotocol Controller Model 950

Service Guide[1]

Provides procedures for isolating and fixing the IBM 3746-950 problems.

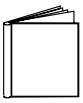


SY33-2115

IBM 3745 Communication Controller Models A[2]
IBM 3746 Expansion Unit Model 900
IBM 3746 Nways Multiprotocol Controller Model 950

Service Processor Installation and Maintenance[3]
(Based on the 7585, 3172, 9585, or 9577)

Provides information on installing and maintaining the service processor based on PS/2 Types 7585, 3172, 9585, or 9577. Can be for systems with microcode that has up to and including EC D46130 (any level) installed.

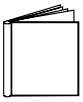


SY33-2120

IBM 3745 Communication Controller Models A[3]
IBM 3746 Expansion Unit Model 900
IBM 3746 Nways Multiprotocol Controller Model 950

Service Processor Installation and Maintenance[4]
(Based on the 7585, 3172, or 9585)

Provides information on installing and maintaining the service processor based on PS/2 Types 7585, 3172, or 9585. Can be for systems with microcode EC F12380 or higher installed.



SY33-2125

IBM 3745 Communication Controller Models A[3]
IBM 3746 Expansion Unit Model 900
IBM 3746 Nways Multiprotocol Controller Model 950

Service Processor Installation and Maintenance[4]
(Based on 6275)

Provides information on installing and maintaining the service processor based on PC Type 6275. Can be for systems with microcode EC F12380 or higher installed.

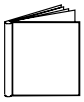
Table H-2 (Page 2 of 4). Service Documentation for the 3746 Model 950

SY27-0393

IBM 3745 Communication Controller Models A[3]
IBM 3746 Expansion Unit Model 900
IBM 3746 Nways Multiprotocol Controller Model 950

Service Processor Installation and Maintenance[4]
(Based on 6563)

Provides information on installing and maintaining the service processor based on PC Type 6563. Can be for systems with microcode EC F12380 or higher installed.

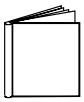


GY27-0406

IBM 3745 Communication Controller Models A[3]
IBM 3746 Expansion Unit Model 900
IBM 3746 Nways Multiprotocol Controller Model 950

Service Processor Installation and Maintenance[4]
(Based on 6578)

Provides information on installing and maintaining the service processor based on PC Type 6578. Can be for systems with microcode EC H10000A and EC H10010A or higher installed.

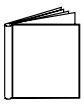


SY33-2118

IBM 3746 Nways Multiprotocol Controller Models 900 and 950

Multiaccess Enclosure Installation and Maintenance[4]

Provides information on installing and maintaining the Multiaccess Enclosure (MAE).

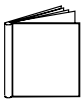


SY33-2124

IBM 3746 Nways Multiprotocol Controller Models 900 and 950

Multiaccess Enclosure Installation and Maintenance[4]
(Starting from EC F12430 and Above)

Provides information on installing and maintaining the Multiaccess Enclosure (MAE). For systems with microcode EC F12430 or higher installed.

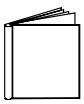


SY33-2112

IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Network Node Processor Installation and Maintenance[3]
(Based on the 7585 or 3172)

Provides information on installing and maintaining the network node processor based on the PS/2 Type 7585 or 3172.



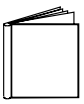
SY33-2126

IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Network Node Processor Installation and Maintenance[3]
(Based on 6275)

Provides information on installing and maintaining the network node processor based on the PC Type 6275.

Table H-2 (Page 3 of 4). Service Documentation for the 3746 Model 950

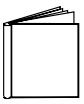


SY27-0394

IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Network Node Processor Installation and Maintenance[3]
(Based on 6563)

Provides information on installing and maintaining the network node processor based on the PC Type 6563.

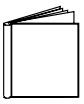


GY27-0407

IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Network Node Processor Installation and Maintenance[3]
(Based on 6578)

Provides information on installing and maintaining the network node processor based on the PC Type 6578.

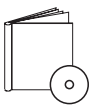


SY33-2127

IBM 3745 Communication Controller Models A[3]
IBM 3746 Expansion Unit Model 900
IBM 3746 Nways Multiprotocol Controller Model 950

Service Processor and Network Node Processor[4]
Service User's Guide

Provides information on installing and maintaining the operational code on service processor, or network node processor.
Can be for systems with microcode EC F12380 or higher installed.

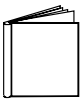


SY33-2117

IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

External Cable Reference[4]

Provides references to console and line cables used for connecting the IBM 3746 Models 900 and 950.

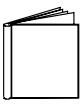


S135-2015

IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Parts Catalog[4]

Provides reference information for ordering parts for the IBM 3746 Models 900 and 950.



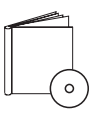
S135-2014

IBM Controller Expansion

Parts Catalog

Provides reference information for ordering parts for the controller expansion attached to the IBM 3745 Models A[2], and 3746 Models 900 and 950.

CD-ROM Bibliography

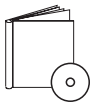


ZK2T-8214

IBM Networking
Softcopy Collection Kit

Allows service manuals consulting via CD-ROM viewer. EMEA version.

Table H-2 (Page 4 of 4). Service Documentation for the 3746 Model 950



ZK2T-8187

IBM Networking
Softcopy Collection Kit

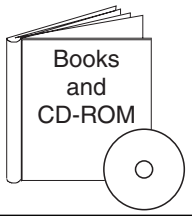
Allows service manuals consulting via CD-ROM viewer. US version.

[1] Documentation shipped with the 3746 Model 950
[2] 3745 Models 17A to 61A
[3] Documentation shipped with the processor
[4] Documentation shipped with the 3746 Models 900 and 950

Customer Documentation for the 3745 (All Models) and 3746 (Model 900)

Table H-3 (Page 1 of 6). Customer Documentation for the 3745 Models X10 and X1A, and 3746 Model 900

This customer documentation has the following formats:

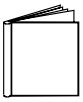


Finding Information

3745 Models A and 3746 Books

All of the books in the 3745 Models A and 3746 library are available on the CD-ROM that contains the Licensed Internal Code (LIC) for the machine.

Evaluating and Configuring



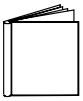
GA33-0092

IBM 3745 Communication Controller
Models 210, 310, 410, and 610

Introduction

Gives an introduction of the IBM Models 210 to 610 capabilities.

For Models A, refer to the *Overview*, GA33-0180.

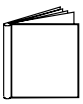


GA33-0180

IBM 3745 Communication Controller Models A and 170[2]
IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Overview

Gives an overview of connectivity capabilities within SNA, APPN, and IP networking.



GA27-4234

IBM 3745 Communication Controller Models A[2]
IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Planning Series:
Overview, Installation, and Integration

Provides information for:

- Overall 3746 planning
- Installation and upgrade scenarios
- Controller and service processor network integration
- Related MOSS-E and CCM worksheets for these tasks.

Table H-3 (Page 2 of 6). Customer Documentation for the 3745 Models X10 and X1A, and 3746 Model 900

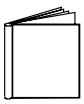
GA27-4235

IBM 3745 Communication Controller Models A[2]
IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Planning Series:
Serial Line Adapters

Provides information for:

- Serial line adapter descriptions
- Serial line adapter line weights and connectivity
- Types of SDLC support
- Configuring X.25 lines
- Performance tuning for frame-relay, PPP, X.25, and NCP lines.
- ISDN adapter description and configuration.



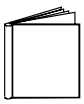
GA27-4236

IBM 3745 Communication Controller Models A[2]
IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Planning Series:
Token Ring and Ethernet

Provides information for:

- Token-ring adapter description and configuration
- Ethernet adapter description and configuration.



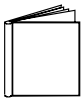
GA27-4237

IBM 3745 Communication Controller Models A[2]
IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Planning Series:
ESCON Channels

Provides information for:

- ESCON adapter descriptions
- ESCON configuration and tuning information
- ESCON configuration examples.



GA27-4238

IBM 3745 Communication Controller Models A[2]
IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Planning Series:
Physical Planning

Provides information for:

- 3746 and MAE physical planning details
- 3746 and MAE cable information
- Explanation of installation sheets
- 3746 plugging sheets.

Table H-3 (Page 3 of 6). Customer Documentation for the 3745 Models X10 and X1A, and 3746 Model 900

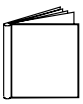
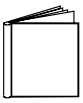
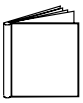
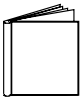
	GA27-4239	***IBM 3745 Communication Controller Models A²*** ***IBM 3746 Nways Multiprotocol Controller*** ***Models 900 and 950*** ***Planning Series:*** ***Management Planning*** Provides information for: • Overview for 3746 • 3746 APPN/HPR, IP router, and X.25 • NetView Performance Monitor (NPM), remote consoles, and RSF • MAE APPN/HPR management.
	GA27-4240	***IBM 3745 Communication Controller Models A²*** ***IBM 3746 Nways Multiprotocol Controller*** ***Models 900 and 950*** ***Planning Series:*** ***Multiaccess Enclosure Planning*** Provides information for: • MAE adapters details • MAE ESCON planning and configuration • ATM and ISDN support.
	GA27-4241	***IBM 3745 Communication Controller Models A²*** ***IBM 3746 Nways Multiprotocol Controller*** ***Models 900 and 950*** ***Planning Series:*** ***Protocol Descriptions*** Provides information for: • Overview and details about APPN/HPR and IP.
	On-line information	***IBM 3745 Communication Controller Models A²*** ***IBM 3746 Nways Multiprotocol Controller*** ***Models 900 and 950*** ***Planning Series:*** ***Controller Configuration and Management Worksheets*** Provides planning worksheets for ESCON, Multiaccess Enclosure, serial line, and token-ring definitions.
Preparing Your Site		
	GC22-7064	***IBM System/360™, System/370™, 4300 Processor*** ***Input/Output Equipment Installation Manual-Physical Planning*** (Including Technical News Letter GN22-5490) Provides information for physical installation for the 3745 Models 130 to 610. For 3745 Models A and 3746 Model 900, refer to the *Planning Guide*, GA33-0457.

Table H-3 (Page 4 of 6). Customer Documentation for the 3745 Models X10 and X1A, and 3746 Model 900

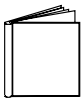
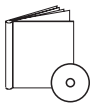
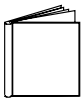
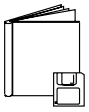
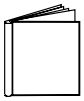
	GA33-0127	***IBM 3745 Communication Controller Models 210, 310, 410, and 610*** ***Preparing for Connection*** Helps for preparing the 3745 Models 210 to 610 cable installation. For 3745 Models A refer to the *Connection and Integration Guide*, SA33-0129.
Preparing for Operation		
	GA33-0400	***IBM 3745 Communication Controller All Models***[3] ***IBM 3746 Nways Multiprotocol Controller Models 900 and 950*** ***Safety Information***[1] Provides general safety guidelines.
	SA33-0129	***IBM 3745 Communication Controller All Models***[3] ***IBM 3746 Nways Multiprotocol Controller Model 900*** ***Connection and Integration Guide***[1] Contains information for connecting hardware and integrating network of the 3745 and 3746-900 after installation.
	SA33-0416	***Line Interface Coupler Type 5 and Type 6 Portable Keypad Display*** ***Migration and Integration Guide*** Contains information for moving and testing LIC types 5 and 6.
	SA33-0158	***IBM 3745 Communication Controller All Models***[3] ***IBM 3746 Nways Multiprotocol Controller Model 900*** ***Console Setup Guide***[1] Provides information for: • Installing local, alternate, or remote consoles for 3745 Models 130 to 610 • Configuring user workstations to remotely control the service processor for 3745 Models A and 3746 Model 900 using: – DCAF program – Telnet Client program – Java Console support.
Customizing Your Control Program		
	SA33-0178	***Guide to Timed IPL and Rename Load Module*** Provides VTAM procedures for: • Scheduling an automatic reload of the 3745 • Getting 3745 load module changes transparent to the operations staff.
Operating and Testing		

Table H-3 (Page 5 of 6). Customer Documentation for the 3745 Models X10 and X1A, and 3746 Model 900

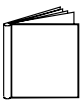
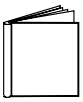
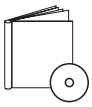
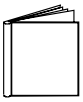
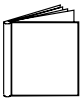
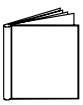
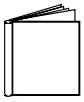
	SA33-0098	***IBM 3745 Communication Controller*** ***All Models***[4] ***Basic Operations Guide***[1] Provides instructions for daily routine operations on the 3745 Models 130 to 610.
	SA33-0177	***IBM 3745 Communication Controller Models A***[2] ***IBM 3746 Nways Multiprotocol Controller Model 900*** ***Basic Operations Guide***[1] Provides instructions for daily routine operations on the 3745 Models 17A to 61A, and 3746 Model 900 operating as an SNA node (using NCP), APPN/HPR Network Node, and IP Router.
	SA33-0097	***IBM 3745 Communication Controller*** ***All Models***[3] ***Advanced Operations Guide***[1] Provides instructions for advanced operations and testing, using the 3745 MOSS console.
	On-line Information	***Controller Configuration and Management Application*** Provides a graphical user interface for configuring and managing a 3746 APPN/HPR Network Node and IP Router, and its resources. It is also available as a stand-alone application, using an OS/2 workstation. Defines and explains all the 3746 Network Node and IP Router configuration parameters through its online help.
	SH11-3081	***IBM 3746 Nways Multiprotocol Controller*** ***Models 900 and 950*** ***Controller Configuration and Management: User's Guide***[5] Explains how to use CCM and gives examples of the configuration process.
	GA33-0479	***IBM 3745 Communication Controller Models A*** ***IBM 3746 Nways Multiprotocol Controller*** ***Models 900 and 950*** ***NetView Console*** ***APPN Command Reference Guide*** Explains how to use the RUN COMMAND from the NetView S/390 Program and gives examples.
Managing Problems		
	SA33-0096	***IBM 3745 Communication Controller*** ***All Models***[3] ***Problem Determination Guide***[1] A guide to perform problem determination on the 3745 Models 130 to 61A.

Table H-3 (Page 6 of 6). Customer Documentation for the 3745 Models X10 and X1A, and 3746 Model 900

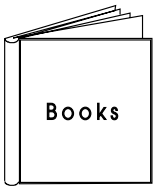
	On-line Information	***Problem Analysis Guide*** An online guide to analyze alarms, events, and control panel codes on: • IBM 3745 Communication Controller Models A[2] • IBM 3746 Nways Multiprotocol Controller Models 900 and 950.
	SA33-0175	***IBM 3745 Communication Controller Models A[2]*** ***IBM 3746 Expansion Unit Model 900*** ***IBM 3746 Nways Multiprotocol Controller Model 950*** ***Alert Reference Guide*** Provides information about events or errors reported by alerts for: • IBM 3745 Communication Controller Models A[2] • IBM 3746 Nways Multiprotocol Controller Models 900 and 950.

[1] Documentation shipped with the 3745.
[2] 3745 Models 17A to 61A.
[3] 3745 Models 130 to 61A.
[4] Except 3745 Models A.
[5] Documentation shipped with the 3746-900.

Additional Customer Documentation for the 3745 Models 130, 150, 160, and 170

Table H-4. Additional Customer Documentation for the 3745 Models 130 to 170

This customer documentation has the following format:



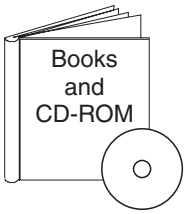
Finding Information	
	3745 Models A and 3746 Books All of the books in the 3745 Models A and 3746 library are available on the CD-ROM that contains the Licensed Internal Code (LIC) for the machine.
Evaluating and Configuring	
GA33-0138	***IBM 3745 Communication Controller Models 130, 150, 160, and 170*** ***Introduction*** Gives an introduction about the IBM Models 130 to 170 capabilities, including Model 160. For Model 17A refer to the *Overview*, GA33-0180.
Preparing Your Site	
GA33-0140	***IBM 3745 Communication Controller Models 130, 150, 160, and 170*** ***Preparing for Connection*** Helps for preparing the 3745 Models 130 to 170 cable installation. For 3745 Model 17A refer to the *Connection and Integration Guide*, SA33-0129.

[1] Documentation shipped with the 3745.

Service Documentation for the IBM 3745 (Models 210, 21A, 310, 31A, 410, 41A, 610, and 61A) and 3746 (Model 900)

Table H-5 (Page 1 of 5). Service Documentation for the 3745 Models x10 and x1A, and 3746 Model 900

This service documentation has the following formats:



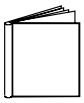
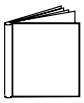
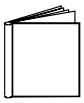
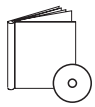
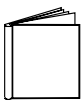
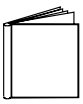
		3745 Models A and 3746 Books All of the books in the 3745 Models A and 3746 library are available on the CD-ROM that contains the Licensed Internal Code (LIC) for the Machine.
	SY33-2057	***IBM 3745 Communication Controller*** ***Models 210 to 61A*** ***Installation Guide***[1] Provides instructions for installing or relocating the IBM 3745 Models X10 and X1A.
	SY33-2114	***IBM 3746 Nways Multiprotocol Controller*** ***Model 900*** ***Installation Guide***[2] Provides instructions for installing or relocating a 3746-900.
	SY33-2116	***IBM 3746 Nways Multiprotocol Controller*** ***Model 900*** ***Service Guide***[2] Provides procedures for isolating and fixing the IBM 3746-900 problems.
	SY33-2055	***IBM 3745 Communication Controller*** ***Models 210, 310, 410, and 610*** ***IBM 3746 Expansion Units*** ***Models A11, A12, L13, L14, and L15*** ***Service Functions***[1] Describes MOSS functions using the IBM 3745 Models X10 and X1A consoles.
	SY33-2054	***IBM 3745 Communication Controller*** ***Models 210 to 61A*** ***Maintenance Information Procedures***[1] Provides procedures for isolating and fixing the IBM 3745 Models X10 and X1A problems.

Table H-5 (Page 2 of 5). Service Documentation for the 3745 Models x10 and x1A, and 3746 Model 900

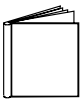


SY33-2115

IBM 3745 Communication Controller Models A[3]
IBM 3746 Expansion Unit Model 900
IBM 3746 Nways Multiprotocol Controller Model 950

Service Processor Installation and Maintenance[4]
(Based on the 7585, 3172, 9585, or 9577)

Provides information on installing and maintaining the service processor based on PS/2 Types 7585, 3172, 9585, or 9577.
Can be for systems with microcode that has up to and including EC D46130 (any level) installed.

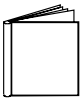


SY33-2120

IBM 3745 Communication Controller Models A[3]
IBM 3746 Expansion Unit Model 900
IBM 3746 Nways Multiprotocol Controller Model 950

Service Processor Installation and Maintenance[4]
(Based on the 7585, 3172, or 9585)

Provides information on installing and maintaining the service processor based on PS/2 Types 7585, 3172, or 9585.
Can be for systems with microcode EC F12380 or higher installed.

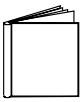


SY33-2125

IBM 3745 Communication Controller Models A[3]
IBM 3746 Expansion Unit Model 900
IBM 3746 Nways Multiprotocol Controller Model 950

Service Processor Installation and Maintenance[4]
(Based on the 6275)

Provides information on installing and maintaining the service processor based on PC Type 6275.
Can be for systems with microcode EC F12380 or higher installed.

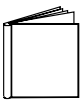


SY27-0393

IBM 3745 Communication Controller Models A[3]
IBM 3746 Expansion Unit Model 900
IBM 3746 Nways Multiprotocol Controller Model 950

Service Processor Installation and Maintenance[4]
(Based on the 6563)

Provides information on installing and maintaining the service processor based on PC Type 6563.
Can be for systems with microcode EC F12380 or higher installed.



GY27-0406

IBM 3745 Communication Controller Models A[3]
IBM 3746 Expansion Unit Model 900
IBM 3746 Nways Multiprotocol Controller Model 950

Service Processor Installation and Maintenance[4]
(Based on 6578)

Provides information on installing and maintaining the service processor based on PC Type 6578.
Can be for systems with microcode EC H10000A and EC H10010A or higher installed.

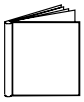
Table H-5 (Page 3 of 5). Service Documentation for the 3745 Models x10 and x1A, and 3746 Model 900

SY33-2127

IBM 3745 Communication Controller Models A[3]
IBM 3746 Expansion Unit Model 900
IBM 3746 Nways Multiprotocol Controller Model 950

Service Processor and Network Node Processor[4]
Service User's Guide

Provides information on installing and maintaining the operational code on service processor, or network node processor.
Can be for systems with microcode EC F12380 or higher installed.

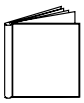


SY33-2118

IBM 3746 Nways Multiprotocol Controller Models 900 and 950

Multiaccess Enclosure Installation and Maintenance[4]

Provides information on installing and maintaining the Multiaccess Enclosure (MAE).

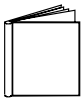


SY33-2124

IBM 3746 Nways Multiprotocol Controller Models 900 and 950

Multiaccess Enclosure Installation and Maintenance[4]
(Starting from EC F12430 and Above)

Provides information on installing and maintaining the Multiaccess Enclosure (MAE). For systems with microcode EC F12430 or higher installed.

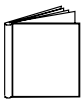


SY33-2112

IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Network Node Processor Installation and Maintenance[4]
(Based on the 7585 or 3172)

Provides information on installing and maintaining the network node processor based on the PS/2 Type 7585 or 3172.

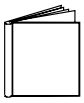


SY33-2126

IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Network Node Processor Installation and Maintenance[4]
(Based on 6275)

Provides information on installing and maintaining the network node processor based on the PC Type 6275.



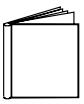
SY27-0394

IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Network Node Processor Installation and Maintenance[4]
(Based on 6563)

Provides information on installing and maintaining the network node processor based on the PC Type 6563.

Table H-5 (Page 4 of 5). Service Documentation for the 3745 Models x10 and x1A, and 3746 Model 900

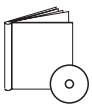


GY27-0407

IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Network Node Processor Installation and Maintenance[3]
(Based on 6578)

Provides information on installing and maintaining the network node processor based on the PC Type 6578.

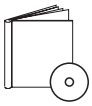


SY33-2056

IBM 3745 Communication Controller
Models 210 to 61A

Maintenance Information Reference[1]

Provides in-depth hardware reference information on the IBM 3745 Models X10 and X1A.

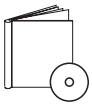


SY33-2075

IBM 3745 Communication Controller
All Models[5]

External Cable References[1]

Provides references to console and line cables used for connecting the IBM 3745 Models 130 to 61A.

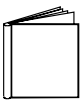


SY33-2117

IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

External Cable Reference[6]

Provides references to console and line cables used for connecting the IBM 3746 Models 900 and 950.

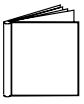


S135-2015

IBM 3746 Nways Multiprotocol Controller
Models 900 and 950

Parts Catalog[6]

Provides reference information for ordering parts for the IBM 3746 Models 900 and 950.

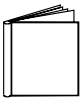


S135-2010

IBM 3745 Communication Controller
Models 210 to 61A

Parts Catalog[1]

Provides reference information for ordering IBM 3745 Models X10 and X1A parts.



S135-2014

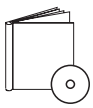
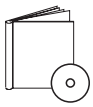
IBM Controller Expansion

Parts Catalog

Provides reference information for ordering parts for the controller expansion attached to the IBM 3745 Models A[3], and 3746 Models 900 and 950.

CD-ROM Bibliography

Table H-5 (Page 5 of 5). Service Documentation for the 3745 Models x10 and x1A, and 3746 Model 900

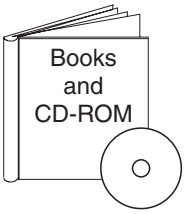
	ZK2T-8214	***IBM Networking Softcopy Collection Kit*** Allows service manuals consulting via CD-ROM viewer. EMEA version.
	ZK2T-8187	***IBM Networking Softcopy Collection Kit*** Allows service manuals consulting via CD-ROM viewer. US version.

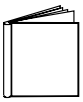
[1] Documentation shipped with the 3745.
[2] Documentation shipped with the 3746-900.
[3] 3745 Models 17A to 61A.
[4] Documentation shipped with the processor.
[5] 3745 Models 130 to 61A.
[6] Documentation shipped with the 3746 Models 900 and 950.

Additional Service Documentation for the IBM 3745 Models 130, 150, 160, 170, and 17A

Table H-6. Additional Service Documentation for the 3745 Models 1x0 and 17A

This service documentation has the following formats:



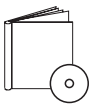


SY33-2067

IBM 3745 Communication Controller
Models 130, 150, 160, 170, and 17A

Installation Guide[1]

Provides instructions for installing or relocating the IBM 3745 Models 1X0 and 17A.

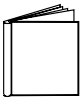


SY33-2069

IBM 3745 Communication Controller
Models 130, 150, 160, and 170

Service Functions[1]

Describes MOSS functions using the IBM 3745 Models 1x0 and 17A consoles.

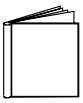


SY33-2070

IBM 3745 Communication Controller
Models 130 to 17A

Maintenance Information Procedures[1]

Provides procedures for isolating and fixing the IBM 3745 Models 1X0 and 17A problems.

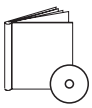


S135-2012

IBM 3745 Communication Controller
Models 130 to 17A

Parts Catalog[1]

Provides reference information for ordering IBM 3745 Models 1X0 and 17A parts.



SY33-2066

IBM 3745 Communication Controller
Models 130, 150, 160, and 170

Hardware Maintenance Reference[1]

Provides in-depth hardware reference information on the IBM 3745 Models 1X0 and 17A.

[1] Documentation shipped with the 3745.

Glossary

Acronyms, Abbreviations and Terms

Term	Information
ACPA/A	Audio Capture and Playback Adapter
ADP	Automatic Data Processing
AGP	Advanced Graphics Port
Alt	Alternate
ANSI	American National Standards Institute
ARTIC	A Real Time Interface Coprocessor
ASCII	American National Standard Code for Interface Interchange
AT	Advanced Technology (as in AT Bus)
AVC	Audio Video Connection
BIOS	Basic Input/Output System (Controls System Resources)
bps	Bits Per Second
BPS	Bytes Per Second
CCITT	The International Telephone and Telegraph Consultative Committee
CCS	Common Command Set
CCSB	Common Complete Status Block
CCSB	Configuration Control Sub Board
CD	Compact Disc
CDPD	Cellular Digital Packet Data
CD-ROM	CD Read Only Memory (stores data/audio)
CGA	Color Graphics Adapter (See EGA, VGA, XGA)
CRC	Cyclic Redundancy Check
CRT	Cathode Ray Tube
CSA	Canadian Standards Association
CSD	Corrective Service Diskette
DASD	Direct Access Storage Device (hard disk, diskette)
DMA	Direct Memory Access
DRAM	Dynamic Random Access Memory
ECA	Engineering Change Announcement
ECC	Error Correction Code
EGA	Enhanced Graphics Adapter
ESD	Electrostatic Discharge
ESDI	Enhanced Small Device Interface
EEPROM	Electrically Erasable Programmable Read Only Memory
EWS	Energy Work Station
FRU	Field Replaceable Unit (replaceable part)
GPIB	General Purpose Interface Bus (IEEE 348)
GSA	General Services Administration
Ht	Height
IDE	Integrated Drive Electronics
IC	Integrated Circuit
IEEE	Institute of Electrical and Electronics Engineers
IEC	International Electrotechnical Commission
IML	Initial Machine Load
IPL	Initial Program Load

Term	Information
ISA	Industry Standard Architecture
ISO	International Organization for Standardization
ISDN	Integrated-Services Digital Network
LAN	Local Area Network
LBA	Local Block Address
LTB	Local Transfer Bus
LUN	Logical Unit Number (as in SCSI)
MAP	Maintenance Analysis Procedure
MCGA	Modified Color Graphics Adapter (320 x 200 x 256)
MCA	Micro Channel Architecture (bus structure)
MHz	Mega Hertz (million cycles per second)
MIDI	Musical Instrument Digital Interface
MM	Multimedia
N/A	Not Available or Not Applicable
NDD	National Distribution Division
NDIS	Network Driver Interface Specification
NMI	Non-Maskable Interrupt
NSC	National Support Center
NVRAM	Non Volatile Random Access Memory
OEM	Original Equipment Manufacturer
PCI	Peripheral component interconnect
PCMCIA	Personal Computer Memory Card International Association
POS	Programmable Option Select
PUN	Physical Unit Number (as in SCSI)
RAID	Redundant Array of Inexpensive Disks (disk array models)
RAM	Random Access Memory (read/write)
RGB	Red Green Blue (as in monitors)
RIPL	Remote Initial Program Load
ROM	Read Only Memory
SASD	Sequential Access Storage Device (Tape)
SCB	Subsystem Control Block
SCSI	Small Computer Systems Interface
SCSI ID	SCSI Identification Number (assigned device number)
SPD	Software Product Description
SR	Service Representative
SRAM	Static Random Access Memory
SVGA	Super Video Graphics Array
STN	Super Twisted Nematic
T/A	NDD Technical Advisor (See your Marketing Representative)
TDD	Telecommunications Device for the Deaf
TFT	Thin-Film Transistor
TPF	ThinkPad File
TSR	Terminate and Stay Resident
UL	Underwriters Laboratory
VCA	Video Capture Adapter
VESA	Video Electronics Standards Association
VGA	Video Graphics Array (640x480x16)
VPD	Vital Product Data

Term	Information
VRAM	Video Random Access Memory
WORM	Write Once, Read Many Media
XGA	Extended Graphics Array (1024 x 768 x 256)
Y/C	Luminance/Chrominance Signal (Video)

Index

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3746 Nways Multiprotocol Controller
Models 900 and 950
Network Node Processor
Installation and Maintenance
(Based on 6578)

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