



@server pSeries 650
Installation Guide

SA38-0610-01





@server

@server pSeries 650
Installation Guide

SA38-0610-01

Second Edition (May 2003)

Before using this information and the product it supports, read the information in "Safety Notices" on page vii, Appendix B, "Environmental Notices", on page 117, and Appendix C, "Notices", on page 119.

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Safety Notices

A *danger* notice indicates the presence of a hazard that has the potential of causing death or serious personal injury. *Danger* notices appear on the following pages:

- viii

A *caution* notice indicates the presence of a hazard that has the potential of causing moderate or minor personal injury. *Caution* notices appear on the following pages:

- viii
- ix
- 10
- 15

For a translation of the safety notices contained in this book, see the *System Unit Safety Information*, order number SA23-2652.

Rack Safety Instructions

- Do not install this unit in a rack where the internal rack ambient temperatures will exceed 40 degrees C.
- Do not install this unit in a rack where the air flow is compromised. Any side, front or back of the unit used for air flow through the unit must not be in direct contact with the rack.
- Care should be taken to ensure that a hazardous condition is not created due to uneven mechanical loading when installing this unit in a rack. If the rack has a stabilizer it must be firmly attached before installing or removing this unit.
- Consideration should be given to the connection of the equipment to the supply circuit so that overloading of circuits does not compromise the supply wiring or overcurrent protection. To provide the correct power connection to the rack, refer to the rating labels located on the equipment in the rack to determine the total power requirement for the supply circuit.
- An electrical outlet that is not correctly wired could place hazardous voltage on the metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.

Electrical Safety

Observe the following safety instructions anytime you are connecting or disconnecting devices attached to the workstation.

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.

Before installing or removing signal cables, ensure that the power cables for the system unit and all attached devices are unplugged.

When adding or removing any additional devices to or from the system, ensure that the power cables for those devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.

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

During an electrical storm, do not connect cables for display stations, printers, telephones, or station protectors for communications lines.

D05

DANGER

To prevent electrical shock hazard, disconnect all power cables from the electrical outlet before relocating the system.

D01

CAUTION:

This product is equipped with a three-wire power cable and plug for the user's safety. Use this power cable with a properly grounded electrical outlet to avoid electrical shock.

C01

CAUTION:

This unit has more than one power supply cord. To reduce the risk of electrical shock, disconnect two power supply cords before servicing.

C21

CAUTION:

This unit weighs more than 55 kg (121.2 pounds). Material handling systems such as levers, slings, or lifts are required to safely move it. When this is not possible, specially trained persons or services (such as riggers or movers) must be used.

C06

Laser Safety Information

CAUTION:

This product may contain a CD-ROM, DVD-ROM, or laser module on a PCI card, which are class 1 laser products.

C30

Laser Compliance

All lasers are certified in the U.S. to conform to the requirements of DHHS 21 CFR Subchapter J for class 1 laser products. Outside the U.S., they are certified to be in compliance with the IEC 825 (first edition 1984) as a class 1 laser product. Consult the label on each part for laser certification numbers and approval information.

CAUTION:

All IBM laser modules are designed so that there is never any human access to laser radiation above a class 1 level during normal operation, user maintenance, or prescribed service conditions. Data processing environments can contain equipment transmitting on system links with laser modules that operate at greater than class 1 power levels. For this reason, never look into the end of an optical fiber cable or open receptacle. Only trained service personnel should perform the inspection or repair of optical fiber cable assemblies and receptacles.

C25, C26

Data Integrity and Verification

IBM computer systems contain mechanisms designed to reduce the possibility of undetected data corruption or loss. This risk, however, cannot be eliminated. Users who experience unplanned outages, system failures, power fluctuations or outages, or component failures must verify the accuracy of operations performed and data saved or transmitted by the system at or near the time of the outage or failure. In addition, users must establish procedures to ensure that there is independent data verification before relying on such data in sensitive or critical operations. Users should periodically check the IBM support websites for updated information and fixes applicable to the system and related software.

About This Book

This book provides information on how to set up and cable the server, install and remove options, and verify server operation.

ISO 9000

ISO 9000 registered quality systems were used in the development and manufacturing of this product.

Highlighting

The following highlighting conventions are used in this book:

Bold	Identifies commands, subroutines, keywords, files, structures, directories, and other items whose names are predefined by the system. Also identifies graphical objects such as buttons, labels, and icons that the user selects.
<i>Italics</i>	Identifies parameters whose actual names or values are to be supplied by the user.
Monospace	Identifies examples of specific data values, examples of text similar to what you might see displayed, examples of portions of program code similar to what you might write as a programmer, messages from the system, or information you should actually type.

References to AIX Operating System

This document may contain references to the AIX operating system. If you are using another operating system, consult the appropriate documentation for that operating system.

This document may describe hardware features and functions. While the hardware supports them, the realization of these features and functions depends upon support from the operating system. AIX provides this support. If you are using another operating system, consult the appropriate documentation for that operating system regarding support for those features and functions.

Accessing Information

Documentation for the IBM @server pSeries is available online. Visit the IBM @server pSeries Information Center at http://publib16.boulder.ibm.com/pseries/en_US/infocenter/base.

- To access the pSeries publications, click **Hardware documentation**.
- To view information about the accessibility features of @server pSeries hardware and the AIX operating system, click **AIX and pSeries accessibility**.

Ergonomic Information

After you have set up your system, we encourage you to visit the Healthy Computing Web site. Good ergonomic practice is important to get the most from your workstation and to avoid discomfort. This means that the equipment and the workplace should be arranged to suit your individual needs and the kind of work you do.

The Healthy Computing Web site gives ergonomic guidelines to help you understand the ergonomic considerations that you should know when working at a computer workstation. The address is: <http://www.us.pc.ibm.com/healthycomputing>

Related Publications

The following publications provide related information:

- The *System Unit Safety Information*, order number SA23-2652, contains translations of safety information used throughout this book.
- The *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590, provides information to system administrators on how to install and use a Hardware Management Console (HMC) to manage a system.
- The *@server pSeries 650 Service Guide*, order number SA38-0612, contains reference information, maintenance analysis procedures (MAPs), error codes, removal and replacement procedures, and a parts catalog.
- The *@server pSeries 650 User's Guide*, order number SA38-0611, contains information on how to use the system, use diagnostics, use service aids, and verify system operations.
- The *RS/6000 and @server Diagnostic Information for Multiple Bus Systems*, order number SA38-0509, contains diagnostic information, service request numbers (SRNs), and failing function codes (FFCs).
- The *RS/6000 and @server Adapters, Devices and Cable Information for Multiple Bus Systems*, order number SA38-0516, contains information about adapters, devices, and cables for your server. This manual is intended to supplement the service information found in the *Diagnostic Information for Multiple Bus Systems*.
- The *PCI Adapter Placement Reference*, order number SA38-0538, contains information regarding slot restrictions for adapters that can be used in this system.
- The *Site and Hardware Planning Information*, order number SA38-0508, contains information to help you plan your installation.
- The *Electronic Service Agent for pSeries and RS/6000 User's Guide*, order number LCD4-1060, contains information on using the Electronic Service Agent.

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- pSeries
- RS/6000

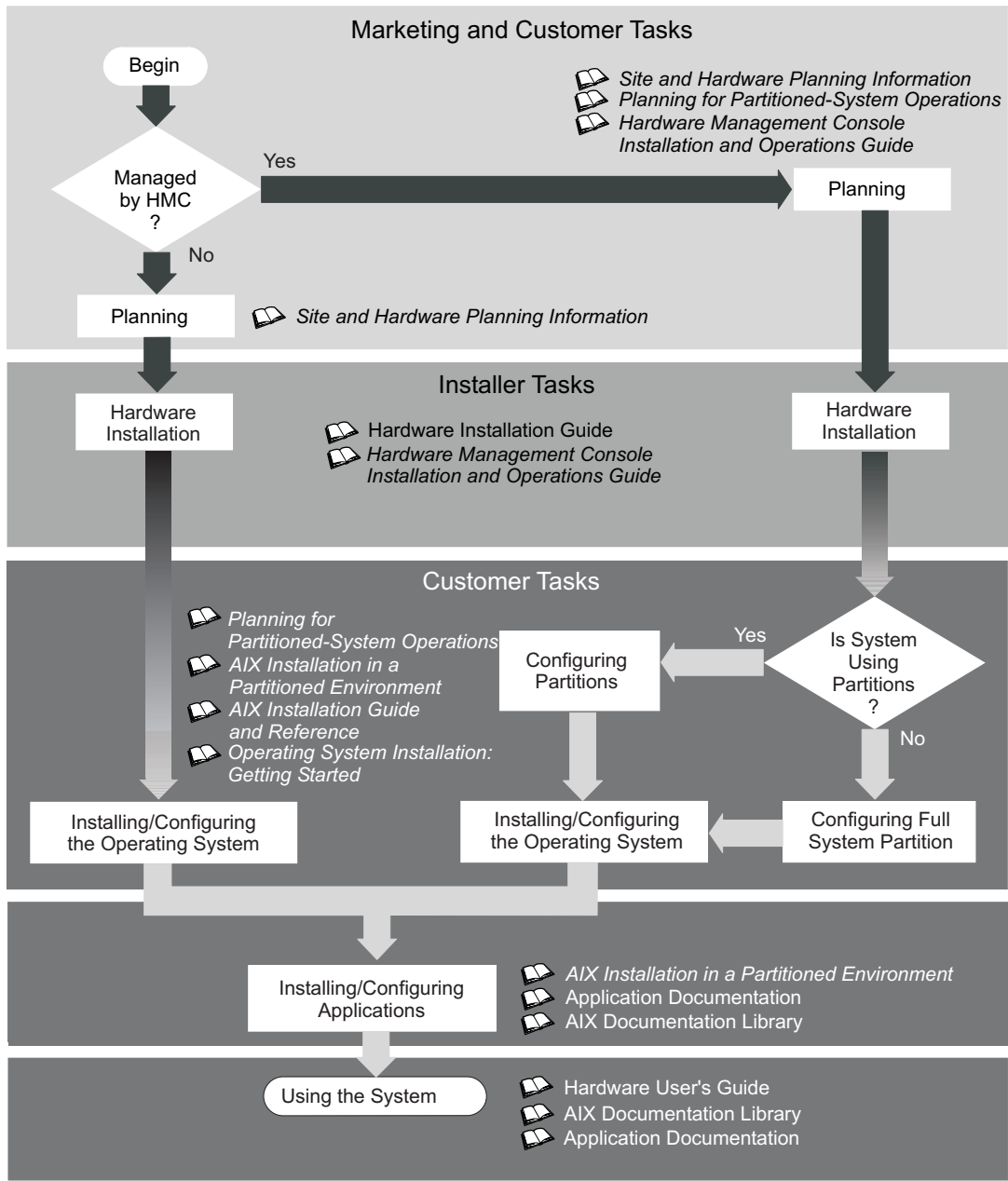
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Chapter 1. Reference Materials

This chapter helps you get started with installing and configuring the @server pSeries environment. The following information is included in the chapter:

- @server pSeries Roadmap
- Documentation Overview - Brief description of the printed and softcopy documentation shipped including targeted audience

The @server pSeries Roadmap helps you locate marketing, service, and customer task information. The roadmap guides you through the tasks and the publications that document those tasks.



The publications listed in this section are available online. To access the online books, visit our IBM @server pSeries Information Center at http://publib16.boulder.ibm.com/pseries/en_US/infocenter/base.

Documentation Overview

This section provides descriptions and target audience information for the @server pSeries and AIX 5L documentation libraries. Some of the documentation may only be available in printed form or in softcopy form. Based on the documentation content, the books are divided into the following categories: **Planning**, **Installing and Configuring**, and **Using the System**.

Table 1. Planning

Documentation Title	Description	Audience	Type
<i>Site and Hardware Planning Information</i>	Contains information to help plan for site preparation tasks, such as floor-planning, electrical needs, air conditioning, and other site-planning considerations.	Marketing, system administrators	softcopy
<i>Planning for Partitioned-System Operations</i>	Describes planning considerations for partitioned systems, including information on dynamic partitioning and Capacity Upgrade on Demand.	System administrators	printed and softcopy
<i>Hardware Management Console for pSeries Installation and Operations Guide</i>	Provides information on how to install, configure, and use a Hardware Management Console (HMC). Logical partition (LPAR) tasks, such as configuring and managing partitions on multiple host servers, are included.	System administrators	printed and softcopy

Table 2. Installing and Configuring

Documentation Title	Description	Audience	Type
Hardware Installation Guide	Provides information on how to install system hardware, cable the system, and verify operations.	System installer	printed and softcopy
<i>Planning for Partitioned-System Operations</i>	Describes planning considerations for partitioned systems, including information on dynamic partitioning and Capacity Upgrade on Demand.	System administrators	printed and softcopy
<i>Hardware Management Console for pSeries Installation and Operations Guide</i>	Provides information on how to install, configure, and use a Hardware Management Console (HMC). Logical partition (LPAR) tasks, such as configuring and managing partitions on multiple host servers, are included.	System administrators	printed and softcopy
<i>AIX Installation in a Partitioned Environment</i>	Provides information on how to install the AIX operating system in an LPAR environment.	System administrators	printed and softcopy
<i>AIX Operating System Installation: Getting Started</i>	Provides information on how to install and configure the AIX operating system on a standalone system using a CD-ROM device.	System administrators	printed and softcopy
<i>AIX 5L Installation Guide and Reference</i>	Provides information on installing the AIX 5L operating system on standalone systems, as well as on client systems using the Network Installation Management (NIM) interface.	System administrators	printed and softcopy
<i>PCI Adapter Placement Reference</i>	Outlines system-specific PCI adapter slot placement and adapter support configurations.	System administrators, service personnel	softcopy
<i>AIX 5L Release Notes</i>	Provides late-breaking information for a specific AIX release.	System administrators	printed and softcopy
<i>AIX 5L Documentation CD</i>	AIX documentation library (system management guides, user guides, application programmer guides, commands and files references, AIX man pages, and so on).	System administrators	softcopy

Table 3. Using the System

Documentation Title	Description	Audience	Type
<i>Hardware Management Console for pSeries Installation and Operations Guide</i>	Provides information on how to install, configure, and use a Hardware Management Console (HMC). Logical partition (LPAR) tasks, such as configuring and managing partitions on multiple host servers, are included.	System administrators	printed and softcopy
Hardware User's Guide	Provides using, problem determination, and service processor information.	System administrators	printed and softcopy
<i>Diagnostic Information for Multiple Bus Systems</i>	Combines operating instructions for hardware diagnostic programs with common MAPs and SRNs (Service Request Numbers).	Service personnel	printed and softcopy
<i>PCI Adapter Placement Reference</i>	Outlines system-specific PCI adapter slot placement and adapter support configurations.	System administrators, service personnel	printed
<i>Hardware Management Console for pSeries Maintenance Guide</i>	Contains MAPs, removal and replacement, error code, and parts information to help diagnose and repair the system.	Service personnel	printed and softcopy
<i>Adapters, Devices, and Cable Information for Multiple Bus Systems</i>	Provides information about adapters, devices, and cables that are attached to or used within the system.	System administrators	printed and softcopy
<i>System Unit Safety Information</i>	Contains the English version of safety notices, as well as translations of those safety notices into other languages.	System administrators, service personnel	printed and softcopy
<i>AIX 5L Documentation CD</i>	AIX documentation library (system management guides, user guides, application programmer guides, commands and files references, AIX man pages, and so on).	System administrators	softcopy

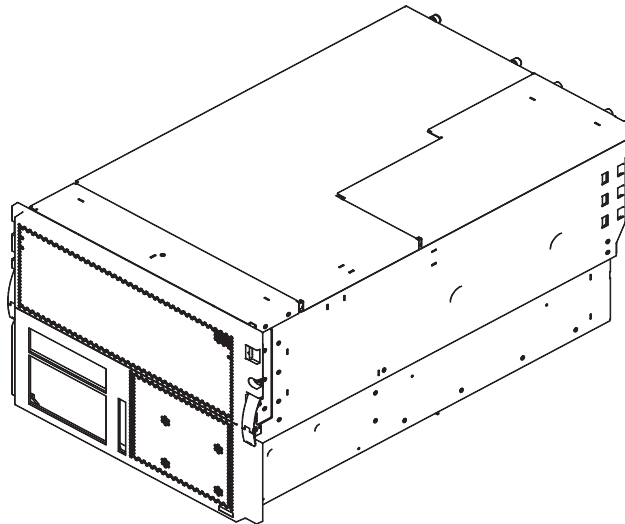
Chapter 2. Installing the pSeries 650

Service representatives use the procedures in this chapter to set up your pSeries 650.

Note: This procedure explains how to attach the mounting hardware to the rack enclosure. If your pSeries 650 was preinstalled in the rack, perform the rack-installation procedures as described in the *7014 Model T00 Rack Installation and Service Guide*, order number SA38-0577, then return here and begin with “Step 5. Are All of the Features Installed?” on page 16.

pSeries 650 Overview

The pSeries 650 is a multiprocessor, multibus system packaged in one 7038 Model 6M2 system drawer and up to eight I/O drawers. The processor subsystem drawer is 8 EIA units high and can be mounted in a 19-inch rack. The 7038 Model 6M2 system drawer houses the processors, memory, and a base set of I/O.



The I/O capacity of the system can be expanded by the addition of up to eight I/O subsystems.

The pSeries 650 system supports up to eight logical partitions. Processors, memory, and I/O within each partition can be dynamically removed or added without the need to reboot the system. Logical partitioning requires the use of a hardware management console (HMC) that is used to manage and monitor the system resources as well as provide a service focal point.

Cables are used to connect the base system to the I/O subsystem drawers, including the following:

- SPCN (System Power Control Network) cables.
- RIO (Remote Input Output) cables.

Power is connected to the pSeries 650 through redundant power cords that attach to redundant type-7 power distribution buses (PDBs), which are installed in the rack.

Before You Begin

To ensure that all of the installation steps are complete, the installer should use the following installation checklists during the installation process. The customer's choice of system console options and partition configurations determines which of the following checklists to use. At the appropriate points in the installation steps, you will be referred to the applicable checklist.

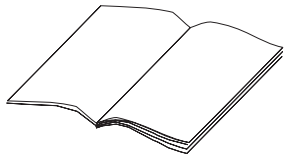
Note: If the system you are installing will be managed by an HMC, and the HMC is not installed and functional, see the *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590, for instructions on installing the HMC. Install the HMC, then return here and continue with this procedure.

- "TTY Terminal Console and the System is Not Partitioned" on page 39
- "Graphics Terminal Console and the System is Not Partitioned" on page 40
- "HMC-Managed System Using a Single Full System Partition" on page 41
- "HMC-Managed System with Multiple Partitions" on page 42

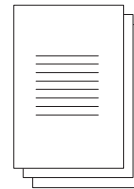
Step 1. Check Your Inventory

Use the packing lists for each ship group to verify that you have all the items shipped with the system.

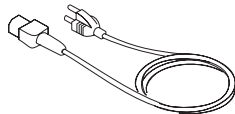
Books, CD-ROM and Other Media



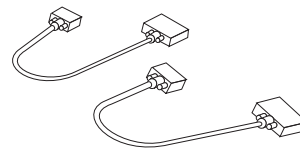
"About Your Machine" Document



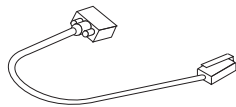
Power Cables (1 standard, 2 optional)



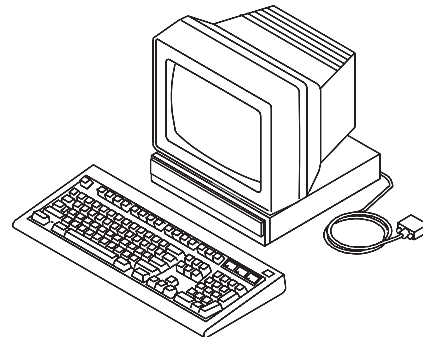
9-Pin to 25-Pin Serial Converters (2) (optional)



RJ48 to D-Shell Converter Cable (1)

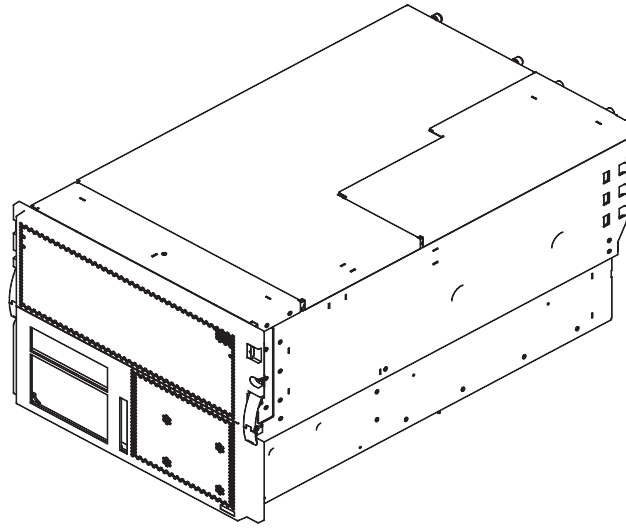


ASCII Terminal or System Console Display (optional)

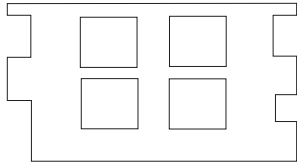


System Unit

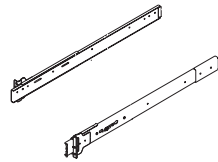
- 7038 Model 6M2 system drawer



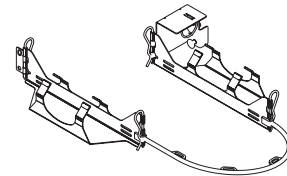
- Rack Mounting Template



- 2 Rack Rails

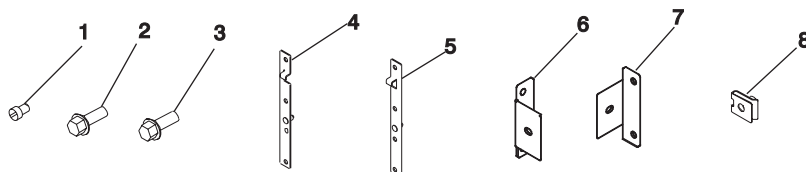


- Cable Management Arm



- Rack-Mounting Kit Envelope contains:

- 8 system to rail M4 screws (item 1)
- 4 M5 thumbscrews (item 2)
- 16 M5 rack screws (item 3)
- Left EIA plate (item 4)
- Right EIA plate (item 5)
- Right rear-mounting bracket (item 6)
- Left rear-mounting bracket (item 7)
- 8 nut clips (item 8)



Use of a lift tool is required to install the system unit into a rack, for lift tool information contact your service support.

Step 2. Read the Safety Notices

Before continuing, read the following safety information. Do not plug any cables into the system unit, adapters, or electrical outlets until you have reviewed this information. Make sure none of the power cords are connected before continuing to the next step.

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.

Before installing or removing signal cables, ensure that the power cables for the system unit and all attached devices are unplugged.

When adding or removing any additional devices to or from the system, ensure that the power cables for those devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.

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

During an electrical storm, do not connect cables for display stations, printers, telephones, or station protectors for communications lines.

D05

CAUTION:

This product is equipped with a three-wire power cable and plug for the user's safety. Use this power cable with a properly grounded electrical outlet to avoid electrical shock.

C01

DANGER

To prevent electrical shock hazard, disconnect all power cables from the electrical outlet before relocating the system.

D01

Step 3. Attach the Mounting Hardware to the Rack Enclosure

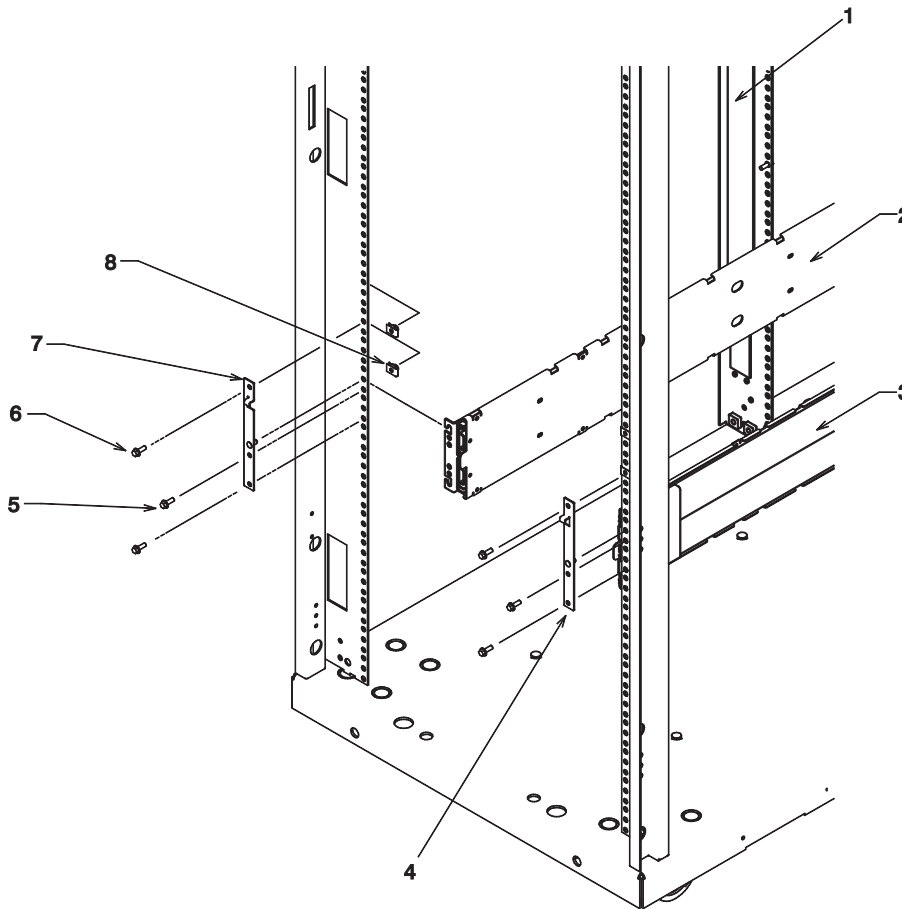
To attach the mounting hardware, you will need the following items:

- Rack-Mounting Template
- 2 Rack Rails
- Cable Management Arm
- Rack-Mounting Kit Envelope
- Screwdriver or Nutdriver

1. Install the slide-rails and the cable management arm on the mounting rails of the rack enclosure.

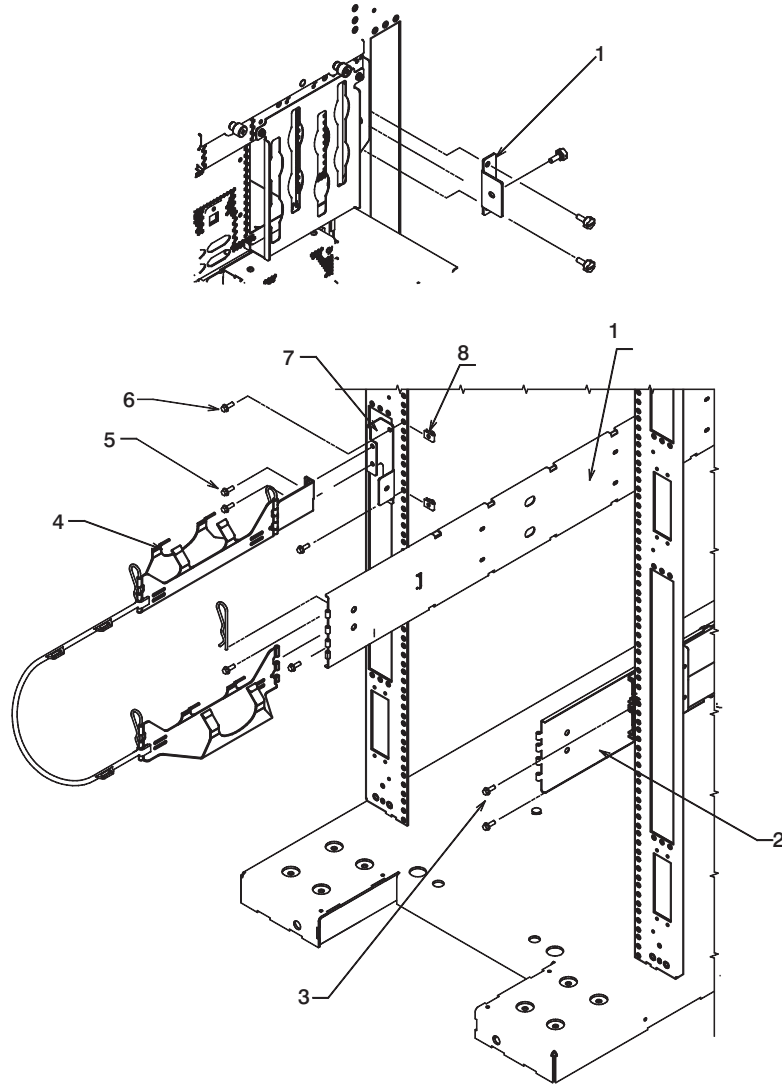
Note: If you do not have the rail template, go to “Rail Positioning Without a Template” on page 14. You must align the rack slide rails correctly. Otherwise, the installation cannot be completed successfully.

- a. Position the template on the front rack-mounting rails, aligning the holes.
- b. Install the nut clips (item 8 in the following illustration), using the locations shown on the template.
- c. Install the EIA plates (items 4 and 7 in the following illustration), and attach them to the rack-mounting rail with an M5 rack screw in the lower of the two nut clips.



- | | |
|--------------------------------|-------------------------------|
| 1 Rack | 5 M5 Screw for EIA Plates |
| 2 Left Rail (from front) | 6 M5 Screw for Rails |
| 3 Right Rail (from front) | 7 Left EIA Plate (from front) |
| 4 Right EIA Plate (from front) | 8 M5 Nut Clip |

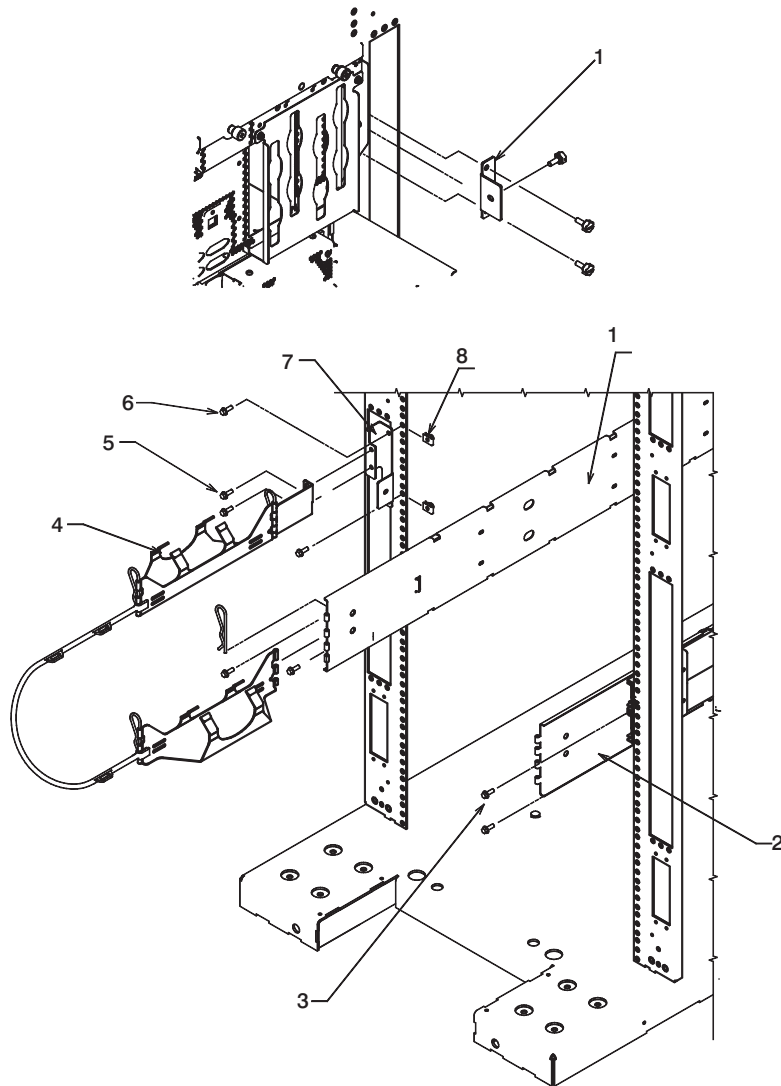
- d. Move the template to the rear rack-mounting rails, and position it at the same level as the front.
- e. Using the locations shown on the template for the hold-down brackets, install the nut clips (item 8 in the following illustration).



1	Right Rail (from rear)	5	M5 Screw for Cable Management Arm
2	Left Rail (from rear)	6	M5 Screws for Shipping Bracket
3	M5 Screw for Rails	7	Left Side Shipping Bracket (from rear)
4	Cable Management Arm	8	M5 Nut Clip

- Note:** The left-mounting bracket is also the mounting bracket for the cable-management arm.
- f. Install the mounting brackets using M5 screws and the mounted nut clips.

2. Attach the slide rails to the rack.
 - a. Insert the left slide rail so that the pin on the rear end of the slide rail engages the appropriate hole in the rear-mounting rail. Refer to the template for the alignment hole. The front end of the slide rail has an L-shape channel in the front flange that fits over the pin on the EIA plate. Secure the front and rear ends of each slide rail, using a total of eight M5 screws.
 - b. Perform the step above for the right slide rail.
3. Attach the cable-management arm to the left rear of the rack enclosure.
 - a. Align the mounting bracket for the cable-management arm with the nut clips on the rear mounting rail.
 - b. Insert two M5 by 16-mm screws to secure the mounting bracket (item 1 in the following illustration) to the rack.



- | | |
|--------------------------|--|
| 1 Right Rail (from rear) | 5 M5 Screw for Cable Management Arm |
| 2 Left Rail (from rear) | 6 M5 Screws for Shipping Bracket |
| 3 M5 Screw for Rails | 7 Left Side Shipping Bracket (from rear) |
| 4 Cable Management Arm | 8 M5 Nut Clip |

- c. Attach the free end of the cable-management arm to the rear of the left slide rail, using a hitch pin.

Rail Positioning Without a Template

If you do not have a rack-mounting template, do the following:

1. Determine where in the rack to place the system unit. The system unit you are about to install measures 8 EIA units high. Make note of the EIA location number.

Note: An EIA unit on your rack consists of a grouping of three holes.

2. Facing the front of the rack and working from the right side, place a self-adhesive dot next to the top hole of the bottom EIA unit.

Note: The self-adhesive dots are used to aid in identifying locations on the rack. If you no longer have any of the dots, use some other form of marking tool to aid you in identifying hole locations (for example, tape, a marker, or pencil).

3. Place another self-adhesive dot next to the top hole of the above EIA unit.

Note: If you are counting the holes, begin with the hole identified by the first dot and count up four holes. Place the second dot next to the fourth hole.

4. Secure a nut clip to the rack four holes up from the top dot (bottom hole of the top EIA unit). The nut clip aids in securing your system drawer to the rack while in transit.

Notes:

- a. If you are counting the holes, begin with the hole identified by the top dot and count up four holes. Place the nut clip next to the fourth hole.
 - b. Whenever a populated rack is being moved, secure the system drawers with two retaining thumbscrews threaded through the nut clips. This action secures the system front bezel and system chassis to the rack.
 - c. When counting from the nut clip to the bottom dot, there is an 8-hole span.
5. Repeat this process for the left side of the rack.

Step 4. Install the System in the Rack Enclosure

CAUTION:

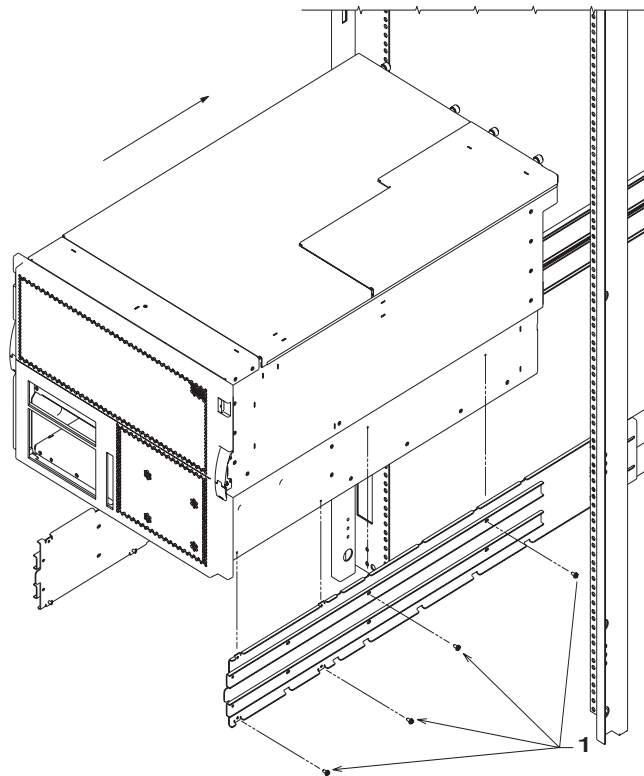
The stabilizer must be firmly attached to the bottom front of the rack to prevent the rack from turning over when the drawers are pulled out of the rack. Do not pull out or install any drawer or feature if the stabilizer is not attached to the rack.

C16

Attention: When installing this unit in a rack, ensure that a hazardous condition is not created due to uneven mechanical loading. If the rack has a stabilizer, the stabilizer must be firmly attached before installing or removing this unit.

Attention: This procedure requires use of a lift tool.

1. Mount the server on the slide rails as follows.
 - a. Extend the slide rails fully from the rack until the slide rails lock.
 - b. Using a lift tool, lift the server and position it so that the rails align with the rack-rail holes.
 - c. Slide the server backward or forward as necessary until the rail holes align with the holes in the side of the server.
 - d. Attach the rails to both sides of the server with M4 by 5-mm screws (Item 1 in the following figure).



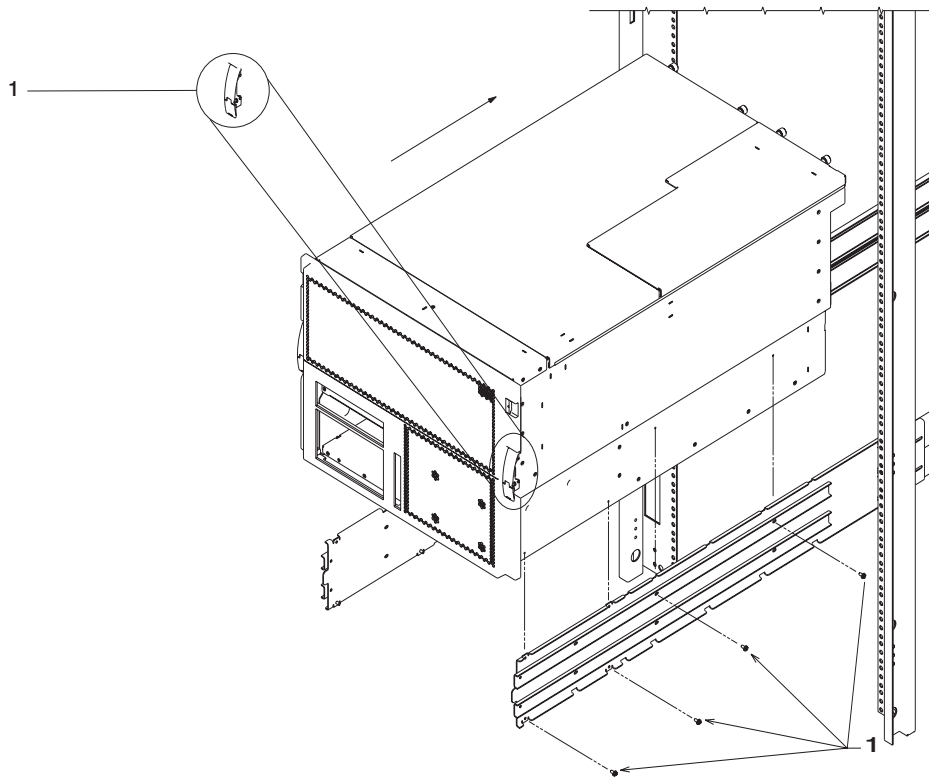
1 M4 by 5-mm Screws

2. Press the safety latches on the slide rails, and slide the server about halfway into the rack enclosure.

Note: When the server is fully extended, safety latches on the slide rails lock into place. This action prevents the server from being accidentally pulled out too far. To release the safety latches, press the latches from inside the rack.

3. Slide the server fully into the rack enclosure until the slide latches on the front chassis brackets click into place.

Note: To release the server, release the left and right slide latches, and pull the server forward.



1 Slide Latches

4. (Optional) For additional security, such as would be needed when transporting the rack, fasten the server to the rack enclosure by inserting an M5 screw through the chassis bracket, mounting rail, and cage nut on each side. Also, a thumbscrew can be used with the hold-down brackets on the rear of the rack to secure the rear of the server.

Step 5. Are All of the Features Installed?

The 7311 Model D10 I/O Subsystem is a 19-inch rack-mountable expansion drawer that is designed to be attached to the pSeries 650 system drawer. Two 7311 Model D10 drawers can fit side by side in a single 4U rack enclosure. If you are installing these I/O drawers, refer to the *D10 Installation Guide*, order number SA23-1295, for more information.

The 7311 Model D20 I/O Subsystem is a 19-inch rack-mountable expansion drawer that also can be attached to the pSeries 650 system drawer. A single 7311 Model D20 occupies a full 19" 4U rack position. If you are installing these I/O drawers, refer to the *D20 Installation Guide*, order number SA23-1296, for more information.

If you have internal options that are not installed, install them now. Refer to Chapter 5, “Installing Options for the pSeries 650”, on page 43, and then return here.

Step 6. Position the Display

If your system will be connected to a graphics display or an ASCII terminal, position the display (or terminal) at or near its final location. Place the display (or terminal) in a sturdy and stable location.

Step 7. Check Your Display or Console Type

If you are using an ASCII terminal and keyboard as the console for this system, and do not have a graphics display to connect, continue with “Step 12. Connect the Serial and Parallel Devices” on page 20.

If you are using a graphics display with a keyboard and mouse, continue with “Step 9. Attach the Display Cable Toroid” on page 18.

If you are connecting to a Hardware Management Console (HMC), continue with “Step 8. Connecting to a Hardware Management Console (HMC)”.

Step 8. Connecting to a Hardware Management Console (HMC)

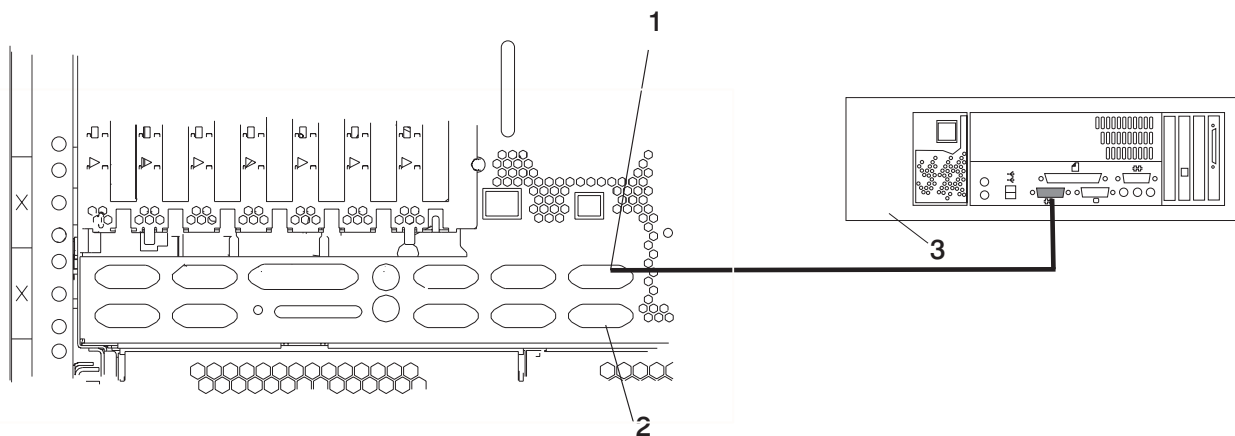
If the HMC is not installed and functional, see the *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590, for instructions on installing the HMC. Install the HMC, then return here and continue with this step.

Note: Two HMC connectors, located on the rear of the pSeries 650 processor subsystem, are used to connect the processor subsystem to the HMC. The connectors are labeled HMC1 and HMC2.

To connect the first HMC to the pSeries 650 processor subsystem, connect a serial cable from a serial port on the HMC to the HMC1 connector on the rear of the processor subsystem.

Note: If you have a second HMC to connect, connect a second serial cable from a serial port on the second HMC to the HMC2 connector on the rear of the processor subsystem.

After connecting the HMC, go to “Step 12. Connect the Serial and Parallel Devices” on page 20.

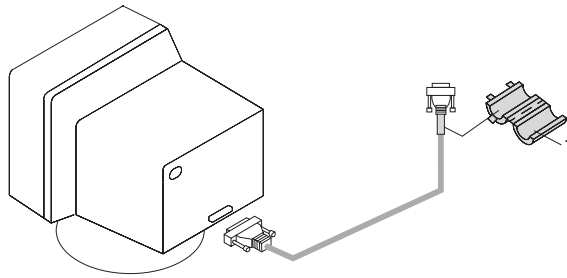


1 (HMC) HSC Port 1
3 HMC

2 (HMC) HSC Port 2

Step 9. Attach the Display Cable Toroid

If the cable for your display came with a separate toroid, install the toroid using the installation instructions included with the toroid.



1 Display Cable Toroid

Step 10. Connect the Graphics Display

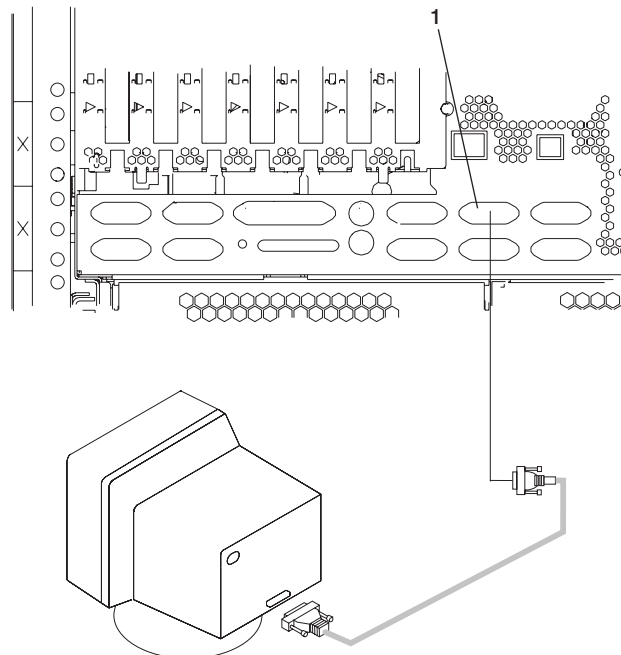
Note: If you have an ASCII terminal, you must connect it to the serial connector S1 (item 1 in the following illustration). If you are using an ASCII terminal as the console for this system, and do not have a graphics display to connect, continue with “Step 12. Connect the Serial and Parallel Devices” on page 20.

Connect the graphics display cable to the back of the display and to the graphics adapter connector. For the locations of installed adapters, consult the “About Your Machine” document.

For more information about your display, refer to the documentation included with the display.

Notes:

1. The PCI graphics adapter might be installed in any of the PCI slots on the system unit.
2. Some displays require an additional cable.

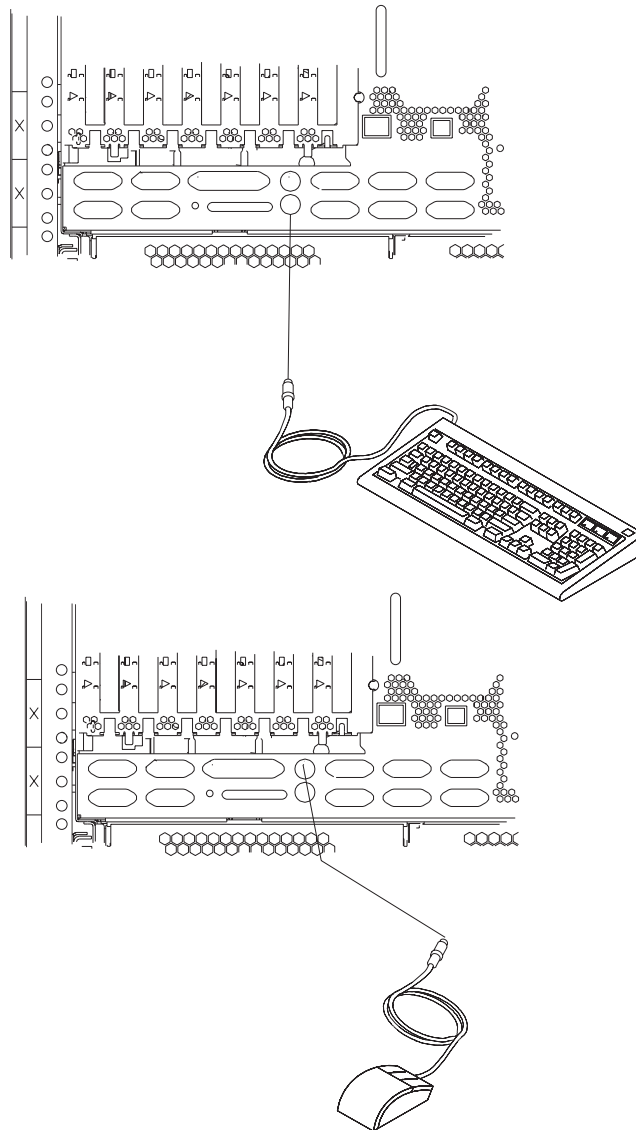


If you ordered a graphics display with your system unit, the graphics adapter has been set to use the highest display resolution and refresh rate available for the display. If you want to attach another display to your system unit or change the default display resolution or refresh rate, refer to the documentation for your display and graphics adapter. For further information documentation is available online; see “Accessing Information” on page xiii.

Step 11. Connect the Keyboard and Mouse (When Using a Graphics Display)

If a wrist/palm rest was included with your keyboard and you want to attach it, refer to the installation instructions included with the keyboard.

As shown in the following illustration, connect the keyboard and mouse to the connectors on the rear of the system unit.



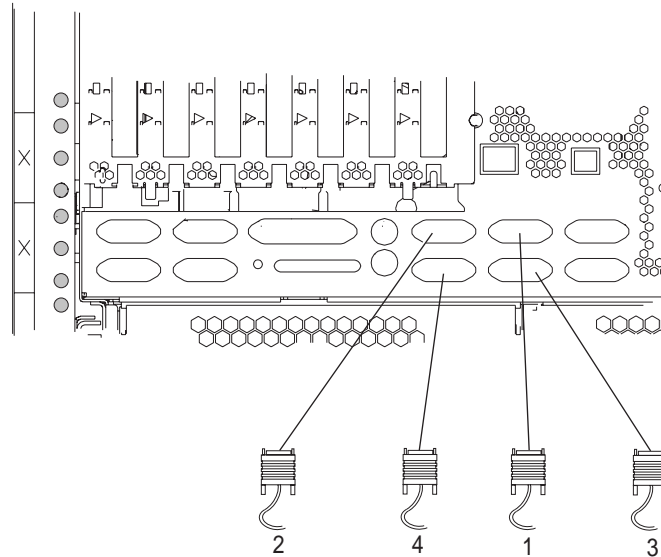
Step 12. Connect the Serial and Parallel Devices

If you have a remote ASCII terminal, connect it through an external modem to serial connector S1, and connect a local ASCII terminal to serial port 2 connector S2.

If you have a local ASCII terminal or a single serial device, connect it to the serial connector S1.

If you have additional serial devices to connect, you can connect additional serial devices to the two remaining serial ports (S3 and S4) that are located at the rear of the system.

If you have a parallel device (such as a printer), connect it to the parallel connector.



- 1 Serial Port 1 Connector
- 2 Serial Port 2 Connector
- 3 Serial Port 3 Connector
- 4 Serial Port 4 Connector

The following are examples of serial port usage. All of the serial ports are located on the rear of the system.

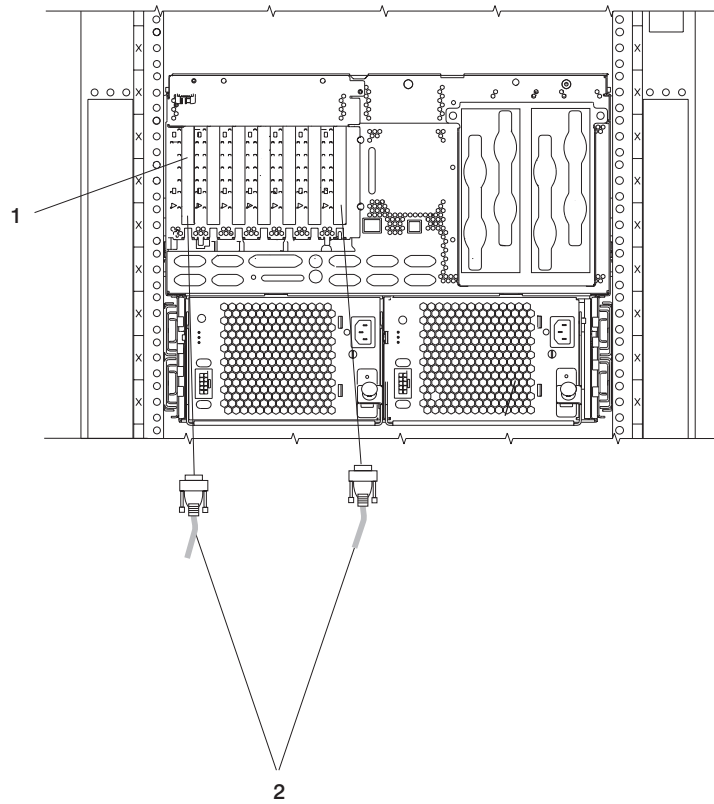
Serial Port Number	Applicable Usage Examples
Serial Port 1	Service Agent, PDA system management applications (for example: handheld devices, laptop systems), Service Processor menus
Serial Port 2	Service Processor menus, Service Agent, PDA system management applications (interface cable required)
Serial Port 3	Service Processor menus, HACMP
Serial Port 4	HACMP, UPS, and modems

Note: Do not use serial port 1 to run HACMP or attach a UPS. If you are configuring your system to run HACMP with a UPS attached, you must connect the HACMP cable to serial port 3 and the UPS cable to serial port 4. *Do not* run a UPS connected to serial port 2.

If you decide to disconnect HACMP, you *must* reset the service processor using the pinhole reset switch before running another application. The service processor pinhole reset switch is located on the operator panel.

Step 13. Connect the Adapter Cables

If you are using any optional adapters (such as token ring or 8-port EIA-232), connect the cables to the appropriate adapter connectors in the PCI slots of your machine. For the locations of installed adapters, consult the "About Your Machine" document.



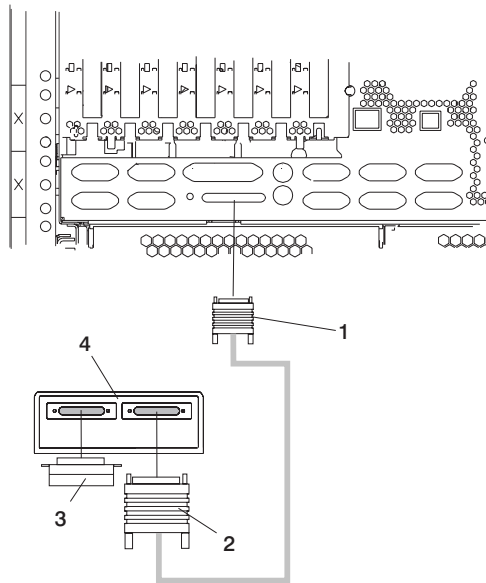
- 1 PCI Slots
- 2 Optional Adapter Cables

Step 14. Connect the External SCSI Device

1. Connect the SCSI cable to the SCSI connector.
2. Connect the other end of the SCSI cable to the SCSI device.
3. If this is the last device connected, connect the SCSI device terminator.

Note: The built-in SCSI interface is Ultra3 SCSI. When a cable is not attached to the SCSI connector on the system, the SCSI bus is automatically terminated.

4. To set the SCSI device address, refer to the SCSI device documentation.



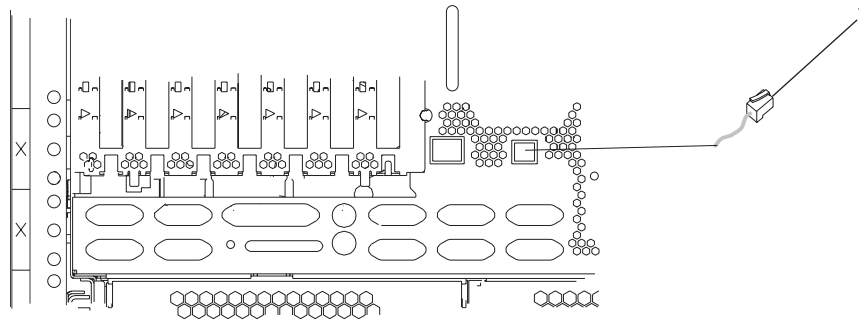
- 1 External SCSI Connector
- 2 SCSI Cable to SCSI Device

- 3 SCSI Terminator
- 4 SCSI Device

Step 15. Are You Using the Rack Indicator Feature?

The rack indicator feature signals when a drawer installed in a rack has a failure. If you are unsure whether you are using the rack indicator feature, ask your system administrator. If you are not using the rack indicator feature, continue to “Step 16. Are You Using an Ethernet Connection?”.

Connect the rack indicator cable as shown in the following illustration.



1 Rack Indicator Cable

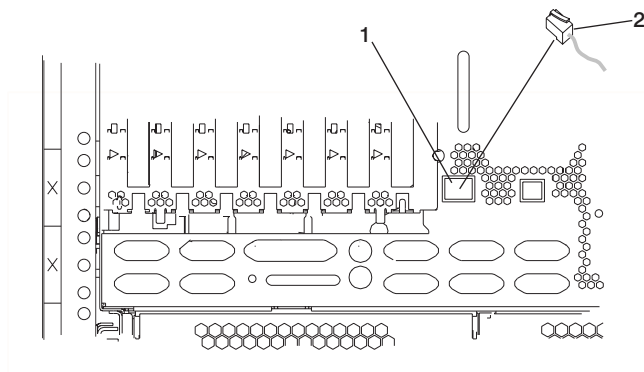
Step 16. Are You Using an Ethernet Connection?

If you are unsure whether you are using an Ethernet connection, ask the system administrator. If you are not using Ethernet or you have already connected your Ethernet to an adapter, continue to “Step 17. Connect the Power Cords to the Server” on page 24.

To connect the Ethernet cable, do the following:

Note: The twisted-pair connector is compatible with the IEEE 802.3 Ethernet network 10/100 Base T link.

1. Connect the twisted-pair cable to one of two RJ-45 connectors located on the rear of the system drawer. For RJ-45 connector locations, see the following illustration.
2. The twisted-pair Ethernet cable is now installed. Continue with “Step 17. Connect the Power Cords to the Server” on page 24.



1 RJ-45 Connector
2 Twisted-Pair Cable

Step 17. Connect the Power Cords to the Server

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.

Before installing or removing signal cables, ensure that the power cables for the system unit and all attached devices are unplugged.

When adding or removing any additional devices to or from the system, ensure that the power cables for those devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.

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

During an electrical storm, do not connect cables for display stations, printers, telephones, or station protectors for communications lines.

D05

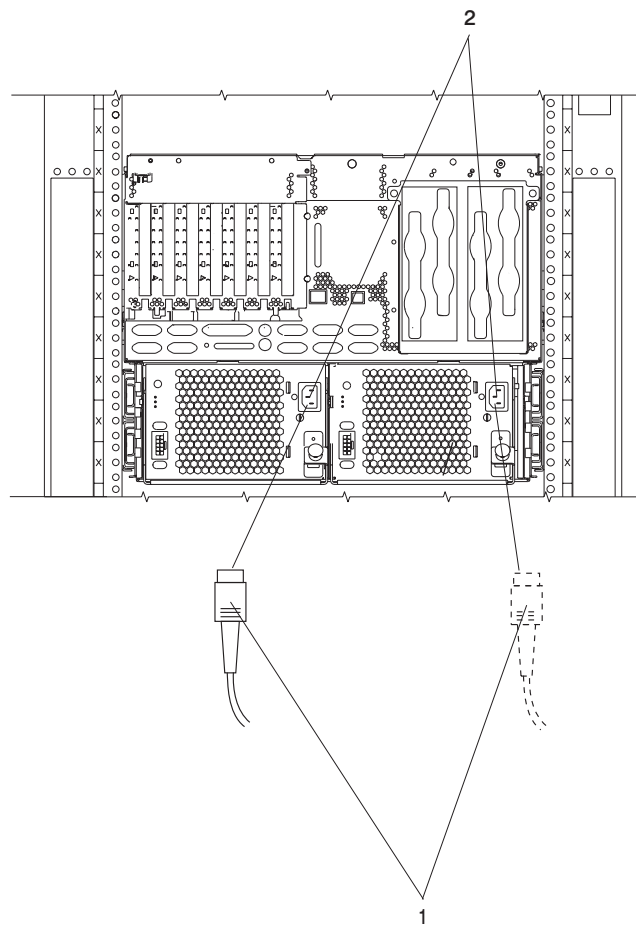
CAUTION:

This product is equipped with a three-wire power cable and plug for the user's safety. Use this power cable with a properly grounded electrical outlet to avoid electrical shock.

C01

To connect the power cords to the server, do the following:

1. Plug the power cords into the power supply connectors.
2. Route the power cords through the cable-restraint bracket.



- 1 Power Cords
- 2 Power Supply Connectors

For more information about cabling, refer to Appendix D, “Subsystem Positioning and Cabling”, on page 121.

Step 18. Route the Cables

To route the cables, do the following:

1. Route the mouse cable and keyboard cable through the cable-restraint bracket.
2. Route all cables through the cable-management arm, attaching the cables to the arm with the hook and loop fastener strips. The wraps are provided for additional cable management.

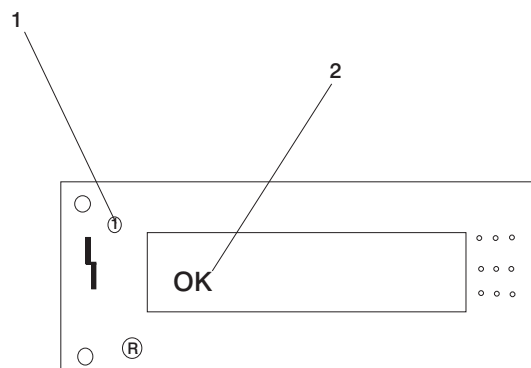
Step 19. Connect the Power Cords

Plug the power cords for the display, and attached devices into electrical outlets.

If redundant power is required, ensure that there are at least two type-7 power distribution buses (PDBs) installed in the rack. These PDBs must be connected to two separate ac power sources. To ensure adequate power, the 7038 Model 6M2 must be connected to type-7 PDBs.

Note: For information about connecting power cables to the PDUs in the rack, refer to the *7014 Model T00 Rack Installation and Service Guide*, order number SA38-0577, and *Site and Hardware Planning Information*, order number SA38-0508.

Plug the power cords for the processor subsystem into the type-7 PDBs that supply power to the rack. When the power cords are plugged into the PDBs, the operator panel displays OK, and the green power LED **(1)** blinks. When this occurs, your system is in standby mode. The following illustration shows the operator panel in standby mode.



- 1 Green Power LED
- 2 Operator Panel Display

If your system does not stop in standby mode, check all cables for good connection. If you cannot find a problem, contact your service support for assistance.

Step 20. What is the Next Step?

The next step in the installation procedure is to apply power to the system and verify that the system is ready to be used for regular operations. The steps to verify the system vary depending on how the customer has decided to manage the system. The system could be managed using an HMC or a directly-connected console (such as a TTY terminal or a graphics display, keyboard, and mouse).

Determine the console configuration and operating system usage for the system that you are installing. Then, using the following table, go to the appropriate checklist indicated.

If your system console type and power control is:	And your system usage is:	Then go to:
An ASCII terminal is connected to a serial port as the system console. The power is controlled at the operator panel.	The system is running one copy of the operating system (no partitions).	"TTY Terminal Console and the System is Not Partitioned" on page 39.
A graphics display, keyboard, and mouse are connected as the system console. The power is controlled at the operator panel.	The system is running one copy of the operating system (no partitions).	"Graphics Terminal Console and the System is Not Partitioned" on page 40.
An HMC is used to manage a full system partition. The power is controlled by the HMC.	The operating system is running in a full system partition.	"HMC-Managed System Using a Single Full System Partition" on page 41.
An HMC is used to manage multiple logical partitions. The power is controlled by the HMC.	Multiple operating systems are running in multiple logical partitions.	"HMC-Managed System with Multiple Partitions" on page 42.

Chapter 3. Verifying the Hardware Operation

To check the system for correct hardware operation, use the system verification procedure discussed in this chapter.

Considerations Before Running This Procedure

These verification procedures use either online AIX diagnostics or standalone AIX diagnostics. Either the online AIX diagnostics or the standalone AIX diagnostics must be available to perform this procedure. Read the following before using this procedure:

- If this system unit is directly attached to another system unit or attached to a network, be sure communications with the other systems are stopped.
- This procedure requires use of all of the system resources. No other activity can be running on the system while you are performing this procedure.
- This procedure requires a Hardware Management Console for pSeries (HMC), a display attached to a graphics adapter, or an ASCII terminal attached to the S1 or S2 port.

Note: If you use a virtual terminal on the HMC and you are asked to define the terminal type, the virtual terminal is considered a VT320.

- If your system is set up to run in a partitioned configuration, this procedure runs the AIX online diagnostics in service mode with the system booted to full system partition mode. For information about full system partition mode, refer to “Full System Partition” on page 30.

Does the system have online AIX diagnostics preinstalled?

- YES** If there is an HMC attached to the system, go to “Using the HMC to Load the Online Diagnostics in Service Mode” on page 32.
- If an HMC is not attached to the system, go to “Loading the Online Diagnostics on a System without an HMC Attached” on page 33.
- NO** If there is an HMC attached to the system, go to “Using the HMC to Load the Standalone Diagnostics from CD-ROM” on page 32.
- If an HMC is not attached to the system, go to “Loading the Standalone Diagnostics on a System without an HMC Attached” on page 33.

Power Procedures

These power procedures are here for reference during the system verification tests. Do not perform any power procedures until the verification procedures instruct you to do so.

You can power-on the pSeries 650 by using the Hardware Management Console or by using the power-on button on the processor subsystem operator panel. If an HMC is connected to the system, the HMC power-on method is the preferred method. Choose the appropriate power-on method for your system and perform the procedures to power on (start) your system.

HMC Power-On Method

To power on the managed system using the HMC, you must be a member of one of the following roles:

- System Administrator
- Advanced Operator
- Operator
- Service Representative

To power on the managed system, do the following:

1. In the Navigation area, click the **Partition Management** icon.
2. In the Contents area, select the managed system.
3. In the menu, click **Selected**.
4. Select **Power On**.

You are asked to select a power-on mode from the following:

- Partition Standby
- Full System Partition
- System Profile

The next section discusses each of these power-on modes.

Note: You must power off your managed system to switch between using the full system partition and using either logical or affinity partitions. You must also power off the system between using logical partitions and affinity partitions.

Partition Standby: The Partition Standby power-on option allows you to create and activate logical partitions. When the Partition Standby power-on is completed, the operator panel on the managed system displays LPAR..., indicating the managed system is ready for you to use the HMC to partition its resources.

Note: The full system partition is listed as *Not Available* because the managed system was powered on using the Partition Standby option.

Full System Partition: The full system partition power-on option allows you to use all of the system's resources on one operating system after the system has been powered on. This is the traditional single-system method of using your system's resources.

The physical operator panel on your managed system displays progress codes when you boot the system to this mode.

Power On Options: If you select the full system partition option, you can then select one of the following profiles:

Power On Normal

This profile boots an operating system from the designated boot device.

Power On SMS

This profile is similar to Power On Diagnostic Stored Boot List Profile, except the system boots using the default boot list that is stored in the system firmware.

Power On Diagnostic Stored Boot List

This profile causes the system to perform a service mode boot using the service mode boot list saved on the managed system. If the system boots AIX from the disk drive and AIX diagnostics are loaded on the disk drive, AIX boots to the diagnostics menu.

Using this profile to boot the system is the preferred way to run online diagnostics.

Power On Diagnostic Default Boot List

This profile boots to the System Management Services (SMS) menus. The SMS menus include:

- Password Utilities
- Display Error Log
- Remote Initial Program Load Setup
- SCSI Utilities
- Select Console
- MultiBoot

- Select Language
- OK Prompt

Power On Open Firmware OK Prompt

This profile is used only by service representatives to obtain additional debug information. When this selection is enabled, the system boots to the open firmware prompt.

To learn more about these power-on options, see the *IBM Hardware Management Console for pSeries Installation and Operations Guide*.

System Profiles: The System Profile option powers on the system according to a predefined set of profiles.

Note: The profiles are activated in the order in which they are shown in the system profile.

Configuring the Network Using the HMC: To complete the installation, the following configuration tasks must be performed:

- Configuring Inventory Scout Services
- Configuring Service Agent
- Collecting Vital Product Data (VPD)
- Transmitting VPD

For more information about performing these tasks, refer to the *IBM Hardware Management Console for pSeries Installation and Operations Guide*.

Operator Panel Power-On Method

Perform the following steps to power on the processor subsystem and attached I/O subsystems using the power button on the operator panel.

1. Open the rack door. Look for OK in the operator panel display, which indicates that the system is in standby.
2. Press the power button on the operator panel.

The power LED on the operator panel starts blinking at a fast rate. 9xxx checkpoints appear in the operator panel display.

When the power-on sequence is complete, the following events have occurred:

- The power LED on the system operator panel stops blinking and stays on.
- The power LEDs on the I/O subsystem come on and stay on.

Using the HMC to Load the Online Diagnostics in Service Mode

To run the online diagnostics in service mode from the boot hard disk, do the following:

1. Select **Server and Partition**.
2. Select **Partition Management**.
For more information about full system partitions, refer to the *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590.
3. From the HMC, select **Server Management**.
4. In the Contents area, select the icon that represents the 7038 Model 6M2. Right-click on the mouse, and select **Open Terminal Window**.
5. From the Service Processor menu on the VTERM, select Option 2 **System Power Control**.
6. Select option 6. Verify that the state changes to currently disabled. Disabling fast system boot automatically enables slow boot.
7. Select Option 98 to exit the system power control menu.
8. Use the HMC to power on the managed system in full system partition mode by selecting the managed system in the Contents area.
9. Highlight the desired system by right-clicking on or selecting the system in the Contents area. On the menu, choose **Selected**.
10. Select **Power On**.
11. Select the **Power on Diagnostics Stored Boot List** option.
12. Ensure that the media subsystem contains no media devices.
13. Enter any passwords, if requested.

Note: If you are unable to load the diagnostics to the point when the DIAGNOSTIC OPERATING INSTRUCTIONS display, go to “Using the HMC to Load the Standalone Diagnostics from CD-ROM”.

Go to “Running System Verification” on page 35.

Using the HMC to Load the Standalone Diagnostics from CD-ROM

To run the standalone diagnostics in service mode from CD-ROM, use the following steps:

1. Stop all programs, including the operating system (get help if needed).
2. Remove all tapes, diskettes, and CD-ROMs.
3. Power off the pSeries 650 (refer to the *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590, for more information).
4. In your desktop area, right-click on the mouse, and select **Open Terminal Window**.
5. From the service processor menu on the VTERM, select option 2, **System Power Control Menu**.
6. Select option 6. Verify that the state changes to currently disabled. Disabling fast system boot automatically enables slow boot.
7. Select option 98 to exit the system power control menu.
8. Use the HMC to power on the managed server in full system partition mode. Select **Power on Diagnostic Default Boot List**.
9. Insert the CD-ROM into the CD-ROM drive in the media bay in the pSeries 650 (*not* into the HMC CD-ROM drive).

Go to “Running System Verification” on page 35.

Note: If you are unable to load standalone diagnostics, call your support center for assistance.

Loading the Online Diagnostics on a System without an HMC Attached

To run the online diagnostics in service mode from the boot hard disk, do the following:

1. Stop all programs including the operating system (get help if needed).
2. Remove all tapes, diskettes, and CD-ROM discs.
3. Turn off the system unit power.
4. Turn on the system unit power.
5. After the **keyboard** POST indicator displays on the firmware console and before the last POST indicator (**speaker**) displays, press the numeric 6 key on either the directly attached keyboard or the ASCII terminal to indicate that a service mode boot should be initiated using the customized service mode boot list.
6. Enter any requested password.

Note: If you are unable to load the diagnostics to the point when the DIAGNOSTIC OPERATING INSTRUCTIONS display, call your support center for assistance.

Loading the Standalone Diagnostics on a System without an HMC Attached

To run the standalone diagnostics in service mode from the boot hard disk, do the following:

Note: Online diagnostics are not available when the operating system is Linux.

1. Stop all programs including the operating system (get help if needed).
2. Remove all tapes, diskettes, and CD-ROM discs.
3. Turn off the system unit power.
4. Turn on the system unit power and immediately insert the diagnostic CD-ROM into the CD-ROM drive.
5. After the **keyboard** POST indicator displays on the firmware console and before the last POST indicator (**speaker**) displays, press the numeric 5 key on either the directly attached keyboard or the ASCII terminal to indicate that a service mode boot should be initiated using the default service mode boot list.
6. Enter any requested password.

Note: If you are unable to load the diagnostics to the point when the DIAGNOSTIC OPERATING INSTRUCTIONS display, call your support center for assistance.

Running Standalone Diagnostics from a Network Installation Management (NIM) Server with an HMC Attached to the System

A client system connected to a network with a Network Installation Management (NIM) server can boot standalone diagnostics from the NIM server if the client-specific settings on both the NIM server and client are correct.

Notes:

1. All operations to configure the NIM server require root user authority.
2. If you replace the network adapter in the client, the network-adapter hardware-address settings for the client must be updated on the NIM server.
3. The **Cstate** for each standalone diagnostics client on the NIM server should be kept in the *diagnostic boot has been enabled* state.
4. On the client system, the NIM server network adapter should be put in the bootlist after the boot disk drive. This allows the system to boot in standalone diagnostics from the NIM server if there is a

problem booting from the disk drive. For information about setting the bootlist, see the **Multiboot** section under “SMS” in the client system’s service guide.

NIM Server Configuration

Refer to the “Advanced NIM Configuration Tasks” chapter of the *AIX 5L Installation Guide and Reference*, order number SC23-4389, for information on doing the following:

- Registering a client on the NIM server
- Enabling a client to run diagnostics from the NIM server

Documentation for the AIX operating system is available from the IBM @server pSeries Information Center at http://publib16.boulder.ibm.com/pseries/en_US/infocenter/base. Select **AIX documentation**. The *AIX Documentation* CD contains the base set of publications for the operating system, including system-management and end-user documentation.

To verify that the client system is registered on the NIM server and the diagnostic boot is enabled, run the **lsnim -a Cstate -Z ClientName** command from the command line on the NIM server. Refer to the following table for system responses.

Note: The *ClientName* is the name of the system on which you want to run standalone diagnostics.

System Response	Client Status
#name:Cstate: ClientName:diagnostic boot has been enabled:	The client system is registered on the NIM server and enabled to run diagnostics from the NIM server.
#name:Cstate: ClientName:ready for a NIM operation: or #name:Cstate: ClientName:BOS installation has been enabled:	The client is registered on the NIM server but not enabled to run diagnostics from the NIM server. Note: If the client system is registered on the NIM server but Cstate has not been set, no data will be returned.
0042-053 lsnim: there is no NIM object named "ClientName"	The client is not registered on the NIM server.

Client Configuration and Booting Standalone Diagnostics from the NIM Server

To run standalone diagnostics on a client from the NIM server, do the following:

1. Remove any removable media (tape or CD-ROM disc).
2. Stop all programs including the operating system (get help if needed).
3. If you are running standalone diagnostics in a full system partition, verify with the system administrator and system users that the system unit can shut down. Stop all programs, including the operating system. Refer to the operating system documentation for **shutdown** command information.

In a partitioned system, make the CD-ROM drive available to the partition used to run standalone diagnostics (refer to the *IBM Hardware Management Console for pSeries Installation and Operations Guide* for more information). Verify with the system administrator and system users using that partition that all applications on that partition must be stopped, and that the partition will be rebooted. Stop all programs on that partition, including the operating system.

4. If you are in a full system partition, power on the system unit to run standalone diagnostics. In a partitioned system, reboot the partition to run standalone diagnostics.
5. When the keyboard indicator is displayed (the word **keyboard**), press the number 1 key on the keyboard to display the SMS menu.

6. Enter any requested passwords.
7. Select **Setup Remote IPL (Initial Program Load)**.
8. Enter the client address, server address, gateway address (if applicable), and subnet mask. Exit to the Network Parameters screen.
9. If the NIM server is set up to allow pinging from the client system, use the **ping** utility in the RIPL utility to verify that the client system can ping the NIM server. Under the **ping** utility, choose the network adapter that provides the attachment to the NIM server to do the ping operation. If the ping returns with an OK prompt, the client is prepared to boot from the NIM server. If ping returns with a FAILED prompt, the client cannot proceed with the NIM boot.

To do a one-time boot of the network adapter attached to the NIM server network, do the following:

1. Exit to the SMS Main screen.
2. Select **Select Boot Options**.
3. Select **Install or Boot a Device**.
4. On the Select Device Type screen, select **Network**.
5. Set the network parameters for the adapter from which you want to boot.
6. Exit completely from SMS. The system starts loading packets while doing a **bootp** from the network.

Follow the instructions on the screen to select the system console.

- If Diagnostics Operating Instructions Version x.x.x displays, standalone diagnostics have loaded successfully.
- If the operating system login prompt displays, standalone diagnostics did not load. Check the following items:
 - The network parameters on the client may be incorrect.
 - Cstate on the NIM server may be incorrect.
 - Network problems might be preventing you from connecting to the NIM server.

Running System Verification

When the Diagnostic Operating Instructions display, do the following to run system verification:

1. Press Enter.
2. If the terminal type is requested, you must use the **Initialize Terminal** option on the Function Selection menu to initialize the operating system before you can continue with the diagnostics.

Note: If you use a virtual terminal on the HMC and you are asked to define the terminal type, the virtual terminal is considered a VT320.

3. Select the **System Verification** option on the Diagnostic Mode Selection menu.
4. To run a general checkout of all installed resources, select the **All Resource** option on the Diagnostic Selection menu. Follow the instructions on the screen to complete the checkout procedure.
To check one particular resource, select that resource on the Diagnostic Selection menu.

The checkout program ends with either of the following results:

- The Testing Complete screen displays a message stating No trouble was found.
- The A Problem Was Detected On (Time Stamp) menu displays, with either a service request number (SRN) or an error code. Make a note of any codes displayed on the display or operator panel.

To perform additional system verification, go to “Performing Additional System Verification” on page 36. To exit diagnostics, go to “Stopping the Diagnostics” on page 36.

Performing Additional System Verification

To perform additional system verification, do the following:

1. Press Enter to return to the Diagnostic Selection menu.
2. To check other resources, select the resource. When you have checked all of the resources you need to check, go to “Stopping the Diagnostics”.

Stopping the Diagnostics

To stop the diagnostics, do the following:

1. To exit the diagnostics, press the F3 key (from a defined terminal) or press 99 (from an undefined terminal).
2. If you changed any attributes on your terminal to run the diagnostics, change the settings back to normal.
3. This completes the system verification.

If the server passed all the diagnostic tests, the verification process is complete and your server is ready to use.

If you received an error code, record the code and go to the *@server pSeries 650 Service Guide*.

Verify that the Latest Firmware and Adapter and Drive Microcode are Installed

Use the procedures in this section to verify that the latest firmware and adapter microcode are installed on the system. The firmware and microcode are available from either of the following sources:

- Web site:
<http://techsupport.services.ibm.com/server/mdownload2/download.html>
From the Web site, follow the instructions for checking your system’s firmware level and for downloading the latest level of code. Adapter and drive microcode packages are also available from this Web site.
- Current Object Repository (CORE):
If you have access to CORE, do the following to access the firmware and microcode:
 1. Access Current Object Repository (CORE).
 2. Select **CORE Product Family** and **eServer pSeries - RS/6000**
 3. Select **CORE Machine Type** and **pSeries - RS/6000 - Microcode-System/Service**

Verify that the Latest HMC Software is Installed

Use the following instructions to verify the software level of the HMC that is managing the system you just installed.

1. Determine the level of the HMC software running on the HMC. If you don’t know the level of your HMC’s software, refer to the section entitled “Updating the HMC Software” in the *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590.
2. Go to the following Web site for the latest HMC corrective service software:
<http://techsupport.services.ibm.com/server/hmc/corrsv.html>. If the level of software on your HMC is not at the same level as the version on the Web, download and update the HMC software to the latest level. Instructions for updating the HMC software can be found in the *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590.

Access the System Documentation

If you are installing this system and another person is the system administrator, deliver this book to the system administrator when the installation is complete. Ensure that the system administrator reads the following information and is aware of the options to access the documentation for the new system.

Accessing Hardware Documentation

Documentation for the IBM @server pSeries is available online. Visit the IBM @server pSeries Information Center at http://publib16.boulder.ibm.com/pseries/en_US/infocenter/base.

- To access the pSeries publications, click **Hardware documentation**.
- To view information about the accessibility features of @server pSeries hardware and the AIX operating system, click **AIX and pSeries accessibility**.

Accessing System Documentation

Documentation for the AIX operating system is available from the IBM @server pSeries Information Center at http://publib16.boulder.ibm.com/pseries/en_US/infocenter/base. Select **AIX documentation**. The *AIX Documentation* CD contains the base set of publications for the operating system, including system-management and end-user documentation.

Verify Partition Standby and Full System Partition Power Options

If an HMC is attached, perform these procedures to verify that the system can be booted to partition-standby and full-system partition modes. Perform this procedure just before you turn the system over to the customer.

1. At the HMC, in the Navigation area, click the **Partition Management** icon.
2. In the Contents area, select the managed system.
3. In the menu, click **Selected**.
4. Select **Power On**.
You are asked to select a power-on mode from the following:
 - Partition Standby
 - Full System Partition
 - System Profile
5. In the Power On Options menu, select Partition Standby and click **OK**.
6. If the boot to Partition Standby is successful, LPAR will appear in the operator panel.
7. Reboot the system to Full System Partition.
8. If the boot to Partition Standby and Full System Partition is not successful, follow normal service procedures to correct the problem.

Final Installation Tasks

This section contains information on completing the installation of the 7038 Model 6M2.

Complete System Records and Installation Procedure

Update the "System Records" in Appendix G, "System Records", on page 139 to reflect the configuration of the system adapters and devices that are installed. After completing the records, deliver this book to the system administrator. The system administrator can proceed with installing and configuring the operating system.

Configure the Network

To configure the network, the following tasks must be performed:

- Configuring Inventory Scout

- Collecting Vital Product Data (VPD)
- Configuring Service Agent

For more information on performing these tasks, refer to the *IBM Hardware Management Console for pSeries Installation and Operations Guide*.

Chapter 4. Completing the Installation

This chapter contains information on how to ensure that the installation is complete and you are ready to turn the system over to the system administrator. Complete the steps described in this chapter *after* you verify the hardware operation as described in Chapter 3, “Verifying the Hardware Operation”, on page 29.

Step 1. Bezels and Doors

If you have not done so, install any remaining bezels and close the doors on the rack.

Step 2. Complete Installation Checklists

The installation instructions prompt you through the installation procedure. Use the checklist as you work to ensure that the installation process is complete.

Note: The procedures referenced in this section might be optional on your system. Contact your service support representative for more information.

TTY Terminal Console and the System is Not Partitioned

To complete an installation when the TTY terminal is used for the system console, the installer must:

- ___ 1. Locate the installed TTY terminal. Refer to “Step 7. Check Your Display or Console Type” on page 17.
- ___ 2. Check the connection of the TTY terminal to the appropriate serial port on the system unit. Refer to “Step 12. Connect the Serial and Parallel Devices” on page 20.
- ___ 3. Arrange the system console and attached devices so that they can be used comfortably. Refer to “Step 6. Position the Display” on page 17.
- ___ 4. Connect the power to the system. Refer to “Step 17. Connect the Power Cords to the Server” on page 24.
- ___ 5. Verify the system operation by completing the procedures in Chapter 3, “Verifying the Hardware Operation”, on page 29.
- ___ 6. Verify that the latest firmware and adapter/drive microcode code are installed. Refer to “Verify that the Latest Firmware and Adapter and Drive Microcode are Installed” on page 36.
- ___ 7. Ensure that the operating system is installed:
 - If an operating system has been preinstalled in your system, go to the next step.
 - If you plan to install the operating system now, see the installation instructions provided with the operating system.
 - The operating system can be installed from a CD (if a CD-ROM drive is installed). For this method, the system must have a CD-ROM drive.
 - The operating system can be installed from a Network Installation Management (NIM) server. For information about installing AIX from a NIM server, see the *AIX 5L Installation Guide and Reference*, order number SC23-4389.
- ___ 8. If the system is not running, start the system. Refer to the procedures in “Operator Panel Power-On Method” on page 31.
- ___ 9. If you want to set up your service processor, perform the following procedures:
 - ___ a. Configure Inventory Scout Services and Service Agent.
 - ___ b. Collect vital product data.
 - ___ c. Transmit vital product data.

For more information about performing these tasks, refer to user's guide for your system.
- ___ 10. Leave this installation guide with the system administrator.

Graphics Terminal Console and the System is Not Partitioned

To complete an installation when a graphics display, keyboard, and mouse are used for the system console, the installer must:

- ___ 1. Locate the installed graphics display, keyboard, and mouse. Refer to “Step 7. Check Your Display or Console Type” on page 17
- ___ 2. Check the connection of the graphics display to the appropriate PCI adapter, and the connection of the keyboard and mouse to the system unit. Refer to “Step 10. Connect the Graphics Display” on page 18.
- ___ 3. Arrange the system console and attached devices so that they can be used comfortably. Refer to “Step 6. Position the Display” on page 17.
- ___ 4. Connect the power to the system. Refer to “Step 17. Connect the Power Cords to the Server” on page 24.
- ___ 5. Verify the system operation by completing the procedures in Chapter 3, “Verifying the Hardware Operation”, on page 29.
- ___ 6. Verify that the latest firmware and adapter/drive microcode code are installed. Refer to “Verify that the Latest Firmware and Adapter and Drive Microcode are Installed” on page 36.
- ___ 7. Ensure that the operating system is installed:
If an operating system has been preinstalled in your system, go to the next step.
If you plan to install the operating system now, see the installation instructions provided with the operating system.
 - The operating system can be installed from a CD (if a CD-ROM drive is installed). For this method, the system must have a CD-ROM drive.
 - The operating system can be installed from a Network Installation Management (NIM) server. For information about installing AIX from a NIM server, see the *AIX 5L Installation Guide and Reference*, order number SC23-4389.
- ___ 8. If the system is not running, start the system. Refer to the procedures in “Operator Panel Power-On Method” on page 31.
- ___ 9. If you want to set up your service processor, perform the following procedures:
 - ___ a. Configure Inventory Scout Services and Service Agent.
 - ___ b. Collect vital product data.
 - ___ c. Transmit vital product data.For more information about performing these tasks, refer to user’s guide for your system.
- ___ 10. Leave this installation guide with the system administrator.

HMC-Managed System Using a Single Full System Partition

To complete an installation when an HMC is used to manage a full system partition on a managed system, the installer must:

- ___ 1. Locate the installed HMC. If the HMC is not already installed, install it now. Refer to the *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590.
- ___ 2. Arrange the HMC and attached devices so that they can be used comfortably. Refer to the *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590.
- ___ 3. Ensure that the HMC is running. Refer to *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590.
- ___ 4. Connect the power to the system. Refer to “Step 17. Connect the Power Cords to the Server” on page 24.
- ___ 5. Verify the system operation by completing the procedures in Chapter 3, “Verifying the Hardware Operation”, on page 29.
- ___ 6. Verify that the latest firmware and adapter/drive microcode code are installed. Refer to “Verify that the Latest Firmware and Adapter and Drive Microcode are Installed” on page 36.
- ___ 7. Ensure that the operating system is installed:
If an operating system has been preinstalled in your system, go to the next step.
If you plan to install the operating system now, see the installation instructions provided with the operating system.
 - The operating system can be installed from a CD (if a CD-ROM drive is installed). For this method, the system must have a CD-ROM drive.
 - The operating system can be installed from a Network Installation Management (NIM) server. For information about installing AIX from a NIM server, see the *AIX 5L Installation Guide and Reference*, order number SC23-4389.
- ___ 8. If the system is not running, start the system. refer to the *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590 for procedures on starting the system from the HMC.
- ___ 9. Configure the network. Perform the following procedures:
 - ___ a. Configure Inventory Scout Services and Service Agent.
 - ___ b. Collect vital product data.
 - ___ c. Transmit vital product data.For more information about performing these tasks, refer to the *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590.
- ___ 10. Leave this installation guide with the system administrator.

HMC-Managed System with Multiple Partitions

To complete an installation when an HMC is used to manage a multi-partition system, the installer must:

- ___ 1. Locate the installed HMC. If the HMC is not already installed, install it now. Refer to the *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590.
- ___ 2. Arrange the HMC and attached devices so that they can be used comfortably. Refer to the *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590.
- ___ 3. Ensure that the HMC is running. Refer to *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590.
- ___ 4. Connect the power to the system. Refer to “Step 17. Connect the Power Cords to the Server” on page 24.
- ___ 5. Verify the system operation by completing the procedures in Chapter 3, “Verifying the Hardware Operation”, on page 29.
- ___ 6. Verify that the latest firmware and adapter/drive microcode code are installed. Refer to “Verify that the Latest Firmware and Adapter and Drive Microcode are Installed” on page 36.
- ___ 7. Ensure that the operating system is installed:
If an operating system has been preinstalled in your system, go to the next step.
If you plan to install the operating system now, see the installation instructions provided with the operating system.
 - The operating system can be installed from a CD (if a CD-ROM drive is installed). For this method, the system must have a CD-ROM drive.
 - The operating system can be installed from a Network Installation Management (NIM) server. For information about installing AIX from a NIM server, see the *AIX 5L Installation Guide and Reference*, order number SC23-4389.
- ___ 8. If the system is not running, start the system. refer to the *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590 for procedures on starting the system from the HMC.
- ___ 9. Configure the network. Perform the following procedures:
 - ___ a. Configure Inventory Scout Services and Service Agent.
 - ___ b. Collect vital product data.
 - ___ c. Transmit vital product data.

For more information about performing these tasks, refer to the *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590.
- ___ 10. Leave this installation guide with the system administrator.

Chapter 5. Installing Options for the pSeries 650

This chapter provides instructions to help you add options to your system. In case you need to remove one option to install another, some option removal instructions are provided. If you have several internal options to install, these instructions enable you to add them all at one time.

Before performing any of the installation or removal procedures in this chapter, read the following safety considerations.

Safety Considerations

Observe the following safety precautions anytime you work with this system unit.

In the system you are about to set up or service:

- The ac power interface connector is considered the main power disconnect device.
- This system has redundant power supply capabilities, meaning that it has the capability of having two power supplies running simultaneously in the same system unit. When you are instructed to disconnect the power source, ensure that all power cords have been unplugged.

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.

Before installing or removing signal cables, ensure that the power cables for the system unit and all attached devices are unplugged.

When adding or removing any additional devices to or from the system, ensure that the power cables for those devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.

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

During an electrical storm, do not connect cables for display stations, printers, telephones, or station protectors for communications lines.

D05

CAUTION:

This product is equipped with a three-wire power cable and plug for the user's safety. Use this power cable with a properly grounded electrical outlet to avoid electrical shock.

C01

CAUTION:

This unit has more than one power supply cord. To reduce the risk of electrical shock, disconnect two power supply cords before servicing.

C21

Notes:

1. This unit will have two power cords only if the redundant power supply feature is installed.
2. Servicing of the pSeries 650 is performed with the system in the rack and placed into the service position. See the *@server pSeries 650 Service Guide* for more information on the service position for the pSeries 650.
3. A highlighted number in a procedure step refers to the numbered components found in the illustration for that particular procedure.

Handling Static-Sensitive Devices

Attention: Electronic boards, diskette drives, and disk drives are sensitive to static electricity discharge. These devices are wrapped in antistatic bags to prevent this damage.

Take the following precautions:

- If you have an antistatic wrist strap available, use it while handling the device.
- Do not remove the device from the antistatic bag until you are ready to install the device in the system.
- With the device still in its antistatic bag, touch it to a metal frame of the system.
- Grasp cards and boards by the edges. Hold drives by the frame. Avoid touching the solder joints or pins.
- If you need to lay the device down while it is out of the antistatic bag, lay it on the antistatic bag. Before picking it up again, touch the antistatic bag and the metal frame of the system at the same time.
- Handle the devices carefully to prevent permanent damage.

Color Coded Indicators

Some components in this system are color coded to indicate a location where an installation or removal task is performed. When you are installing or removing components in this system, note that the handles and latches are indicated using either blue or orange color. The colors indicate the following:

- Orange designates a location for a component that can be installed or removed without powering off the system. The system hardware and operating system must be enabled to allow these tasks. Also, there might be preparatory steps that the user must perform before any installation or removal is attempted.
- Blue indicates a touch point that is used in the installation or removal of a component. The power must be removed before you install or remove a part that has only a blue touch point.
- If a component has both blue and orange indicators, the orange indicator takes precedence over the blue indicator.

Stopping the System

Attention: If you are installing a hot-pluggable component, do not stop the system.

Is an HMC attached to the system?

YES

Do the following:

1. Ask the customer to shut down all active partitions.
2. Use the HMC power-off function to power off the system.

As the system powers off, the power LED on the operator panel starts blinking at a fast rate, and B0FF appears in the system operator panel display.

When the power-off sequence is complete, the system goes into standby mode, and the following occurs:

- OK displays on the operator panel.
- The system's operator panel power indicator LED blinks at a slow rate.

After the operating system is in standby mode, set the power switches of any attached devices to *off*.

NO

Do the following:

1. Ask the customer to stop all applications that are running on the system.
2. Log into the system as the root user.
3. At the command line, type `shutdown` to stop the operating system.

Note: If Linux is running, enter the `shutdown now -h` command.

As the system powers off, the power LED on the operator panel starts blinking at a fast rate. B0FF appears in the operator panel display.

When the power-off sequence is complete, the system goes into standby mode and the following occurs:

- OK displays on the operator panel.
- The system's operator panel power indicator LED blinks at a slow rate.

After the operating system is in standby mode, set the power switches of any attached devices to *off*.

Disk Drive Options

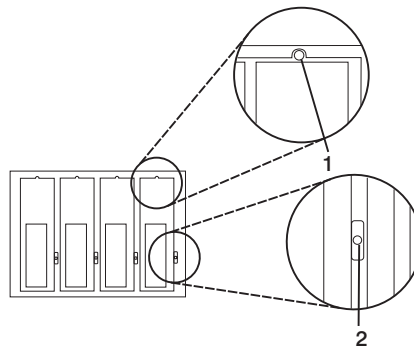
Attention: The Linux operating system does not support some hot-pluggable procedures. Also, Linux does not support hot-plugging any hot-pluggable PCI adapters or devices. The system with Linux installed on one or more partitions must be shutdown and powered off before replacing any PCI adapter or device assigned to a Linux partition. Please follow the non-hot-pluggable adapter or device procedures when replacing a PCI adapter or device in any partition with Linux installed.

Your system can have up to four disk drives installed. The disk drives are mounted in carriers that allow the disk drives to plug into the bay slots. When you install or remove disk drives, refer to the procedures in this section.

Disk drives that are installed in the four-position bays are referred to as *hot-pluggable* disk drives.

The SCSI disk drive bays have light emitting diodes (LEDs) to identify the state of the disk drive slot **(1)** shown in the following illustration. The disk drive carriers also have status lights **(2)**, which are used to determine if the drive is active.

Note: The SCSI disk may have an optional second LED. If so, the bottom one is not used.



LED	Identifies	Status
1	Disk drive slot status	Light is on when slot is active.
2	Disk drive status	Light is on when drive is active.

Preinstallation Considerations for Disk Drives

Consider the following when installing disk drives into your system unit:

- Use caution when you are handling all disk drives. Disk drives are more likely to be damaged during installation and service than at any other time. A fall of as little as .25 inch, bumping, or rough handling can all cause latent failures.
- Media drives are particularly sensitive to electrostatic discharge. Follow all electrostatic handling procedures prior to handling the media drive.
- You must install the appropriate disk drive bay hardware before proceeding.

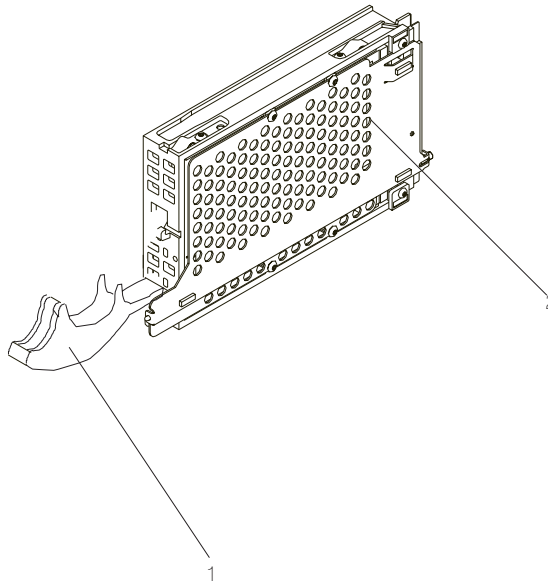
Installing Hot-Plug SCSI Disk Drives

Attention: The Linux operating system does not support some hot-pluggable procedures. Also, Linux does not support hot-plugging any hot-pluggable PCI adapters or devices. The system with Linux installed on one or more partitions must be shutdown and powered off before replacing any PCI adapter or device assigned to a Linux partition. Please follow the non-hot-pluggable adapter or device procedures when replacing a PCI adapter or device in any partition with Linux installed.

Note: A four-position disk drive bay is required for hot-plugging of disk drives.

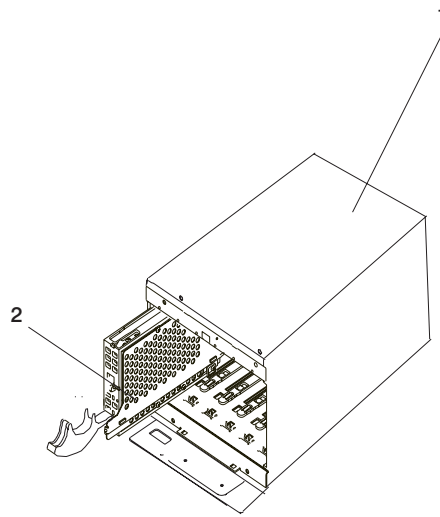
Review the information in “Disk Drive Options” on page 46 before installing a disk drive. To install a disk drive, do the following:

1. Determine the bay in which you are installing the new disk drive. Remove the cover from the bay.
2. Remove the disk drive from its protective packaging and open the drive latch handle.



- 1 Drive latch handle
- 2 Disk drive

3. Install the disk drive in the drive slot. Align the disk drive with the drive slot rails, and slide the disk drive into the slot until it contacts the backplane at the rear of the drive bay. The drive should be inserted far enough for the latch handle to engage the latch.



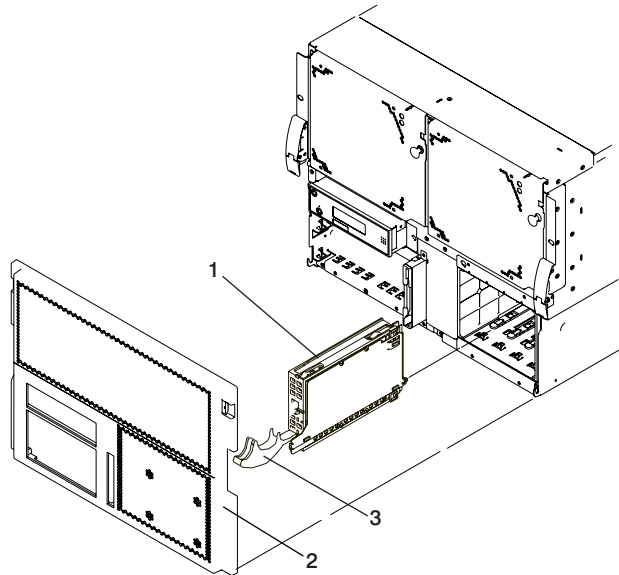
- 1 Disk drive bay
- 2 Disk drive

4. Push the disk drive lever up and to the rear to lock the disk drive.
5. Repeat steps 1 through 4 in “Installing Hot-Plug SCSI Disk Drives” on page 47 for all the drives that you are installing in this bay. Then replace the cover on the bay.
6. Log in as root user.
7. At the command line, type `smitty`.
8. Select **Devices**.
9. Select **Install/Configure Devices Added After IPL** and press Enter. Follow the instructions on the screen. Successful configuration is indicated by the OK message displayed next to the **Command** field at the top of the screen.
10. Press F10 to exit smitty.
11. Go to “Configuring and Deconfiguring SCSI Hot-Swap Disk Drives” on page 51 to configure the drive for use with your operating system.

Removing Hot-Plug SCSI Disk Drives

Review the information in “Disk Drive Options” on page 46 before removing a disk drive. To remove a disk drive, do the following:

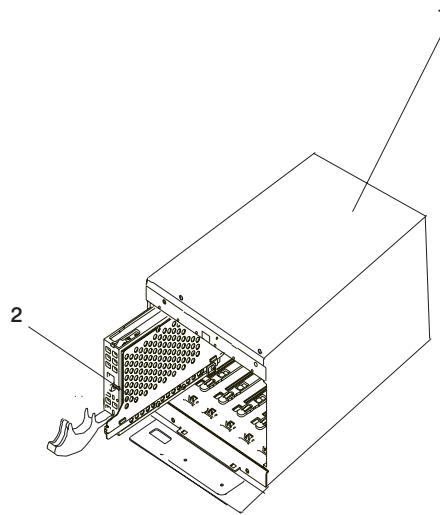
1. Back up the information from the disk drive to another drive.
2. Deconfigure the drive you are removing from the system. See “Deconfiguring Drives” on page 51.
3. Remove the disk drive bay cover from the disk drive bay.



- 1 Disk drive bay
- 2 Disk drive bay cover

4. Log in as root user.
5. At the command line, type `smitty`.
6. Select **System Storage Management (Physical and Logical Storage)**.
7. Select **Removable Disk Management**.

8. Select **Remove a Disk**.
9. Select the desired disk from the list on the screen and press Enter.
10. Follow the instructions on the screen to remove the drive.
11. When you are asked "Are you sure?" answer "Yes" and press Enter. The power LED on the drive that you selected turns off.
12. Remove the disk drive by pulling the disk drive lever toward you until it is completely open. Then remove the disk drive from the slot. The LED on the top of the slot will turn off when the disk drive is removed.



- 1 Disk drive bay
- 2 Disk drive

13. Repeat steps 1 through 12 in "Removing Hot-Plug SCSI Disk Drives" on page 49 for all the drives that you are removing from this bay. Then replace the cover on the bay.
14. Press F10 to exit smitty.

Configuring and Deconfiguring SCSI Hot-Swap Disk Drives

Attention: The Linux operating system does not support some hot-pluggable procedures. Also, Linux does not support hot-plugging any hot-pluggable PCI adapters or devices. The system with Linux installed on one or more partitions must be shutdown and powered off before replacing any PCI adapter or device assigned to a Linux partition. Please follow the non-hot-pluggable adapter or device procedures when replacing a PCI adapter or device in any partition with Linux installed.

To configure or deconfigure a drive, use the following procedures:

Configuring Drives

1. Log in as root user.
2. At the command line, type `smitty`.
3. Select **System Storage Management (Physical and Logical Storage)** and press Enter.
4. Select **Logical Volume Manager** and press Enter.
5. Select **Volume Groups** and press Enter.
6. Select **Set Characteristics of a Volume Group** and press Enter.
7. Select **Add a Physical Volume to a Volume Group**.
8. Fill in the fields for the drive you are adding to the system. Press F4 for a list of selections.
Documentation for the AIX operating system is available from the IBM @server pSeries Information Center at http://publib16.boulder.ibm.com/pseries/en_US/infocenter/base. Select **AIX documentation**. The *AIX Documentation* CD contains the base set of publications for the operating system, including system-management and end-user documentation.
9. Press F10 to exit smitty.

Deconfiguring Drives

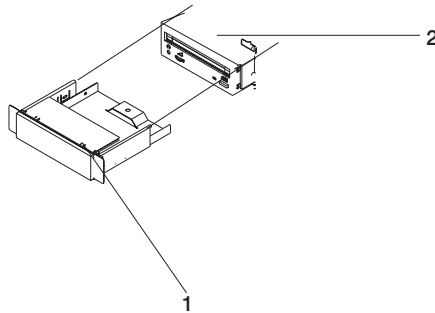
1. Log in as root user.
2. At the command line, type `smitty`.
3. Select **System Storage Manager (Physical and Logical Storage)** and press Enter.
4. Select **Logical Volume Manager** and press Enter.
5. Select **Volume Groups** and press Enter.
6. Select **Set Characteristics of a Volume Group** and press Enter.
7. Select **Remove a Physical Volume from a Volume Group**.
8. Press F4 to list the available volume groups, then select the volume group name and press Enter.
9. Press F4 to select a physical volume and follow the instructions on the screen to select the physical volume. Press Enter.
10. Return to the procedure that directed you here.

Installing Media Drives

This section helps you install media drives in the optional media position of the system.

Installing a Drive in the Optional Media Position

1. If you have not already done so, shut down the system as described in “Stopping the System” on page 45.
2. If you have not already done so, unplug the system unit power cable from the electrical outlet.
3. Remove the media-bay blank cover bracket by pulling it straight out from the system unit.



- 1** Media-bay blank cover bracket
2 System unit

4. Ensure that the locking knobs are pulled to the out position, and install the drive in the system unit by sliding it into the optional media bay until the locking knobs contact the frame of the system unit.
5. Push each locking knob until it locks into position.
6. If you do not have other options to install, replace the system unit covers.

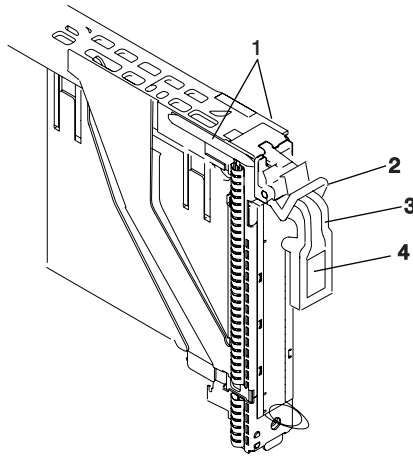
PCI Adapters

Attention: The Linux operating system does not support some hot-pluggable procedures. Also, Linux does not support hot-plugging any hot-pluggable PCI adapters or devices. The system with Linux installed on one or more partitions must be shutdown and powered off before replacing any PCI adapter or device assigned to a Linux partition. Please follow the non-hot-pluggable adapter or device procedures when replacing a PCI adapter or device in any partition with Linux installed.

Most PCI adapters can be removed and replaced, or installed in the system without turning off the power to the entire system. These adapters are referred to as *hot-pluggable* PCI adapters. Some adapters are not hot-pluggable and power must be removed from the system for adapter removal, replacement, or installation. Though some adapters are not hot-pluggable, they must still be installed in the cassette.

Note: An adapter or an adapter blank filler must be installed into the PCI adapter cassette assembly before it is reinstalled in a system unit or an I/O drawer.

Before you remove or replace an adapter, determine if the PCI adapter you are working with is hot-pluggable. See the *PCI Adapter Placement Reference*, order number SA38-0538. The following illustration shows the PCI adapter cassette with the handle lowered.



- | | |
|-------------------------|----------------------------------|
| 1 Dovetail | 3 Handle in the lowered position |
| 2 Gray locking crossbar | 4 Center of handle |

If you are installing or removing a PCI adapter that is:

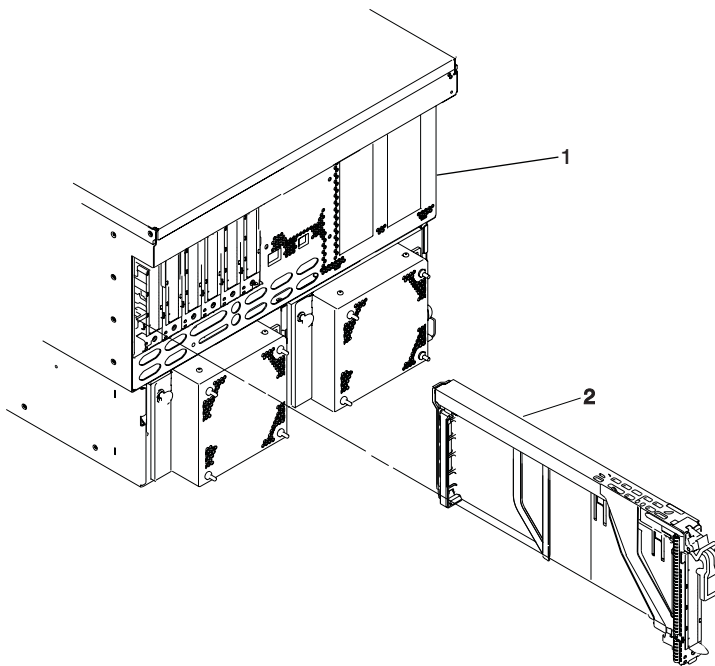
- Not hot-pluggable, go to “Non-Hot-Pluggable PCI Adapter” on page 54.
- Hot-pluggable, go to “Hot-Pluggable PCI Adapter” on page 56.

Non-Hot-Pluggable PCI Adapter

Removal

To remove a non-hot-pluggable adapter, perform the following steps:

1. Turn off power and remove the power from the system as described in “Stopping the System” on page 45.
2. Determine the slot from which you are removing the adapter.
3. Disconnect any cables that are connected to the adapter being removed.
4. Press the center of the handle of the PCI adapter cassette to release the latch, then lower the handle completely.
5. To keep the handle from pulling up when it is completely lowered, push the gray locking cross bar.
6. Carefully pull the PCI adapter cassette straight out from the I/O subsystem, as shown in the following illustration. Take care not to pull EMC gaskets from neighboring cassettes.



- 1 I/O subsystem
2 PCI adapter cassette

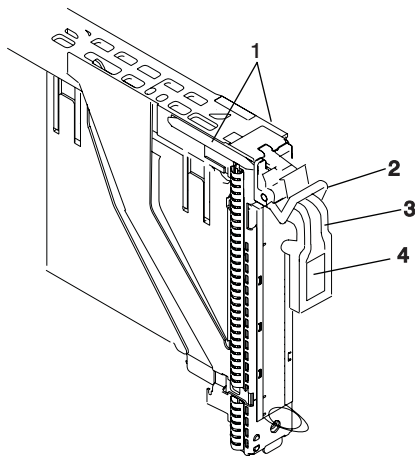
7. If you are installing another adapter in this slot, follow the instructions given in “Installing or Replacing a Non-Hot-Pluggable PCI Adapter” on page 55.
8. If you are not installing another adapter in this slot, install a blank PCI adapter in a cassette into the slot.
9. Connect power to the system and turn on the power.
10. Return the system to normal operations.

Installing or Replacing a Non-Hot-Pluggable PCI Adapter

To install or replace a non-hot-pluggable PCI adapter the adapter must be in a cassette. Use the following procedure:

Note: Because the adapter you are installing is not hot-pluggable, shut down the system and remove power before performing this procedure.

1. Press the center of the handle of the PCI adapter cassette to release the latch, then lower the handle completely.
2. When the handle is completely lowered, push the gray locking cross bar. The following illustration shows the PCI adapter cassette with the handle lowered.



- | | |
|-------------------------|----------------------------------|
| 1 Dovetail | 3 Handle in the lowered position |
| 2 Gray locking crossbar | 4 Center of handle |

3. Hold the assembly straight on and level with the slot.
4. Align the bottom edge of the PCI cassette cover with the PCI adapter guide rail on the backplane to which it is being installed.

Note: If there is a cassette to the left of the one that you are installing, align the ridge on the cover with the tick in the notch of the neighboring cassette.

5. Slide the cassette partially into the guide.
6. Ensure that the dovetail on the top track aligns with its mating component(s) on both sides.
7. When the cassette is fully inserted, prepare to activate the handle by lowering the gray locking bar. Lift up the handle completely until you hear a click. The PCI adapter should be completely seated.

Note: To enable proper insertion of the adapter, some minor forward or backward movement of the PCI adapter cassette might be necessary.

8. Set the color slide to blue.
9. Connect power to the system and turn on the power as described in "HMC Power-On Method" on page 29.
10. Ensure that the adapter is configured when the system completes the boot process.

Hot-Pluggable PCI Adapter

Installing a Hot-Pluggable PCI Adapter

Attention: The Linux operating system does not support some hot-pluggable procedures. Also, Linux does not support hot-plugging any hot-pluggable PCI adapters or devices. The system with Linux installed on one or more partitions must be shutdown and powered off before replacing any PCI adapter or device assigned to a Linux partition. Please follow the non-hot-pluggable adapter or device procedures when replacing a PCI adapter or device in any partition with Linux installed.

Note: Before installing a new adapter, ensure the device driver for the adapter is installed. See the instructions that came with the new adapter.

To install an adapter, perform the following steps:

1. Install the new adapter into a PCI adapter cassette. See “PCI Adapter or Blank Filler Removal from a Cassette Assembly” on page 60.
2. Log in as root user, if the system is a partitioned system, log in as root user on the partition that has the adapter assigned to it.
3. At the command line, type **smitty**.
4. Select **Devices**.
5. Select **PCI Hot Plug Manager**.
6. From the PCI Hot-Plug Manager menu, select **Add a PCI Hot-Plug Adapter** and press Enter. The Add a Hot-Plug Adapter window displays.
7. See the *PCI Adapter Placement Reference*, order number SA38-0538, for adapter placement information. Select an empty PCI slot for the adapter.
8. Select the appropriate empty PCI slot from the ones listed on the screen, and press Enter.
9. Follow the instructions on the screen to install the adapter until the visual indicator (LED) for the specified PCI slot is set to the Action state.
10. Install the new adapter in the adapter slot by performing the following:
 - a. Lower the black handle completely.
 - b. Push the gray locking cross bar until you hear a clicking sound.
 - c. Hold the assembly straight on and level with the slot.
 - d. Align the bottom edge of the PCI cassette cover with the PCI adapter guide rail on the I/O backplane.

Note: If there is a cassette to the left of the one that you are installing, align the ridge on the cover with the tick in the notch of the neighboring cassette.
 - e. Slide the cassette partially into the guide.
 - f. Ensure that the dovetail on the top track aligns with its mating component(s) on both sides.
 - g. When the cassette is fully inserted, prepare to activate the handle by lowering the gray locking bar. Lift up the handle completely until you hear a click. The PCI adapter should be completely seated.
 - h. Set the color slide to orange.
11. Connect the appropriate cables and devices to the adapter.
12. Continue to follow the screen instructions until you receive a message that the installation is successful. Successful installation is indicated by the OK message displayed next to the **Command** field at the top of the screen.
13. Press the F3 key to return to the PCI Hot-Plug Manager menu.
14. Select **Install/Configure Devices Added After IPL** and press Enter. Follow the instructions on the screen. Successful installation is indicated by the OK message displayed next to the **Command** field at the top of the screen.

15. If you do not have other adapters to install, continue with the next step.
OR
If you have other adapters to install, press the F3 key to return to the PCI Hot-Plug Manager menu and then return to step 6 on page 56.
16. Press F10 to exit the Hot-Plug Manager.

Removing a Hot-Pluggable PCI Adapter

Attention: The Linux operating system does not support some hot-pluggable procedures. Also, Linux does not support hot-plugging any hot-pluggable PCI adapters or devices. The system with Linux installed on one or more partitions must be shutdown and powered off before replacing any PCI adapter or device assigned to a Linux partition. Please follow the non-hot-pluggable adapter or device procedures when replacing a PCI adapter or device in any partition with Linux installed.

Note: If you are removing an adapter and replacing it with an adapter that is identical to the adapter that was removed, use the procedure “Replacing a Hot-Pluggable PCI Adapter” on page 105.

To remove an adapter, perform the following steps:

1. Open the door of the rack.
2. Determine the slot from which you are removing the adapter.
3. Ensure that any processes or applications that might use the adapter are stopped.

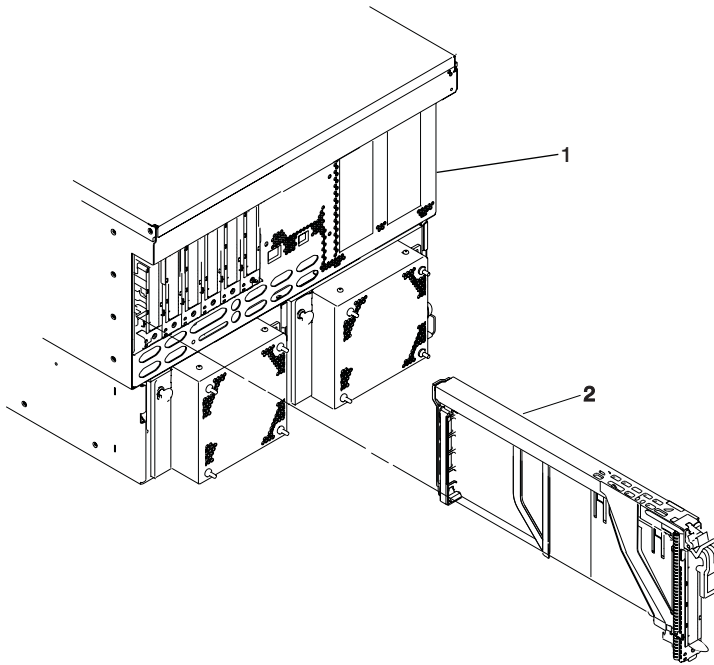
Note: Removing a hot-pluggable PCI adapter requires the system administrator to take the PCI adapter offline before performing any PCI adapter hot-plug procedures. Before taking an adapter offline, the devices attached to the adapter must also be taken offline. This action prevents a service representative or user from causing an unexpected outage for system users.

For more information on taking the PCI adapter online, see the AIX operating system documentation. Documentation for the AIX operating system is available from the IBM @server pSeries Information Center at http://publib16.boulder.ibm.com/pseries/en_US/infocenter/base. Select **AIX documentation**. The *AIX Documentation* CD contains the base set of publications for the operating system, including system-management and end-user documentation.

4. Log in as root user, if the system is a partitioned system, log in as root user on the partition that has the adapter assigned to it.
5. At the command line, type **smitty**.
6. Select **Devices**.
7. Select **PCI Hot Plug Manager**.
8. Select **Unconfigure a Device** and press Enter.
9. Press F4 to display the Device Names menu.
10. Select the adapter you are removing from the menu.
11. Use the Tab key to answer NO to **Keep Definition**. Press Enter.
12. The ARE YOU SURE screen displays. Press Enter to verify the information. Successful unconfigure is indicated by the OK message displayed next to the **Command** field at the top of the screen.
13. Press F3 to return to the PCI Hot-Plug Manager menu.
14. Select **Replace/Remove a PCI Hot-Plug Adapter** and press Enter. The Replace/Remove a PCI Hot-Plug Adapter menu displays.
15. Move the cursor to select the adapter that you are removing and press Enter. (The description entry displays as unknown).
16. Press the Tab key until the entry field displays the remove operation. Press Enter. Follow the instructions that display on the screen until you are instructed to remove the adapter.

17. When you are instructed to remove the adapter from the adapter slot, disconnect any cables that are connected to the adapter being removed.
18. Press the center of the handle of the PCI adapter cassette to release the latch, then lower the handle completely.
19. When the handle is completely lowered, push the gray locking cross bar.

20. Carefully pull the PCI adapter cassette straight out from the I/O subsystem, as shown in the following illustration. Take care not to pull EMC gaskets from neighboring cassettes.



- 1 I/O subsystem
- 2 PCI adapter cassette

21. If you are not installing another adapter in this slot, install a blank PCI adapter cassette into the slot.
22. Continue to follow the screen instructions until you receive a message that the adapter removal is successful. Successful removal is indicated by the OK message displayed next to the **Command** field at the top of the screen.
23. If you do not have other adapters to remove, continue with the next step.
OR
If you have other adapters to remove, press the F3 key to return to the PCI Hot-Plug Manager menu and then return to step 14 on page 57.
24. Press F10 to exit the Hot-Plug Manager.

PCI Adapter or Blank Filler Removal from a Cassette Assembly

Use this procedure when you are preparing to install or replace an adapter or an adapter blank filler in the system unit or an I/O drawer.

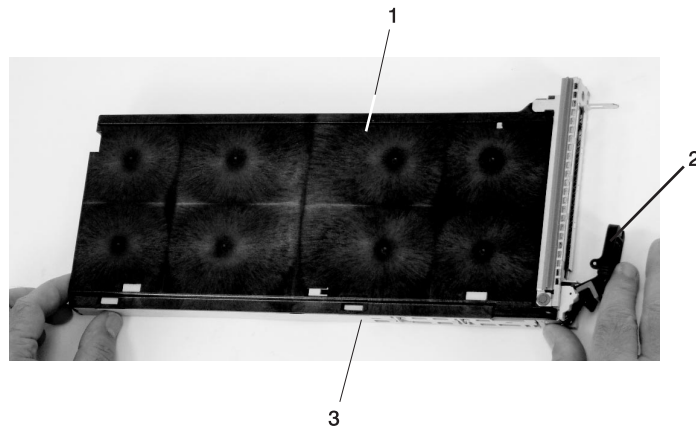
Note: An adapter or an adapter blank filler must be installed into the PCI adapter cassette assembly before it is reinstalled in a system unit or an I/O drawer.

Determine the slot of the system or I/O drawer in which you plan to install or remove an adapter, and refer to the procedures for removing an adapter from the system. Remove the PCI adapter cassette assembly from the system unit or I/O drawer before beginning this procedure.

Note: It may take approximately 30 to 40 minutes to perform this procedure the first time. This time includes using the instructions in this guide and performing the steps. Thereafter, performing this procedure usually takes approximately 10 minutes.
Before performing the following steps, familiarize yourself with the entire procedure.

To remove a PCI adapter or blank filler from a cassette assembly, do the following:

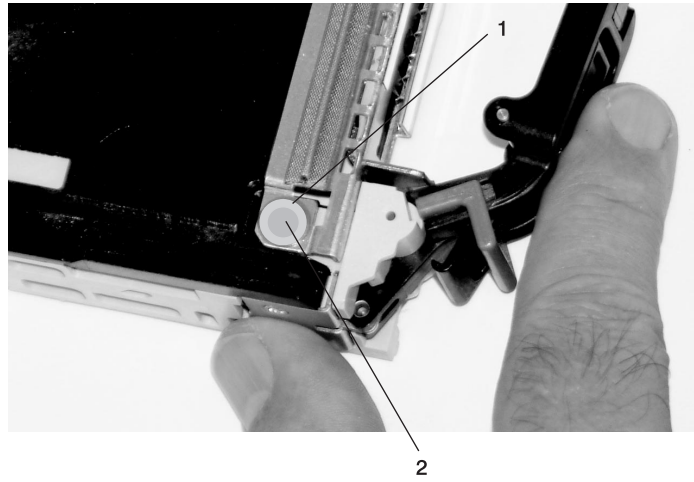
1. Place the PCI adapter cassette assembly on a flat work surface with the cover facing up, and the top of the adapter facing you. See the following illustration.



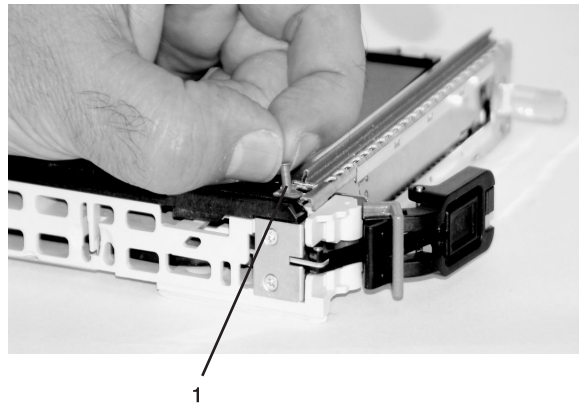
1 Cover
2 Handle

3 Top of Cover

- Using two fingers, remove the bushing-lock pin from the bushing. The pin can be removed by pulling it out of the bushing with your fingernails.

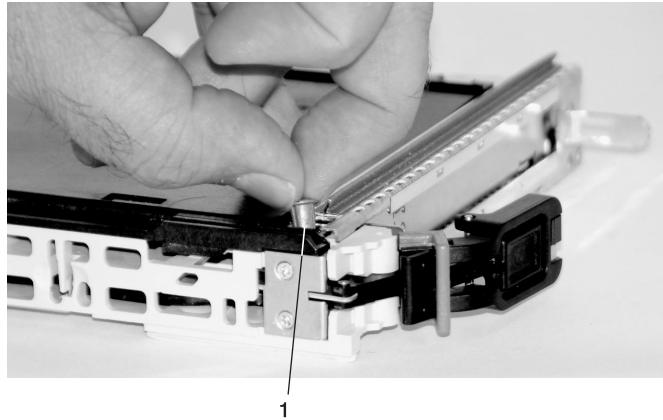


- 1 Bushing
- 2 Bushing-Lock Pin



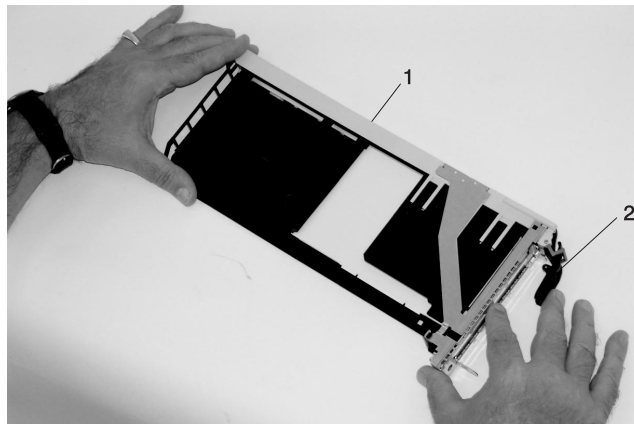
- 1 Bushing-Lock Pin

3. Remove the bushing. The bushing can be removed by pulling it out of the PCI adapter cassette assembly with your fingernails.



1 Bushing

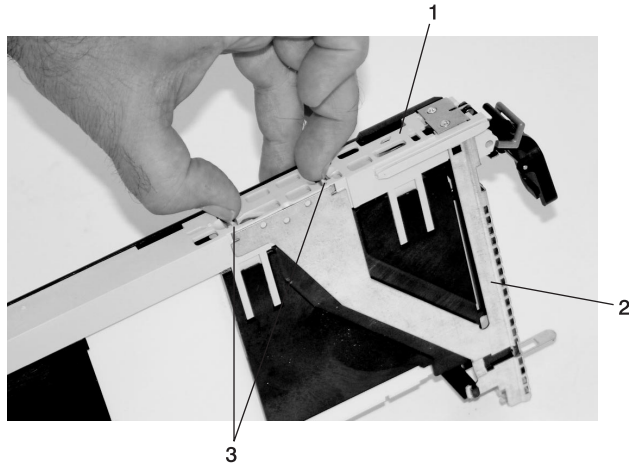
4. Turn over the PCI adapter cassette assembly so that the top is facing away from you.



1 Top of Adapter
2 Handle

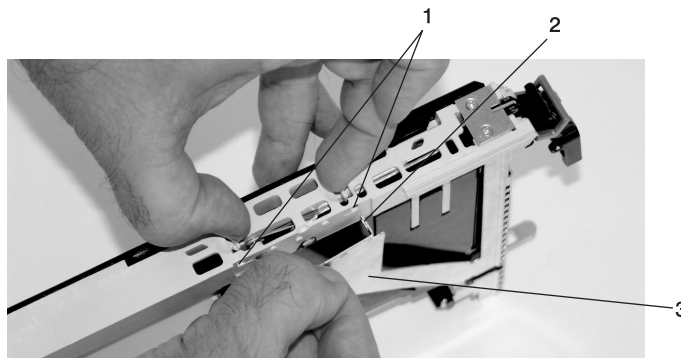
5. Remove the bezel, as follows:

- a. Locate the plastic latch fingers in the top part of the cassette.



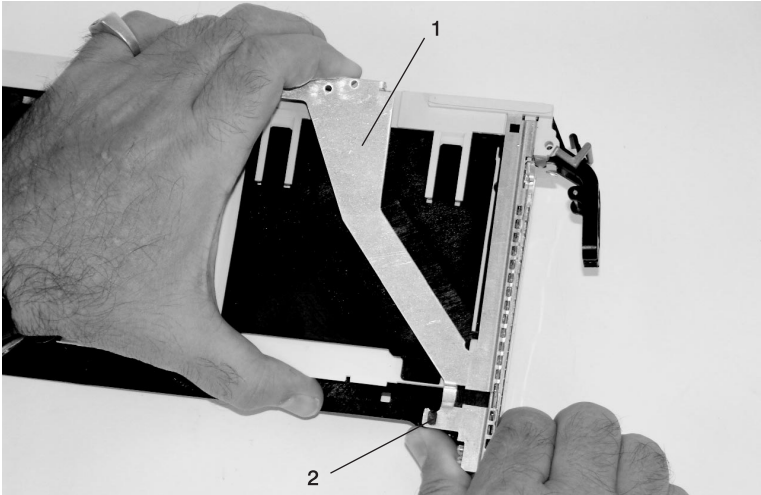
- 1 Top of Cassette
- 2 Bezel
- 3 Plastic Latch Fingers

- b. Using one hand, pinch the plastic latch fingers, and with your other hand, carefully lift the top part of the bezel extension out until the tabs clear the slots in the PCI adapter cassette assembly.



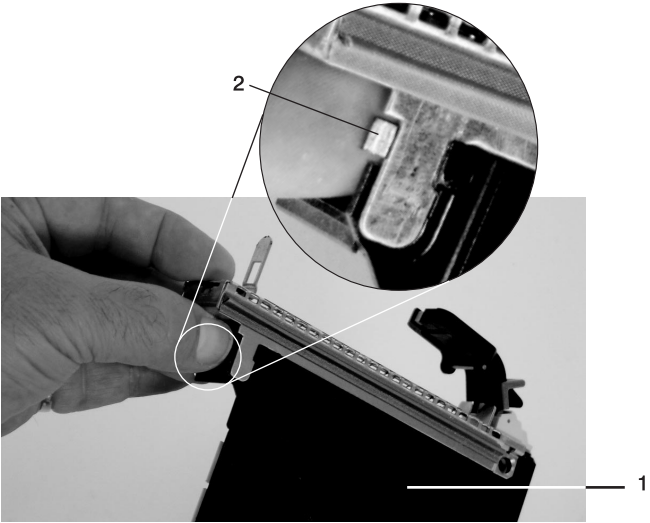
- 1 Slots
- 2 Tab
- 3 Bezel Extension

c. While holding the bezel extension out, push the plastic cover latch out of the bezel hook, as shown in the following illustration. This action allows the bezel to be removed.



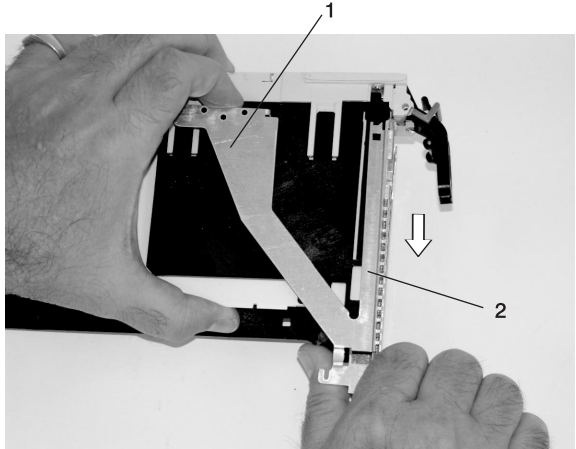
1 Bezel Extension
2 Plastic Cover Latch in Bezel Hook

d. On the opposite side of the cassette (cover side), push the cover latch to release the bezel.

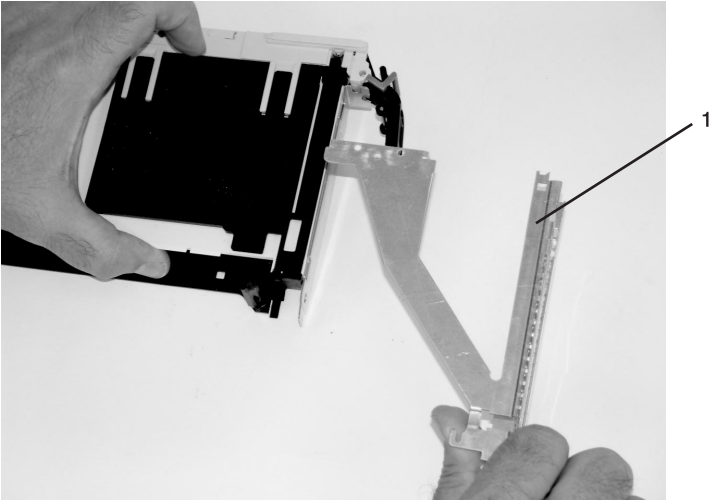


1 Cover Side
2 Cover Latch

- e. While holding the bezel extension out, carefully slide the bezel off. You might have to work from both sides to loosen the bezel assembly from the cassette assembly. When the bezel is free, slide it completely off the cassette assembly, and set it aside.



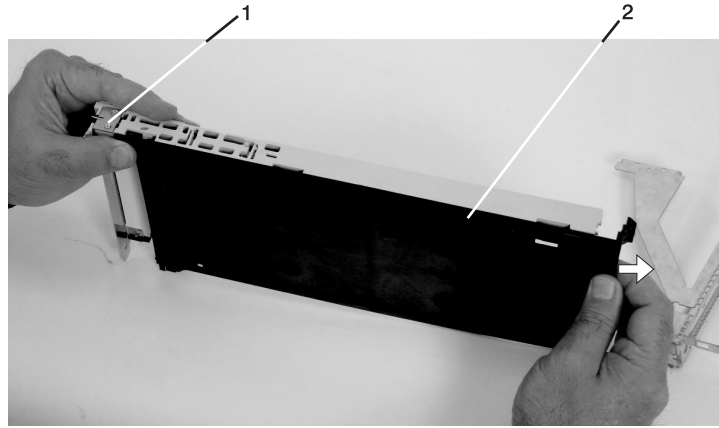
1 Bezel Extension
2 Bezel



1 Bezel

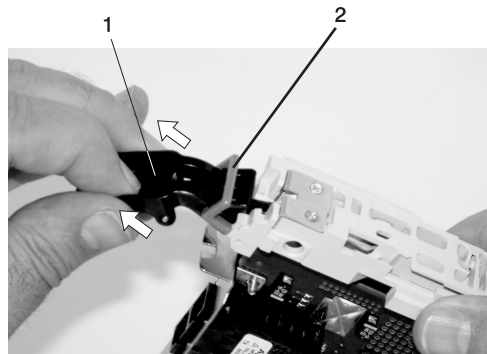
6. Turn over the cassette so that the cover is facing up, as shown in the following illustration. Remove the cover from the cassette as follows:
 - a. Slide the cover until it releases from the cassette assembly.

Attention: The cover might be tight and difficult to slide. If you grasp the left end (handle end) of the cassette and the right end of the cover, you can use enough force to pull the cover off the PCI adapter cassette assembly.



- 1 Left End of the Cassette
- 2 Cassette Cover

- b. Lift the cover off the assembly, and set it aside.
 - c. By pulling on both sides of the gray plastic locking bar, which is located on the handle, ensure that the handle is pulled into the unlocked position. Raise the handle on the cassette linkage assembly until it locks into the up position (the blank filler or adapter moves downward).



- 1 Handle
- 2 Gray Plastic Locking Bar

7. Remove the metal EMC shield from the top of the tailstock.



1 Metal EMC Shield

8. Remove the blank filler or adapter that is installed in the cassette linkage assembly.

Note: If there is a blank filler in the cassette linkage assembly, as shipped from the manufacturer, there are two adapter arms. One adapter arm is used with short adapters (short adapter arm) and the other adapter arm is used with long adapters (long adapter arm).

If you are removing a short adapter or blank filler, go to “Short Adapter or Blank Filler Removal” on page 68.

If you are removing a long adapter, go to “Long Adapter Removal” on page 70.

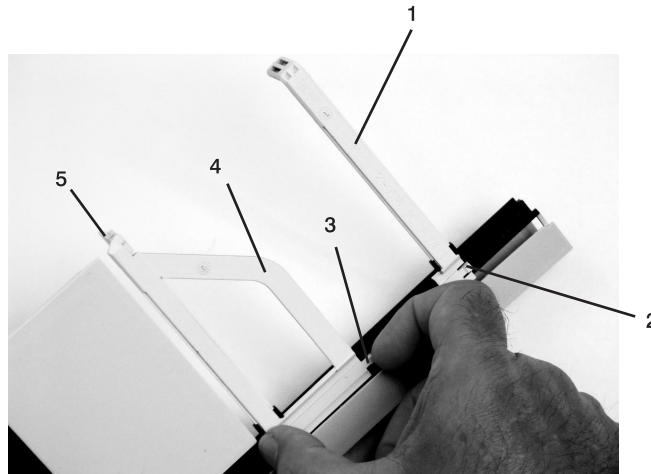
Short Adapter or Blank Filler Removal

To remove a short adapter or blank filler, do the following:

1. Slide the long and short adapter arms away from the adapter or blank filler by doing the following:
 - a. Each adapter arm has a release tab that allows the arm to be moved away from the adapter or blank filler in the cassette assembly. Use your fingernail to lift the tab, to allow each arm to be moved away from the adapter or blank filler. Lift the release tab on the short adapter arm, and push on the slotted tab to release the end of the blank filler.

Note: If you plan to install a short adapter, leave the long adapter arm on the cassette linkage assembly. If you plan to install a long adapter, remove both the long and short adapter arms from the cassette linkage assembly in the next step.

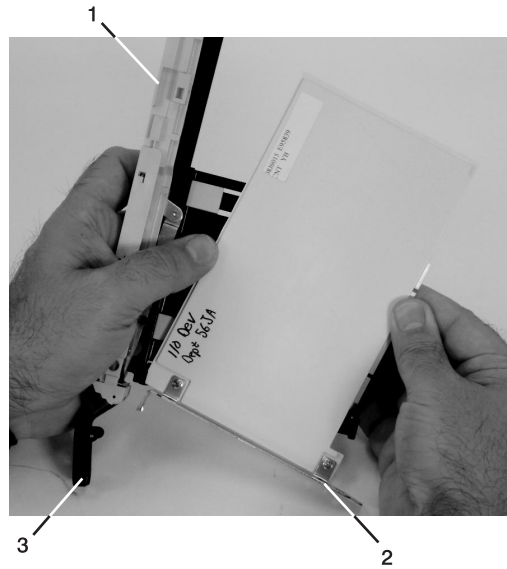
- b. Slide the long and short adapter arms away from the blank filler or adapter.



- 1 Long Adapter Arm
- 2 Release Tab
- 3 Release Tab

- 4 Short Adapter Arm
- 5 Slotted Tab

2. Remove the adapter or blank filler from the cassette linkage assembly by rotating the bottom of the tailstock out, as shown in the following illustration. Store the adapter or blank filler in a safe place.



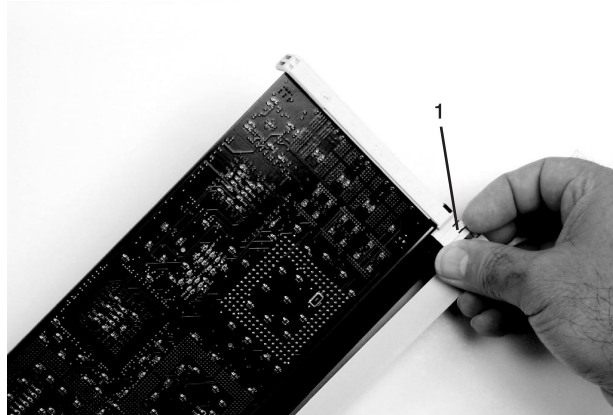
- | | | | |
|---|------------------------------|---|--------|
| 1 | Cassette Linkage
Assembly | 3 | Handle |
| 2 | Bottom of Tailstock | | |

3. The PCI adapter cassette assembly removal procedure is complete. To install a new adapter or blank filler in the cassette, go to "Installing a Hot-Pluggable PCI Adapter" on page 56.

Long Adapter Removal

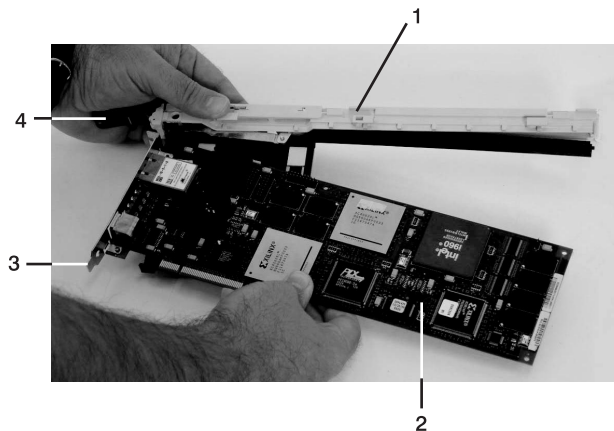
To remove a long adapter, do the following:

1. Each adapter arm has a release tab that allows the arm to be moved away from the adapter in the cassette assembly. Use your fingernail to lift the tab, to allow the arm to be moved away from the adapter. Lift the release tab on the long adapter arm, and slide it off the cassette linkage assembly.



1 Release Tab

2. Remove the adapter from the cassette linkage assembly by rotating the bottom of the tailstock out, as shown in the following illustration. Store the adapter in a safe place.



1 Cassette Linkage
Assembly
2 Adapter

3 Bottom of Tailstock
4 Handle

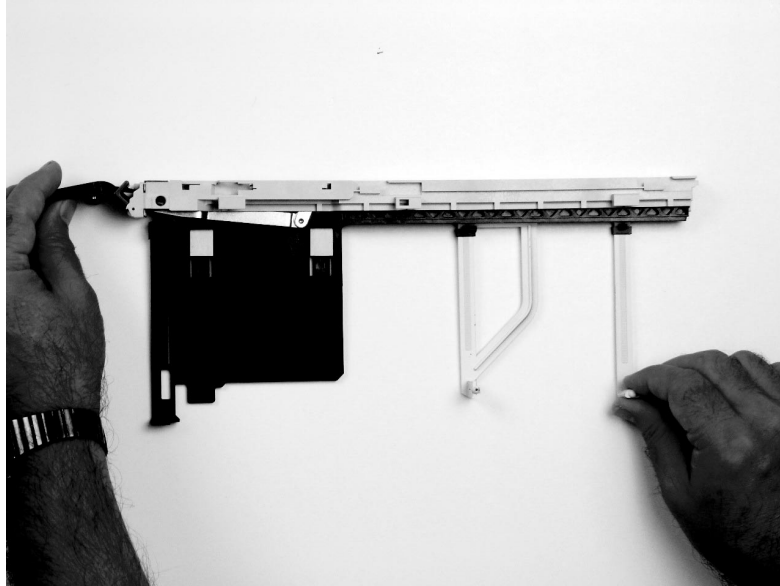
3. The PCI adapter cassette assembly removal procedure is complete. To install a new adapter or blank filler in the cassette, go to "Installing a Hot-Pluggable PCI Adapter" on page 56.

Replacing an Adapter in a PCI Adapter Cassette

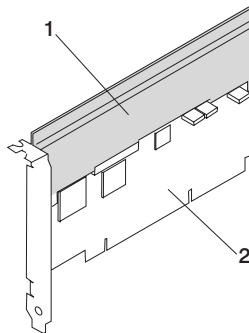
This procedure is performed when preparing to install a new adapter or a blank filler in the processor subsystem or an I/O drawer. Familiarize yourself with the entire procedure before performing the following steps.

1. Place the empty PCI Adapter Cassette Assembly linkage on a flat work surface in front of you. Position the cassette so that the handle is in the raised (up position), and on the left, with the top of the linkage facing away from you.

Note: Your PCI Adapter Cassette Assembly linkage might not have the short or long adapter retaining arms installed if you removed them during the remove procedure. In the following figure, both arms are shown.

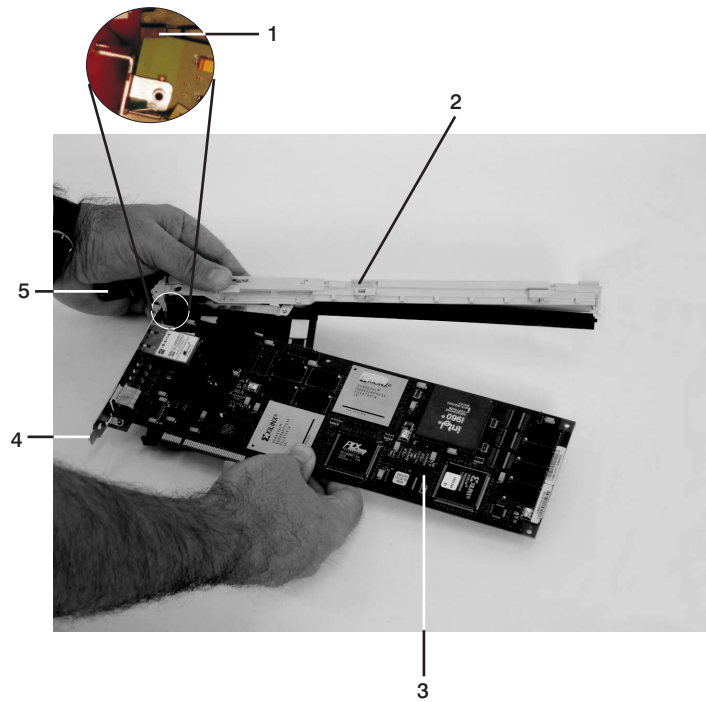


Note: If you are installing an adapter that is in the following list, use the additional brackets listed to help when you seat the adapter during installation. There are unique brackets **(1)** for each adapter type **(2)**:



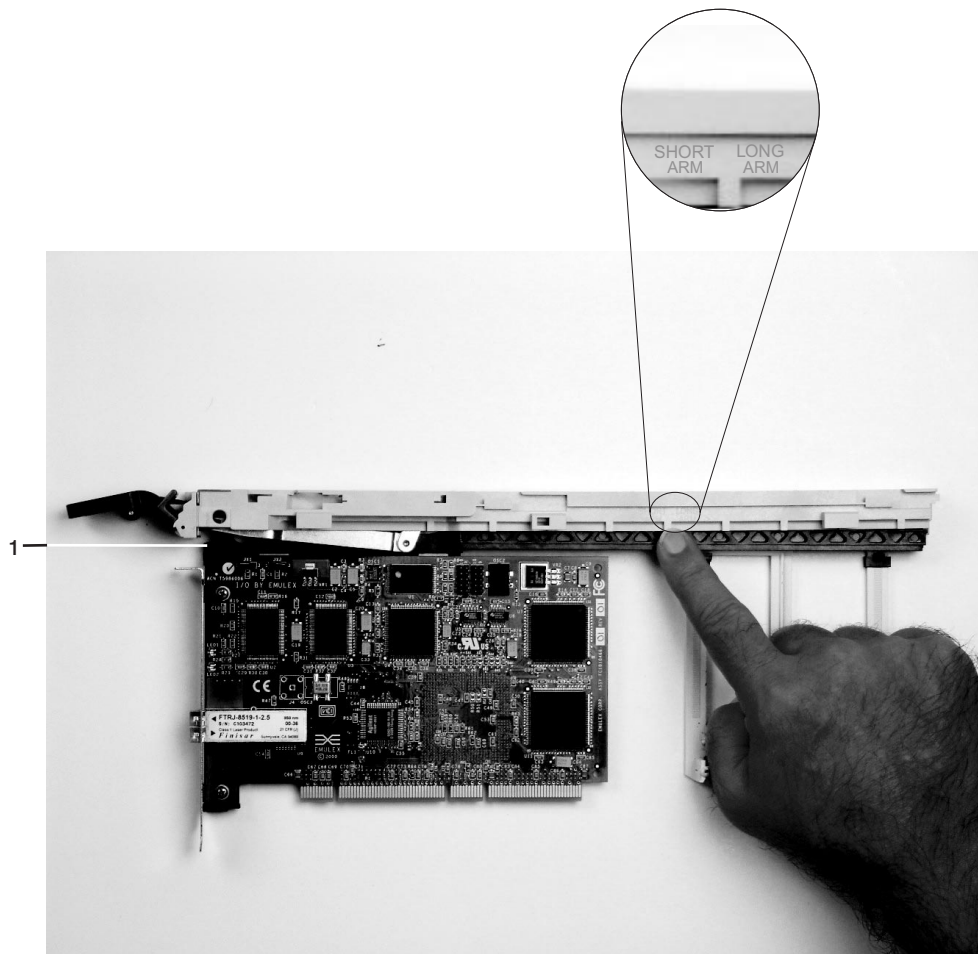
- | | |
|----------------|--|
| 53P5450 | Bracket for Gigabit Ethernet PCI-X Adapter, FC 5700 or 10/100/1000 Base-TX Ethernet PCI-X Adapter, FC 5701 |
| 44P2661 | Bracket for Dual Channel Ultra3 SCSI PCI Adapter, FC 6203 Type 4Y |
| 44P0321 | Bracket for 10/100 BaseT Ethernet PCI Adapter, FC 4962 Type AF |
| 44P2675 | Bracket for 2 Gigabit Fibre Channel Adapter, FC 6228 Type 4W |
| 44P2676 | Bracket for Gigabit Ethernet - SX PCI Adapter, FC 2969 Type 9U, or 10/100/1000 Base-T Ethernet PCI Adapter, FC 2975 Type A-A |

2. Use the following procedure to determine if you are installing a long adapter or a short adapter. If you know the length of your adapter, skip the following steps and proceed to 3 on page 74.
 - a. Remove the adapter from its protective packaging and, if present, remove the plastic extension handle from the end of the adapter.
 - b. Place the adapter or a blank filler over the cassette with the upper left corner aligned into the top adapter-retaining clip.



- | | |
|------------------------------|-----------------------|
| 1 Top Adapter-Retaining Clip | 3 Adapter |
| 2 Cassette Linkage Assembly | 4 Bottom of Tailstock |
| | 5 Handle |

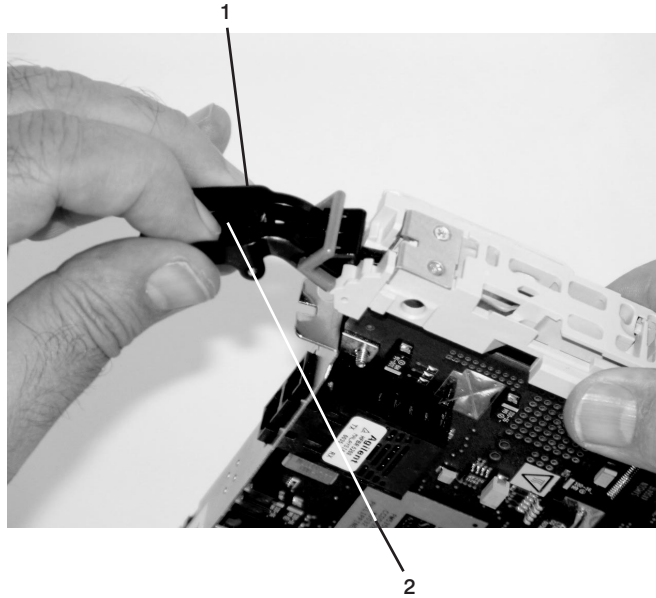
- c. The cassette linkage is marked to show long or short adapters similar to the adapter shown below. Check the right end of the adapter to determine if it is long enough to fall into the long area of the cassette linkage. Ensure that the corner on the left end of the adapter is still aligned into the top adapter-retaining clip and determine the length of the adapter.



1 Top Adapter-Retaining Clip

3. Remove the adapter or blank filler and ensure that the handle is in the up position. If you need to move the handle, ensure that the gray locking bar is pulled into the unlocked position, and then rotate the adapter handle until the handle is in the up position (the cassette linkage will extend down beyond the cassette top).

If you are installing a short adapter or blank filler, proceed to “Short Adapter or Blank Filler Installation” on page 75. If you are installing a long adapter, proceed to “Long Adapter Installation” on page 90.

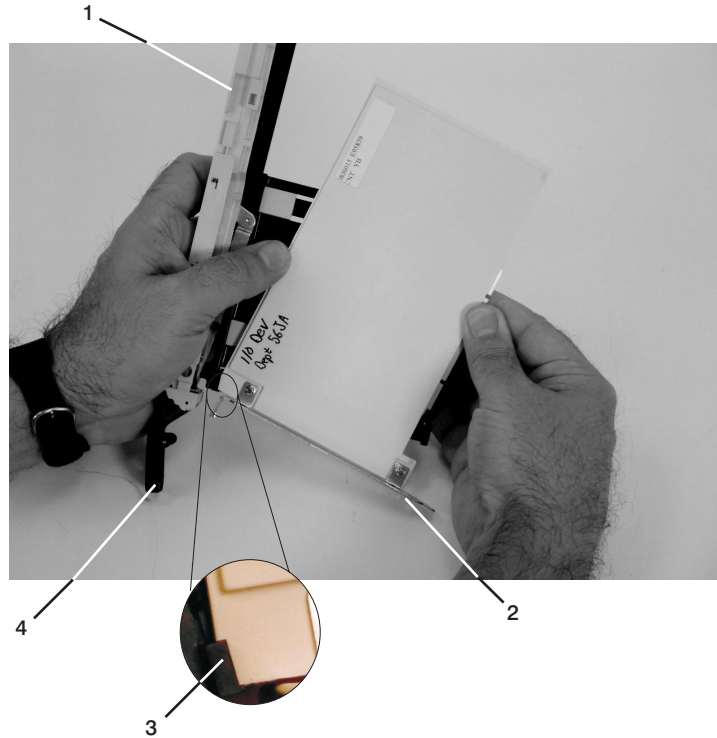


- 1 Handle
- 2 Lock

Short Adapter or Blank Filler Installation

Use the following procedure to install a short adapter or blank filler.

1. Install the adapter or blank filler by doing the following:
 - a. Place the adapter or blank filler into the cassette so that the upper left corner of the adapter engages the adjustable top adapter-retaining clip as shown in the following figure.



1 Cassette Linkage
Assembly

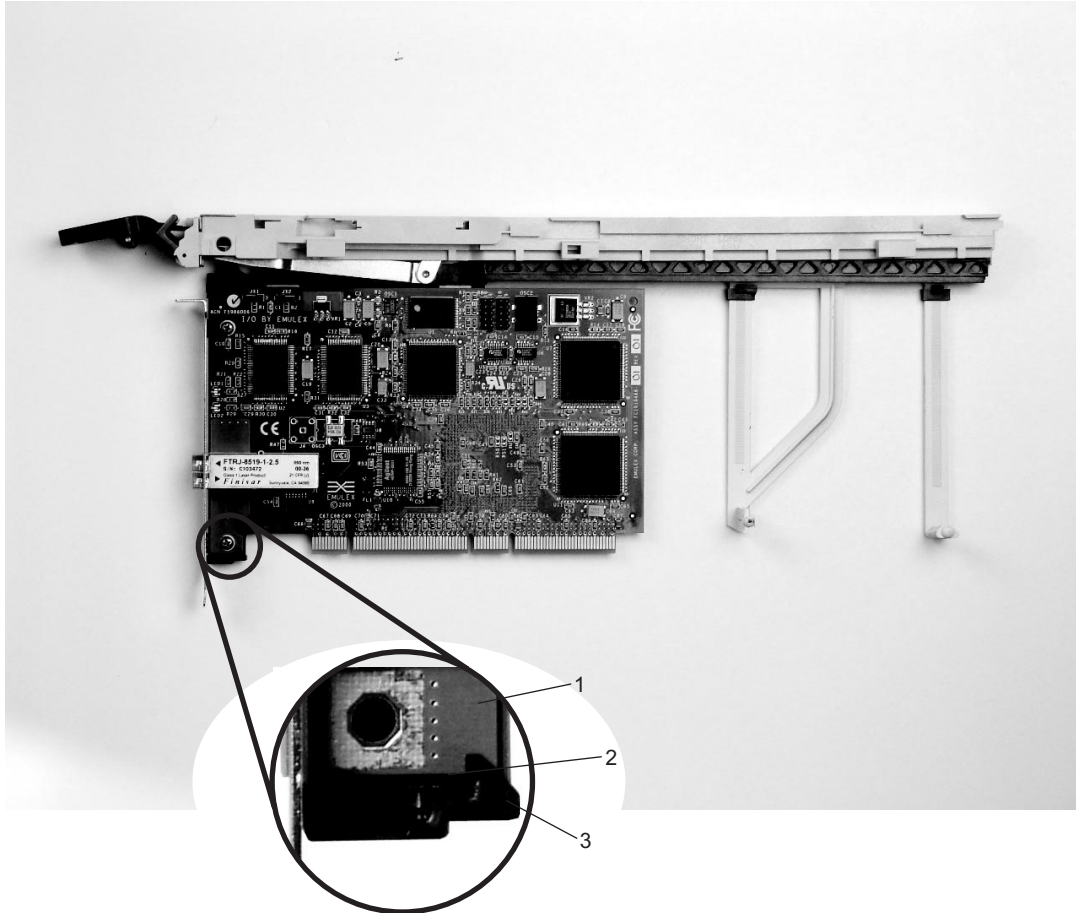
2 Bottom of Tailstock

3 Retaining Clip

4 Handle

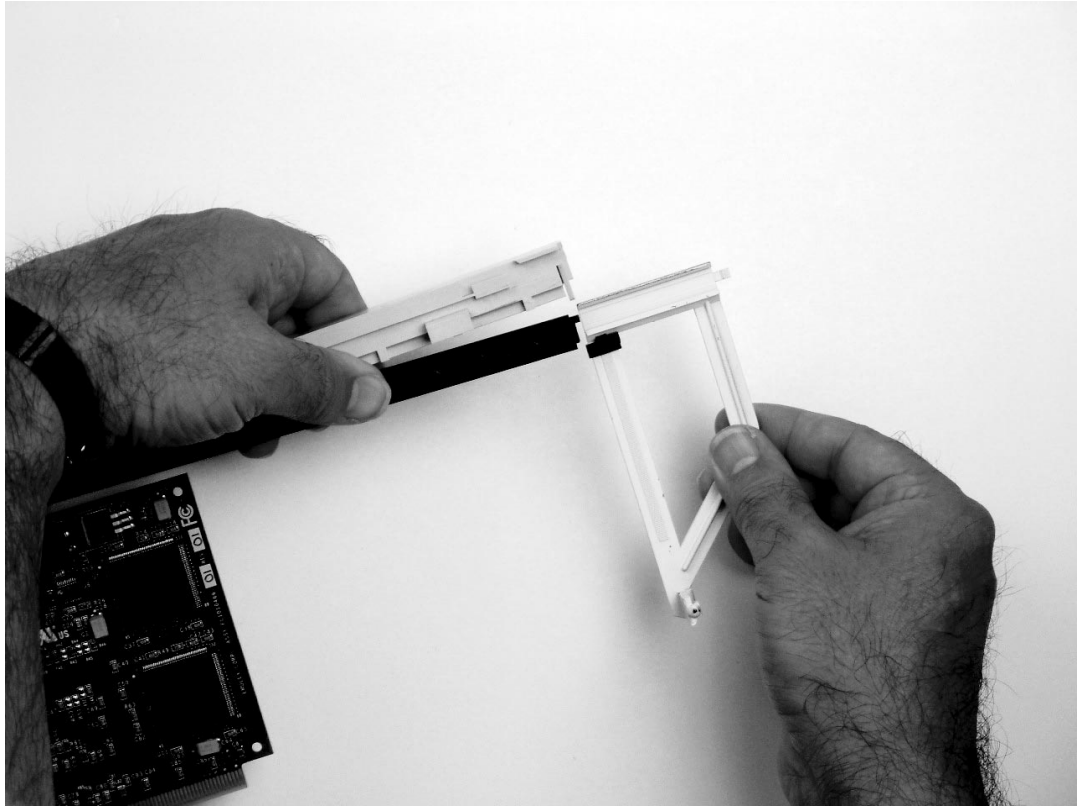
- b. Rotate the adapter so that the adapter engages the slot in the bottom adapter-retaining clip and the top corner of the adapter is seated into the adjustable top adapter-retaining clip.

Note: If the adapter is not a full height adapter, you must slide the adjustable top adapter-retaining clip downward until the lower edge of the adapter is seated into the slot on the bottom adapter-retaining clip.

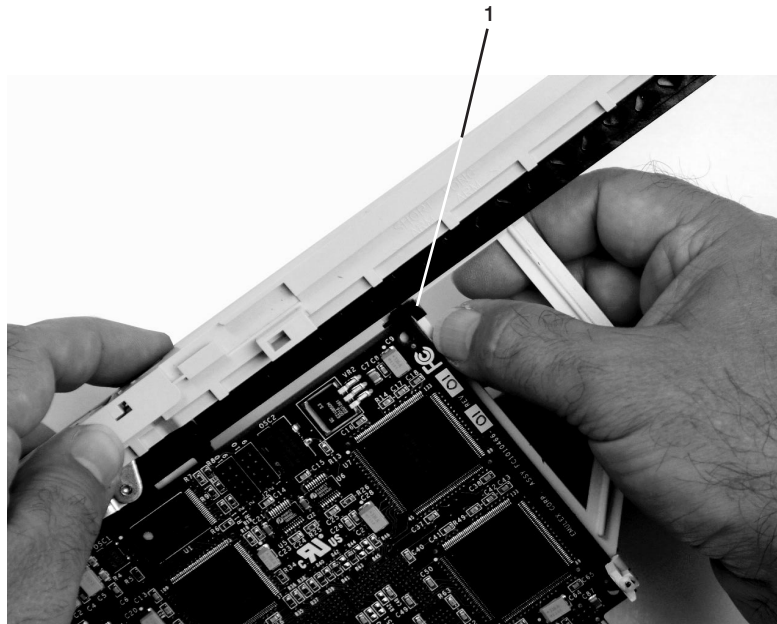


- 1 Adapter
- 2 Slot
- 3 Bottom Retaining Clip

- c. Slide the short-adapter retaining arm toward the adapter or blank filler on the cassette linkage rail.
 - 1) If the short-adapter retaining arm has been removed from the cassette linkage rail, install the short-adapter retaining arm and then slide the arm until it contacts the adapter or blank filler as shown in the following figure.



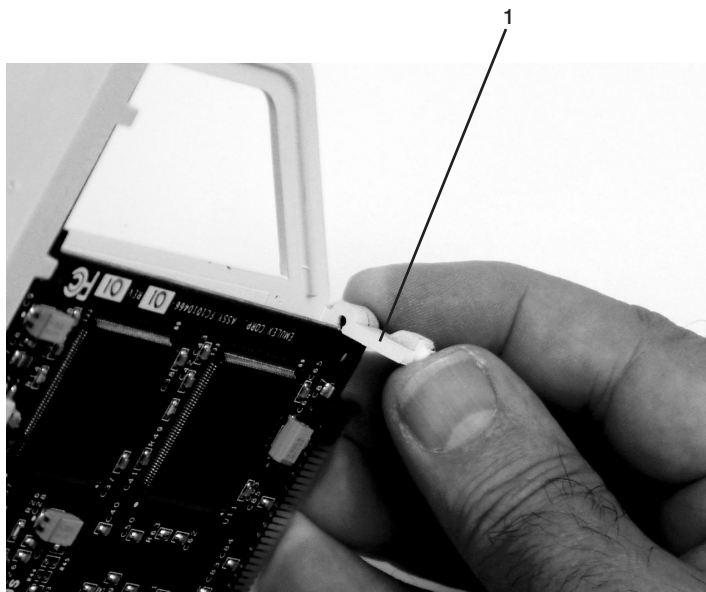
- d. Ensure that the adjustable top retainer clip catches the corner of the adapter as shown in the following figures.



1 Short Adapter Top Retaining Clip

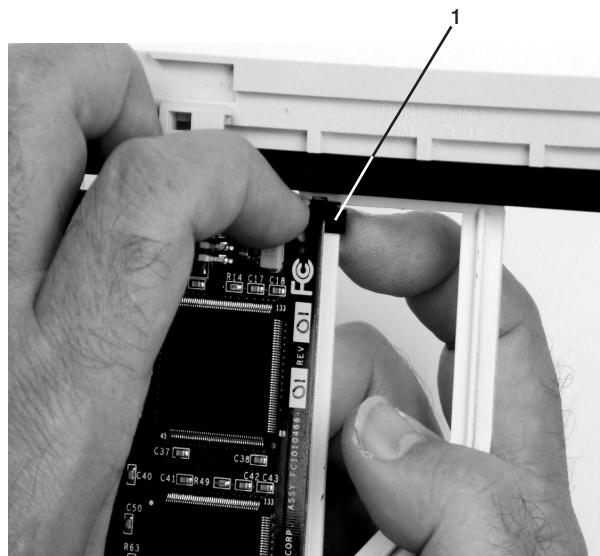
- e. Use the lower short adapter-retaining clip to engage and hold the bottom of the adapter.

Note: It might be necessary to apply pressure to engage and hold the bottom of the adapter.



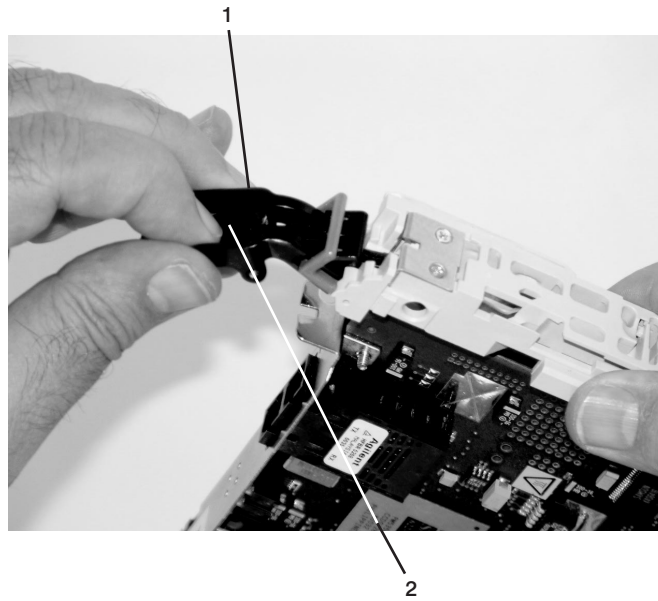
1 Lower Short Adapter Arm Clip

- f. To hold the top of the adapter, slide down the adjustable top adapter-retaining clip on the retaining arm. Ensure that the bottom edge of the adapter is held by the lower part of the adapter retaining arm.



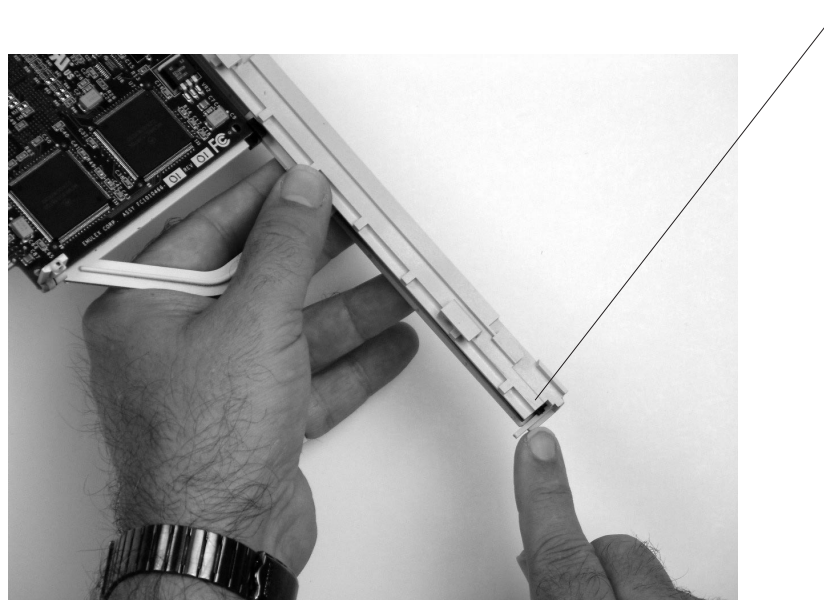
1 Short Adapter Adjustable Retaining Clip

- g. Press the lock on the handle and rotate the adapter handle until it is in the down position (adapter or blank filler moves up into the cassette assembly).



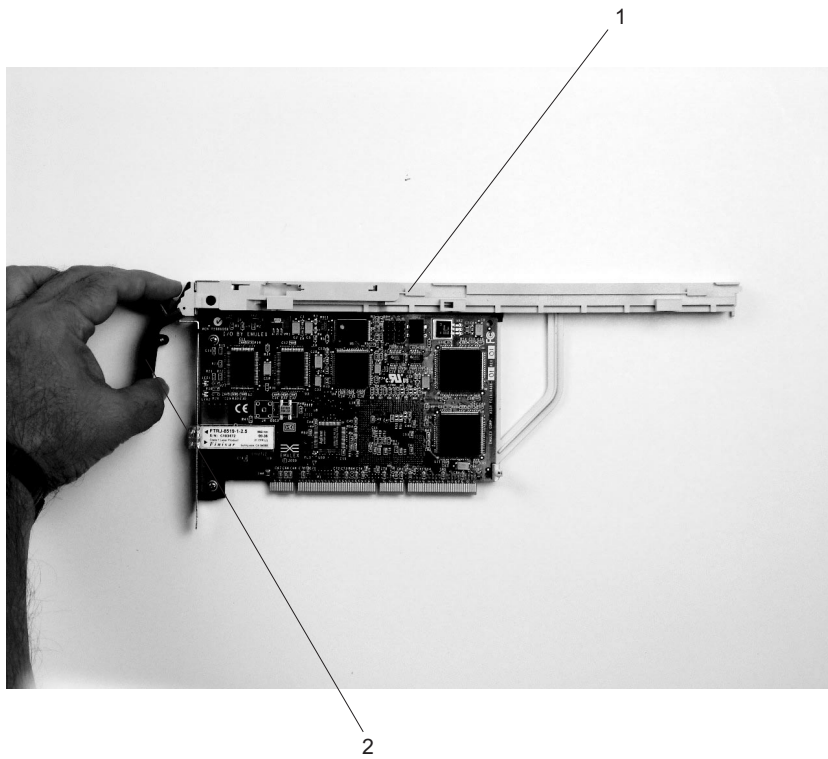
- 1 Handle
- 2 Lock

Ensure the right end of the cassette linkage rail moves up into the cassette as shown below:



- 1 Right End of Cassette Linkage

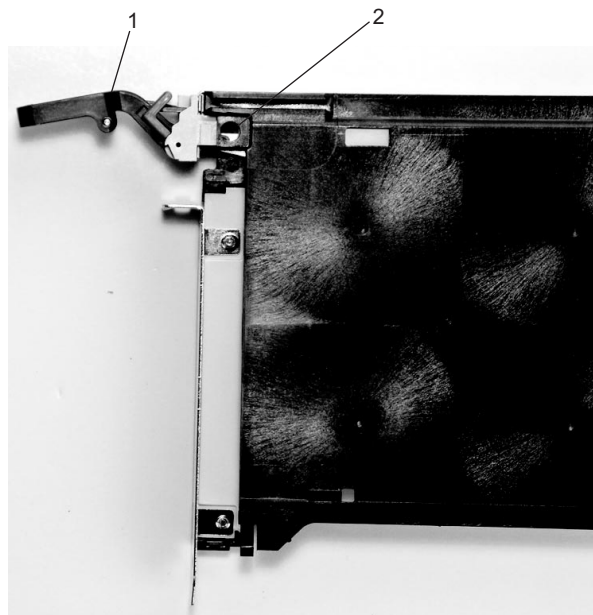
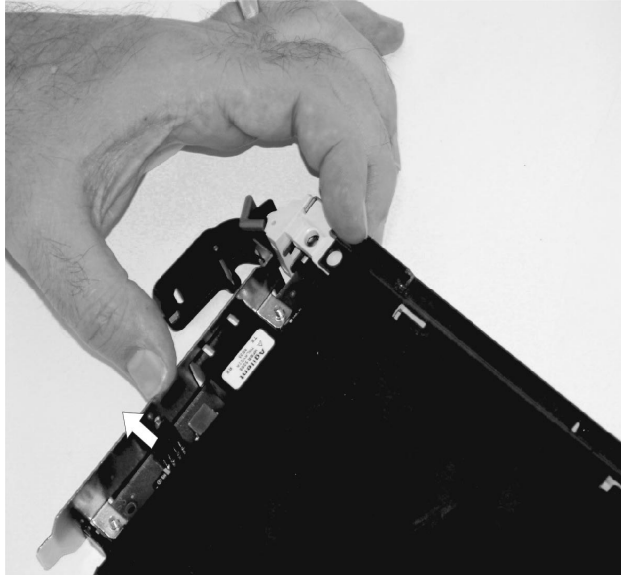
- h. Position the adapter and cassette assembly with the handle on the left (in the down position) and the top facing away from you.



- 1 Top of Cassette
2 Handle

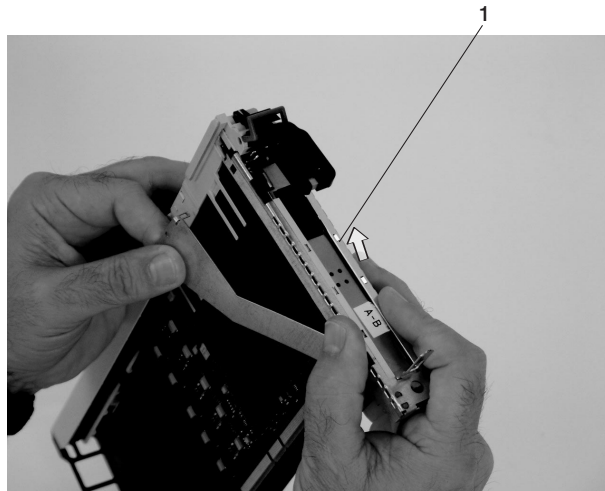
i. Install the cover on the cassette assembly:

- 1) Place the cassette cover on the cassette assembly as shown below. Slide the cover toward the handle until the hole in the cover aligns with the hole in the cassette assembly.



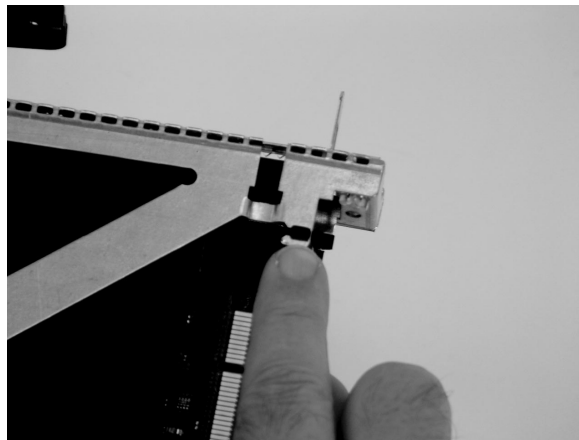
- 1 Handle
- 2 Holes Aligned

- j. Install the bezel assembly using the following procedure.
- 1) Carefully slide the bezel onto the cassette assembly.

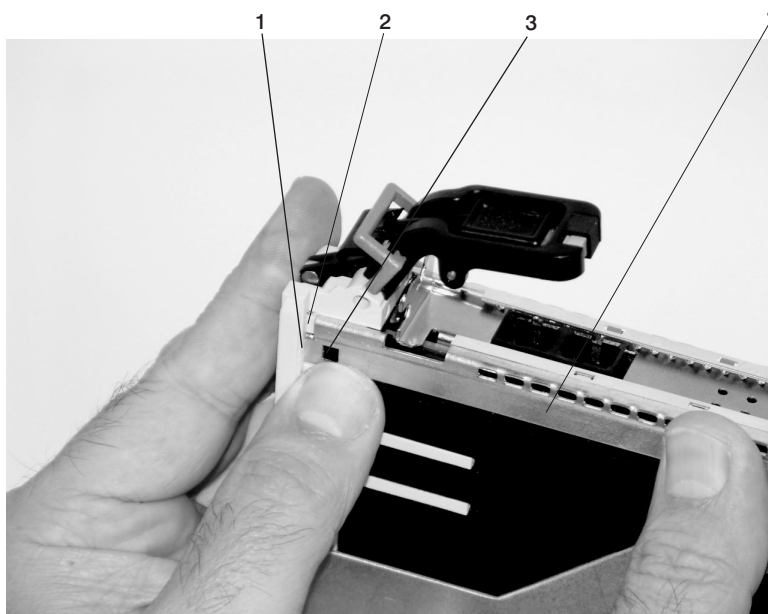


1 Bezel

- 2) Align and insert the cover arm latch in the hooked notch in the bezel.

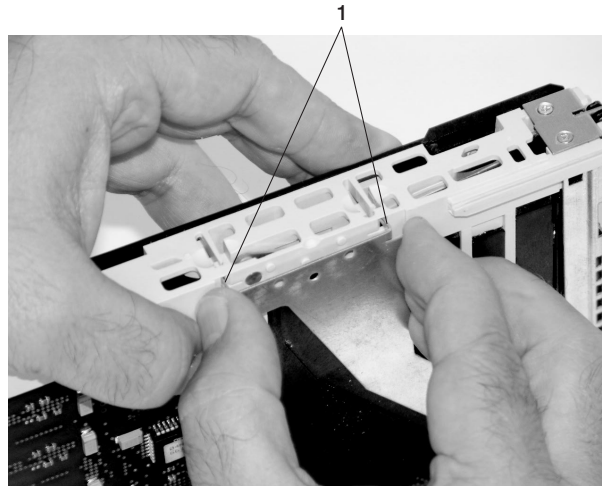


- 3) Align the top of the bezel assembly into the grooves on the top of the cassette assembly and then push the bezel onto the cassette linkage until the tab on the top of the bezel is seated in the recess of the cassette assembly.



- | | |
|----------|------------------|
| 1 Recess | 3 Tab |
| 2 Groove | 4 Bezel Assembly |

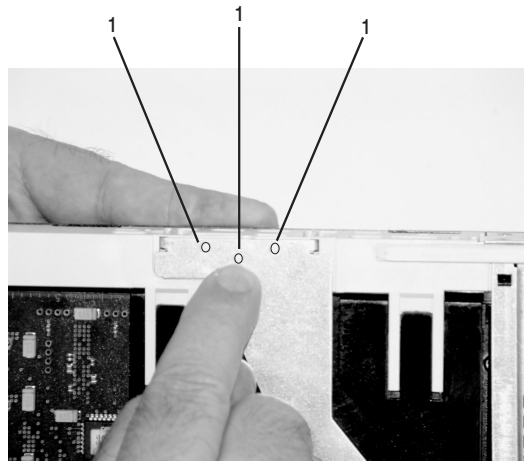
- 4) Insert the two tabs on the bezel extension into the two slots on the cassette assembly.



- 1 Tabs

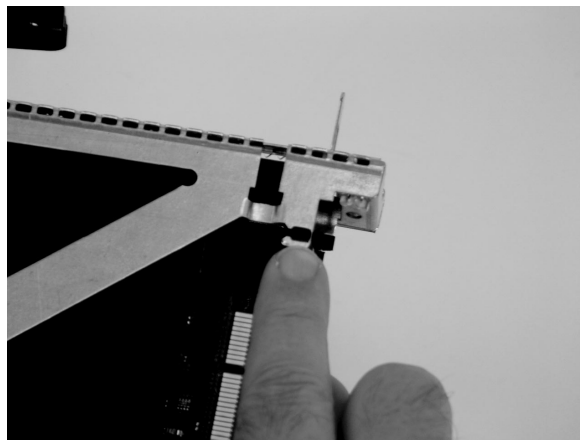
k. Check for the following:

- 1) Ensure that the extension arm engages the pins on the cassette. You should be able to see the pins through the holes in the arm. The bezel tab should be seated as shown in the following figure.

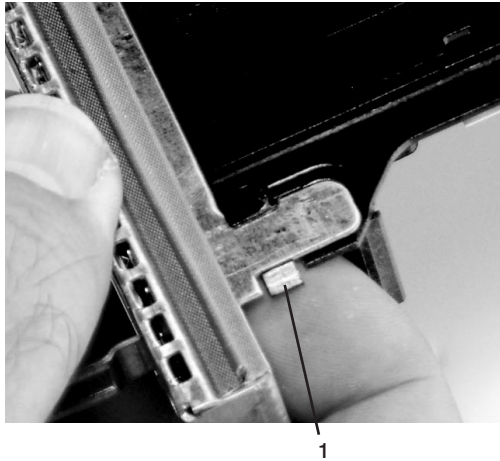


1 Pin

- 2) Ensure the cover arm latch is completely pressed into the hooked slot on the bezel as shown.

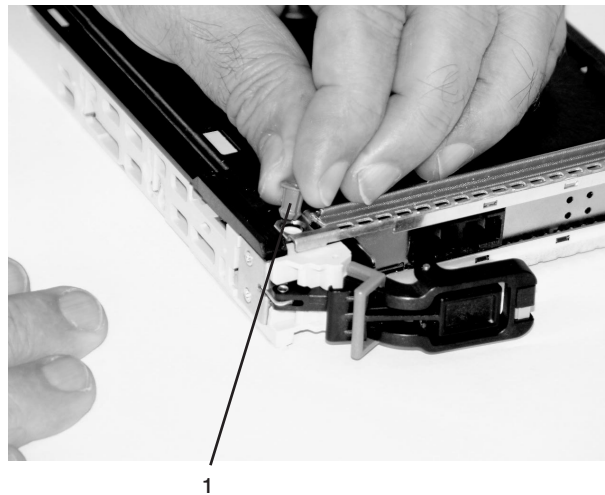


- 3) Turn the cassette assembly over so the cover is up and check the cover latch to ensure it is holding the bezel to the cover as shown.



1 Cover Latch

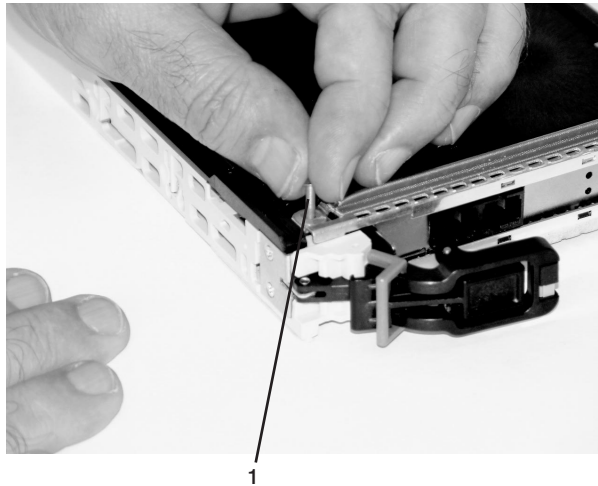
- I. Position the adapter with the cover side up. Ensure the holes are aligned, and insert the bushing as shown.



1 Bushing

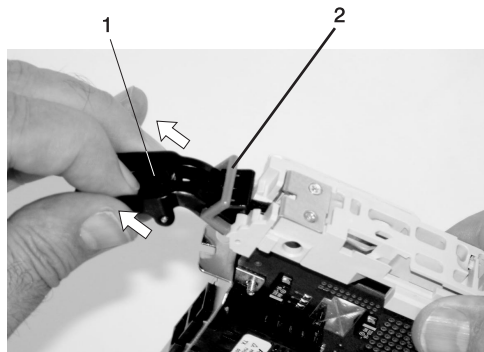


m. Insert the bushing lock pin into the hole in the bushing and push it in until it seats.



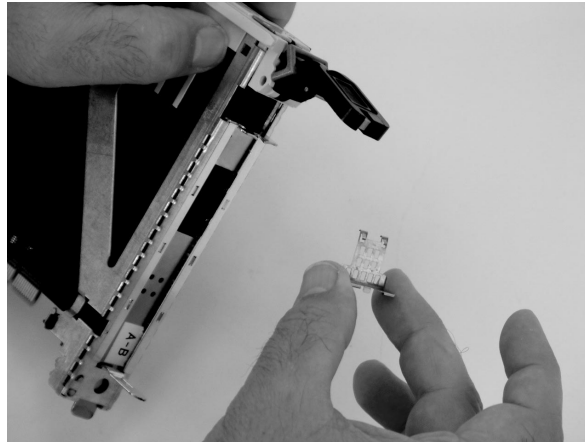
1 Bushing Lock Pin

n. By pulling on both sides, ensure the gray plastic locking bar on the handle is pulled into the unlocked position. Raise the handle on the cassette linkage until it locks into the up position (the blank filler or adapter moves downward).



1 Handle
2 Gray Plastic Locking Bar

- o. To install the metal EMC shield on the adapter bracket, do the following:



- 1) Ensure that the shield slides up inside the top of the cassette.



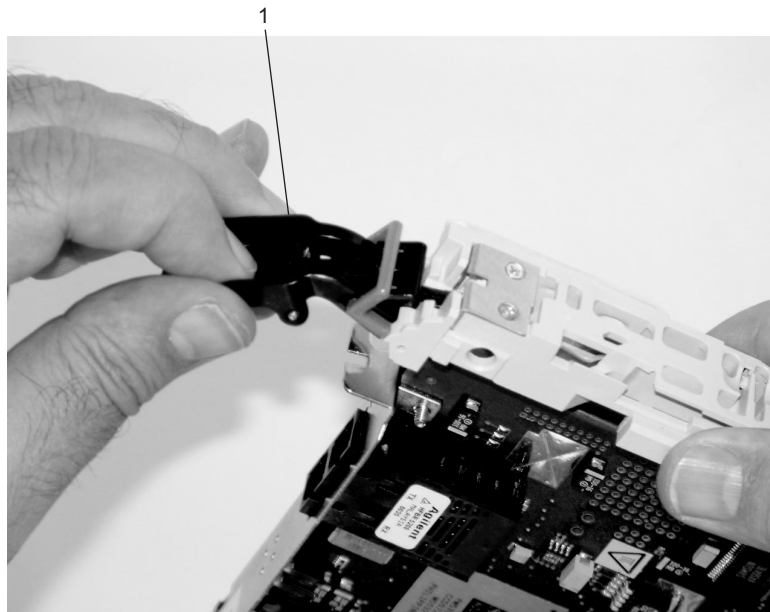
1 Metal EMC Shield

- 2) The metal shield has clips that slide over the top of the tailstock. Ensure that these clips are holding the EMC bracket to the tailstock.



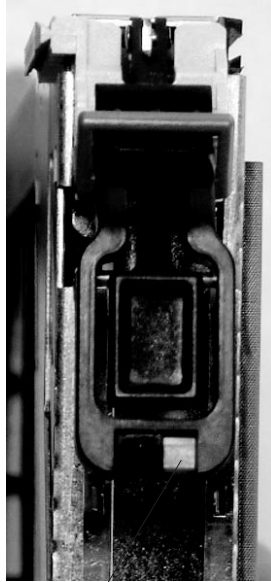
1 Top of Tailstock

- p. Press the lock on the handle and rotate the adapter handle until the handle is in the down position (adapter or blank filler moves up into the cassette assembly).



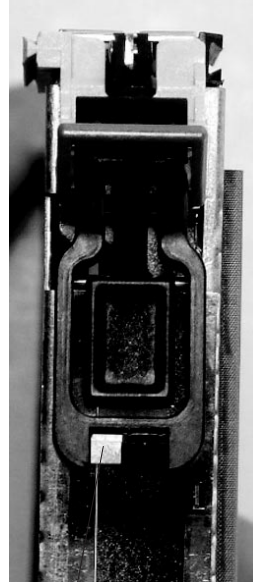
1 Handle

- q. Using the system documentation, determine if the adapter you are installing is hot-swappable. If the adapter is hot-swappable, move the slider on the color indicator to allow the orange to be visible. If the adapter is not hot-swappable, the blue color should show.



1

1 Orange for Hot-Swappable



2

2 Blue for Not Hot-Swappable

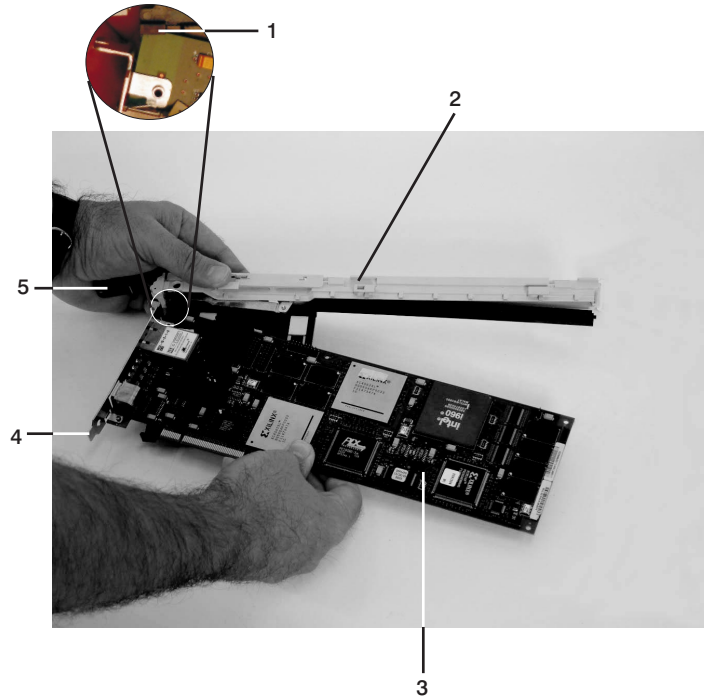
- r. The adapter is ready to be installed into a system or an I/O drawer.

Long Adapter Installation

Use the following procedure to install a long adapter.

Note: Ensure that both the long and short adapter retaining arms are removed from the cassette linkage. See step 1a on page 68 to remove the arms before continuing below.

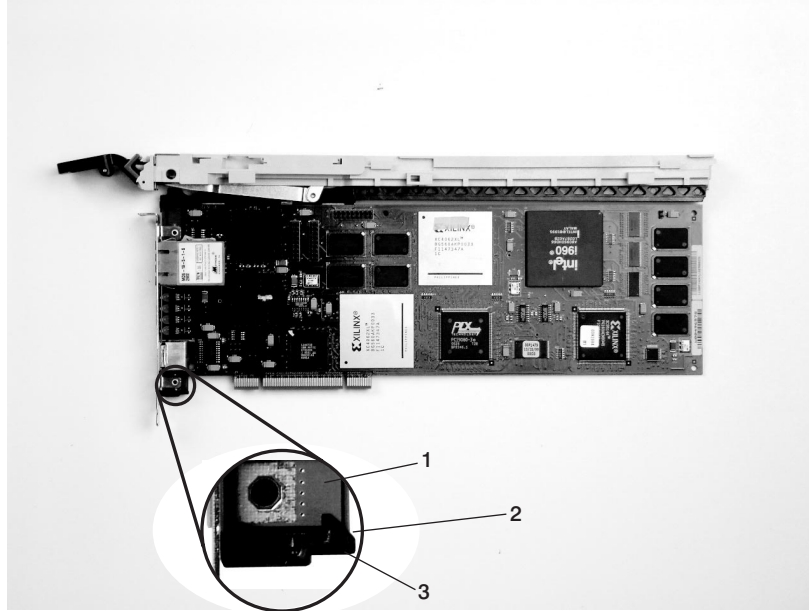
1. Install the long adapter by doing the following:
 - a. Place the adapter into the cassette so that the upper left corner of the adapter engages the top adjustable adapter-retaining clip as shown in the following figure:



- | | |
|------------------------------|-----------------------|
| 1 Top Adapter-Retaining Clip | 3 Adapter |
| 2 Cassette Linkage Assembly | 4 Bottom of Tailstock |
| | 5 Handle |

- b. Rotate the adapter so that the adapter engages the slot in the bottom retaining clip and the top corner of the adapter is seated into the top adjustable adapter-retaining clip.

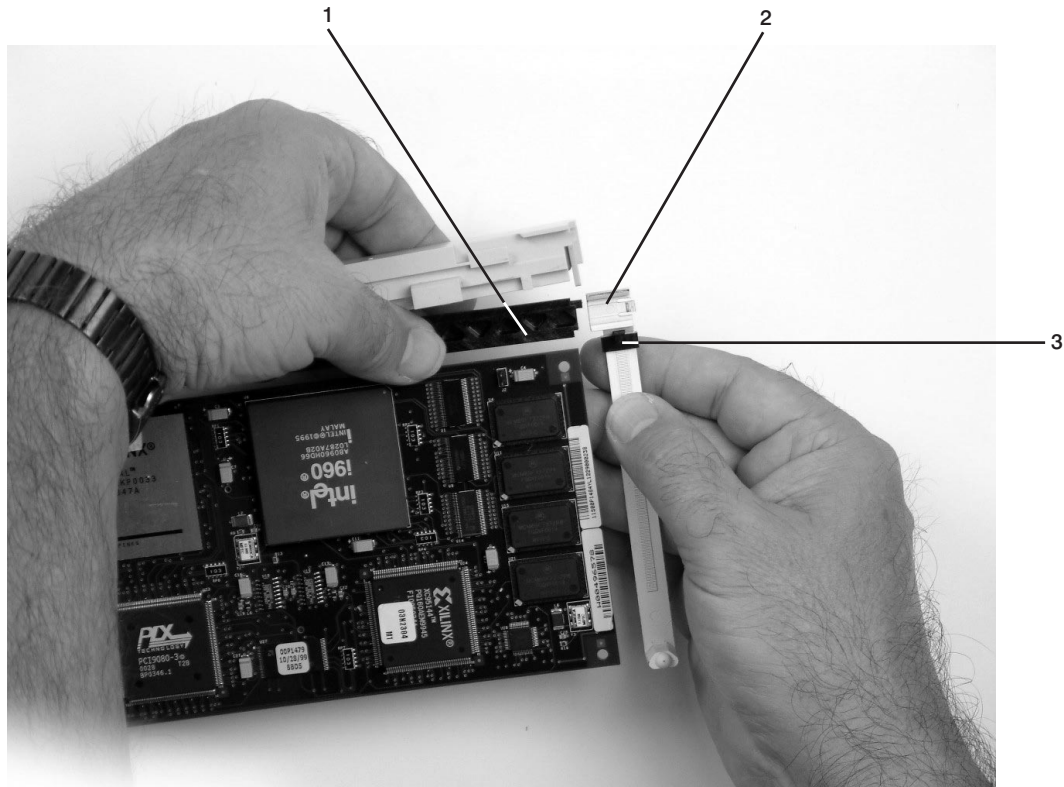
Note: If the adapter is not a full height adapter, you must slide the top adjustable adapter-retaining clip downward until the lower edge of the adapter is seated into the slot on the bottom retaining clip.



1 Adapter
2 Slot

3 Bottom Retaining Clip

- c. Install the long adapter-retaining arm onto the cassette linkage rail as shown in the following figure, and slide the arm toward the adapter.

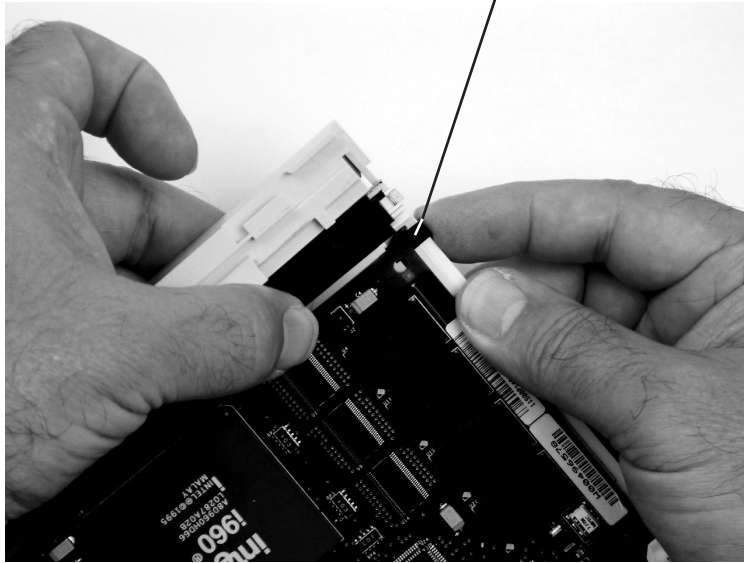


1 Cassette Linkage Assembly
2 Adapter Retaining Arm

3 Top Adapter Retaining Clip

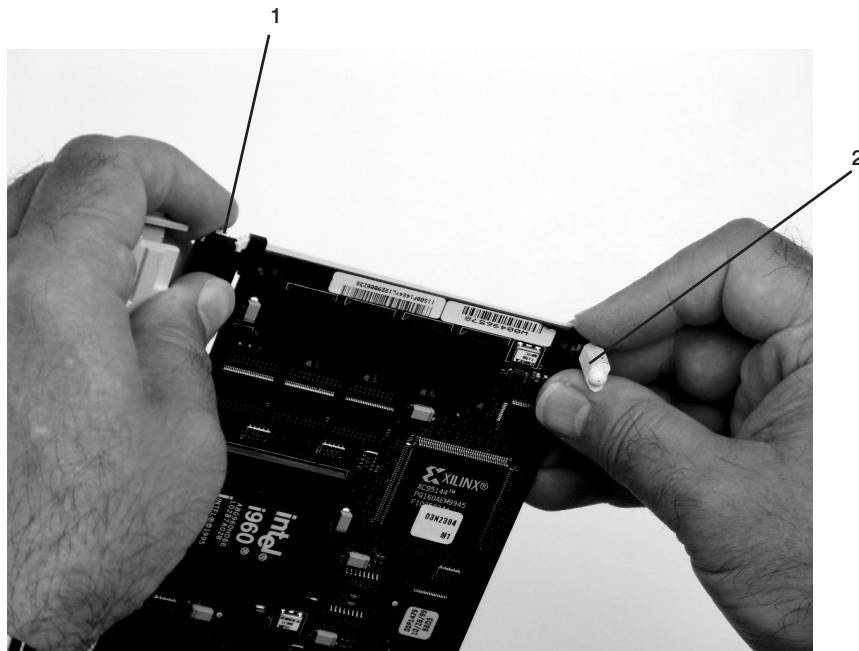
- d. Ensure that the top adjustable adapter-retaining clip catches the corner of the adapter as shown in the following figures.

Long Arm Adjustable Retaining Clip



1 Long Arm Adjustable Retaining Clip

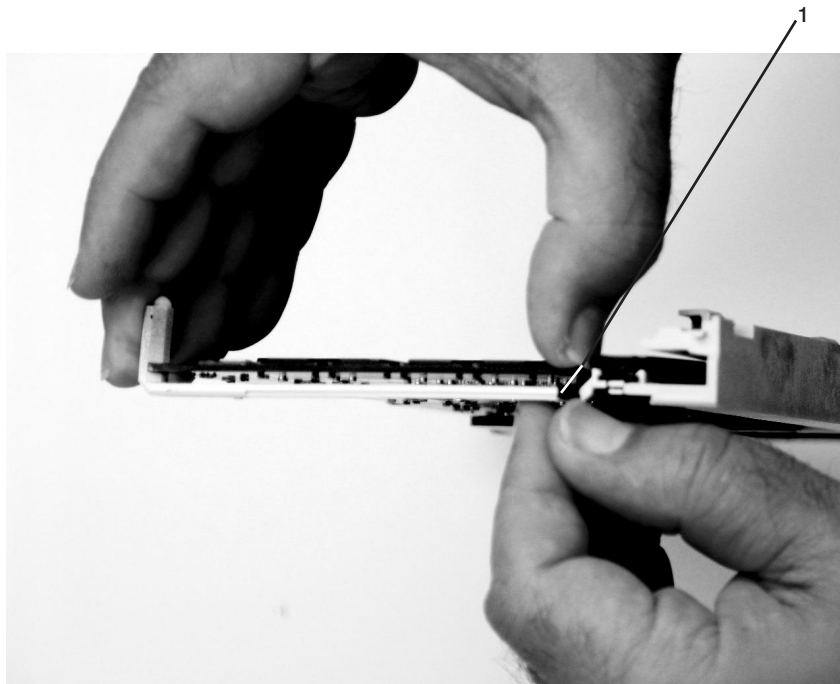
- e. Ensure that the bottom edge of the adapter is held by the lower part of the adapter-retaining arm.



1 Long Adapter Arm
Adjustable Retaining Clip

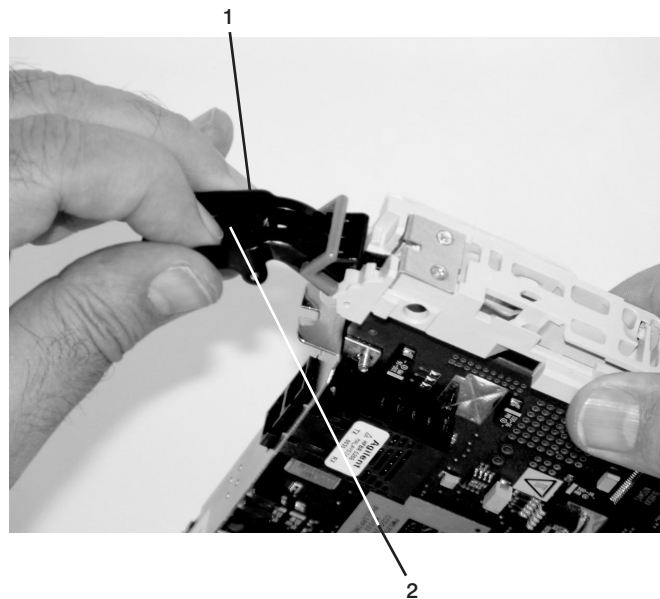
2 Long Adapter Retaining Arm Slot

- f. To hold the top of the adapter, slide down the top adjustable adapter-retaining clip on the retaining arm.



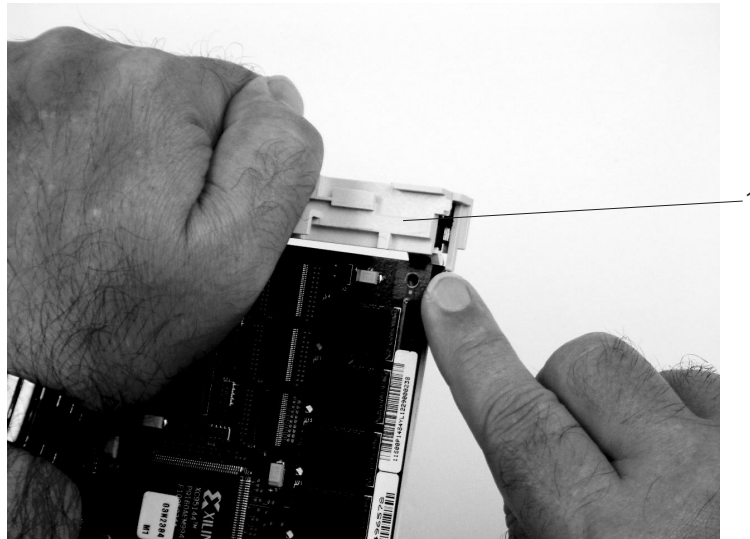
1 Long Adapter Retaining Arm

- g. Press the lock on the handle and rotate the adapter handle until it is in the down position (adapter or blank filler moves up into the cassette assembly).



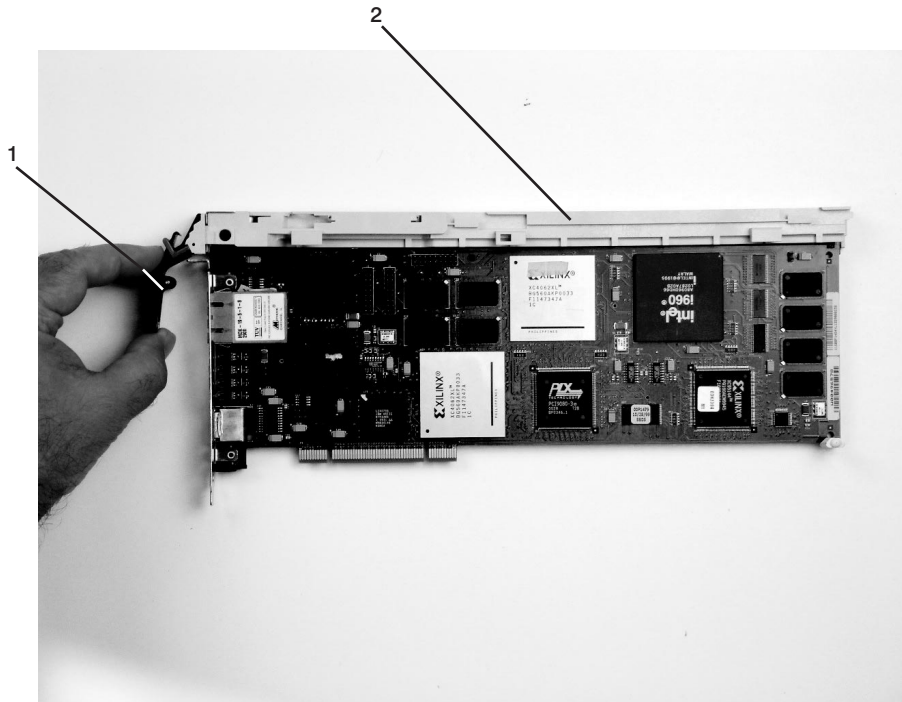
1 Handle
2 Lock

Ensure the right end of the cassette linkage rail moves up into the cassette as shown below:



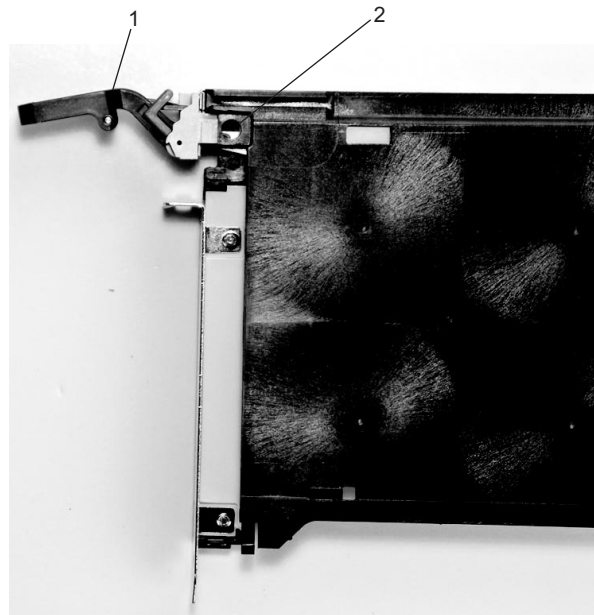
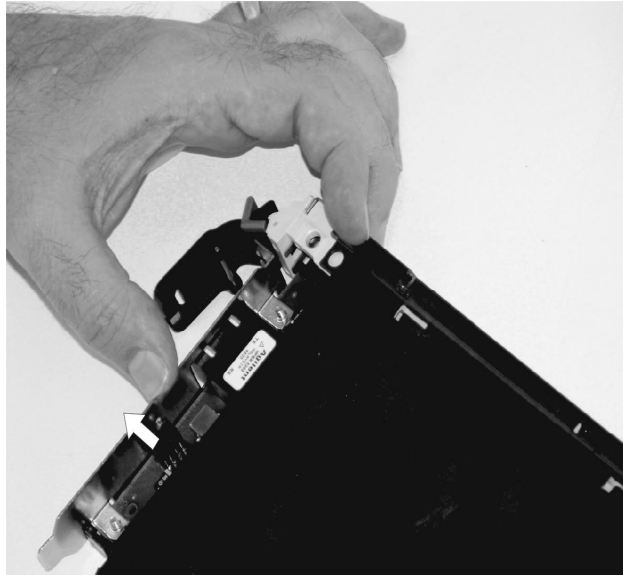
1 Right End of Cassette Linkage

- h. Position the adapter and cassette assembly with the handle on the left (in the down position) and the top facing away from you.



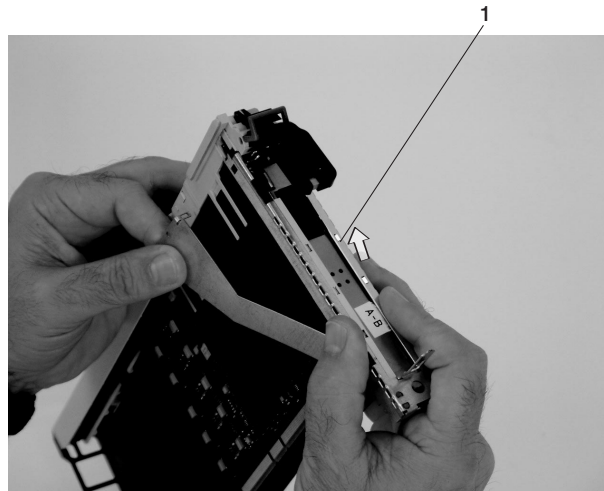
1 Handle
2 Top of Cassette

- i. Install the cover on the cassette assembly by placing the cassette cover on the cassette assembly as shown below. Slide the cover toward the handle until the hole in the cover aligns with the hole in the cassette assembly.



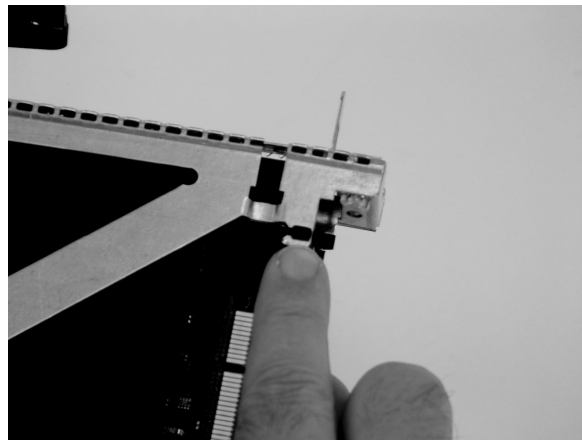
- 1 Top of Cassette
- 2 Handle

- j. Install the bezel assembly using the following procedure:
- 1) Carefully slide the bezel onto the cassette assembly.

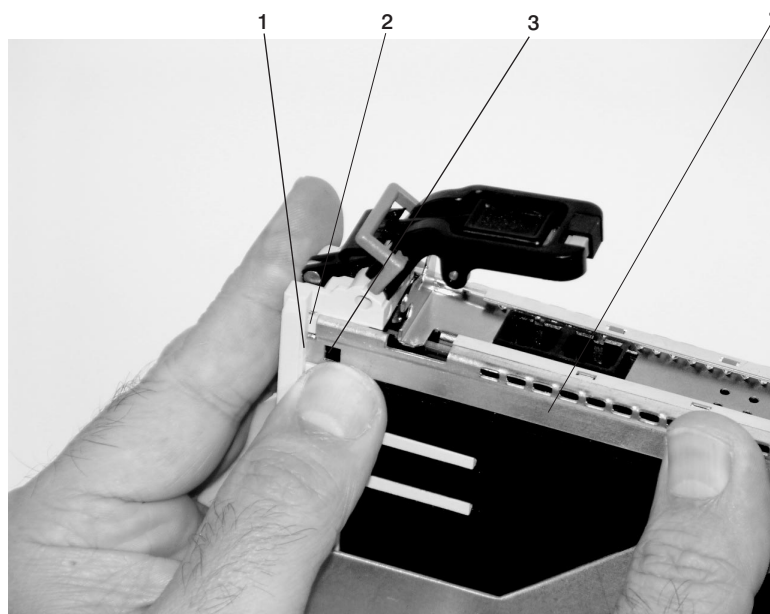


1 Bezel

- 2) Align and insert the cover arm latch in the hooked notch in the bezel.



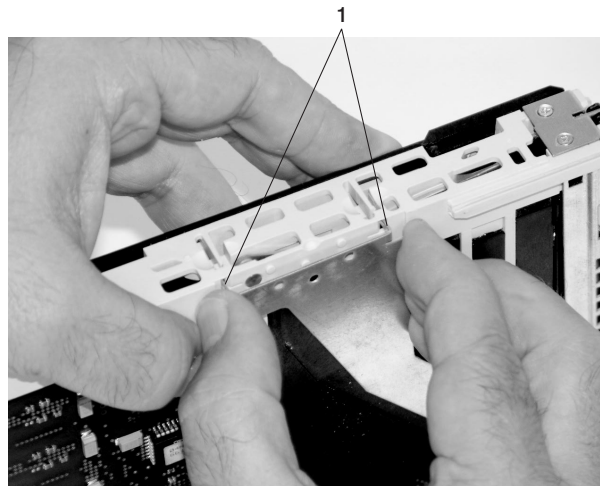
- 3) Align the top of the bezel assembly into the grooves on the top of the cassette assembly and then push the bezel onto the cassette linkage until the tab on the top of the bezel is seated in the recess of the cassette assembly.



1 Recess
2 Groove

3 Tab
4 Bezel

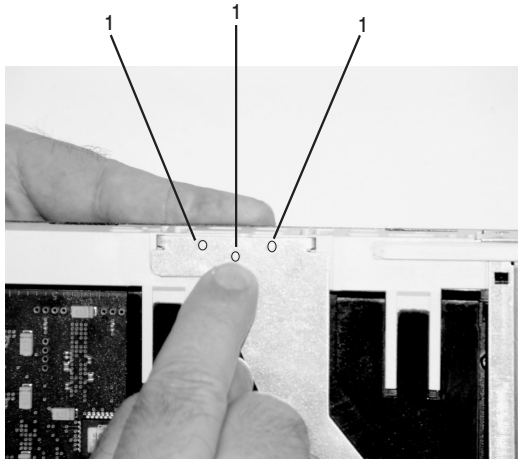
- 4) Insert the two tabs on the bezel extension into the two slots on the cassette assembly.



1 Tabs

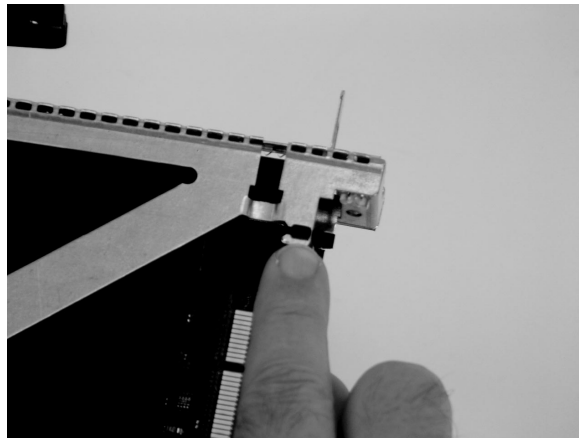
k. Check for the following:

- 1) Ensure that extension arm engages the pins on the cassette. You should be able to see the pins through the holes in the arm. The bezel tab should be seated as shown in the following figure.

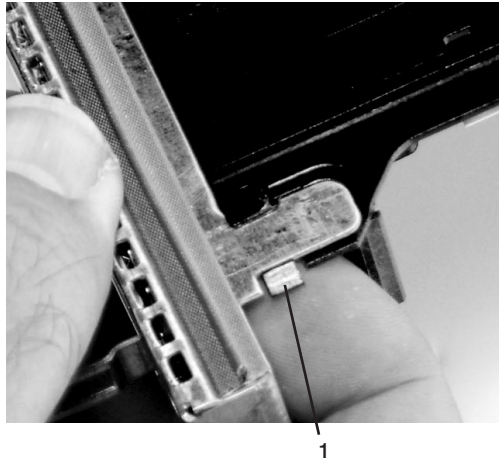


1 Pins

- 2) Ensure the cover arm latch is completely pressed into the hooked slot on the bezel as shown.

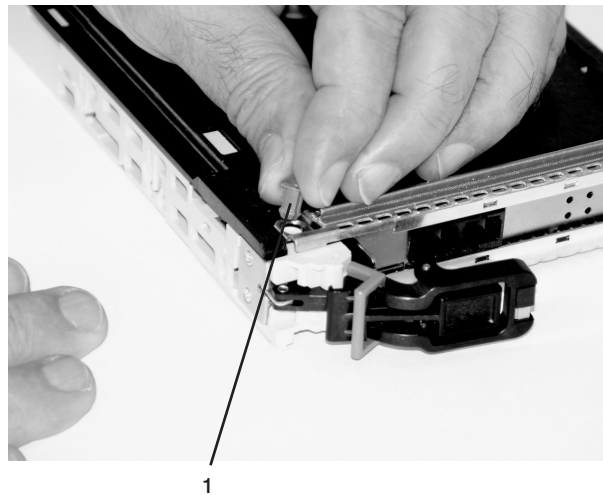


- 3) Turn the cassette assembly over so the cover is up and check the cover latch to ensure it is holding the bezel to the cover as shown.

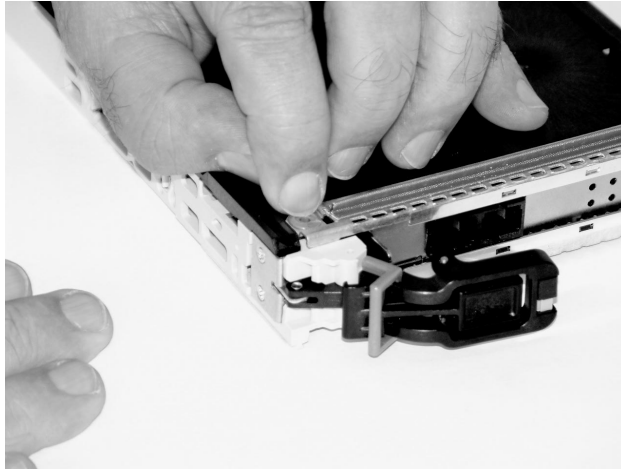


1 Cover Latch

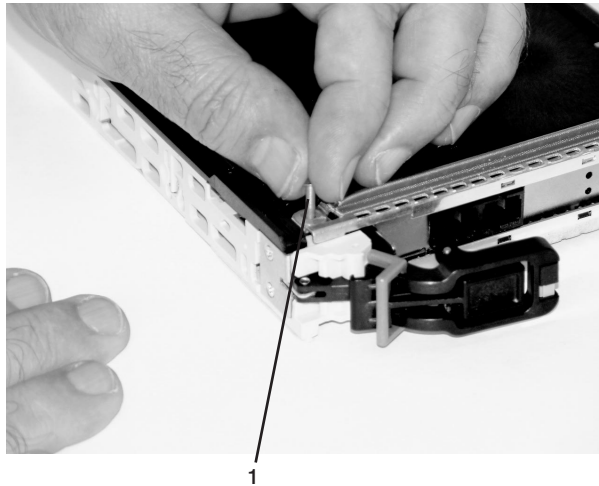
- I. Position the adapter with the cover side up. Ensure the holes are aligned and insert the bushing as shown.



1 Bushing

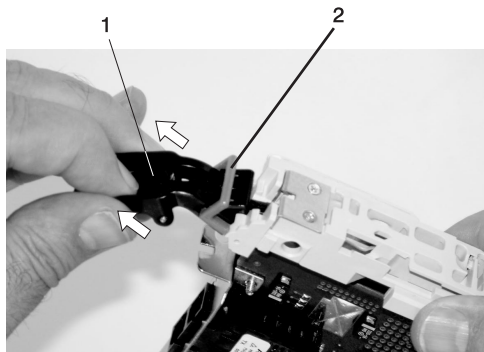


m. Insert the bushing lock pin into the hole in the bushing. Push on the pin until it seats.



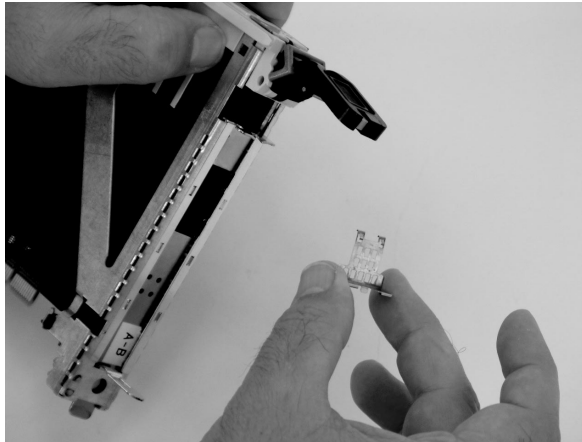
1 Bushing Lock Pin

n. By pulling on both sides, ensure the gray plastic locking bar on the handle is pulled into the unlocked position. Raise the handle on the cassette linkage until it locks into the up position (the blank filler or adapter moves downward).



1 Handle
2 Gray Plastic Locking Bar

o. To install the metal EMC shield on the adapter bracket, do the following:

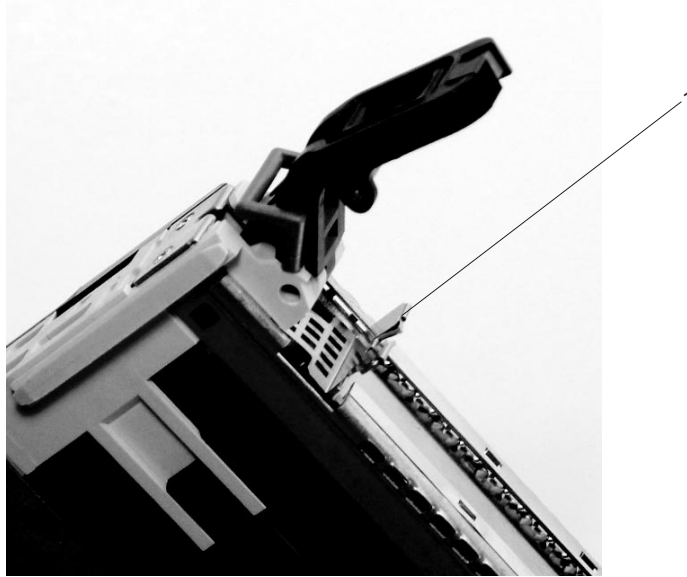


1) Ensure that the shield slides up inside the top of the cassette.



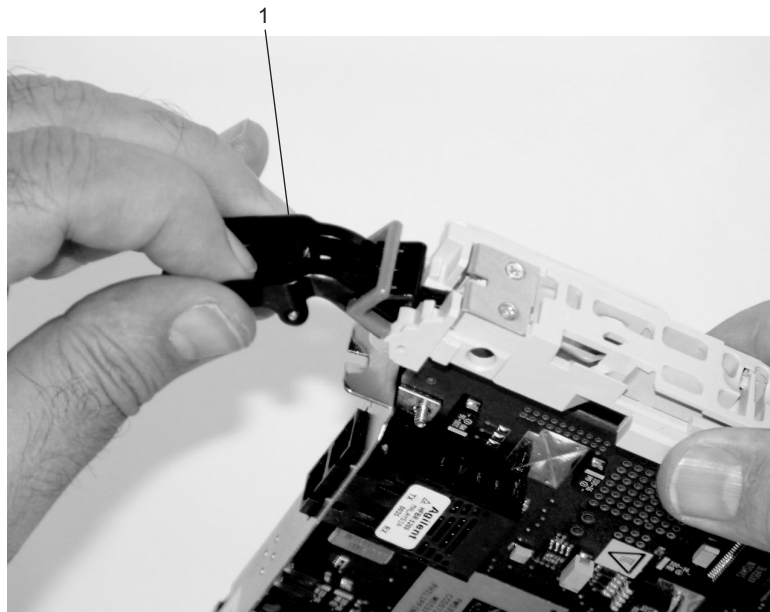
1 Metal EMC Shield

- 2) The metal shield has clips that slide over the top of the tailstock. Ensure that these clips are holding the EMC bracket to the tailstock.



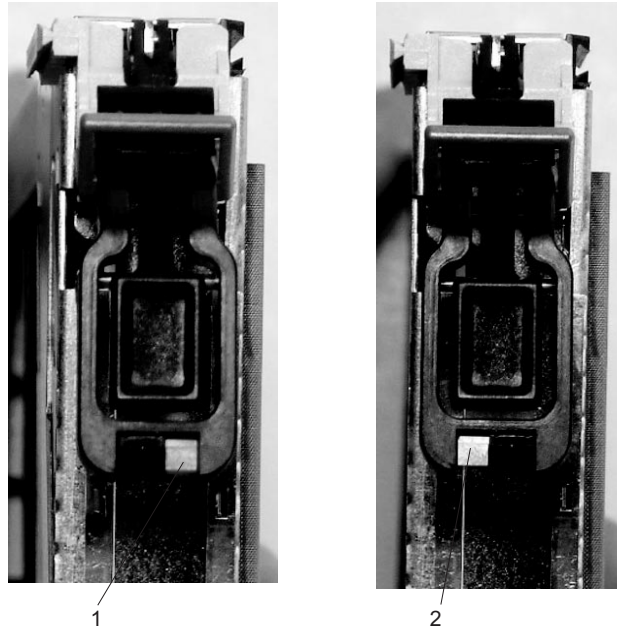
1 Top of Tailstock

- p. Press the lock on the handle and rotate the adapter handle until the handle is in the down position (adapter or blank filler moves up into the cassette assembly).



1 Handle

- q. Using your system documentation, determine if the adapter you are installing is hot-swappable. If the adapter is hot-swappable, move the slider on the color indicator to allow the orange to be visible. If the adapter is not hot-swappable, the blue color should show.



- 1 Orange for Hot-Swappable
- 2 Blue for Not Hot-Swappable

- r. The adapter is ready to be installed into a system or an I/O drawer. Refer to your system documentation for more information.

Replacing a Hot-Pluggable PCI Adapter

Attention: The Linux operating system does not support some hot-pluggable procedures. Also, Linux does not support hot-plugging any hot-pluggable PCI adapters or devices. The system with Linux installed on one or more partitions must be shutdown and powered off before replacing any PCI adapter or device assigned to a Linux partition. Please follow the non-hot-pluggable adapter or device procedures when replacing a PCI adapter or device in any partition with Linux installed.

Note: Use this procedure only when you are replacing one adapter with an identical adapter. If you are replacing an adapter with an adapter that is not identical to the adapter that was removed, go to “Removing a Hot-Pluggable PCI Adapter” on page 57 and “Installing a Hot-Pluggable PCI Adapter” on page 56.

To replace an adapter, do the following:

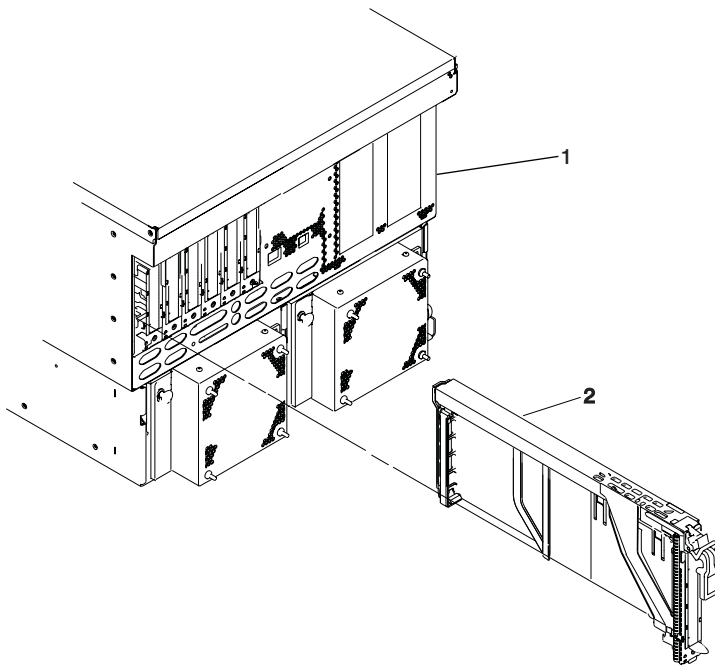
1. Determine the slot from which you are removing the adapter.
2. Ensure that any processes or applications that might use the adapter are stopped.

Note: Removing a hot-pluggable PCI adapter requires the system administrator to take the PCI adapter offline before performing any PCI adapter hot-plug procedures. Before taking an adapter offline, the devices attached to the adapter must also be taken offline. This action prevents a service representative or user from causing an unexpected outage for system users.

For more information on taking the PCI adapter online, see the AIX operating system documentation. Documentation for the AIX operating system is available from the IBM @server pSeries Information Center at http://publib16.boulder.ibm.com/pseries/en_US/infocenter/base. Select **AIX documentation**. The *AIX Documentation CD* contains the base set of publications for the operating system, including system-management and end-user documentation.

3. Log in as root user, if the system is a partitioned system, log in as root user on the partition that has the adapter assigned to it.
4. At the command line, type **smitty**.
5. Select **Devices**.
6. Select **PCI Hot Plug Manager**.
7. Select **Unconfigure a Device** and press Enter.
8. Press F4 to display the Device Names menu.
9. From the menu, select the adapter that you are removing.
10. Answer YES to **Keep Definition**. Press Enter.
11. The ARE YOU SURE screen displays. Press Enter to verify the information. Successful unconfiguration is indicated by the OK message displayed next to the **Command** field at the top of the screen.
12. Press F3 to return to the PCI Hot-Plug Manager menu.
13. Select **Replace/Remove a PCI Hot-Plug Adapter** and press Enter. The Replace/Remove a PCI Hot-Plug Adapter menu displays.
14. Move the cursor to select the adapter that you are removing and press Enter.
15. Press the Tab key until the entry field displays the replace operation, and press Enter. Follow the instructions that display on the screen until you are instructed to remove the adapter.
16. When you are instructed to remove the adapter from the adapter slot, disconnect any cables that are connected to the adapter being removed.
17. Press the center of the handle of the PCI adapter cassette to release the latch, and lower the handle completely.
18. When the handle is completely lowered, push the gray locking cross bar.

19. Carefully pull the PCI adapter cassette straight out from the I/O subsystem. Take care not to pull EMC gaskets from neighboring cassettes.



1 I/O Subsystem
2 PCI Adapter Cassette

20. Install the replacement adapter in the PCI adapter cassette. See “PCI Adapter or Blank Filler Removal from a Cassette Assembly” on page 60.
21. When the adapter is installed in the PCI adapter cassette, install the adapter in the adapter slot, as follows:
 - a. Lower the black handle completely.
 - b. Push the gray locking cross bar until you hear a clicking sound.
 - c. Hold the assembly straight on and level with the slot.
 - d. Align the bottom edge of the PCI cassette cover with the PCI adapter guide rail on the I/O backplane.

Note: If there is a cassette to the left of the one that you are installing, align the ridge on the cover with the tick in the notch of the neighboring cassette.

 - e. Slide the cassette partially into the guide.
 - f. Ensure that the dovetail on the top track aligns with its mating component(s) on both sides.
 - g. When the cassette is fully inserted, prepare to activate the handle and lower the gray locking bar. Lift up the handle completely until you hear a click. The PCI adapter should be completely seated.

Note: To enable proper insertion of the adapter, some minor forward or backward movement of the PCI adapter cassette might be necessary.

 - h. Set the color slide to blue.
22. Connect the appropriate cables and devices to the adapter.
23. Continue to follow the screen instructions until you receive a message that the replacement is successful. Successful replacement is indicated by the OK message displayed next to the **Command** field at the top of the screen.
24. Press the F3 key to return to the PCI Hot-Plug Manager menu.

25. Select **Install/Configure Devices Added After IPL** and press Enter. Follow the instructions on the screen. Successful replacement is indicated by the OK message displayed next to the **Command** field at the top of the screen.
26. Press F10 to exit the Hot-Plug Manager.
27. Install any covers that you removed earlier, and return the system to the normal operations.

Capacity Upgrade on Demand

The Capacity Upgrade on Demand (CUoD) features available on your system allow the system to be manufactured with additional capacity, such as processors and memory. The hardware is delivered with these features built in, ready to be activated when you need them. If your system is ordered with a CUoD feature, you can activate the feature and pay for the increased processing power as your needs grow.

CUoD features enable you to start small, and then increase your processing capacity without disrupting any of your current operations.

You have a choice of how to activate CUoD features after your system is delivered and the features are available. Your choices are:

- Permanent processor on demand.
- Permanent memory on demand.
- On/off capacity on demand.
- Trial capacity on demand.

These choices allow you to try CUoD features for a period of time, or to permanently activate features that you decide your need. On/off capacity allows you to use additional capacity when you need it, and then to turn it off.

Permanent Processors on Demand

When you activate the permanent processor on demand feature, additional processors are permanently activated and usable on your system. The permanent processor on demand feature adds significant value if you want to upgrade without disruption, handle business peaks, or add new workloads. If your operating system is enabled, the permanent processor on demand feature adds permanent capacity with no requirement to reboot the server.

For information about how to activate permanent processor on demand features on your system, refer to “Activating Process for Capacity Upgrade on Demand Features” on page 111, or refer to the *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590, that was delivered with your hardware management console.

Permanent Memory on Demand

The permanent memory on demand feature is one that when you decide to activate it, it is permanently activated and usable on your system. The permanent memory on demand feature adds significant value if you want to upgrade without disruption, handle business peaks, or add new workloads. The permanent memory on demand feature adds permanent capacity with no requirement to reboot the server.

For information about how to activate permanent memory on demand features on your server, refer to “Activating Process for Capacity Upgrade on Demand Features” on page 111, or refer to the *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590, that was delivered with your hardware management console.

On Demand On/Off Features

On demand On/Off features allow you to use extra processor resources that are available on your system. The On/Off features are ordered ahead of time so that the capacity is available on the system when it is needed. After you are finished using the extra capacity, you can turn it off and save your time until the resource is needed again. An activation code lets you order the amount of usage time. Turning on and off the processors is performed from the HMC interface.

For information about how to activate and deactivate On/Off features on your server, refer to “Activating Process for Capacity Upgrade on Demand Features” on page 111, or refer to the *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590, that was delivered with your hardware management console.

Trial Capacity on Demand

The trial capacity on demand function enables CUoD features to be activated one time for a 30 consecutive day period. If your system was ordered with CUoD features and they have not yet been activated, you can turn the features on for a one-time trial period. With the trial capability, you can gauge how much capacity you might need in the future, when you decide to permanently activate the resources you need.

For information about how to use the trial capacity on demand function, refer to “Activating Process for Capacity Upgrade on Demand Features” on page 111, or refer to the *IBM Hardware Management Console for pSeries Installation and Operations Guide*, order number SA38-0590, that was delivered with your hardware management console.

Capacity Planning

If you are doing capacity planning for models with CUoD features, plan ahead for any potentially disruptive actions that might inhibit your using fully the capacity of the system. Some actions you may want to take prior to activating any CUoD features are as follows:

- Perform any I/O updates, such as adding adapters necessary to increase system capacity
- Perform memory upgrades (CUoD) or standard memory features
- Prepare logical partitions

By planning ahead, you can accommodate the growth of existing workloads, as well as handle new workloads without requiring a server outage. Each component of a server affects performance and overall throughput of workloads. By planning ahead and taking into account the complete server configuration, you can help ensure that you get the full benefit of CUoD activations.

Note: If you have questions about capacity-planning topics not covered here, contact your sales representative for assistance.

Processor on Demand Ordering

Permanent CUoD capacity can be activated in either one of the following scenarios. The description of each of the following scenarios highlights if and when it is necessary to send vital product data (VPD) to IBM.

- **New system order (new footprint):** An order can contain a number of CUoD activation features. The manufacturing facility fills orders directly at the plant of manufacture, before the server is delivered to the customer.
- **Ordering activation features for an installed server:** After you have determined that you want to permanently activate some or all of your CUoD features, contact your business partner or sales representative to place an order.

When the order record and the VPD are both available to the manufacturing facility, a processor on demand activation code unique to your server is generated. The activation code is mailed to you and posted at a public Web site for quick access:

<http://www.ibm.com/servers/eserver/pseries/cuod/index.html>

As part of the order process, VPD collected from the installed server is combined with information from the order records for CUoD activation features. This combined information is used to generate a CUoD activation code specifically for your server, enabling the activation of the desired features. Allow some time for the order processing and posting of the processor on demand activation code to take place. Then use the code to activate the processor on demand features directly on your server.

If you need to activate resources immediately, you can activate features using the Trial Capacity on Demand function. This allows you to use the resources immediately while the permanent activation code is being processed.

Capacity on demand activation features will not be fulfilled until you submit the VPD through the Electronic Service Agent or manually to the following Web site:

<http://www.ibm.com/servers/eserver/pseries/cuod/index.html>

When you enter a CUoD activation code, standby processors or memory will immediately become activated for use. If your operating system is enabled for dynamic LPAR operations, the resource status changes from standby to active. The resources then can be dynamically moved to the partition where they are needed.

Electronic Service Agent and Capacity Upgrade on Demand

When Electronic Service Agent is used to electronically report VPD on a regular basis, you can eliminate potential delays in the order process for CUoD activation features (no manual reporting of VPD is necessary prior to the fulfillment of a feature upgrade order). To best utilize Electronic Service Agent and to be prepared to activate CUoD features conveniently, make sure that Electronic Service Agent and related communications equipment are up and running. If this is done before the CUoD activation features are ordered, the VPD for the system will already be up to date, and the manual process of updating the VPD is not needed.

After Electronic Service Agent is installed, follow the procedures under “Activating Process for Capacity Upgrade on Demand Features” on page 111 to enable the system to collect and transfer the required VPD for CUoD.

If a CUoD activation feature is ordered and then canceled, an action by the service representative is required to cancel the order. After the activation code is posted on the Web or mailed, the order for CUoD activation features is considered fulfilled, and the billing process is started.

Dynamic Processor Sparing

In environments with CUoD, dynamic processor sparing allows inactive processors to act as *dynamic spares*. An inactive processor is activated if a failing processor reaches a predetermined error threshold, thus helping to maintain performance and improve system availability. Starting with AIX 5.2, this capability is offered on pSeries servers with CUoD to help minimize the impact to server performance caused by a failed processor. This will happen dynamically and automatically when using dynamic logical partitioning (DLPAR) and the failing processor is detected prior to failure. If not detected prior to failure or not using DLPAR, a reboot of the system activates an alternate processor from the inactive spares. The user can then re-establish required performance levels without waiting for parts to arrive on-site. Dynamic processor sparing does not require the purchase of an activation code; it requires only that the system have inactive CUoD processors available.

Software Licenses and Processor on Demand

Activating a processor may change the terms and conditions for applications that you use on your server. Consult the application documentation to determine if the license terms and conditions requirements change based on hardware configuration.

Activating Process for Capacity Upgrade on Demand Features

The process begins when you determine a potential need for more processing capability in the future and want to have the hardware installed on the server now. If CUoD feature is ordered for your server, they are included in the server when it is delivered. Use the following steps to activate additional capacity when it is needed:

1. Determine the additional capacity you want to activate.
2. Contact your sales representative or business partner to place an order for particular processor on demand activation features.
3. The sales representative places an order to the system coordinator or feature coordinator for the features you request. The order specifies the upgrade features to add.
4. To process the order, you must send the system Vital Product Data (VPD) to IBM in either of the following ways:
 - Electronic process (Electronic Service Agent)
 - Web-based VPD entry:

For details on how to submit the VPD either through the Electronic Service Agent or using the Web system, go to the following Web site and view the *Planning Guide for Capacity Upgrade on Demand*.

<http://www.ibm.com/servers/eserver/pseries/cuod/index.html>

5. After the activation code is received (from either the Web or the mailed copy), enter the activation code using the HMC. Detailed procedures are available in the *Planning Guide for Capacity Upgrade on Demand*.
6. After you have finished the activation process, you can assign the activated processors to a partition. If you are using dynamic partitioning (DLPAR), you need not reboot the system to use the processors. If you are not using DLPAR, you must reboot the managed system before the newly activated processors can be used.

Before adding processors to a partition that is running Linux, you must stop Linux partitions and then restart them after you have assigned the processors.

Begin using the new capacity. If you encountered any problems using the preceding process, see the following Web site:

<http://www.ibm.com/servers/eserver/pseries/cuod/index.html>

Appendix A. Communications Statements

The following statement applies to this product. The statement for other products intended for use with this product appears in their accompanying documentation.

Federal Communications Commission (FCC) Statement

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Neither the provider nor the manufacturer is responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

European Union (EU) Statement

This product is in conformity with the protection requirements of EU Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility. The manufacturer cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of option cards supplied by third parties. Consult with your dealer or sales representative for details on your specific hardware.

This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to CISPR 22 / European Standard EN 55022. The limits for Class A equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

Attention: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

International Electrotechnical Commission (IEC) Statement

This product has been designed and built to comply with IEC 60950.

United Kingdom Telecommunications Safety Requirements

This equipment is manufactured to the International Safety Standard EN60950 and as such is approved in the UK under the General Approval Number NS/G/1234/J/100003 for indirect connection to the public telecommunication network.

The network adapter interfaces housed within this equipment are approved separately, each one having its own independent approval number. These interface adapters, supplied by the manufacturer, do not use or contain excessive voltages. An excessive voltage is one which exceeds 70.7 V peak ac or 120 V dc. They

interface with this equipment using Safe Extra Low Voltages only. In order to maintain the separate (independent) approval of the manufacturer's adapters, it is essential that other optional cards, not supplied by the manufacturer, do not use main voltages or any other excessive voltages. Seek advice from a competent engineer before installing other adapters not supplied by the manufacturer.

Avis de conformité aux normes du ministère des Communications du Canada

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Canadian Department of Communications Compliance Statement

This Class A digital apparatus meets the requirements of the Canadian Interference-Causing Equipment Regulations.

VCCI Statement

<p>この装置は、クラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。</p> <p>VCCI-A</p>

The following is a summary of the VCCI Japanese statement in the box above.

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

Electromagnetic Interference (EMI) Statement - Taiwan

<p>警告使用者： 這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。</p>

The following is a summary of the EMI Taiwan statement above.

Warning: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user will be required to take adequate measures.

Radio Protection for Germany

Dieses Gerät ist berechtigt in Übereinstimmung mit Dem deutschen EMVG vom 9.Nov.92 das EG-Konformitätszeichen zu führen.

Der Aussteller der Konformitätserklärung ist die IBM Germany.

Dieses Gerät erfüllt die Bedingungen der EN 55022 Klasse A. Für diese von Geräten gilt folgende Bestimmung nach dem EMVG:

Geräte dürfen an Orten, für die sie nicht ausreichend entstört sind, nur mit besonderer Genehmigung des Bundesministers für Post und Telekommunikation oder des Bundesamtes für Post und Telekommunikation betrieben werden. Die Genehmigung wird erteilt, wenn keine elektromagnetischen Störungen zu erwarten sind.

(Auszug aus dem EMVG vom 9.Nov.92, Para.3, Abs.4)

Hinweis

Dieses Genehmigungsverfahren ist von der Deutschen Bundespost noch nicht veröffentlicht worden.

Appendix B. Environmental Notices

Product Recycling and Disposal

This unit contains materials such as circuit boards, cables, electromagnetic compatibility gaskets and connectors which may contain lead and copper/beryllium alloys that require special handling and disposal at end of life. Before this unit is disposed of, these materials must be removed and recycled or discarded according to applicable regulations. IBM offers product return programs in several countries, for country specific instructions please refer to the following web site:

<http://www.ibm.com/ibm/environment/products/prp.phtml>

This product may contain a sealed lead acid battery(s) or nickel-cadmium battery(s). The battery(s) must be recycled or disposed of properly. Recycling facilities may not be available in your area. In the United States, IBM has established a collection process for reuse, recycling, or proper disposal of used sealed lead acid, nickel cadmium and nickel metal hydride batteries and battery packs from IBM equipment. For information on proper disposal of the batteries in this product, please contact IBM at 1-800-426-4333. For information on disposal of sealed lead acid or nickel cadmium batteries outside the United States, contact your local waste disposal or recycling facility.

Environmental Design

The environmental efforts that have gone into the design of this system signify IBM's commitment to improve the quality of its products and processes. Some of these accomplishments include the elimination of the use of Class 1 ozone-depleting chemicals in the manufacturing process and reductions in manufacturing wastes. For more information, contact an IBM account representative.

Acoustical Noise Emissions

The equivalent continuous A-weighted sound pressure level at workstations (emission sound pressure level at the 1-meter bystander positions) does not exceed 70 dB(A).

Der Geräuschpegel der Einheit ist kleiner oder gleich 70 db(A).

Declared Acoustical Noise Emissions

Product Configuration	Acoustical Characteristic			
	Declared A-Weighted Sound Power Level, L_{WA_d} (B)		Declared A-Weighted Sound Pressure Level, LpAm (dB)	
	Operating	Idle	Operating	Idle
Processor Subsystem	6.1 ⁵	6.1 ⁵	44 ⁶	44 ⁶

Notes:

- Noise levels cited are for the typical configuration (A-Frame: Bulk Power, CEC cage, battery option, media drawer, and two I/O drawers).
- The 0.6-B (6-dB) reduction in noise emission levels with the acoustical rear door corresponds to a factor of 4 reduction. That is, the noise level of a single A-Frame with Slimline covers is about the same as the noise level of four A-Frames with acoustical covers.
- L_{WA_d} is the upper-limit A-weighted sound power level; LpAm is the mean A-weighted sound pressure level at the 1-meter bystander positions; 1 B = 10 dB.
- All measurements made in conformance with ISO 7779 and declared in conformance with ISO 9296.

Appendix C. Notices

This information was developed for products and services offered in the U.S.A.

The manufacturer may not offer the products, services, or features discussed in this document in other countries. Consult the manufacturer's representative for information on the products and services currently available in your area. Any reference to the manufacturer's product, program, or service is not intended to state or imply that only that product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any intellectual property right of the manufacturer may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any product, program, or service.

The manufacturer may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to the manufacturer.

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This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. The manufacturer may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Information concerning products made by other than the manufacturer was obtained from the suppliers of those products, their published announcements, or other publicly available sources. The manufacturer has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to products made by other than the manufacturer. Questions on the capabilities of products made by other than the manufacturer should be addressed to the suppliers of those products.

Appendix D. Subsystem Positioning and Cabling

I/O subsystems can be installed in a standard 19-inch EIA rack in any location. The cables that connect the subsystems allow some flexibility in drawer placement, but the I/O subsystems should be located above the processor subsystem to which they are connected in the same rack.

Up to eight I/O subsystems can be connected to a processor subsystem. Use the following guidelines:

- Each I/O subsystem connects to the processor subsystem using one system power control network (SPCN) cable loop.
- Each I/O subsystem connects to the processor subsystem using one or more remote I/O (RIO) cable loops.
- Lowest cost configurations allow up to four I/O subsystems connected to the processor subsystem using a single RIO loop.
- Best performance is achieved when each I/O drawer is connected to the processor subsystem through its own RIO loop.

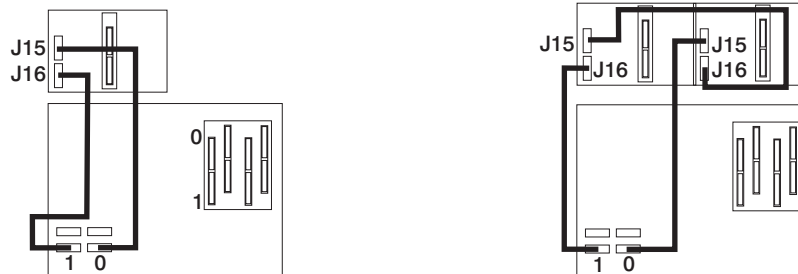
SPCN Cabling

I/O subsystem SPCN cables are connected to the processor subsystem unit in a loop configuration. The SPCN cables are connected in a loop so that the system has two paths to each I/O subsystem. Up to eight I/O subsystems are supported on one SPCN loop.

One I/O Subsystem, Two I/O Subsystems

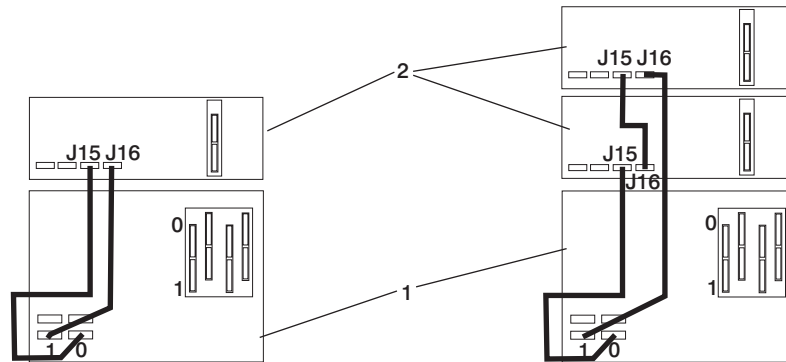
The illustrations on the left show one I/O subsystem connected to the processor subsystem. The illustrations on the right show two I/O subsystems connected to the processor subsystem using one SPCN loop.

Processor Subsystem Connected to One or Two Model D10 I/O Subsystems



- 1 Processor Subsystem
- 2 I/O Subsystem

Processor Subsystem Connected to One or Two 7311 Model D20 I/O Subsystems

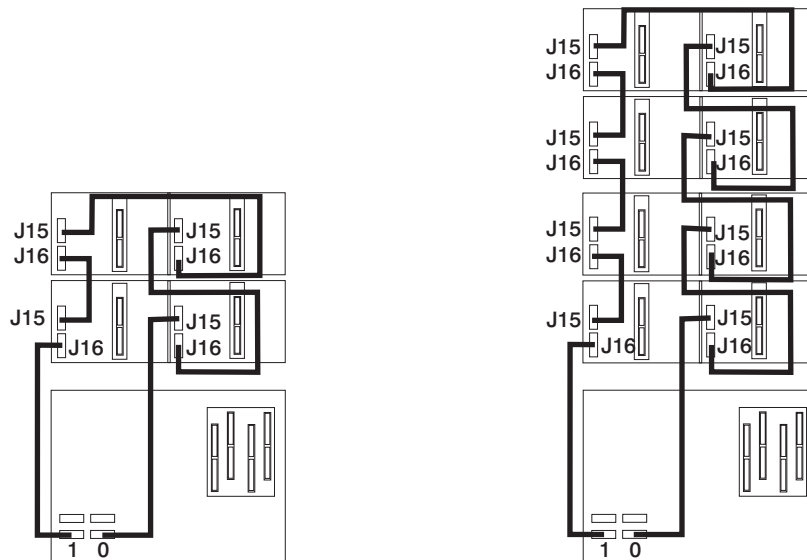


- 1 Processor Subsystem
- 2 I/O Subsystem

Four I/O Subsystems, Eight I/O Subsystems

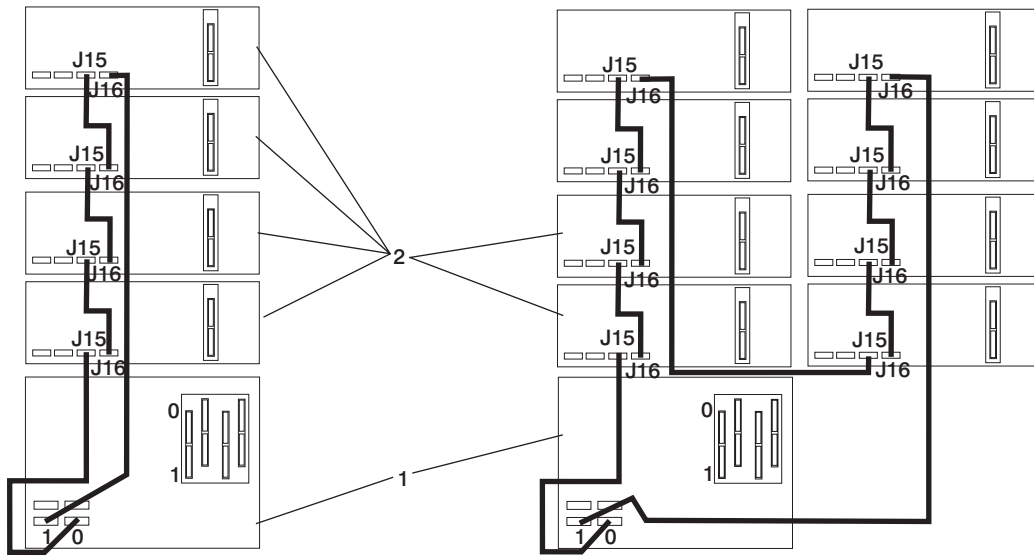
The illustration on the left shows four I/O subsystems connected to the processor subsystem using one SPCN loop. The illustration on the right shows eight I/O subsystems connected to the processor subsystem using one SPCN loop.

Processor Subsystem Connected to Four or Eight Model D10 I/O Subsystems



- 1 Processor Subsystem
- 2 I/O Subsystem

Processor Subsystem Connected to Four or Eight 7311 Model D20 I/O Subsystems



- 1 Processor Subsystem
- 2 I/O Subsystem

RIO Cabling

I/O subsystems are connected to the processor subsystem through remote I/O (RIO) cable loops. The cable loops are connected to ports that are available from the rear of the processor subsystem. The RIO cables are connected in loops so that the system has two paths to each I/O subsystem when more than one I/O drawer is in a loop.

If only one I/O subsystem is in a RIO loop and both the processor subsystem and the I/O subsystem are RIO-G capable, the RIO-G cables are used as one two-cable path to the I/O subsystem. In this cable configuration, the data rate is increased by a factor of 2.

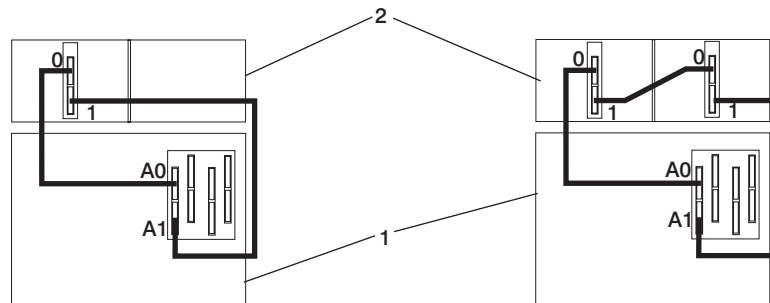
- A maximum of eight Model D10 drawers are supported on one processor subsystem.
- A maximum of eight 7311 Model D20 I/O drawers are supported on one processor subsystem.
- If both Model D10 and Model D20 I/O drawers are connected to the same processor subsystem, the total number of I/O subsystems supported is eight.
- The maximum number of I/O subsystems supported on one RIO loop is four.
- The Model D10 and Model D20 I/O drawers must be on separate RIO loops.
- The Model D10 and Model D10-G can share one RIO loop.
- The Model D20 and Model D20-G can share one RIO loop.

The system can have up to four RIO loops. A total of eight I/O drawers can be connected to the processor subsystem in a variety of cabling configurations. For optimum performance, connect the RIO loops in a configuration that spreads multiple I/O drawers across as many RIO loops as possible. A dedicated RIO loop for each I/O drawer can provide highest performance. Some examples of valid cabling examples follow.

One I/O Subsystem or Two I/O Subsystems

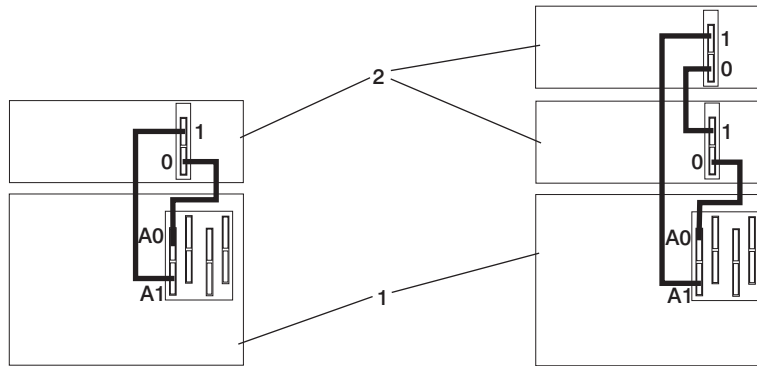
The illustrations on the left shows one I/O subsystem drawer connected to the processor subsystem. The illustrations on the right show two I/O subsystem drawers connected to the system unit using one RIO loop.

Processor Subsystem Connected to One or Two Model D10 I/O Subsystems



- 1 Processor Subsystem
- 2 I/O Subsystem

Processor Subsystem Connected to One or Two 7311 Model D20 I/O Subsystems

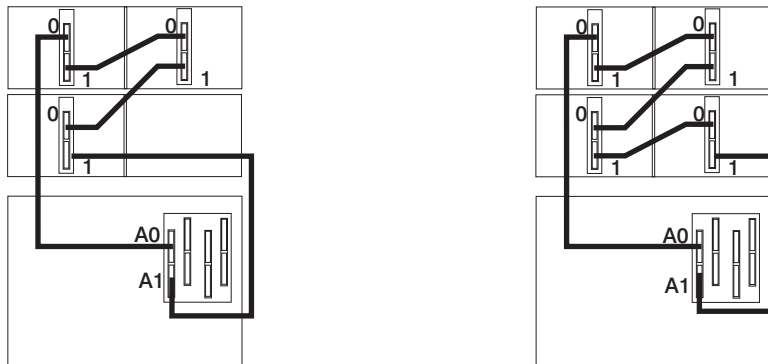


- 1 Processor Subsystem
- 2 I/O Subsystem

Three I/O Subsystems or Four I/O Subsystems

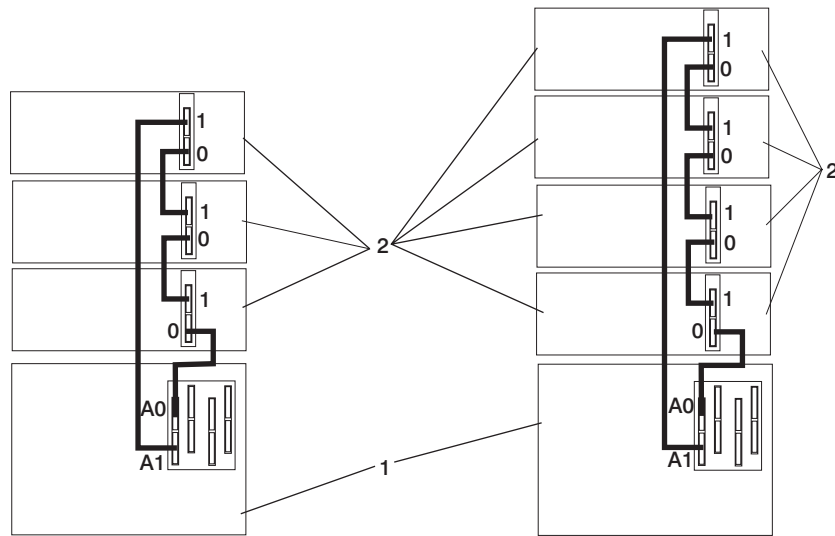
The illustration on the left shows three I/O subsystem drawers connected to the system unit using one RIO loop. The illustration on the right shows four I/O subsystem drawers connected to the system unit using one RIO loop.

Processor Subsystem Connected to Three or Four Model D10 I/O Subsystems



- 1 Processor Subsystem
- 2 I/O Subsystem

Processor Subsystem Connected to Three or Four 7311 Model D20 I/O Subsystems

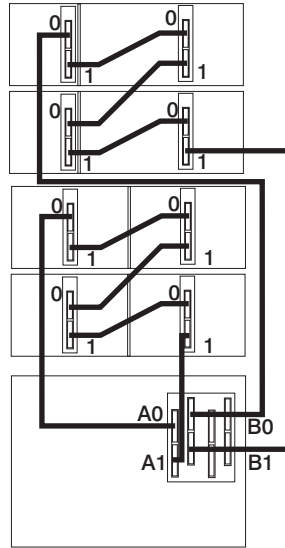


- 1 Processor Subsystem
- 2 I/O Subsystem

Eight I/O Subsystems with Two RIO Loops

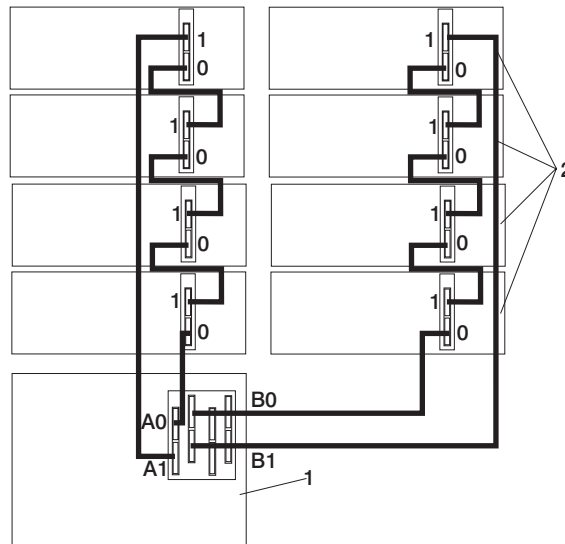
The following illustrations show eight I/O subsystem drawers connected to the processor subsystem unit using two RIO loops.

Processor Subsystem Connected to Eight Model D10 I/O Subsystems



- 1 Processor Subsystem
- 2 I/O Subsystem

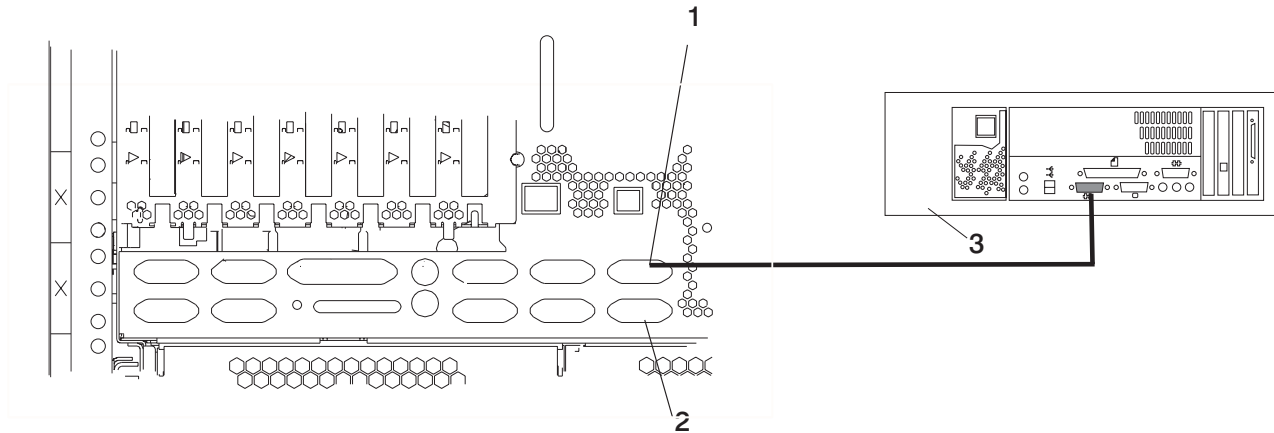
Processor Subsystem Connected to Eight 7311 Model D20 I/O Subsystems



- 1 Processor Subsystem
- 2 I/O Subsystem

Hardware Management Console for pSeries (HMC) to the HMC Connector

To connect your HMC to the pSeries 650 Model 6M2, connect a serial cable into a serial port on the HMC. The port can be either a serial port on the back of the HMC or a serial port on an 8-port or 128-port async adapter. Connect the other end of the serial cable into the HMC1 connector located on the rear of the processor subsystem. The following illustration shows the location of the serial ports on the back of the HMC and the HMC connectors located on the processor subsystem.



- 1 HMC (HSC) Port 1,
Location: U0.1-P2/S5
- 2 HMC (HSC) Port 2,
Location: U0.1-P2/S6
- 3 HMC

Optional 8-Port or 128-Port Async Adapters

Up to two optional async adapters can be installed in the HMC. The adapters have breakout boxes that allow connection to serial cables that connect to the managed system's HMC ports.

Appendix E. Service Processor Setup and Test

Attention: This procedure applies to modems attached to the serial ports (S1 and S2) on the system drawer. It does not affect the operation of the modem attached to the Hardware Management Console for pSeries (HMC).

The call-out function is normally handled by the service focal point running on the HMC.

For your convenience, an example of a basic service processor setup checklist is included here. Your setup may include more or fewer of the available features, so you can adjust this checklist for your own application.

Note: Call-out and surveillance are disabled in partitioned systems.

Service Processor Setup Checklist

1. Shut down the managed system, wait for the “OK” in the physical operator panel.
2. Open a virtual terminal on the HMC.
3. Bring up the service processor menus.
4. Set the system name.
5. Enable Surveillance.
6. Configure call-in/call-out.
7. Exit the service processor menus.
8. Remove all power by removing the power cords from both power supplies in the rear of the processor subsystem.
9. Attach modems (if needed).
10. Apply power by reconnecting the power cords to both power supplies in the rear of the processor subsystem.
Attention: Make sure that system power remains off.
11. Test both of the following:
 - Call-In, page “Testing Call-In” on page 130
 - Call-Out, page “Testing Call-Out” on page 131
12. Use the “Save or Restore Hardware Management Policies,” in the “Introduction to Tasks and Service Aids” section of the *RS/6000 and @server Diagnostic Information for Multiple Bus Systems* to back up the service processor settings.

Note: This is strongly recommended to protect the usefulness of the service processor and the availability of the server.

Your service processor is now ready for use.

Testing the Setup

This section contains sample testing procedures to help ensure your setup is working.

These tests include communicating with the server operating system. Before you start, ensure that the necessary serial port(s) is configured. If you need assistance, refer to “Serial Port Configuration” on page 131.

The server should be powered off as a result of the “Service Processor Setup Checklist” on page 129.

Testing Call-In

1. Go to your remote terminal and call in to your server. Your server answers and offers you the service processor Main Menu after requesting your privileged access password.
2. Select **System Power Control**.
3. Select **Power-On System**.
When you are asked if you wish to continue powering on the system, type **Y**.
4. After the system firmware and operating system have initialized the server, the login prompt displays at your remote terminal if you set up seamless modem transfer. This may take several minutes. When the login prompt displays, you have successfully called the service processor.
5. Type **logout** to disconnect from the operating system. The message No Carrier displays on your remote terminal.
6. Call your server again. The operating system answers and offers you the login prompt. If these tests are successful, call-in is working.
7. Log in and type **shutdown -F** to shut down your server.
8. The message No Carrier displays on your remote terminal.

Testing Call-Out

During the setup, you entered your phone numbers for the pager and customer voice (refer to the *@server pSeries 650 Model 6M2 Service Guide* for more information). These numbers are used for this test.

1. Your remote terminal is disconnected as a result of the Call-In test.
2. Call your server again.
3. At the service processor Main Menu, select **Call-In/Call-Out Setup** menu, then select **Call-Out** test. This action causes a simulated error condition for the purposes of this test.
4. After a few moments, a message displays, regarding an illegal entry. Press Enter to clear the message and return to the main menu.
5. When your telephone rings, answer the call. You should hear the sound of a telephone being dialed. This is your computer trying to page you.

If this test is successful, call-out is working correctly.

Serial Port Configuration

To configure the serial port on an AIX system, run the following from an AIX console:

1. Log in as root user.
2. To determine if you have any serial ports already configured, type:

```
lsdev -Cc tty
```

If no serial ports are configured, none are listed. If you want to configure serial ports that are not listed, continue with the remaining steps.

3. Identify the serial port(s) with the modem(s).
4. Type **smit tty**
5. Select **add tty**
6. Select **RS232**
7. Select **Baud rate 9600** or higher.
8. Select **login enable** and set the flow control to RTS.
9. Commit the selections and set up any other needed serial ports.
10. Exit SMIT.

Appendix F. Firmware Updates

This section provides information and instructions for updating the system firmware. You may need to perform these steps if you are installing an option or if your support representative has requested that you update your firmware.

Downloading the firmware update image and update instructions from the Web is preferred.

Always check the pSeries and RS/6000 Support Web site for the latest firmware images and update instructions. The Web address is: <http://techsupport.services.ibm.com/server/mdownload2>

If you cannot download from the Web, do the following:

- If the system is running, but access to the Web is not available, see “System Firmware Update in AIX Using a Locally Available Image” on page 135.
- If the system cannot be powered on, but the service processor menus are available, see “Updating System Firmware From the Service Processor Menus” on page 136.
- If the service processor programming has been corrupted, the service processor will automatically enter recovery mode when power is applied to the system. For more information on recovery mode, go to “Recovery Mode” on page 137.

To check the level of firmware that is currently on the system, see “Determining the Level of Firmware on the System” on page 134.

General Information on System Firmware Updates

All the system firmware types that can be reprogrammed are updated at the same time. They are:

- System power control network programming
- Service processor programming
- IPL programming
- Run-time abstraction services

It is strongly recommended that you create a set of firmware update diskettes from the Web site as soon as possible after a system is installed. The diskette images can be downloaded to any personal computer, pSeries, or RS/6000 system with Internet access. This method and contacting your service representative are the only two ways to acquire a set of firmware update diskettes; they cannot be created by using the service processor menus or by using the operating system.

Retain and store the latest firmware diskettes each time the firmware gets updated in the event that the firmware becomes corrupted and must be reloaded.

Download the detailed instructions, as well as the latest flash images, from the following Web address: <http://www.rs6000.ibm.com/support/micro>. Before doing a system firmware update, check the Web site for the latest code and images. Do not attempt a firmware update if you are unsure of the image you have, or of the procedure required for the update.

The images are available on the Web site in either DOS format or AIX (backup) format:

- If downloading to a PC, download the DOS image and follow the instructions. The diskettes that are created will be in AIX (backup) format.
- If downloading to a pSeries or RS/6000 system, follow the instructions to create an image on a disk drive or on diskettes.

Determining the Level of Firmware on the System

Note: This information may be superseded by the information that is available on the Web site listed below. Always check the Web site for the latest images and instructions for checking the firmware level. The Web address is: <http://techsupport.services.ibm.com/server/mdownload2>.

There are two forms in which the firmware level may be denoted:

- RKyymmdd, where RK = the pSeries @server pSeries 650 Model 6M2's firmware designation, yy = year, mm = month, and dd = day of the release.
- vKyymmdd, where v = version number, K = the pSeries @server pSeries 650 Model 6M2's firmware designation, yy = year, mm = month and dd = day of the release.

If your system is running AIX, the platform firmware level can be determined by either of the following methods:

- On the AIX command line, by typing:

```
lscfg -vp|grep -p Platform
```

A line that begins with ROM level (alterable).. displays the firmware level that is currently on the system.

- Looking at the top of the service processor main menu.

If the system is running Linux, the platform firmware level can be determined by any one of the following methods:

- If the system was installed prior to May of 2003, and has not had a firmware update in the May 2003 time frame or later, type the following on the Linux command line:

```
/usr/sbin/ibmras/nvram --print-vpd | grep RK
```

- If the system was installed in May of 2003 or later, or the system has firmware on it that was released in the May 2003 time frame or later, type the following on the Linux command line:

```
/usr/sbin/ibmras/nvram --print-vpd | grep 3K
```

A line similar to Alterable ROM Level RK021114 or Alterable ROM Level 3K030509 displays the firmware level that is currently on the system.

- Looking at the top of the service processor menu main menu.

System Firmware Update in AIX Using a Locally Available Image

To update the system firmware using a locally available image, perform the following steps:

1. Log in as root user.
2. If the **/tmp/fwupdate** directory does not exist, create it by issuing the following command:

```
mkdir /tmp/fwupdate
```
3. The firmware update file must be downloaded or copied into the **/tmp/fwupdate** directory on the system. This can be done by using the **ftp** command to get the image from an ftp server or NFS-mounting the directory on the host system.

The firmware updated file can also be transferred to the target system by backing up the image onto diskettes from another server and restoring it into the **/tmp/fwupdate** directory.

After the firmware update file has been downloaded or copied into the **/tmp/fwupdate** directory, verify its existence by entering either of the following command, depending on the name of the update image:

```
ls /tmp/fwupdate/RK*.img
```

or

```
ls /tmp/fwupdate/3K*.img
```

The update file will have either the RKyymmdd.img format or the 3Kyymmdd.img format. In both cases, the K in the second position indicates that this is an update image for your system; yy is the year, mm is the month, and dd is the day of the update file.

4. After the update file has been written to the **/tmp/fwupdate** directory, enter the following commands:

```
cd /usr/lpp/diagnostics/bin
```

then either of these commands, depending on the name of the update file:

```
./update_flash -f /tmp/fwupdate/RKyymmdd.img
```

or

```
./update_flash -f /tmp/fwupdate/3Kyymmdd.img
```

Attention: Do not overlook the periods (.) in the commands shown above. AIX commands are case-sensitive. Type them exactly as shown.

You will be asked for confirmation to proceed with the firmware update and the required reboot. If you confirm, the system will apply the new firmware, reboot, and return to the AIX prompt. This may take up to ten minutes depending on the configuration of the system.

Attention: On some systems, the message `Wait for rebooting before stopping` may display on the system console. Do not turn off the system until the system has fully rebooted to the AIX login prompt. If a shutdown is necessary at that time, log in as root user and issue the **shutdown** command.

While the update is in progress, you will see `Rebooting...` on the display for several minutes.

The firmware update is complete.

Updating System Firmware From the Service Processor Menus

This procedure requires a diskette drive to be installed in the system. This procedure also requires a set of firmware update diskettes in backup format.

The service processor menus are available while the system is powered off. As a privileged user, from the service processor main menu, select **Service Processor Setup**, then select **Reprogram Flash EPROM Menu**. The update process requests update diskettes as needed.

Updating System Firmware from the AIX Service Aids

Attention: This method is not recommended for partitioned systems, but if the device resources are allocated properly, the firmware update can be done using the AIX service aid.

Note: This service aid is supported only in online diagnostics.

If the firmware on a partitioned system is being updated:

- One partition running AIX must have service authority.
- All other partitions except the one with service authority must be shut down.
- The partition with service authority must own the device from which the firmware update image will be read.
- It is recommended that the partition with service authority have a hard disk.

If the required devices are not in the partition with service authority, the customer or system administrator must reassign the appropriate resources to it. This requires rebooting the partition with service authority. To avoid the resource allocation issues, it is recommended that the service processor menus be used to update the firmware.

If the firmware on a full system partition is being updated, no special steps are required to perform the firmware update using the service aid.

For information about updating system firmware, refer to the instructions that are provided on the web site with the latest image.

Note: Because the system always reboots itself during this type of firmware update process, the update process can take from 20 to 60 minutes.

Updating System Firmware from a NIM Server

Refer to "Running Standalone Diagnostics from a Network Installation Management (NIM) Server with an HMC Attached to the System" on page 33.

Recovery Mode

If the service processor detects that its programming has been corrupted when it is powering on to standby mode, it will enter recovery mode. In recovery mode, it prompts for the firmware update diskettes by putting eight-digit codes on the operator panel display, as shown in the following table. After the update process is complete, the service processor resets itself and performs a complete reboot.

Code	Action
A1FD 0000	System firmware has been corrupted and must be reflashed.
A1FD 0001	Insert update diskette 1.
A1FD 0002	Insert update diskette 2.
A1FD 0003	Insert update diskette 3.
A1FD 000n	Insert update diskette n.

Notes:

1. If the wrong diskette is inserted at any time, or if the diskette is left in the drive after it has been read, B1FD 001F is displayed, indicating that the wrong diskette is in the drive.
2. If B1FD 001A is displayed at any time during the process, the service processor must be reset by activating the pinhole reset switch on the primary drawer operator panel.

Updating System Firmware from the AIX Command Line

For information about updating system firmware, refer to the Web site for detailed instructions on the latest image provided.

Note: The update process can take up to 60 minutes, and the system reboots itself during the update process.

Appendix G. System Records

Record the Identification Numbers

Record and retain the following information.

System Name:	_____
System Machine Type and Serial Number:	_____
Number of I/O Subsystems Attached:	_____
I/O subsystem Machine Type and Serial Numbers:	_____

The identification numbers for the system and attached I/O subsystems are located on the front cover and on the rear of the units.

Device Records

Use the following tables to keep a record of the options installed in or attached to your system and I/O subsystems. This information can be helpful when you install additional options in your system or if you ever need to have your system serviced.

Location	Option Description
Mouse Connector	<u>IBM Mouse</u> <input type="checkbox"/> Other: _____
Keyboard Connector	<u>Space Saving</u> <input type="checkbox"/> <u>Enhanced</u> <input type="checkbox"/> Other: _____
Ethernet Connector	_____
SCSI Connector	_____
Serial Port 1	_____
Serial Port 2	_____
Serial Port 3	_____
Serial Port 4	_____
PCI Expansion Slot 1	_____
PCI Expansion Slot 2	_____
PCI Expansion Slot 3	_____
PCI Expansion Slot 4	_____
PCI Expansion Slot 5	_____
PCI Expansion Slot 6	_____
PCI Expansion Slot 7	_____

Media Bays

Location	Drive Description
Diskette	<u>Diskette Drive</u>
First Media Bay	_____
Second Media Bay	_____

Processor Boards

Location	Processor Board Memory Description
Processor Board Position 1	Number of quads filled ____ DIMM Size ____
Processor Board Position 2	Number of quads filled ____ DIMM Size ____
Processor Board Position 3	Number of quads filled ____ DIMM Size ____
Processor Board Position 4	Number of quads filled ____ DIMM Size ____

First I/O Subsystem _____ Records

Location	Option Description
PCI Adapter Slot 1	
PCI Adapter Slot 2	
PCI Adapter Slot 3	
PCI Adapter Slot 4	
PCI Adapter Slot 5	
PCI Adapter Slot 6	
PCI Adapter Slot 7	

Location	Option Description
Hot-Plug Disk Drive Slot 1	
Hot-Plug Disk Drive Slot 2	
Hot-Plug Disk Drive Slot 3	
Hot-Plug Disk Drive Slot 4	
Hot-Plug Disk Drive Slot 5	
Hot-Plug Disk Drive Slot 6	
Hot-Plug Disk Drive Slot 7	
Hot-Plug Disk Drive Slot 8	
Hot-Plug Disk Drive Slot 9	
Hot-Plug Disk Drive Slot 10	
Hot-Plug Disk Drive Slot 11	
Hot-Plug Disk Drive Slot 12	

Second I/O Subsystem _____ Records

Location	Option Description
PCI Adapter Slot 1	
PCI Adapter Slot 2	
PCI Adapter Slot 3	
PCI Adapter Slot 4	
PCI Adapter Slot 5	
PCI Adapter Slot 6	
PCI Adapter Slot 7	

Location	Option Description
Hot-Plug Disk Drive Slot 1	
Hot-Plug Disk Drive Slot 2	
Hot-Plug Disk Drive Slot 3	
Hot-Plug Disk Drive Slot 4	
Hot-Plug Disk Drive Slot 5	
Hot-Plug Disk Drive Slot 6	
Hot-Plug Disk Drive Slot 7	
Hot-Plug Disk Drive Slot 8	
Hot-Plug Disk Drive Slot 9	
Hot-Plug Disk Drive Slot 10	
Hot-Plug Disk Drive Slot 11	
Hot-Plug Disk Drive Slot 12	

Third I/O Subsystem _____ Records

Location	Option Description
PCI Adapter Slot 1	
PCI Adapter Slot 2	
PCI Adapter Slot 3	
PCI Adapter Slot 4	
PCI Adapter Slot 5	
PCI Adapter Slot 6	
PCI Adapter Slot 7	

Location	Option Description
Hot-Plug Disk Drive Slot 1	
Hot-Plug Disk Drive Slot 2	
Hot-Plug Disk Drive Slot 3	
Hot-Plug Disk Drive Slot 4	
Hot-Plug Disk Drive Slot 5	
Hot-Plug Disk Drive Slot 6	
Hot-Plug Disk Drive Slot 7	
Hot-Plug Disk Drive Slot 8	
Hot-Plug Disk Drive Slot 9	
Hot-Plug Disk Drive Slot 10	
Hot-Plug Disk Drive Slot 11	
Hot-Plug Disk Drive Slot 12	

Fourth I/O Subsystem _____ Records

Location	Option Description
PCI Adapter Slot 1	
PCI Adapter Slot 2	
PCI Adapter Slot 3	
PCI Adapter Slot 4	
PCI Adapter Slot 5	
PCI Adapter Slot 6	
PCI Adapter Slot 7	

Location	Option Description
Hot-Plug Disk Drive Slot 1	
Hot-Plug Disk Drive Slot 2	
Hot-Plug Disk Drive Slot 3	
Hot-Plug Disk Drive Slot 4	
Hot-Plug Disk Drive Slot 5	
Hot-Plug Disk Drive Slot 6	
Hot-Plug Disk Drive Slot 7	
Hot-Plug Disk Drive Slot 8	
Hot-Plug Disk Drive Slot 9	
Hot-Plug Disk Drive Slot 10	
Hot-Plug Disk Drive Slot 11	
Hot-Plug Disk Drive Slot 12	

Fifth I/O Subsystem _____ Records

Location	Option Description
PCI Adapter Slot 1	
PCI Adapter Slot 2	
PCI Adapter Slot 3	
PCI Adapter Slot 4	
PCI Adapter Slot 5	
PCI Adapter Slot 6	
PCI Adapter Slot 7	

Location	Option Description
Hot-Plug Disk Drive Slot 1	
Hot-Plug Disk Drive Slot 2	
Hot-Plug Disk Drive Slot 3	
Hot-Plug Disk Drive Slot 4	
Hot-Plug Disk Drive Slot 5	
Hot-Plug Disk Drive Slot 6	
Hot-Plug Disk Drive Slot 7	
Hot-Plug Disk Drive Slot 8	
Hot-Plug Disk Drive Slot 9	
Hot-Plug Disk Drive Slot 10	
Hot-Plug Disk Drive Slot 11	
Hot-Plug Disk Drive Slot 12	

Sixth I/O Subsystem _____ Records

Location	Option Description
PCI Adapter Slot 1	
PCI Adapter Slot 2	
PCI Adapter Slot 3	
PCI Adapter Slot 4	
PCI Adapter Slot 5	
PCI Adapter Slot 6	
PCI Adapter Slot 7	

Location	Option Description
Hot-Plug Disk Drive Slot 1	
Hot-Plug Disk Drive Slot 2	
Hot-Plug Disk Drive Slot 3	
Hot-Plug Disk Drive Slot 4	
Hot-Plug Disk Drive Slot 5	
Hot-Plug Disk Drive Slot 6	
Hot-Plug Disk Drive Slot 7	
Hot-Plug Disk Drive Slot 8	
Hot-Plug Disk Drive Slot 9	
Hot-Plug Disk Drive Slot 10	
Hot-Plug Disk Drive Slot 11	
Hot-Plug Disk Drive Slot 12	

Seventh I/O Subsystem _____ Records

Location	Option Description
PCI Adapter Slot 1	
PCI Adapter Slot 2	
PCI Adapter Slot 3	
PCI Adapter Slot 4	
PCI Adapter Slot 5	
PCI Adapter Slot 6	
PCI Adapter Slot 7	

Location	Option Description
Hot-Plug Disk Drive Slot 1	
Hot-Plug Disk Drive Slot 2	
Hot-Plug Disk Drive Slot 3	
Hot-Plug Disk Drive Slot 4	
Hot-Plug Disk Drive Slot 5	
Hot-Plug Disk Drive Slot 6	
Hot-Plug Disk Drive Slot 7	
Hot-Plug Disk Drive Slot 8	
Hot-Plug Disk Drive Slot 9	
Hot-Plug Disk Drive Slot 10	
Hot-Plug Disk Drive Slot 11	
Hot-Plug Disk Drive Slot 12	

Eighth I/O Subsystem _____ Records

Location	Option Description
PCI Adapter Slot 1	
PCI Adapter Slot 2	
PCI Adapter Slot 3	
PCI Adapter Slot 4	
PCI Adapter Slot 5	
PCI Adapter Slot 6	
PCI Adapter Slot 7	

Location	Option Description
Hot-Plug Disk Drive Slot 1	

Location	Option Description
Hot-Plug Disk Drive Slot 2	
Hot-Plug Disk Drive Slot 3	
Hot-Plug Disk Drive Slot 4	
Hot-Plug Disk Drive Slot 5	
Hot-Plug Disk Drive Slot 6	
Hot-Plug Disk Drive Slot 7	
Hot-Plug Disk Drive Slot 8	
Hot-Plug Disk Drive Slot 9	
Hot-Plug Disk Drive Slot 10	
Hot-Plug Disk Drive Slot 11	
Hot-Plug Disk Drive Slot 12	

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Readers' Comments — We'd Like to Hear from You

@server pSeries 650
Installation Guide

Publication No. SA38-0610-01

Overall, how satisfied are you with the information in this book?

	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
Overall satisfaction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How satisfied are you that the information in this book is:

	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
Accurate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Complete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Easy to find	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Easy to understand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Well organized	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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