Bull ESCALA PL 220T & PL 220R

Installation Guide

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Installation Guide

Hardware

January 2002

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Communication 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 are 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 Standard 950.

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 Réglement 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

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。　　　　　　　　ＶＣＣＩ－Ａ

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

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。

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.

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:
x
1-3
1-18

A *caution* notice indicates the presence of a hazard that has the potential of causing moderate or minor personal injury. A Caution notice appears on the following pages:
x
xi
1-3
1-18
3-32.

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 indirect contact with the rack.

- Care should be taken to insure 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 removed 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 any time 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 communication lines.**

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

DANGER
> **To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.**

Laser Safety Information

CAUTION:
This product may contain a CD–ROM which is a class 1 laser product..

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 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

Environmental Notices

Product Recycling and Disposal

This unit contains materials such as circuit boards and connectors with lead that require special handling and disposal at end of life. Before this unit is disposed, these materials must be removed and recycled or discarded according to applicable regulations. This manual contains specific information on batteries where applicable. Contact your account representative for more information. This product may contain nickel–cadmium and /or lithium batteries. The battery(s) must be recycled or disposed of properly. Recycling facilities may not be available in your area.

For information on reuse, recycling or proper battery disposal procedures, contact your sales representative or local waste disposal facility.

Unit emissions

The unit–related emission value is equal to or lower than 70dB(A).

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

About this Book

This book provides information about the ESCALA PL 220T and ESCALA PL 220R, specifically how to install and remove options, use the system, use diagnostics and service aids, and verify system operation. The Model PL 220T is a deskside system and the Model PL 220R is a rack mount system.

ISO 9000

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

Related Publications

The following publications are available:

- The *System Unit Safety Information*, order number 86 X1 11WD, contains translations of safety information used throughout this book.

- The *User's Guide*, order number 86 A1 77EF, contains information on how to use the system, use diagnostics, use service aids and verify system operations.

- The *Service Guide*, order number 86 A1 79EF, contains reference information, maintenance analysis procedures (MAPs), error codes, removal and replacement procedures, and a parts catalog.

- The *T00 Rack Installation and Service Guide*, order number 86 A1 94KX, contains information regarding the Model T00 Rack, in which the EPC810 may be installed.

- The *Diagnostic Information for Multiple Bus Systems*, order number 86 A1 26HX, contains diagnostic information, service request numbers (SRNs) and failing function codes FFCs).

- The *Adapters for Multiple Bus Systems*, order number 86 A1 27HX, contains cabling and technical information about some of the adapters and devices available for your system unit.

- The *Site Preparation for Rack Systems*, order number , provides a step–by–step approach to prepare a customer site dor the installation of single and multiple rack–mounted machines together with their subsystems and peripherals.

- The *Disks and Tapes Configuration Information*, order number 86 A1 88GX, gives the jumper and switch settings to configure disks and tapes peripherals that use the Small Computer System Interface (SCSI).

Chapter 1. Setting Up the Server

Follow the procedures in this chapter to set up your system.

Step 1. Check your Inventory

Model PL 220T and Model PL 220R

- Books, CD–ROM and other media

- Power cables (2 standard, 1 optional)

- 9–pin to 25–pin Serial Converters (2) (optional)

- SCSI converter cable (optional)

- ASCII terminal (optional)
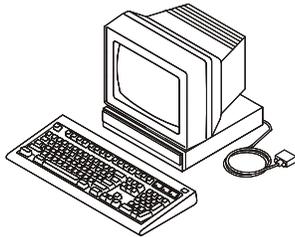
- Keyboard (optional) Wrist/Palm Rest (optional)

- Display, cable (optional), and cable toroid (optional)
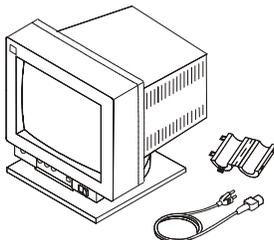
- Mouse (optional)

System Unit (Model PL 220T or PL 220R)

☐ Model PL 220R   ☐ Model PL 220T
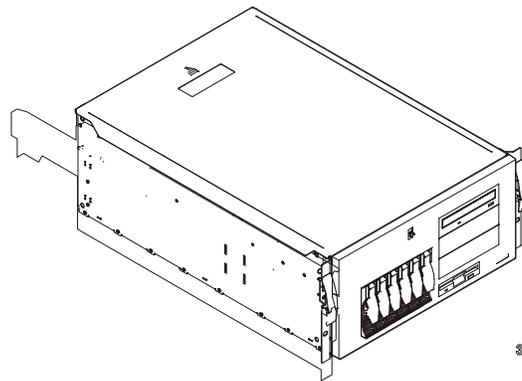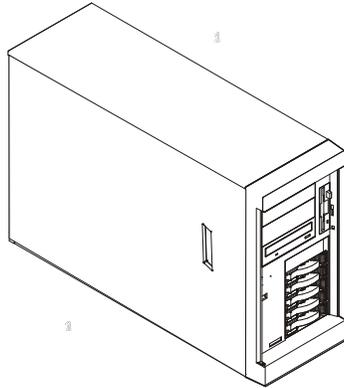
Model PL 220R (Rack Mount) Only

- Rack Mounting Template

- Rack Rails
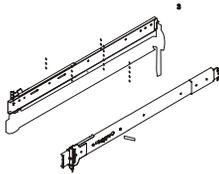
- Cable Management Arm
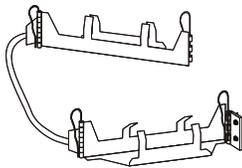
- Rack Mounting Kit. Envelope contains: 8 rail screws, 12 rack screws, 12 cage nuts (12 for square holes and 12 for round holes).
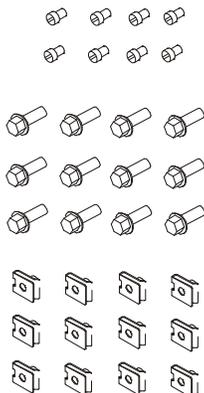
Step 2. Need Help?

If you encounter difficulties while setting up your system unit, contact your sales representative for assistance.

Step 3. 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 communication lines.*

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.*

DANGER
> *To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.*

Step 4. Are You Installing a Model PL 220R (Rack Mount)?

If you are installing a Model PL 220R, continue with this step. If you are installing a Model PL 220T (Tower), go to Step 7. "Are All of the Internal Options Installed" on page 1-9.

You will need the following items:

• Rack Mounting Template

• 2 Rack Rails

• Cable Management Arm

• Rack Mounting Kit Envelope

• Screwdriver or Nutdriver

Step 5. Attach the Mounting Hardware to the Rack Enclosure

1. Install the cage nuts for the rack rails and the cable management arm on the mounting rails of the rack enclosure.

Note: You must align the rack rails correctly. Otherwise, the installation cannot be completed successfully.

    a. Position the template on the front mounting rail, aligning the holes.

    b. Install the cage nuts, using the locations shown on the template.

    c. Move the template to the rear mounting rails.

    d. Install the cage nuts, using the locations shown on the template.
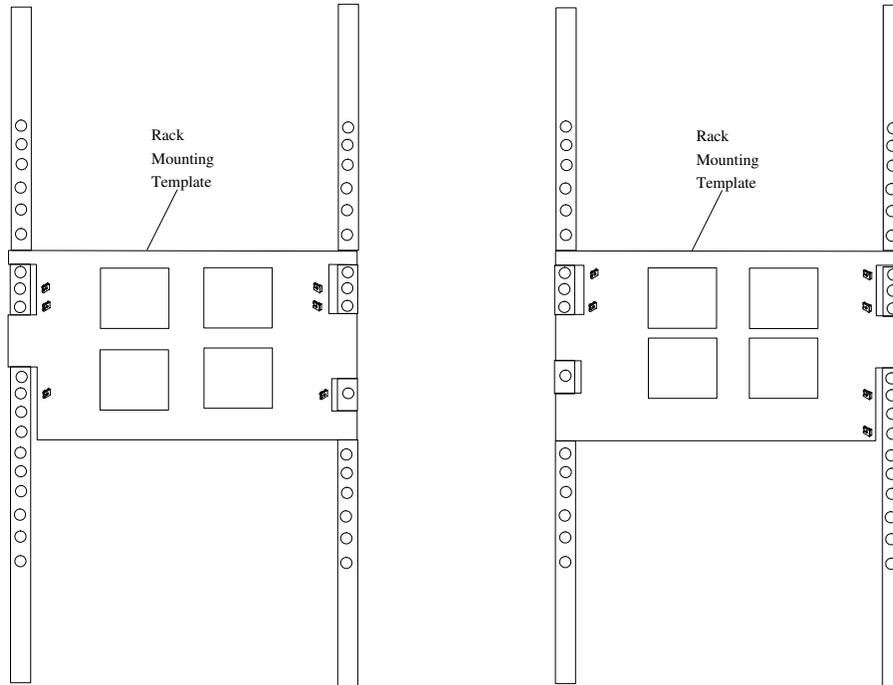
2. Attach the slide rails to the rack.

   a. Insert the left slide–rail rear bracket pin into the hole between the two cage nuts for the slide rail at the rear of the rack. The two holes in the rear bracket line up with the cage nuts.

   b. Pull the slide–rail front bracket to the front of the rack; insert the front bracket pin into the hole above the cage nuts for the slide rail. The two holes in the front bracket line up with the cage nuts.
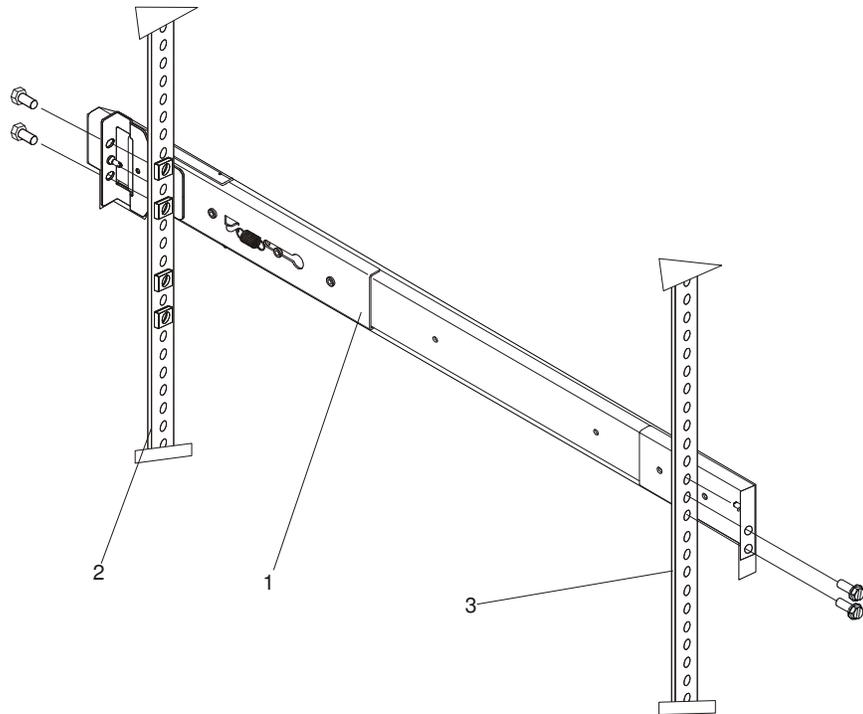
1	Left slide rail
2	Left rear
3	Left front

   c. Do the same for the right slide rail.

   d. From the outside of the rack enclosure, insert two M6 by 16–mm screws through each slide–rail bracket and cage nut; then, tighten the screws finger tight.

3. Attach the cable–management arm to the left rear of the rack enclosure.

   a. Align the cable–management–arm mounting bracket with the cage nuts on the rear mounting rail.

   b. Insert two M6 by 16–mm screws to secure the mounting bracket to the rack.
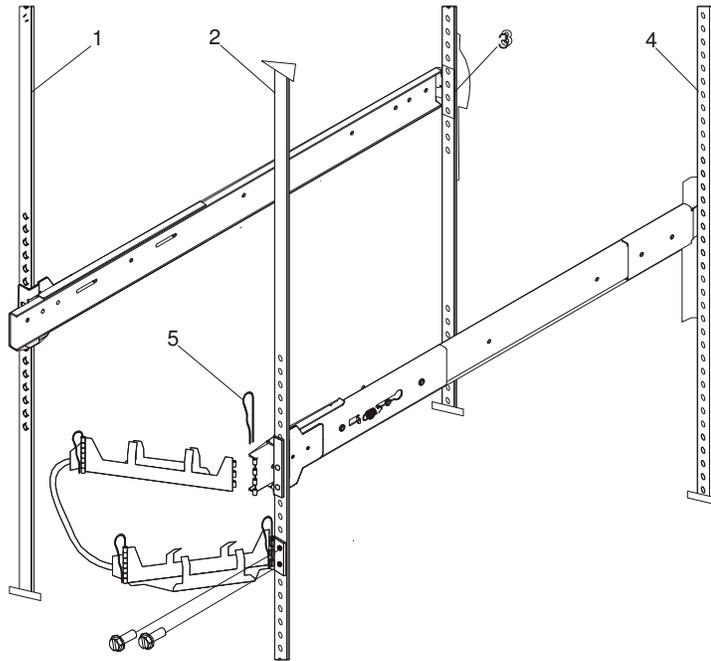
1	Right rear
2	Left rear
3	Right front
4	Left front
5	Hitch pin

   c. Attach the free end of the cable–management arm to the rear of the left slide rail, using a hitch pin (**5**).

Step 6. Install the System in the Rack Enclosure

Attention: 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.

1. 1.Mount the server on the slide rails.

   a. Extend the slide rails fully from the rack until the slide rails lock.

   b. Rest the blue wheel–shaped knobs (1) on the slide rails at a point close to the rack.

   c. Lower the front of the server until the bottom notch in each chassis bracket fits into the top notch in the slide rail end.
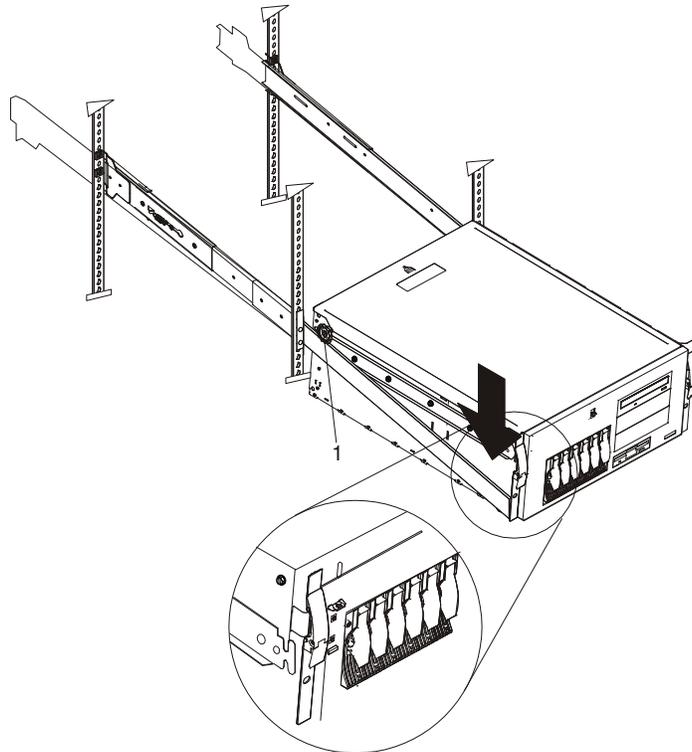
Slide the server backward or forward as necessary until the notches meet.

d. Attach the rails to the sides of the server with M4 by 5–mm screws.
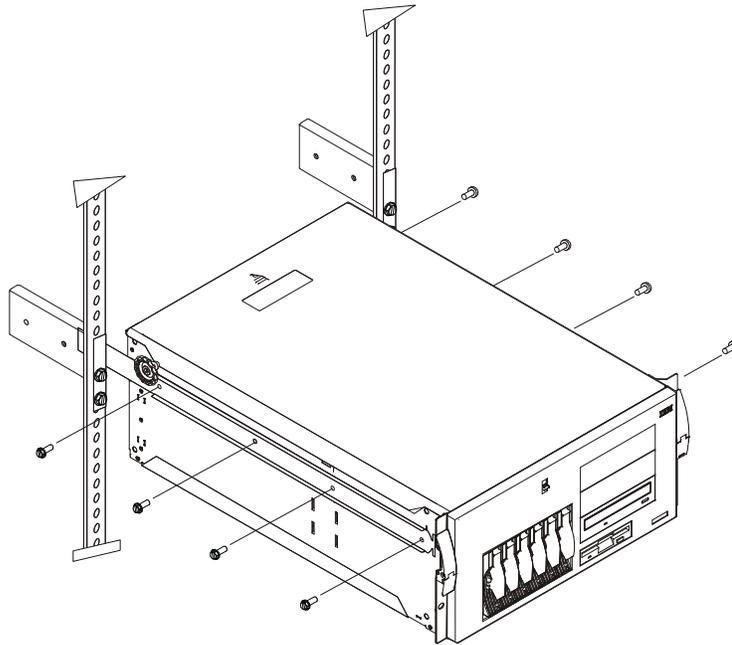
2. Remove the blue wheel–shaped knobs from the server. Store the knobs in a safe place to use if you need to remove the server from the rack at a later time.

3. Press the safety latches on the slide rails (1) 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 and dropped. To release the safety latch, press in on the latch.
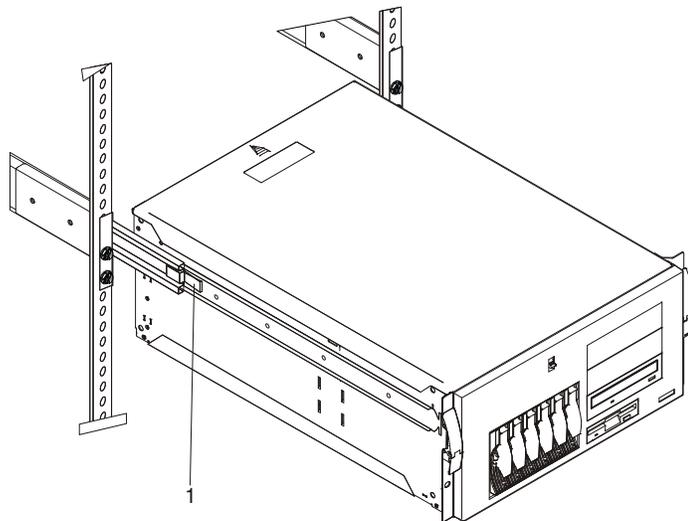
4. Secure the server in the rack enclosure.

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

b. Using a screwdriver, tighten the screws that hold the rear of the slide rails to the rear of the rack.

c. Release the server and pull the server forward about halfway.

Note: To release the server, release the left and right slide latches and pull the server forward.
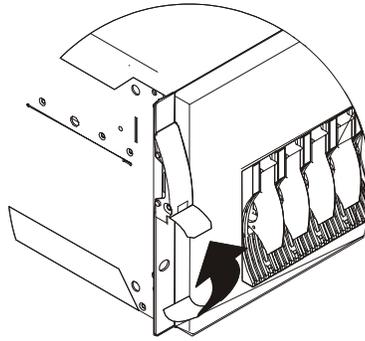
d. Using a screwdriver, tighten the screws that hold the front of the slide rails to the front of the rack.

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

5. Optional: For additional security, such as might be needed when transporting the rack, fasten the server to the rack enclosure by inserting a M6 by 16–mm screw through the chassis bracket, mounting rail, and cage nut on each side.
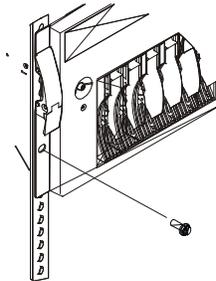
Step 7. Are All of the Internal Options Installed?

These instructions are for systems that have internal options (such as adapters, disk drives, or memory upgrades) already installed.

If you have internal options that are not installed, install them now. Refer to Chapter 3: "Installing Options in Your System", and then return here.

Step 8. Position the System Unit and Display

Position the system unit and display (optional) at or near their installed location.

Observe the following guidelines when you are positioning the system unit:

• The system unit weighs between 34 kg (75 pounds) and 41 kg (90 pounds). Do not try to lift the system unit by yourself.

• Displays or ASCII terminals can weigh as much as 35 kg (77 pounds). Use caution when lifting or moving the display or ASCII terminal.

• Leave enough space around the system unit to safely and easily complete the setup procedures.

• Observe standard ergonomic guidelines while arranging your system unit so that you can work comfortably and safely.

- Be sure to maintain at least 51 mm (2 inches) of space on the sides of the system unit and 152 mm (6 inches) at the rear of the system unit to allow the system unit to cool properly. The front of the system requires a minimum of 76 mm (3 inches) of space. Blocking the air vents can cause overheating, which might result in a malfunction or permanent damage to the system unit.

- Place the system unit in a location where it can safely and easily reach any necessary power outlets and network connections.

- Place the display or ASCII terminal in a stable and sturdy location.

Step 9. Connect the Graphics Display

Notes:

If you are using an ASCII terminal with a keyboard as the console for this system, go to "Step 12: Connect the Serial and Parallel Devices" on page 1-13.

If you are using a graphics display with a keyboard and mouse, continue with "Step10. Attach the Display Cable Toroid" on page 1-11.

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 that display. If you want to:

- Attach another display to your system unit

  OR

- Change the default display resolution or refresh rate

  after completing the installation steps, refer to the documentation for your graphics adapter.

As shown in "Step 10. Attach the Display Cable Toroid" on page 1-11, connect the graphics display cable to the back of the display and to the graphics adapter connector. Consult the "About Your Machine" document for the locations of installed adapters.

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

Note: Some displays require an additional cable.

Step 10. Attach the Display Cable Toroid

If the cable for your display does not include a toroid, locate the toroid shipped with your system unit and follow the installation instructions included with the toroid.
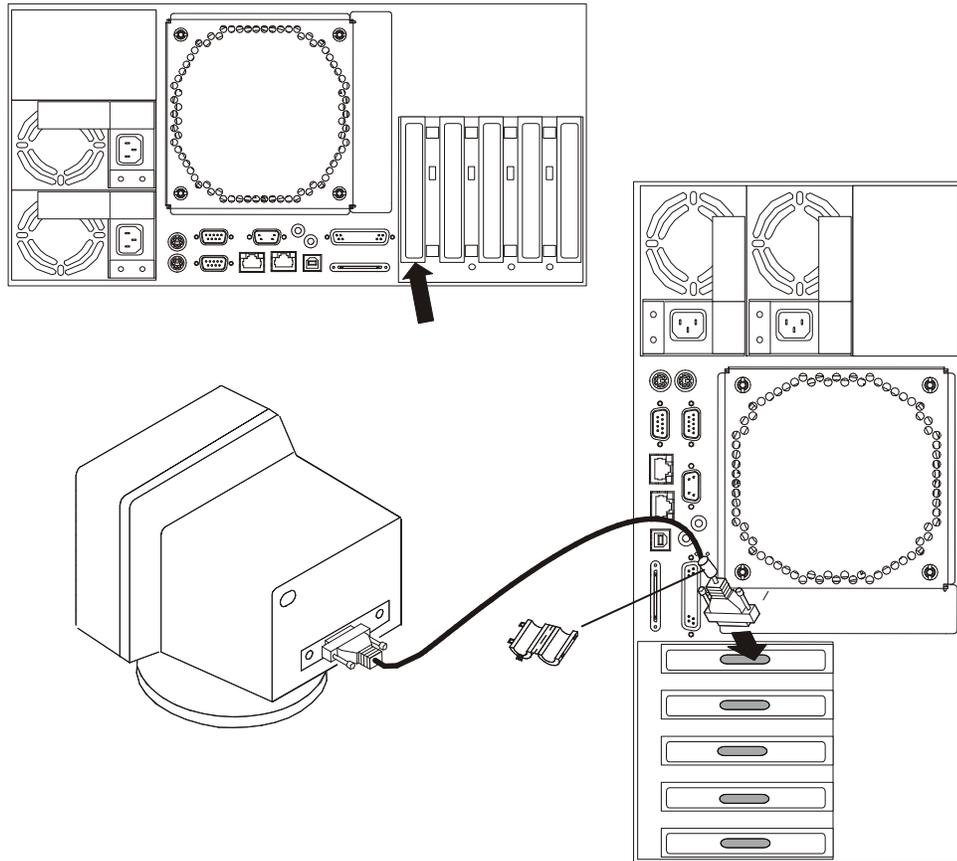
Step 11. Connect the Keyboard and Mouse

Note: IA keyboard and a mouse should be attached to the ports shown only if they are used with an attached graphics display.

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

As shown below, connect the keyboard and mouse to the connectors on the rear of the system unit.
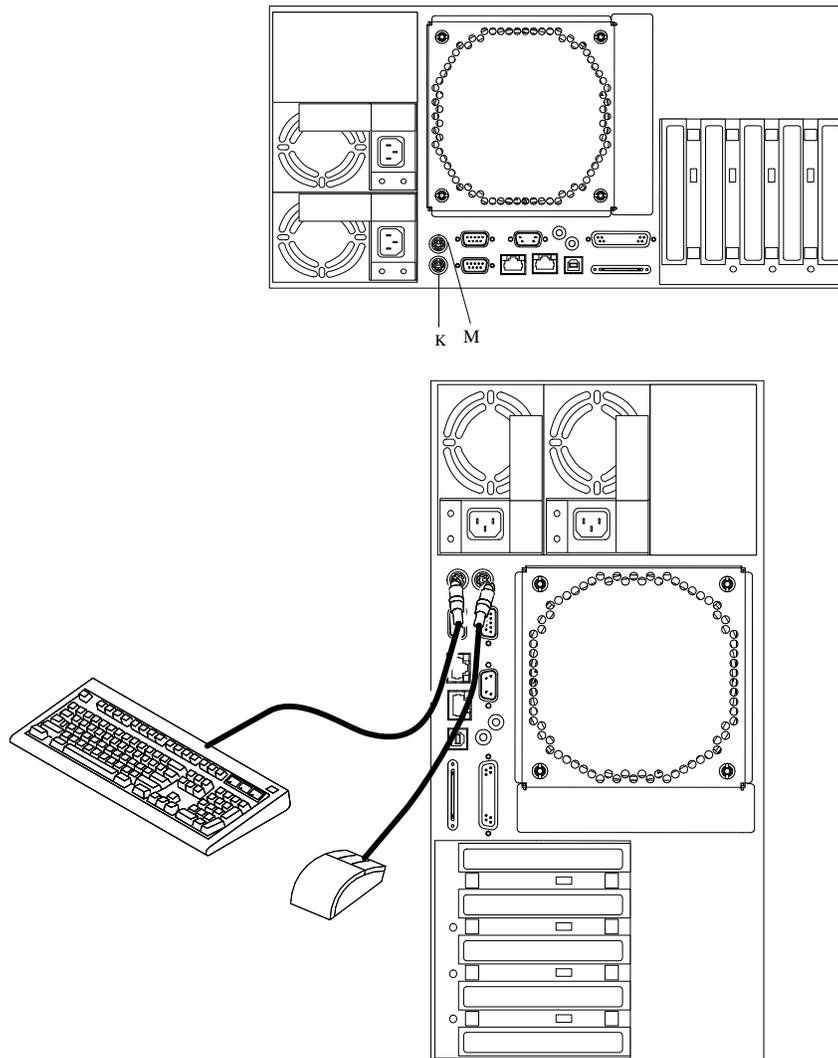
Step 12. Connect the Serial and Parallel Devices

If you have a local ASCII terminal or a single serial device, connect it to the serial connector S1 **(1)**.

Note: 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 connector S2 **(2)**.

Connect any additional serial devices to the S3 connector (**3**) if it is not already in use.

If you have a parallel device (such as a printer), connect it to the parallel connector **(4).**
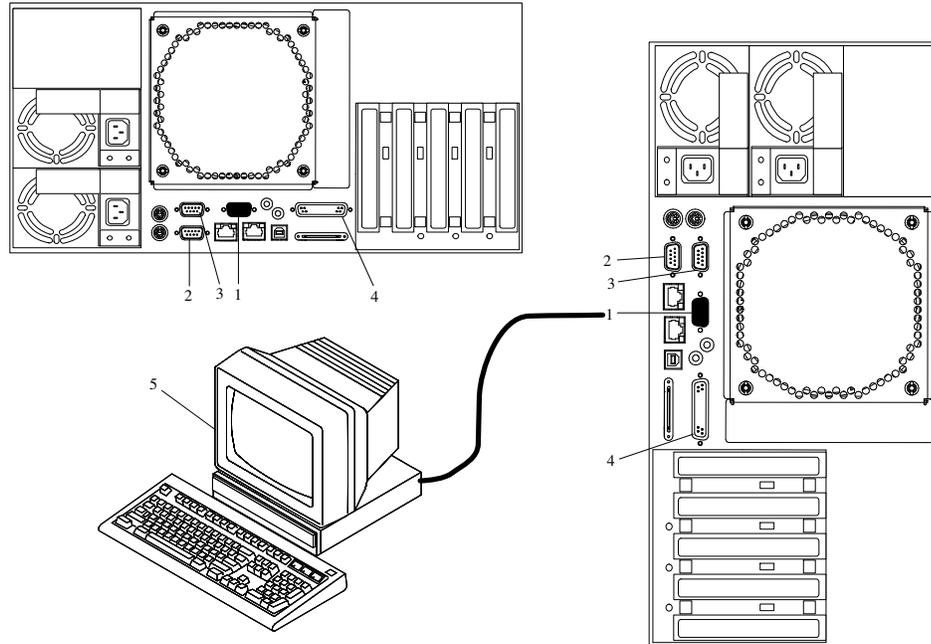
Step 13. Connect the Adapter Cables

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. Consult the "About Your Machine" document for the locations of installed adapters.
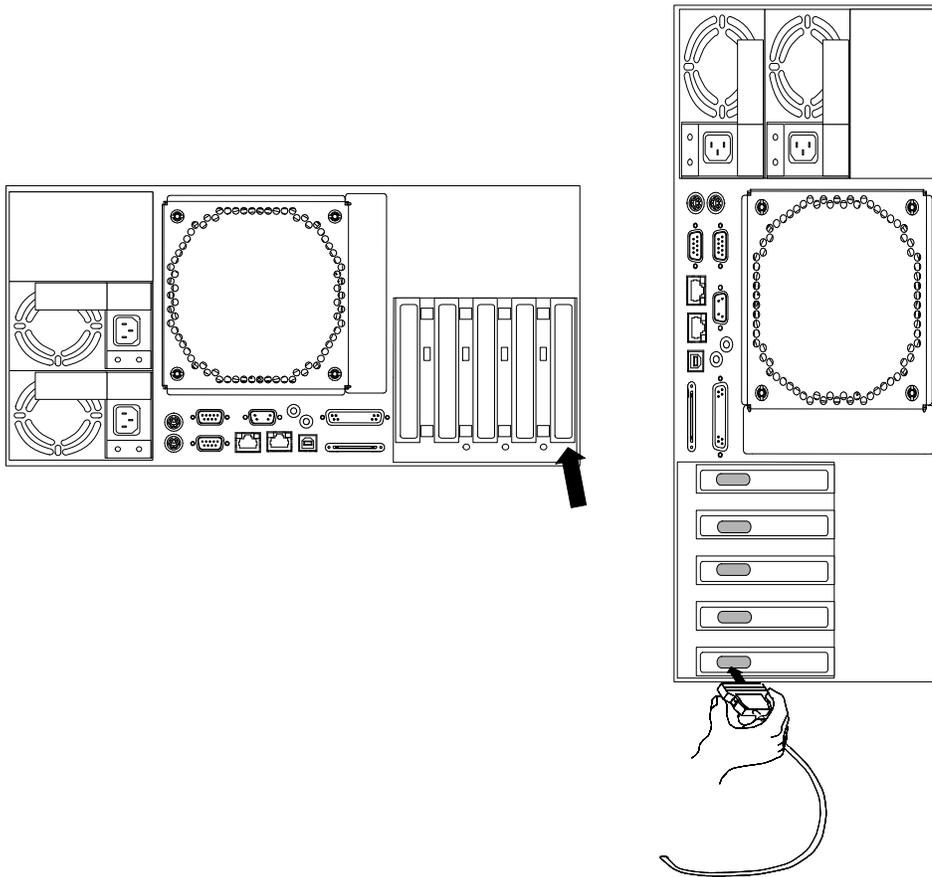
Step 14. Connect the First External SCSI Device

If your no external SCSI devices to attach, skip to "Step 17. Are You Using an Ethernet Connection?" on page 1-17.

If you need to connect an external SCSI device, follow these steps. If you ordered the optional SCSI converter cable and need it to connect an external SCSI device, begin with step 1 below. If you do not need the converter cable, begin with step 3 below.

1. Connect the SCSI end of the converter cable (**1**) directly to the system unit.

2. Connect the other end of the SCSI converter cable to one end of the SCSI device cable (**2**).

3. Connect the other end of the SCSI device cable (**3**) to the SCSI device.

4. Connect the SCSI device terminator (**4**) (if this is the last device to be connected). The last device on a SCSI bus *must* be terminated.

Note: When a cable is not attached to the SCSI connector on the system unit, the connector is automatically terminated (internally).

5. To set the SCSI device address, refer to the SCSI device documentation. For future reference, you can record the address in "Appendix A, System Records".
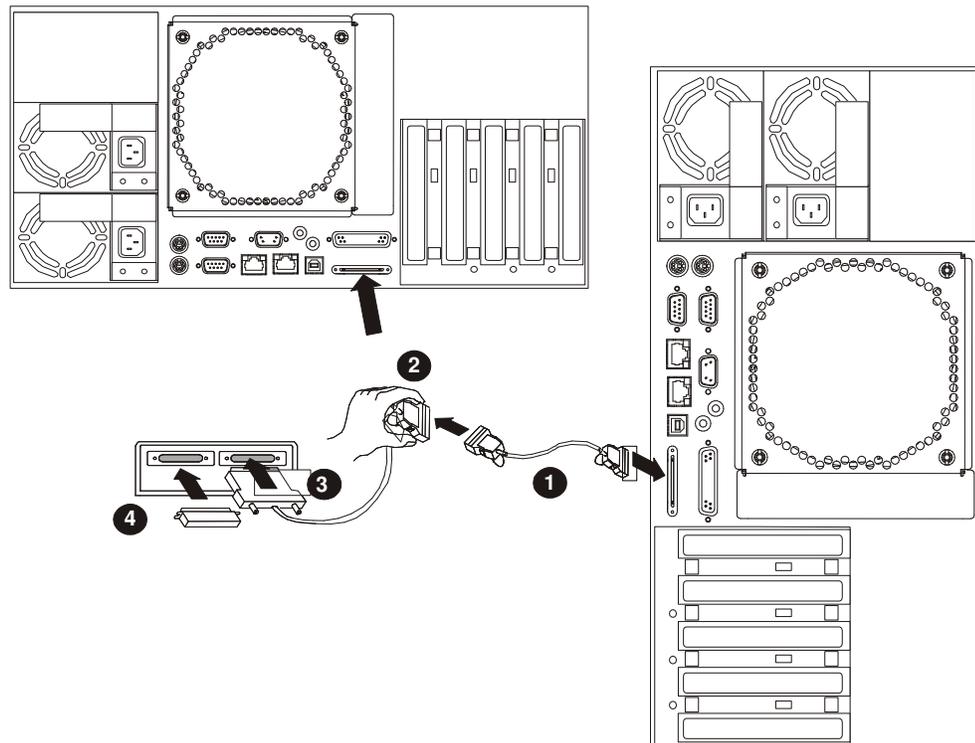
Step 15. Connect Any Additional External SCSI Devices

1. Locate the last SCSI device in the chain from the system unit. If a SCSI device terminator **(1)** is installed, remove it.

2. Connect the new SCSI cable **(2)** where you just removed the SCSI bus terminator.

3. Connect the other end of the SCSI cable **(3)** to the new SCSI device.

4. Connect the SCSI bus terminator **(4)**.

5. Refer to the SCSI device documentation to set the SCSI device address. For future reference, you can record the address in Appendix A, "System Records".

6. Repeat this step for each additional SCSI device you attach.
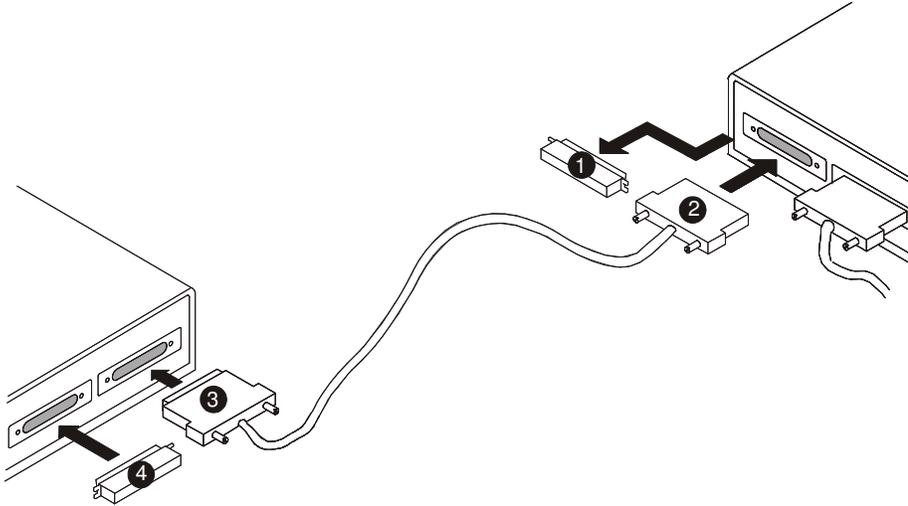
Step 16. Are You Using the Rack Indicator Feature?

The rack indicator feature signals when a drawer installed in a rack has a failure. Ask your system administrator if you are unsure whether you are using the rack indicator feature. If you are not using the rack indicator feature, continue with "Step 17. Are You Using an Ethernet Connection?".

Connect the rack indicator cable.
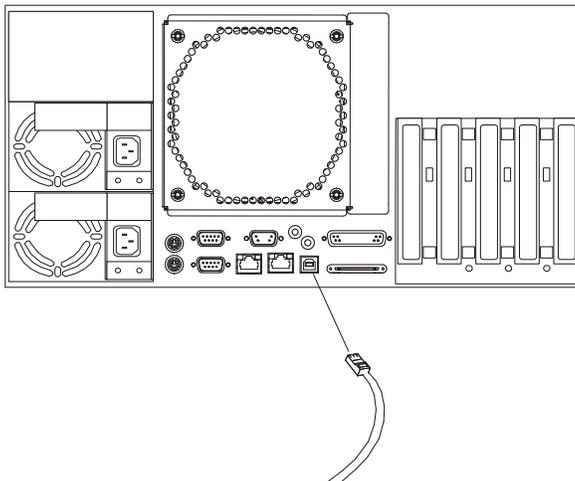
Step 17. Are you Using an Ethernet Connection?

Ask your system administrator if you are unsure whether you are using an Ethernet connection. If you are not using Ethernet or you have already connected your Ethernet to an adapter, continue with "Step 18: Connect the Power Cables to Server" on page 1-18. To connect the Ethernet cable:

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

1. Connect the twisted–pair cable to the twisted–pair connector (**1**) or (**2**).

2. The twisted–pair Ethernet cable is now installed. Continue with "Step 18: Connect the Power Cables to Server" on page 1-18.
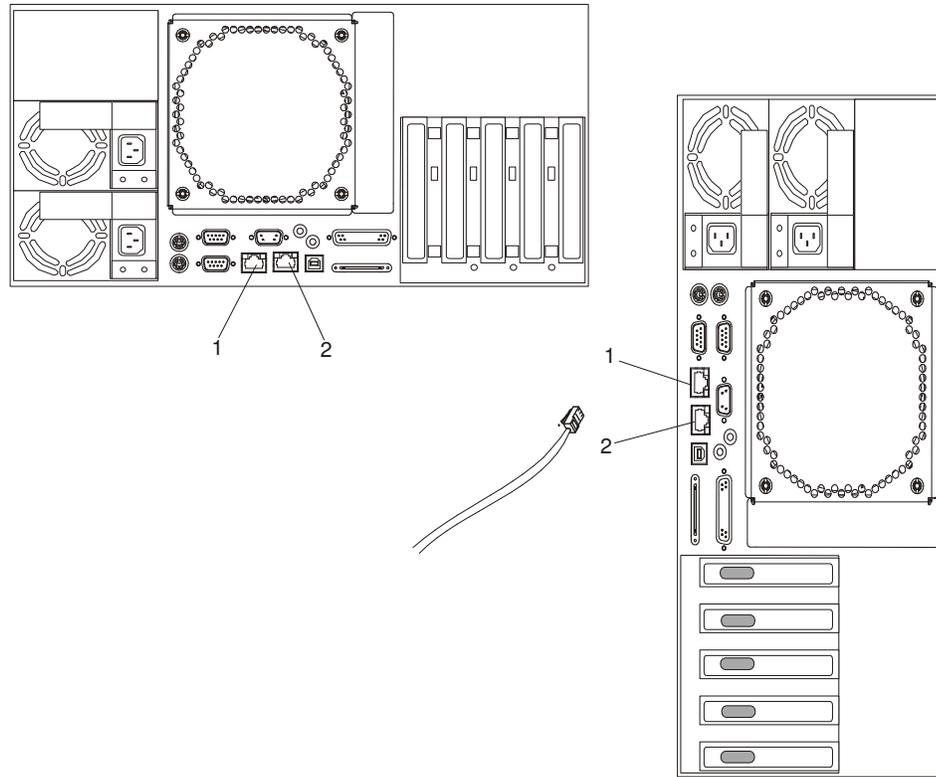
Step 18. Connect the Power Cables to Server

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 communication lines.

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.

Plug the power cables into the power supply connectors (**2**) and route the power cables (**1**) through the cable–restraint bracket (**3**).
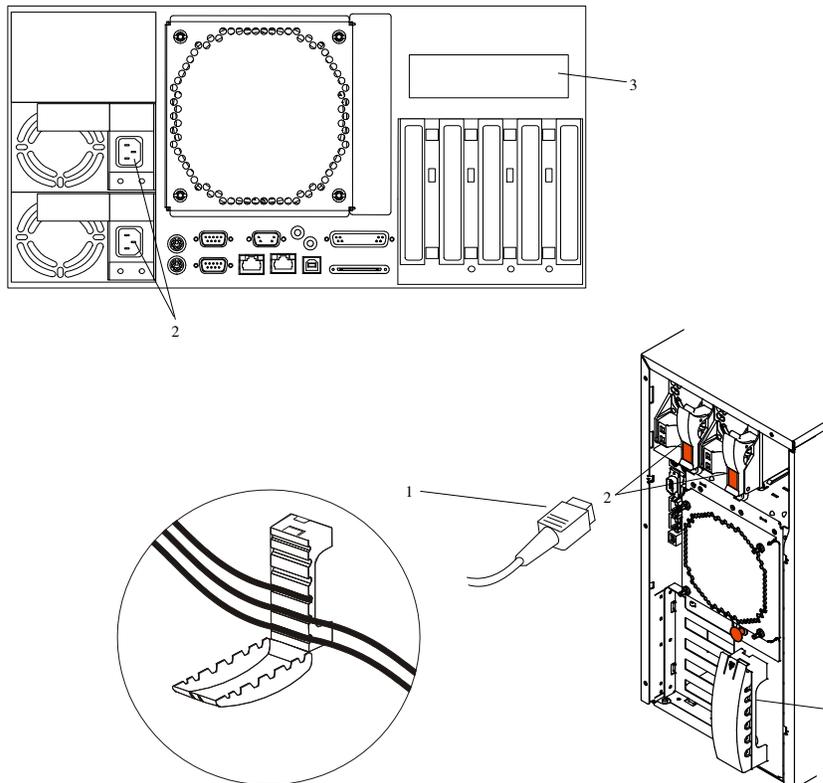
Step 19. Are You Installing a Model PL 220R (Rack Mount)?

If you are installing a Model PL 220R, continue with this step. If you are installing a Model PL 220T (Tower), go to "Step 20. Connect the Power Cables to Electrical Outlets" on page 1-20.

1. Route the power cords, 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 provided. The wraps are provided for additional cable management.
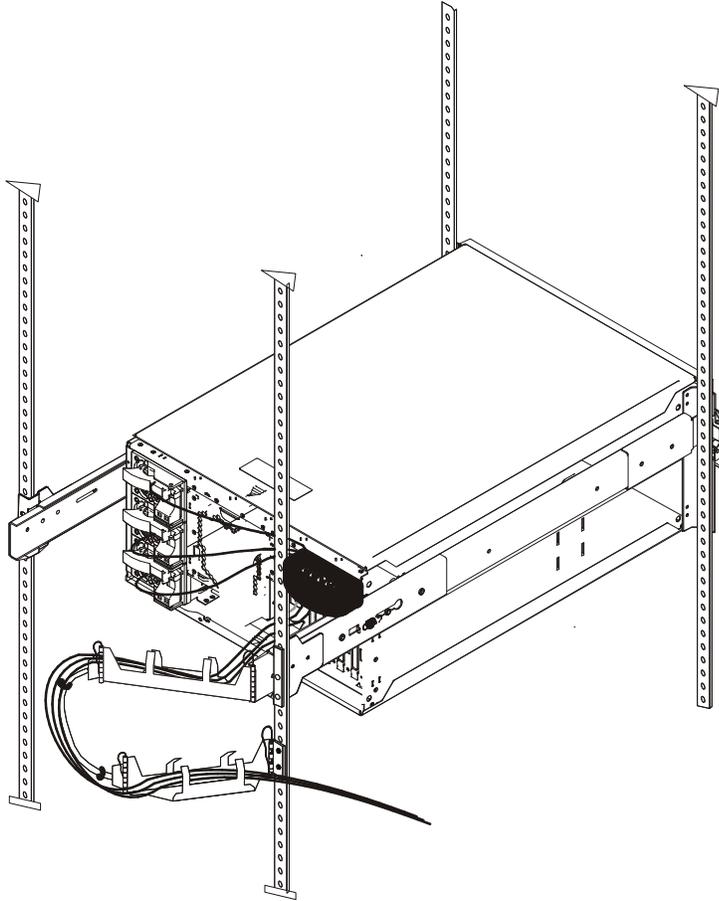
Step 20. Connect the Power Cables to Electrical Outlets.

Plug the power cables for the system unit, display, and attached devices into electrical outlets.
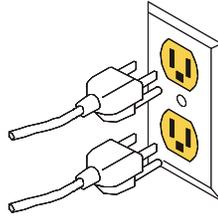
When the power cables are plugged into the electrical outlets, the following occurs:

- The operator panel displays OK, and the green power LED (**1**) blinks. When this occurs, your system is in standby mode. The following figure shows the operator panel in standby mode.
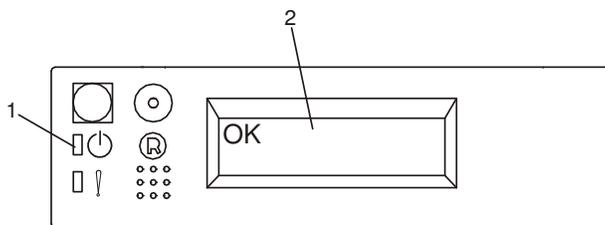
1   Power–On LED
2   Operator Panel Display

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

Step 21. You System Unit is Now Set Up.

Arrange your system unit and attached devices so that you can use them comfortably.

If the AIX operating system is not preinstalled on your system and you want to install the AIX operating system now, refer to the *AIX Installation Guide*. Return here to continue after your operating system is installed.

Step 22. Start the Operating System

To start the installed AIX operating system, press the power–on switch on the operator panel.

- The fans in the system unit start spinning.

- The green power LED on the operator panel comes on solid.

- Checkpoint codes appear in the operator panel display.
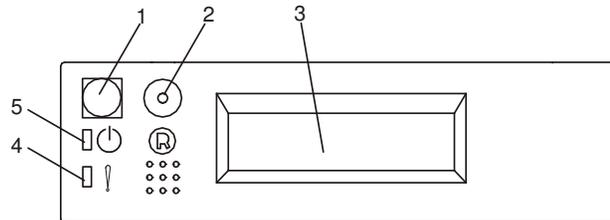
1	Power–On Switch
2	Reset Switch
3	Operator Panel Display
4	Attention LED (amber)
5	Power–On LED (green)

* Follow the instructions on your display.

AIX documentation is also contained on the *AIX Documentation CD*. The documentation information is made accessible by loading the documentation CD files onto the hard disk or by mounting the CD in the CD–ROM drive. Follow the instructions given in the CD–ROM booklet.

Step 23. Verifying the Hardware Operation.

If your system did not load the AIX operating system successfully, or you would like to test your hardware, go to "Chapter 2. Verifying the Hardware Operation".

Chapter 2. Verifying the Hardware Operation

The system verification procedure checks the system for correct hardware operation. If you have a problem with your system in the future, use this procedure to test the system hardware to help you determine if you have a hardware problem. Run the system verification procedure as described in the following steps.

Step 1. Considerations before Running This Procedure

Read the following before using this procedure:

- The AIX operating system must be installed on your system before you attempt to perform this procedure.

- If this system unit is directly attached to another system unit or attached to a network, be sure communication with the other systems is 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.

Step 2. Loading the Diagnostics

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

1. Stop all programs including the AIX operating system (get help if needed).

2. Remove all tapes, diskettes, and CD–ROM discs.

3. Turn off the system power unit.

4. Turn on the system power unit.

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.

Step 3. Running the Verification Procedure

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

1. Press the Enter key.

2. If you want to do a general checkout without much operator action, Select the **Diagnostic Routines** option on the Function Selection menu.

   If you want to do a more complete checkout including the use of wrap plugs, select the **Advanced Diagnostics** option on the Function Selection menu. The advanced diagnostics are primarily for the service representative; they may instruct you to install wrap plugs to better isolate a problem.

3. Select the **System Verification** option on the Diagnostic Mode Selection menu.

4. If you want to run a general checkout of all installed resources, Select the **All Resource** option on the Diagnostic Selection menu.

If you want to check one particular resource, select that resource on the Diagnostic Selection menu.

The checkout programs end with either of the following results:

- The Testing Complete menu displays with 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 Step 4. "Performing Additional System Verification". To exit diagnostics, go to Step 5. "Stopping the Diagnostics".

Step 4. Performing Additional System Verification

To perform additional system verification, do the following:

1. Press Enter to return to the Diagnostic Selection menu.

2. If you want to check other resources, select the resource. When you have checked all of the resources you need to check, go to Step 5.

Step 5. 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 ASCII terminal to run the diagnostics, change the settings back to normal.

3. This completes the system verification. If the system failed any of the diagnostic tests, call your service representative. If you received an error code, record the code and report it to the service organization.

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

Chapter 3. Installing Options In Your System

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

Safety Considerations

Observe the electrical safety instructions listed on page x.

Handling Static–Sensitive Devices

Attention: Adapters, planars, 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 unit.
- 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 unit at the same time.
- Handle the devices carefully in order to prevent permanent damage.

Stopping the System Unit

Attention: When shutting down your system to install options, shut down all applications first and then shut down the operating system. The system power turns off and the system will be in Standby mode when the operating system is shutdown. Before removing power from the system unit, ensure that the shutdown process is complete. Failure to do so can result in the loss of data. Some option–installation procedures do not require the system to be stopped for installation. If necessary, the option–installation procedures in this section will direct you here if stopping the system is required.

1. Log in to the system as **root**.
2. Stop any applications that are running on the system.
3. At a command line, type **shutdown** to stop the operating system.
4. After you shut down the operating system, set the power switches of any attached devices to Off.

Placing the Model PL 220R in the Service Position

Attention: Care should be taken to ensure that a hazardous condition is not created due to uneven mechanical loading when placing the server in the service position. If the rack has a stabilizer it must be firmly attached before placing the server in the service position.

Before doing any actions inside the Model PL 220R, you must put the server in the service position. To place the server in the service position, release the left and right side latches and pull the server toward the front until it is fully extended. When the server is fully extended, safety latches on the slide rails lock into place. This prevents the server from being accidentally pulled out too far and dropped.
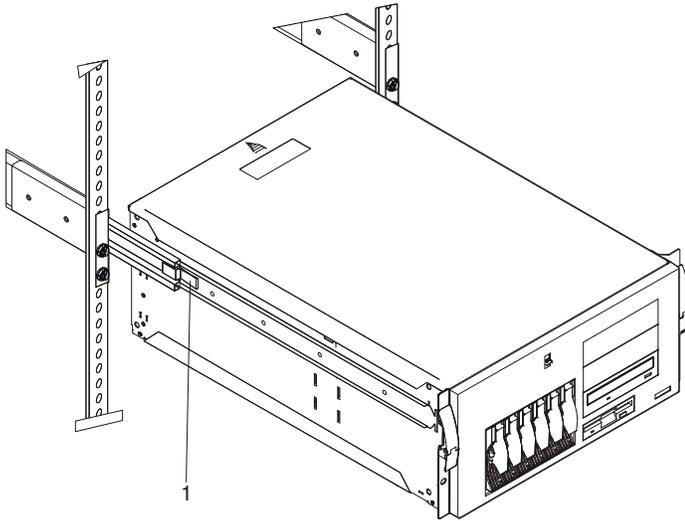
After completing actions, return the server to the normal position by pressing in on the safety latches (**1**).

Option List

Choose an option from the list below and go to the installation procedures for the option you are installing.

- Processor Cards
    - Installing a Processor Card, see page 3-8.
    - Removing a Processor Card, see page 3-9.
- System Memory Options
    - Installing a Memory Card , see page 3-10.
    - Removing a Memory Card, see page 3-12.
    - Installing Memory DIMMs, see page 3-13.
    - Removing Memory DIMMs, see page 3-14.
- Adapters
    - Installing Adapters, see page 3-16.
    - Removing Adapters, see page 3-18.
- Disk Drive Options
    - Installing Hot–Swap Disk Drives, see page 3-19.
    - Replacing Hot–Swap Disk Drives, see page 3-21.

- Installing a Internal Disk Drive, see page 3-22.

- Installing a CD–ROM Drive, Tape Drive, DVD–RAM or DVD–ROM, see page 3-23.

- Configuring or Deconfiguring Disk and Media Drives, see page 3-24.

- Hot–Swap Power Supplies

    - Installing a Hot–Swap Power Supply, see page 3-25.

    - Removing a Hot–Swap Power Supply, see page 3-28.

- Replacing a Hot–Swap Fan Assembly, see page 3-28.

- Replacing the Battery, see page 3-32.

- Connecting the Rack Indicator, see page 3-34.

Removing the Service Access Covers

Service Access Cover (Model PL 220T)
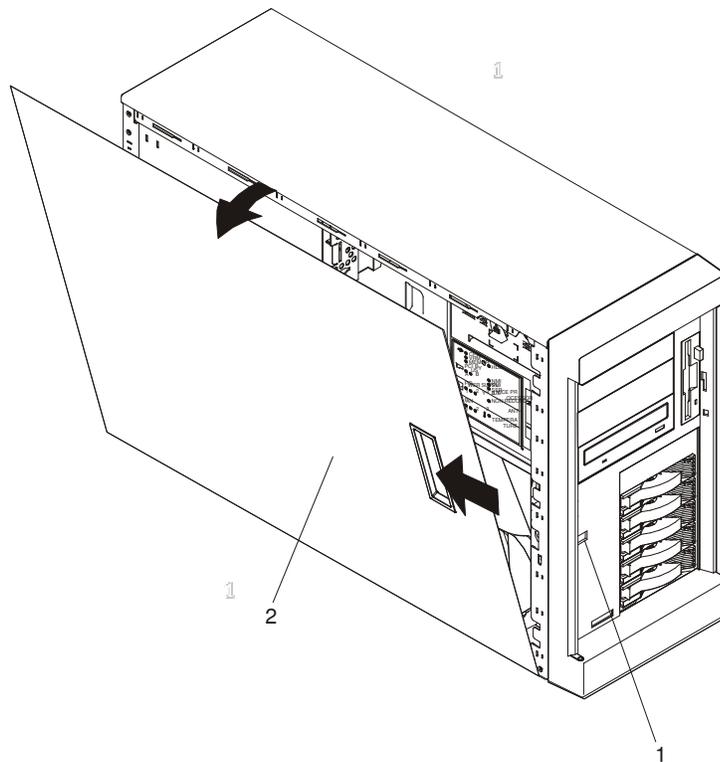
1	Cover–release latch
2	Service access cover

1. If you are planning to install or remove any part other than a hot–swap hard disk drive, hot–swap power supply, or hot–swap fan, turn off the server and all attached devices and disconnect all external cables and power cords.

2. Slide the cover–release lever (**1**) on the front of the server to release the cover and slide the cover (**2**) toward the rear of the server about 25 mm (1 inch). Move the top edge of the cover out from the server; then, lift the cover off the server. Set the cover aside.

Attention: For proper cooling and airflow, replace the cover before turning on the server. Operating the server for extended periods of time (over 30 minutes) with the cover removed might damage server components.

Service Access Cover (Model PL 220R)
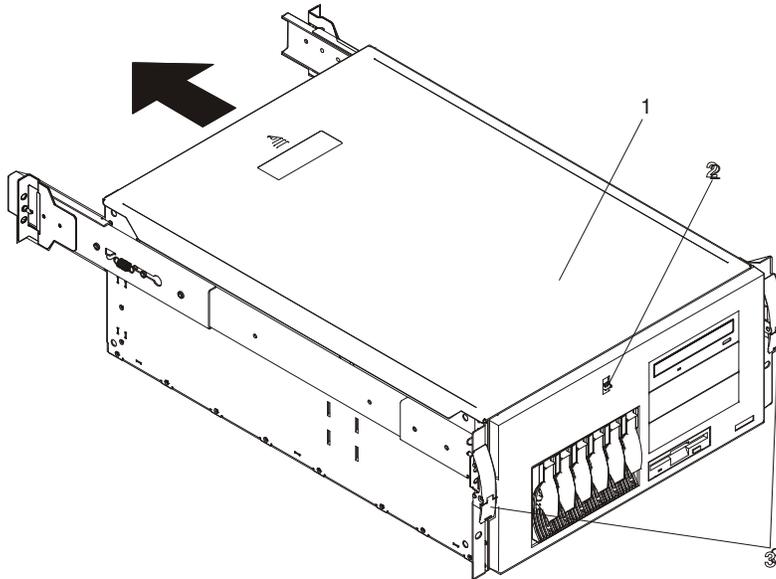
1	Service access cover
2	Cover–release latch
3	Side latches

1. To install or remove any part other than a hot–swap hard disk drive, hot–swap power supply, or hot–swap fan, turn off the server and all attached devices and disconnect all external cables and power cords.

2. If you have not already done so, place the server in the service position as described in "Placing the Model PL 220R in the Service Position" on page 3-2.

3. Move the cover–release lever (**2**) down while sliding the service access cover (**1**) toward the rear of the server about 25 mm (1 inch). Lift the cover off the server and set the cover aside.

Attention: For proper cooling and airflow, replace the cover before turning on the server. Operating the server for extended periods of time (over 30 minutes) with the cover removed might damage server components.

Removing the Bezel

Refer to the following illustrations while you perform the steps in this procedure.

Bezel (Model PL 220T)
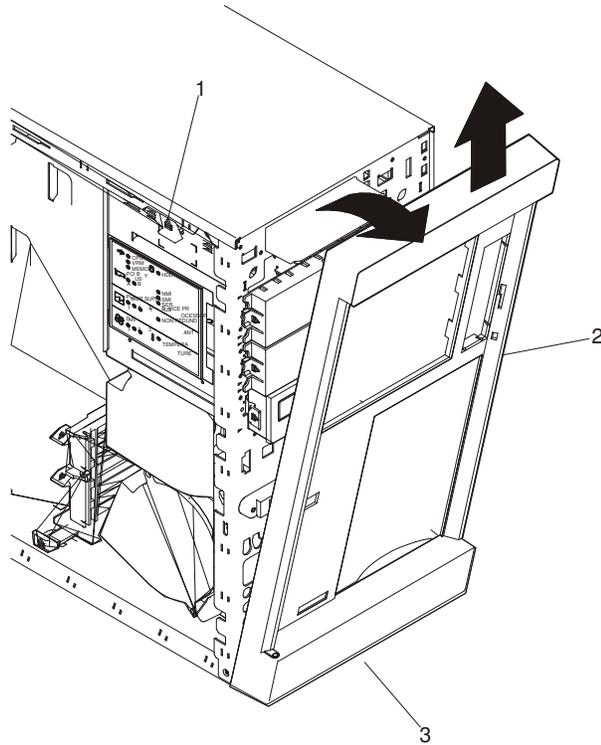
1	Bezel–release lever
2	Bezel
3	Side with bezel tabs and slots

1. If you have not already done so, remove the service access cover as described in "Removing the Service Access Covers" on page 3-3.

2. Press the bezel–release lever (**1**) and remove the bezel (**2**).

Bezel (Model PL 220R)
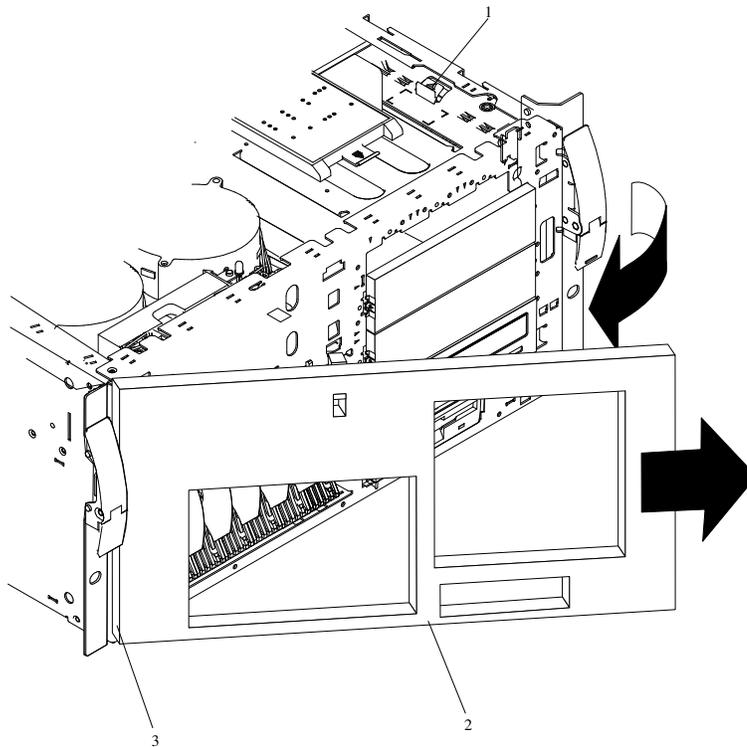
1	Bezel–release lever
2	Bezel
3	Side with bezel tabs and slots

1. If you have not already done so. place the server in the service position as described in "Placing the Model PL 220R in the Service Position" on page 3-2.

2. If you have not already done so, remove the service access cover as described in "Removing the Service Access Covers" on page 3-3.

3. Press the bezel–release lever (**1**) and remove the bezel (**2**).

Removing and Replacing Processor and Memory Card Cover

Removal

1. If you have not already done so, shut down the system as described in "Stopping the System Unit" on page 3-1.

2. If you have not already done so, unplug the system unit power cables from the electrical outlets.

3. If your server is a Model PL 220R (rack mount), place the server in the service position as described in "Placing the Model PL 220R in the Service Position" on page 3-2.

4. If you have not already done so, remove the service access cover as described in "Removing the Service Access Covers" on page 3-3.

5. Pull out on the snap button and remove the processor and memory card cover.
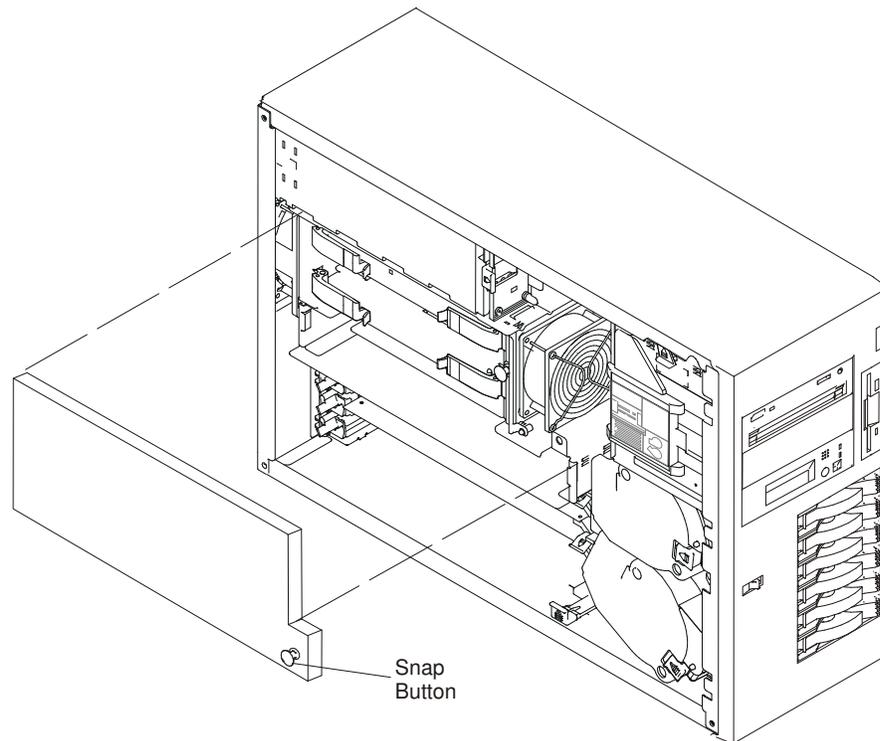
Snap
Button

Replacement

Install the processor and memory card cover and push in on the snap button to secure.

Installing a Processor Card

1. If you have not already done so, shut down the system as described in "Stopping the System Unit" on page 3-1.

2. If you have not already done so, unplug the system unit power cables from the electrical outlets.

3. If your server is a Model PL 220R (rack mount), place the server in the service position as described in "Placing the Model PL 220R in the Service Position" on page 3-2.

4. If you have not already done so, remove the service access cover as described in "Removing the Service Access Covers" on page 3-3.

5. If you have not already done so, remove the processor and memory card cover as described in "Removing and Replacing Processor and Memory Card Cover" on page 3-7.

6. Remove the air flow baffle from the system.

7. Remove the plastic boot from the processor card connector.

8. Open the retention latches. *Both* latches should be in an upright position. See the following illustration.

   Attention: To prevent damage to the card and to the card connectors, open or close both retention latches at the same time.

9. Align the card with the connector.

Note: If one processor card is installed in the system, the processor must be installed in the processor card 1 connector.

Processor Card 1
Connector

Processor Card 2
Connector

Memory Card
Connector

10.Close the retention latches securing the card into the connector.

11. If you have other options to install, refer to "Option List" on page 3-2.

If you do not have other options to install, replace the processor and memory card cover as described in "Removing and Replacing Processor and Memory Card Cover" on page 3-7.

12.Replace the system unit covers as described in "Replacing the Service Access Covers" on page 3-31.

Removing a Processor Card

1. If you have not already done so, shut down the system as described in "Stopping the System Unit" on page 3-1.

2. If you have not already done so, unplug the system unit power cables from the electrical outlets.

3. If your server is a Model PL 220R (rack mount), place the server in the service position as described in "Placing the Model PL 220R in the Service Position" on page 3-2.

4. If you have not already done so, remove the service access cover as described in "Removing the Service Access Covers" on page 3-3.

5. Remove the processor and memory card cover as described in "Removing and Replacing Processor and Memory Card Cover" on page 3-7.

6. The processor card is secured in place with retention latches, one on each end of the card. Open the retention latches.

   Attention: To prevent damage to the card and the card connectors, open or close the retention latches at the same time.

7. Remove the card from the connector. Be sure to store the processor card in a safe place.

8. If you have other options to install, refer to "Option List" on page 3-2.

   If you do not have other options to install, replace the processor and memory card cover as described in "Removing and Replacing Processor and Memory Card Cover" on page 3-7.

9. Replace the system unit covers as described in "Replacing the Service Access Covers" on page 3-31.

Installing a Memory Card

1. If you have not already done so, shut down the system as described in "Stopping the System Unit" on page 3-1.

2. If you have not already done so, unplug the system unit power cables from the electrical outlets.

3. If your server is a Model PL 220R (rack mount), place the server in the service position as described in "Placing the Model PL 220R in the Service Position" on page 3-2.

4. If you have not already done so, remove the service access cover as described in "Removing the Service Access Covers" on page 3-3.

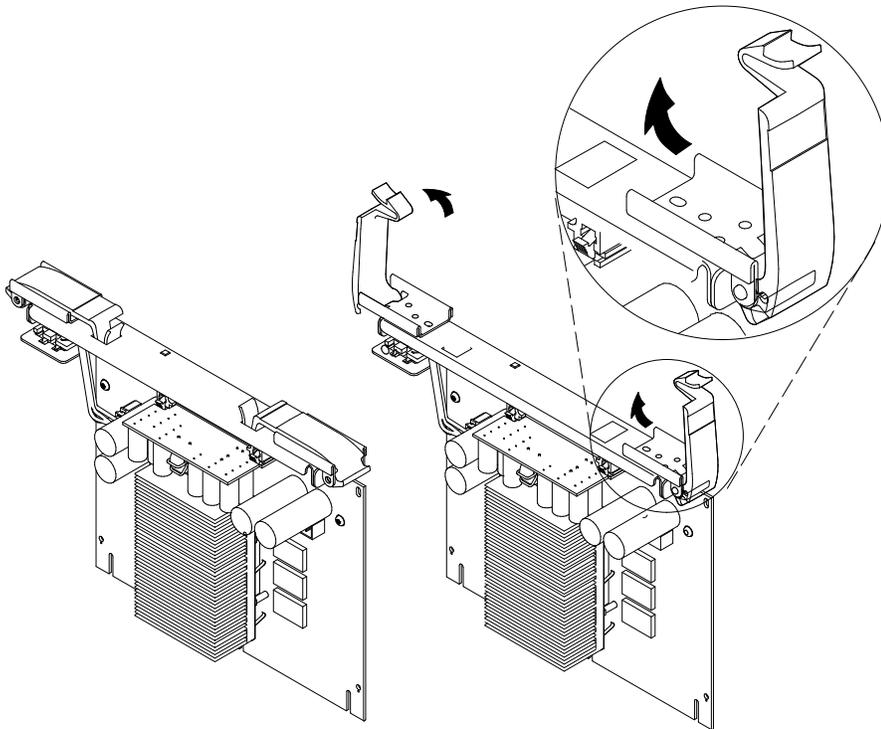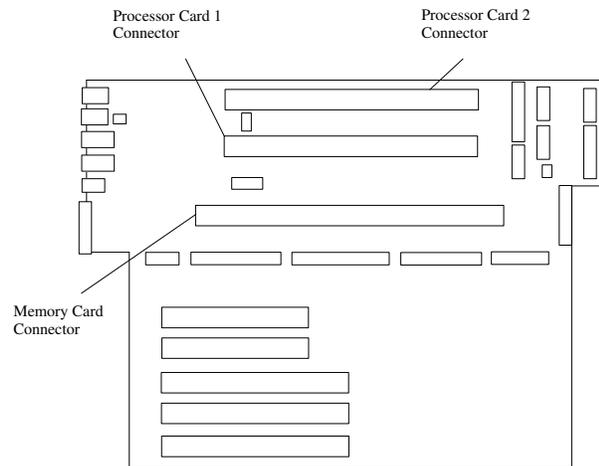5. If you have not already done so, remove the processor and memory card cover as described in "Removing and Replacing Processor and Memory Card Cover" on page 3-7.

6. Open the retention latches. *Both* latches should be in an upright position. See the following illustration.

   Attention: To prevent damage to the card and to the card connectors, open or close both retention latches at the same time.
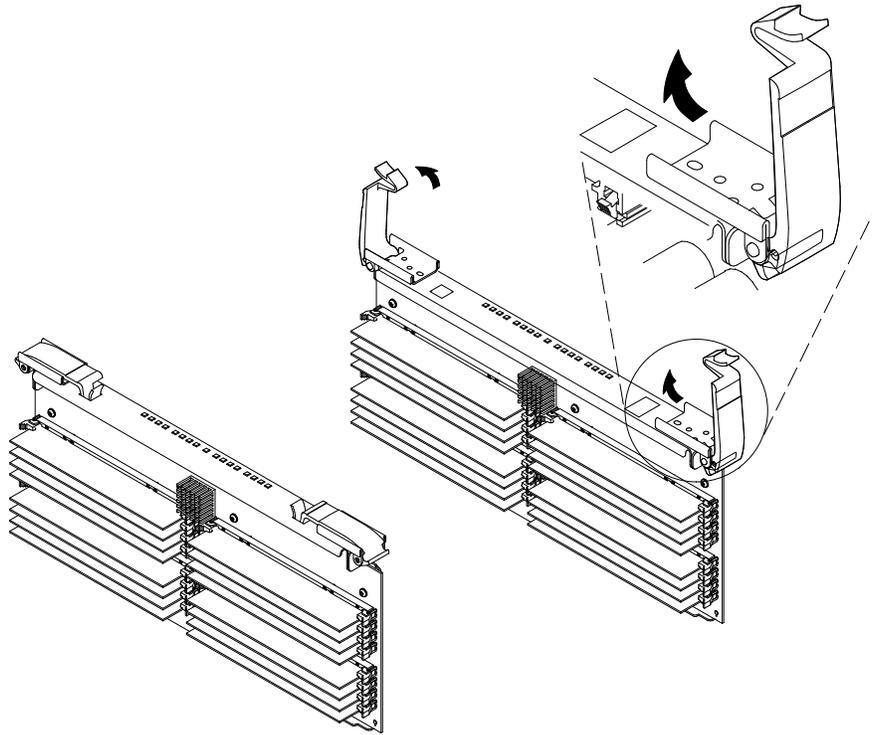
7. Align the card with the connector.

8. Close the retention latches securing the card into the connector.

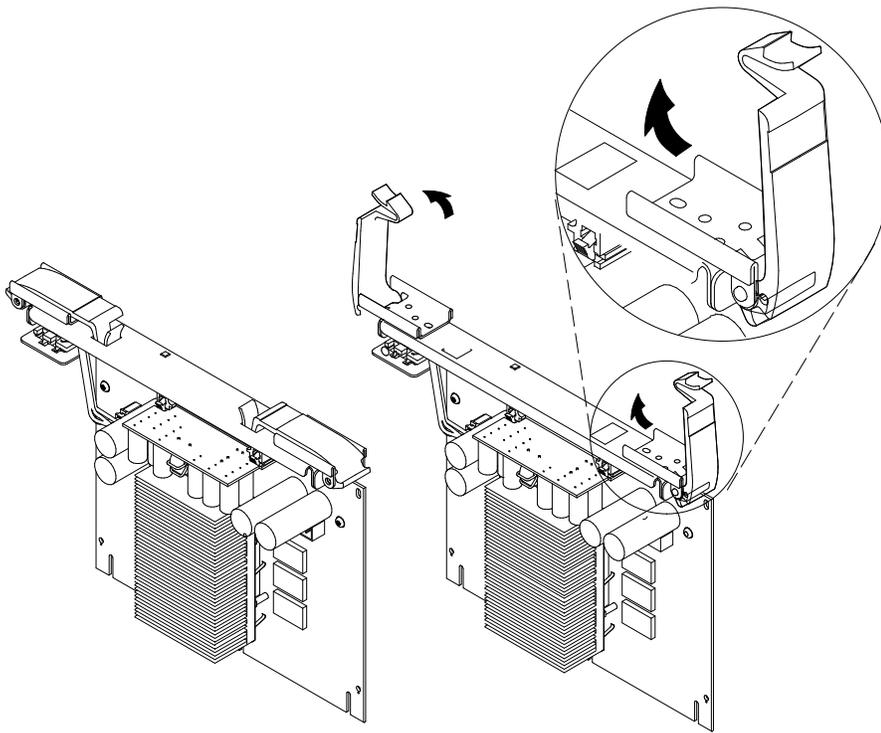9. If you have other options to install, refer to "Option List" on page 3-2.

   If you do not have other options to install, replace the processor and memory card cover as described in "Removing and Replacing Processor and Memory Card Cover" on page 3-7.

10. Replace the system unit covers as described in "Replacing the Service Access Covers" on page 3-31.

Removing a Memory Card

1. If you have not already done so, shut down the system as described in "Stopping the System Unit" on page 3-1.

2. If you have not already done so, unplug the system unit power cables from the electrical outlets.

3. If your server is a Model PL 220R (rack mount), place the server in the service position as described in "Placing the Model PL 220R in the Service Position" on page 3-2.

4. If you have not already done so, remove the service access cover as described in "Removing the Service Access Covers" on page 3-3.

5. Remove the processor and memory card cover as described in "Removing and Replacing Processor and Memory Card Cover" on page 3-7.

6. The memory card is secured in place with retention latches, one on each end of the card. Open the retention latches.

   Attention: To prevent damage to the card and the card connectors, open or close the retention latches at the same time.

7. Remove the card from the connector. Be sure to store the processor card in a safe place.

8. If you have other options to install, refer to "Option List" on page 3-2.

   If you do not have other options to install, replace the processor and memory card cover as described in "Removing and Replacing Processor and Memory Card Cover" on page 3-7.

9. Replace the system unit covers as described in "Replacing the Service Access Covers" on page 3-31.
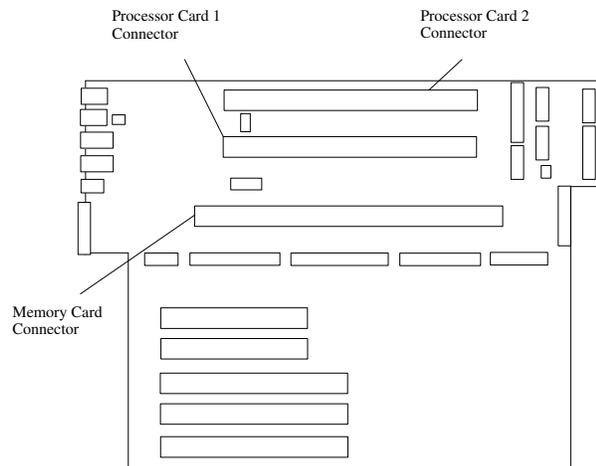
Installing Memory DIMMs

1. If you have not already done so, shut down the system as described in "Stopping the System Unit" on page 3-1.

2. If you have not already done so, unplug the system unit power cables from the electrical outlets.

3. If your server is a Model PL 220R (rack mount), place the server in the service position as described in "Placing the Model PL 220R in the Service Position" on page 3-2.

4. If you have not already done so, remove the service access cover as described in "Removing the Service Access Covers" on page 3-3.

5. If you have not already done so, remove the processor and memory card cover as described in "Removing and Replacing Processor and Memory Card Cover" on page 3-7.

6. If you have not already done so, remove the memory card as described in "Removing a Memory Card" on page 3-12.

7. With one hand, touch any metal surface of the chassis to minimize static electrical charges, and then pick up the memory module.

8. Locate the memory module connector on the memory card.
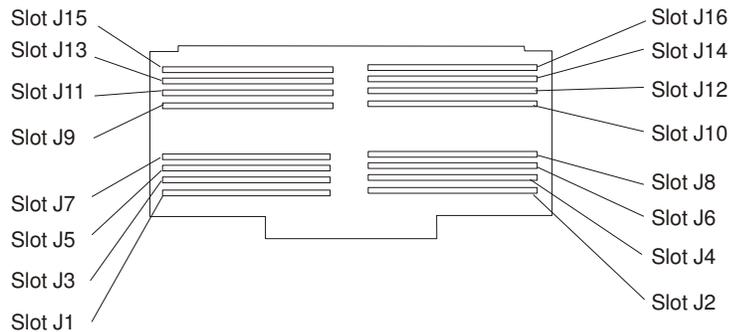
Note: Memory modules must be installed in pairs and in the correct slot configuration. (Slots J1 and J2, J3 and J4, J5 and J6, and so on.)

9. Insert the memory module firmly into the connector.

Locking Tabs

10. Secure the memory module with the locking tabs located at each end of the connector.

11. Replace the memory card into the system unit. See "Installing a Memory Card" on page 3-10 for more information.

12. If you have other options to install, refer to "Option List" on page 3-2.
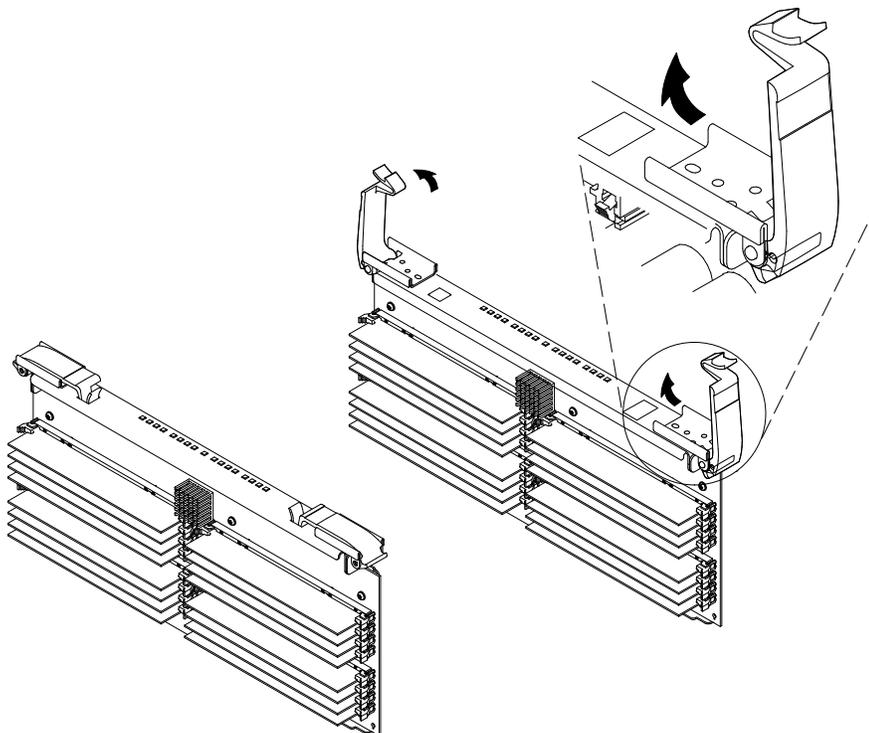
   If you do not have other options to install, replace the processor and memory card cover as described in "Removing and Replacing Processor and Memory Card Cover" on page 3-7.

13. Replace the system unit covers as described in "Replacing the Service Access Covers" on page 3-31.

Removing Memory DIMMs

1. If you have not already done so, shut down the system as described in "Stopping the System Unit" on page 3-1.

2. If you have not already done so, unplug the system unit power cables from the electrical outlets.

3. If your server is a Model PL 220R (rack mount), place the server in the service position as described in "Placing the Model PL 220R in the Service Position" on page 3-2.

4. If you have not already done so, remove the service access cover as described in "Removing the Service Access Covers" on page 3-3.

5. If you have not already done so, remove the processor and memory card cover as described in "Removing and Replacing Processor and Memory Card Cover" on page 3-7.

6. If you have not already done so, remove the memory card as described in "Removing a Memory Card" on page 3-12.

7. Locate the memory module connectors and determine which module you want to remove.

Slot J15
Slot J13
Slot J11
Slot J9
Slot J7
Slot J5
Slot J3
Slot J1

Slot J16
Slot J14
Slot J12
Slot J10
Slot J8
Slot J6
Slot J4
Slot J2

Note: Memory modules must be removed in pairs and in the correct slot configuration. (Slots J1 and J2, J3 and J4, J5 and J6, and so on.)

8. Remove the memory module by pushing the tabs (**1**) out on the memory connectors and then pull the memory module (**2**) out of the connector.

Push Locking Tabs
Out to Release Memory
Module
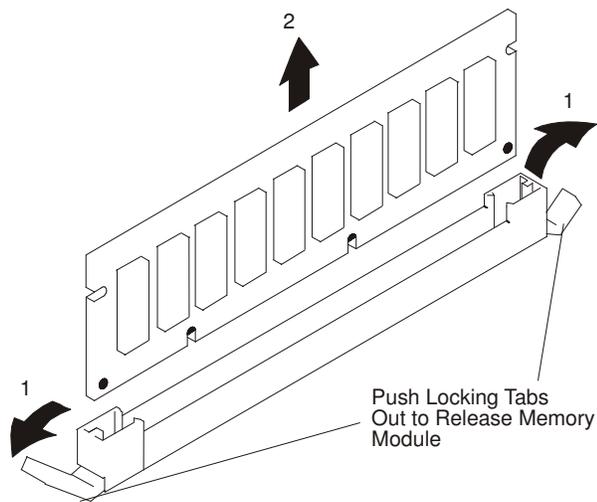
9. Replace the memory card into the system unit. See "Installing a Memory Card" on page 3-10 for more information.

10. If you have other options to install, refer to "Option List" on page 3-2.

If you do not have other options to install, replace the processor and memory card cover as described in "Removing and Replacing Processor and Memory Card Cover" on page 3-7.

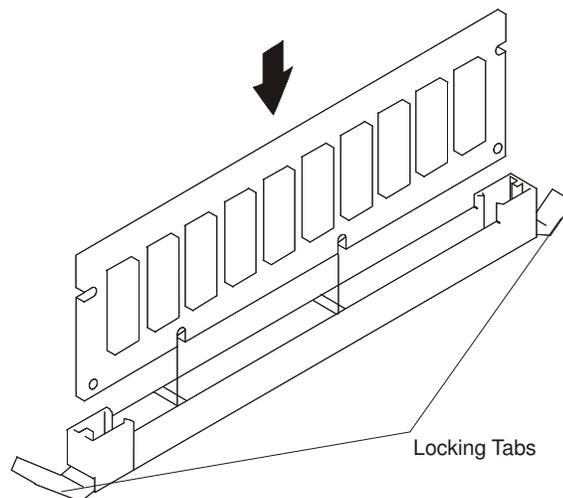11. Replace the system unit covers as described in "Replacing the Service Access Covers" on page 3-31.

Installing Adapters

Read "Safety Considerations" on page ix.

1. If you have not already done so, shut down the system as described in "Stopping the System Unit" on page 3-1.

2. If you have not already done so, unplug the system unit power cables from the electrical outlets.

3. If your server is a Model PL 220R (rack mount), place the server in the service position as described in "Placing the Model PL 220R in the Service Position" on page 3-2.

4. If you have not already done so, remove the service access cover as described in "Removing the Service Access Covers" on page 3-3.

5. Determine which PCI adapter expansion slot you will use for the adapter.

Note: Check the instructions that were provided with the adapter for any requirements or restrictions. See "Appendix B: PCI Adapter Placement Reference" for more information.
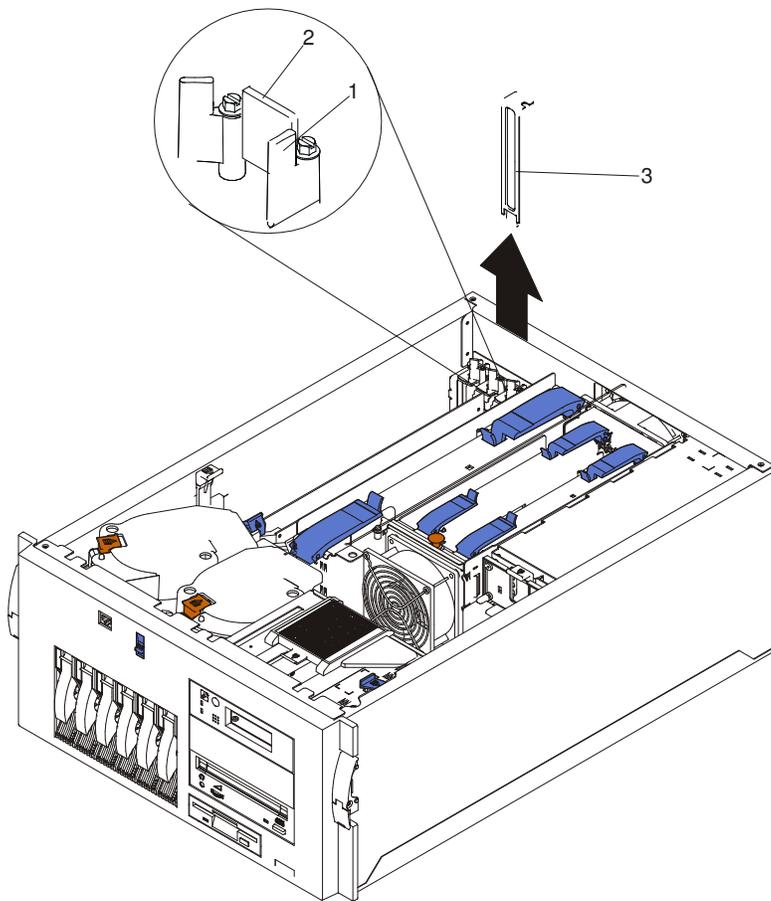
1	Adapter retention latch
2	Tab
3	Expansion–slot cover

6. Remove the expansion–slot cover:

   a. Rotate the adapter retention latch (**1**) counterclockwise.

   b. Raise the tab (**2**) on the adapter guide over the tab on the top corner of adapter.

   c. Remove the expansion–slot cover from the server (**3**). Store it in a safe place for future use.

Attention: Expansion–slot covers must be installed on all vacant slots. This maintains the electromagnetic emissions characteristics of the system and ensures proper cooling of system components.

7. Refer to the documentation that was provided with the adapter for any cabling instructions. It might be easier for you to route any cables before you install the adapter.

8. If you are installing a long adapter, press on the touchpoint on the adapter retainer flap (**3**) at the end of the slot nearest the front of the server, and rotate the adapter retainer flap upward.

9. Remove the adapter from the antistatic package.

   Attention: Avoid touching the components and gold–edge connectors on the adapter.

10. Place the adapter, component–side up, on a flat, static–protective surface.

11. Set any jumpers or switches as described by the adapter manufacturer.
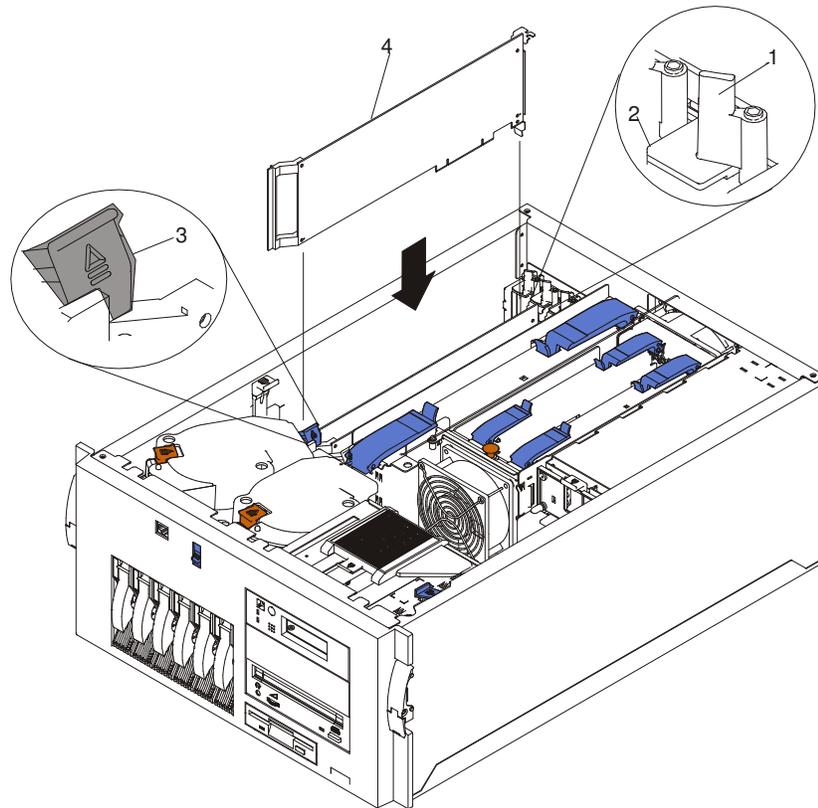
1	Adapter retention latch
2	Tab
3	Adapter retainer flap
4	Adapter

12. Install the adapter.

   a. Carefully grasp the adapter (**4**) by its top edge or upper corners, and align it with the expansion slot on the system board.

   b. Press the adapter firmly into the expansion slot.

   Attention: When you install an adapter in the server, be sure that it is completely and correctly seated in the system–board connector. Incomplete insertion might cause damage to the system board or the adapter.

   c. Lower the tab (**2**) on the adapter guide over the tab on the top corner of adapter. Rotate the adapter retention latch (1) clockwise until it snaps into place.

Attention: Power cannot be restored to the adapter slot if the tab is not lowered into place.

    d. Close the adapter retainer flap (**3**) if previously opened.

13. Connect any needed cables to the adapter.

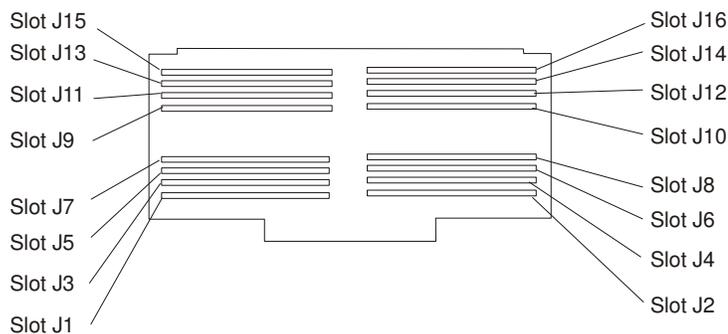   **Attention**: Route cables so that the flow of air from the fans is not blocked.

14. If you have other options to install, refer to "Option List" on page 3-2.

    If you do not have other options to install, replace the covers as described in "Replacing the Service Access Covers" on page 3-31.

Removing Adapters

1. If you have not already done so, shut down the system as described in "Stopping the System Unit" on page 3-1.

2. If you have not already done so, unplug the system unit power cables from the electrical outlets.

3. If your server is a Model PL 220R (rack mount), place the server in the service position as described in "Placing the Model PL 220R in the Service Position" on page 3-2.

4. If you have not already done so, remove the service access cover as described in "Removing the Service Access Covers" on page 3-3.

5. Determine which adapter you are removing.

6. Disconnect any cables attached to the adapter.
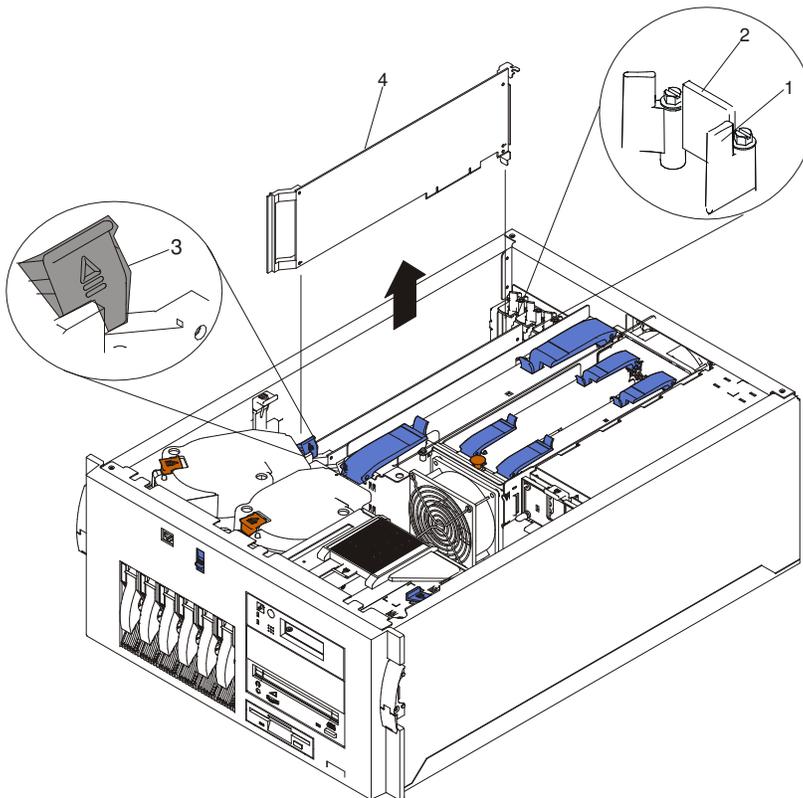
1	Adapter retention latch
2	Tab
3	Adapter retainer flap
4	Adapter

7. If you are removing a long adapter, press on the touchpoint on the adapter retainer flap (**3**) at the end of the slot nearest the front of the server, and rotate the adapter retainer flap upward.

8. Rotate the adapter retention latch (**1**) counterclockwise.

9. Raise the tab (**2**) on the adapter guide over the tab on the top corner of the adapter.

10. Carefully grasp the adapter (**4**) by its top edge or upper corners, and remove it from the system board.

11. If you are not installing another adapter in this slot, install an expansion–slot cover and close the adapter retainer flap (**3**) if previouly opened.

12. If you have other options to install, refer to "Option List" on page 3-2.

   If you do not have other options to install, replace the covers as described in "Replacing the Service Access Covers" on page 3-31.

Installing Hot–Swap Disk Drives

Read "Safety Considerations" on page ix.

The hot–swap drive bays support hot–swap drives only.

Note: You do not have to turn off the server to install hot–swap drives in these bays. However, you must turn off the server when performing any steps that involve installing or removing cables.

Refer to the following illustrations while you perform the steps in this procedure.

| **1** | Filler panel |

2	Drive
3	Drive tray handle (in open position)
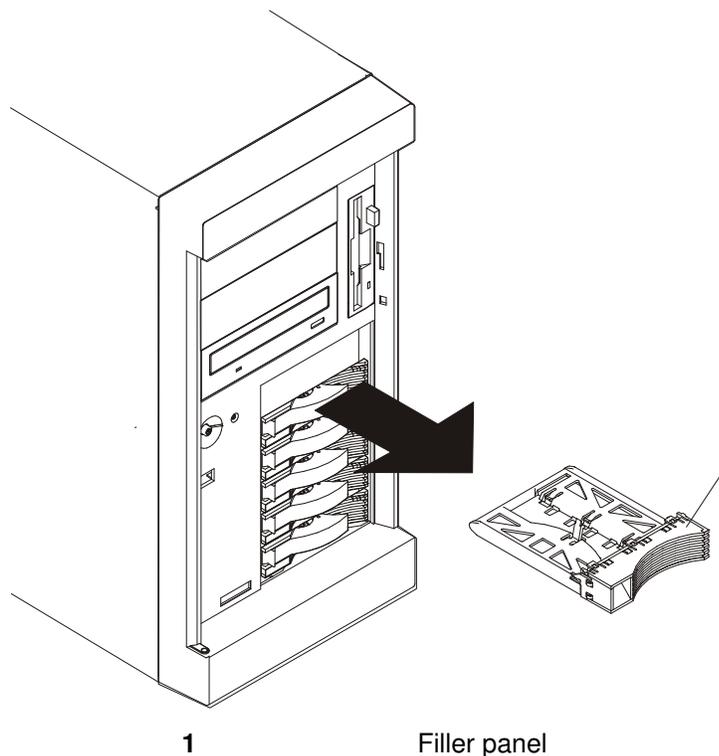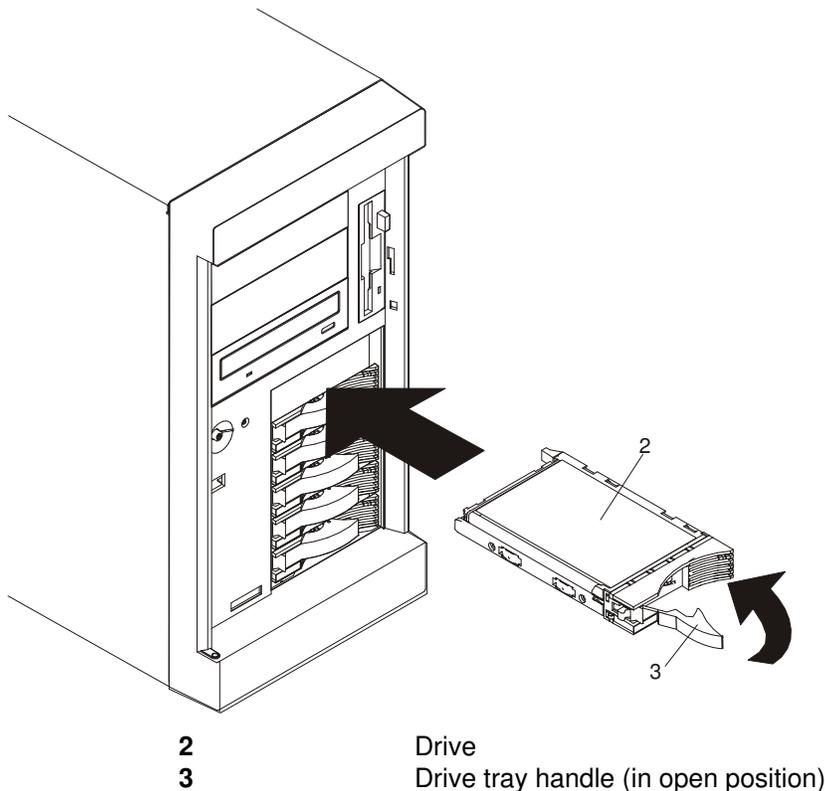
1. If the server is a Model P 220T, unlock and open the server door.

   Attention: To maintain proper system cooling, do not operate the server for more than two minutes without either a drive or a filler panel installed for each bay.

2. Remove the filler panel (**1**) from one of the empty hot–swap bays by inserting your finger into the depression at the left side of the filler panel and pulling the panel away from the server.

   Attention: Do not remove the drive from the tray assembly.

3. Install the hard disk drive (**2**) in the hot–swap bay:

   a. Ensure the drive tray handle (**3**) is open (that is, perpendicular to the drive).

   b. Align the drive/tray assembly so that it engages the guide rails in the bay.

   c. Gently push the drive/tray assembly into the bay until the drive connects to the backplane.

   d. Push the tray handle to the right until it locks.

4. Check the hard disk drive status indicators to verify that the hard disk drives are operating properly.

5. Repeat the previous steps for all the drives you are installing.

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. If you have other options to install, refer to "Option List" on page 3-2.

    If you do not have other options to install, close and lock the server door.

Removing Hot–Swap Disk Drives

You do not have to turn off the server to remove a drive from the hot–swap bays.

Attention:

1. Before you remove a hot–swap hard disk drive that is not defective, back up all important data.

2. To avoid damage to a hard disk drive, do not remove the drive from the hot–swap bay until it has had time to spin down (approximately 30 seconds). Handle the drive carefully.

3. Before you hot–swap a drive, make sure it is defective. If you partially or completely remove a good drive instead of a defective one, the server might lose valuable data.

Refer to the following illustration while you perform the steps in this procedure.
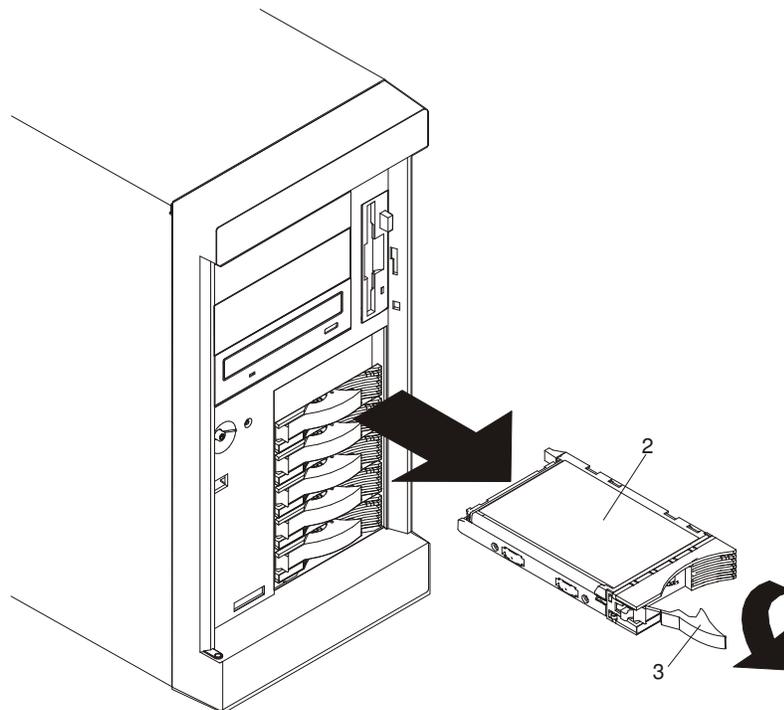
| **2** | Drive |
| **3** | Drive tray handle (in open position) |

1. If the server is a Model PL 220T, unlock and open the server door.

   Attention: To maintain proper system cooling, do not operate the server for more than two minutes without either a drive or a filler panel installed for each bay.

2. Log in as root user.

3. At the command line, type `smitty`.

4. Select **System Storage Management (Physical and Logical Storage)**.

5. Select **Removable Disk Management**.

6. Select **Remove a Disk**.

7. Select the desired disk from the list on the screen and press Enter.

8. Follow the instructions on the screen to remove the drive.

9. When you are asked "Are you sure?" answer "Yes" and press Enter. The power LED on the drive that you selected turns off.

10. Remove the defective hard disk drive (**2**) by placing the handle (**3**) on the drive to the open position (perpendicular to the drive) and pulling the hot–swap tray from the bay.

11. Repeat the previous steps for all the drives you are removing.

12. Press F10 to exit **smitty**.

13. If you have other options to install, refer to "Option List" on page 3-2.

   If you do not have other options to install, close and lock the server door.

Installing an Internal Disk Drive

1. If you have not already done so, shut down the system as described in "Stopping the System Unit" on page 3-1.

2. If you have not already done so, unplug the system unit power cables from the electrical outlets.

3. If your server is a Model PL 220R (rack mount), place the server in the service position as described in "Placing the Model PL 220R in the Service Position" on page 3-2.

4. Remove the bezel as described in "Removing the Bezel" on page 3-5.

5. Remove the operator panel by grasping the release levers (**1**) and pull the operator panel tray from the system unit.

6. With one hand, touch any metal surface of the chassis to minimize static electrical charges, and then pick up the disk drive.

7. Insert the disk drive into the operator panel tray.
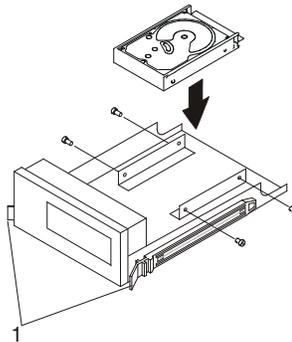
8. Align the screw holes on the disk drive with the screw holes on the operator panel tray.

9. Install the four retaining screws.

10. Install the operator panel tray back into the system unit.

11. Connect all disk drive cables.

12. If you have other options to install, refer to "Option List" on page 3-2.

   If you do not have other options to install; replace the bezel as described in "Replacing the Bezel" on page 3-29.

Installing a CD–ROM, Tape Drive, DVD–RAM, or DVD–ROM

Read "Safety Considerations" on page ix.

1. If you have not already done so, shut down the system as described in "Stopping the System Unit" on page 3-1.

2. If you have not already done so, unplug the system unit power cables from the electrical outlets.

3. If your server is a Model PL 220R (rack mount), place the server in the service position as described in "Placing the Model PL 220R in the Service Position" on page 3-2.

4. Remove the bezel as described in "Removing the Bezel" on page 3-5.

5. Remove the filler panel from the bay opening by pulling the filler panel away from the server. You do not need the filler panel when you have a drive installed in the bay.
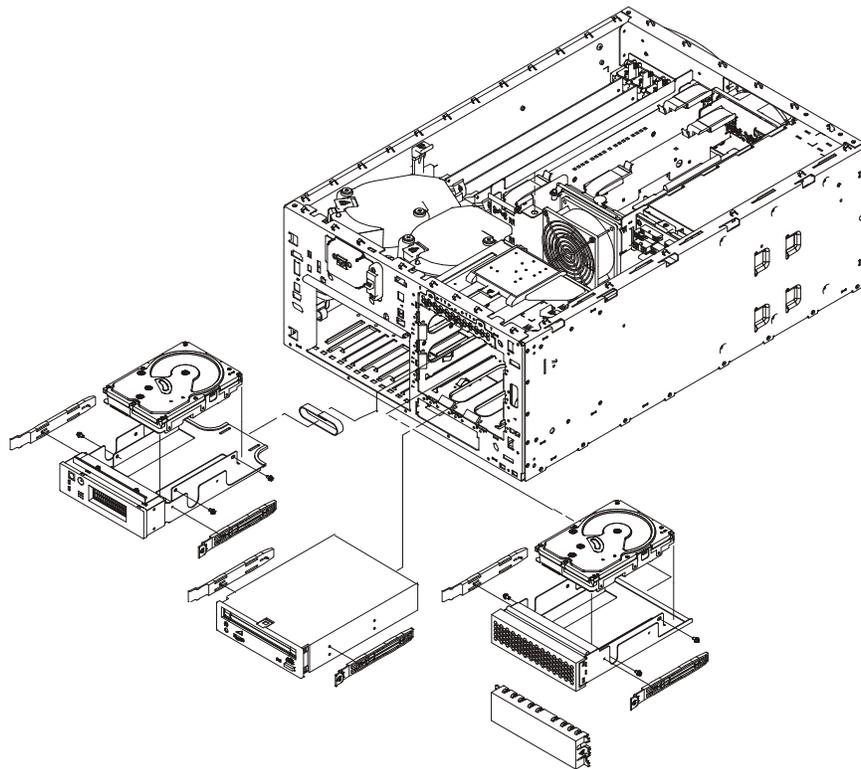
6. Touch the static–protective bag containing the drive to any unpainted metal surface on the server; then, remove the drive from the bag and place it on a antistatic surface.

7. Set any jumpers or switches on the drive according to the documentation that was provided with the drive.

8. Install rails on the drive.

   a. Pull the blue slide rails off the back of the filler panel.

   b. Clip the rails onto the sides of the drive.

9. Place the drive so that the slide rails engage in the bay guide rails. Push the drive into the bay until it clicks into place.

10. Connect one of the connectors on the SCSI cable for the non–hot–swap drive bays to the back of the drive.

11. Connect a power cable to the back of the drive. Power cables for non–hot–swap drives are preinstalled in the server. The connectors are keyed and can be inserted only one way.

12.If you have other options to install, refer to "Option List" on page 3-2.

If you do not have other options to install; replace the bezel as described in "Replacing the Bezel" on page 3-29.

Configuring or Deconfiguring Disk Drives

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 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 **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.

    See the *AIX System Management Guide: Operating System and Devices* to finish the drive configuration. This publication is also contained on the AIX Documentation CD. The documentation is made accessible by loading the documentation CD files onto the hard disk or by mounting the CD in the CD–ROM drive.

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. Then press Enter.
10.Return to the procedure that directed you here.

Installing a Hot–Swap Power Supply

Read "Safety Considerations" on page ix.

The server comes with two power supplies. You can add a third power supply which will be a redundant supply. With a redundant supply the system continues to function if a single power supply fails. Refer to the following illustration while performing the steps in this procedure.
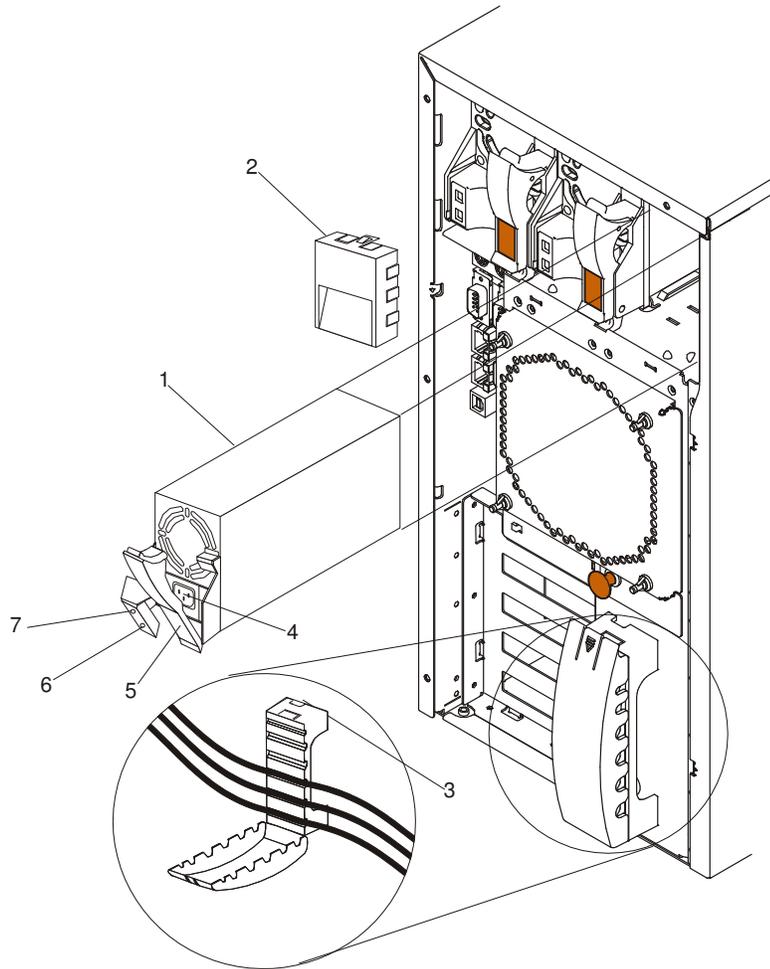
1	Power supply
2	Filler panel
3	Cable–restraint bracket
4	Power cord connector
5	Handle on power supply (in open position)
6	AC power light
7	DC power light

Note: You do not need to turn off the power to the server to install hot–swap power supplies if your system has a redundant power supply.

1. Remove the filler panel (**2**) from the empty power supply bay by inserting your finger into the depression on the filler panel and pulling it away from the server. Save the filler panel in case you remove the power supply at a later time.

Note: During normal operation, each power–supply bay must have either a power supply or filler panel installed for proper cooling.

2. Install the power supply (**1**) in the bay:

a. Place the handle (**5**) on the power supply in the open position (that is, perpendicular to the power supply) and slide the power supply into the chassis.

b. Gently close the handle to seat the power supply in the bay.

3. Plug the power cord for the added power supply into the power cord connector (**4**).

4. Route the power cord through the cable–restraint bracket (**3**).

5. Plug the power cord into a properly grounded electrical outlet.

6. Verify that the DC Power light (**7**) and AC Power light (**6**) on the power supply are lit, indicating that the power supply is operating correctly.

7. If you have other options to install, refer to "Option List" on page 3-2.

Removing a Hot–Swap Power Supply

Read "Safety Considerations" on page ix.

Refer to the following illustration while performing the steps in this procedure.

1	Power supply
2	Filler panel
3	Cable–restraint bracket
4	Power cord connector
5	Handle on power supply (in open position)
6	AC power light
7	DC power light

Note: You do not need to turn off the power to the server to install hot–swap power supplies if your system has a redundant power supply

1. 1.If your system does not have a redundant (third) power supply installed, shut down the system as described in "Stopping the System Unit" on page 3-1 and turn off the power to the server and peripheral devices. Otherwise, go to the next step.

2. To remove the power supply (**1**):

    a. Unplug the power cord connector from the power supply.

    Attention: Be careful when you remove the hot–swap power supply; the power supply might be too hot to handle comfortably.

    b. Remove the defective power supply by placing the handle (**5**) on the power supply in the open position (perpendicular to the power supply) and pulling the power supply from the bay.

3. If you are not replacing the power supply:

    a. Install a power–supply filler panel (**2**).

Note: During normal operation, each power–supply bay must have either a power supply or filler panel installed for proper cooling.

    b. Open the cable–restraint bracket (**3**) and remove the power cord from the cable–restraint bracket. Close the cable–restraint bracket.

    c. Unplug the power cord from the electrical outlet.

    If you are replacing the power supply:

    a. Place the handle (5) on the power supply in the open position, and slide the power supply into the chassis.

    b. Gently close the handle on the power supply to seat the power supply in the bay.

    c. Plug the power cord for the power supply into the power cord connector (**4**).

    d. Verify that the AC Power light (**6**) and DC Power light (**7**) are lit, indicating that the power supply is operating correctly.

    e. If you have other options to install, refer to "Option List" on page 3-2.

Replacing a Hot–Swap Fan Assembly

Read "Safety Considerations" on page ix.

The server comes with four hot–swap fan assemblies.

Attention: Replace a fan that has failed within 48 hours to help ensure proper cooling.

Note: You do not need to turn off the power to the server to replace a hot–swap fan assembly.

The following illustration shows the replacement of a hot–swap fan assembly. Refer to this illustration while performing the steps in this procedure.
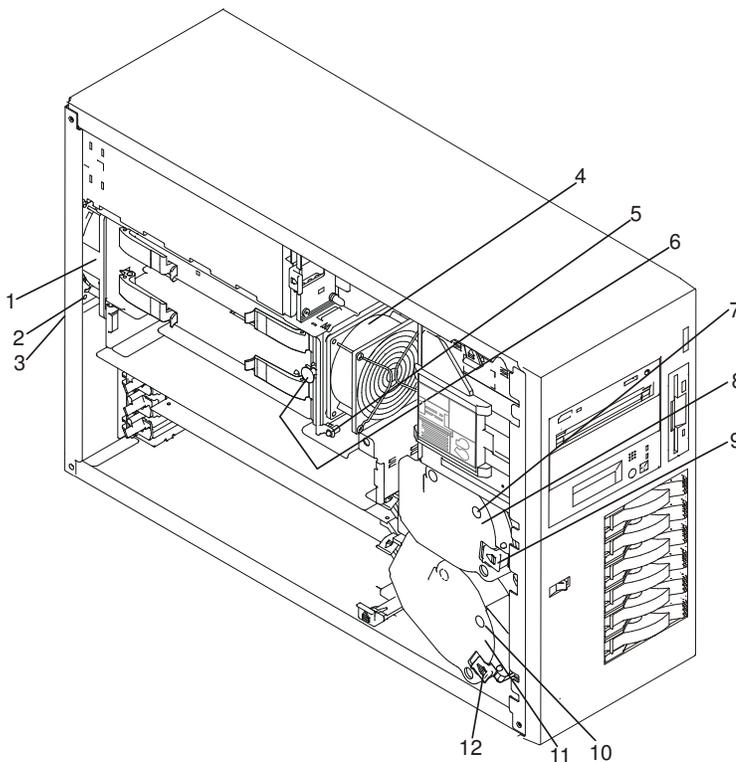
1	Hot–swap fan assembly	**2**	Fan assembly 1 LED
3	Fan 1 release button	**4**	Hot–swap fan assembly 2
5	Fan assembly 2 LED	**6**	Fan 2 release button
7	Fan assembly 3 LED	**8**	Hot–swap fan assembly 3
9	Fan 3 release latch	**10**	Fan assembly 4 LED
11	Hot–swap fan assembly 4	**12**	Fan 4 release latch

1. If your server is a Model PL 220R (rack mount), place the server in the service position as described in "Placing the Model PL 220R in the Service Position" on page 3-2.

2. For fan assemblies 2, 3, and 4 you must remove the service access cover. See "Removing the Service Access Covers" on page 3-3.

   Attention: To ensure proper system cooling, do not remove the service access cover for more than 30 minutes during this procedure.

3. Determine which fan assembly (fan assembly 1 (**1**), fan assembly 2 (**4**), fan assembly 3 (**8**) or fan assembly 4 (**11**)) to replace by checking the fan LEDs on the indicator panel (see Attention LED and Lightpath LEDs) and the LEDs located on the fan assemblies.

4. If you are removing fan assembly 2, you must remove the processor and memory card cover. See "Removing and Replacing Processor and Memory Card Cover" on page 3-7.

5. If you are removing fan assembly 1 or fan assembly 2, pull out the snap button and remove the fan.

   If you are removing fan assembly 3 or fan assembly 4, press the orange release latch (**9**), or (**12**) for the fan and pull the fan away from the server. Slide the replacement fan assembly into the server until it clicks into place.

6. Verify that the FAN LED on the diagnostic panel is not lit. If the FAN LED is lit, reseat the fan.

7. If removed earlier, replace the processor and memory card cover. See "Removing and Replacing Processor and Memory Card Cover" on page 3-7.

8. Replace the service access cover. See "Replacing the Service Access Covers" on page 3-31.

Replacing the Bezel

Bezel (Model PL 220T)
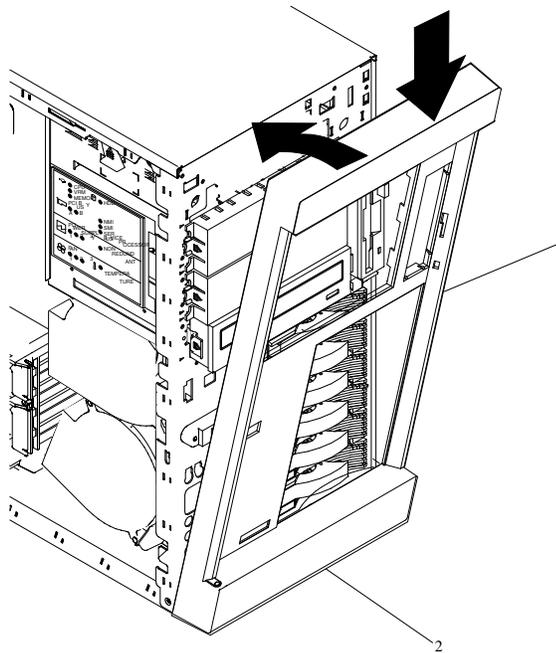
| **1** | Trim bezel |
| **2** | Slots (hidden by bezel) |

Note: When replacing the bezel, check the serial number on the bezel with the serial number on the front of the system to ensure that you are installing the correct bezel on the correct system.

1. Place the tabs at the bottom edge of the trim bezel (**1**) in the slots (**2**) at the bottom front of the server.

2. Press the top of the bezel toward the server until the bezel clicks into place.

Bezel (Model PL 220R)
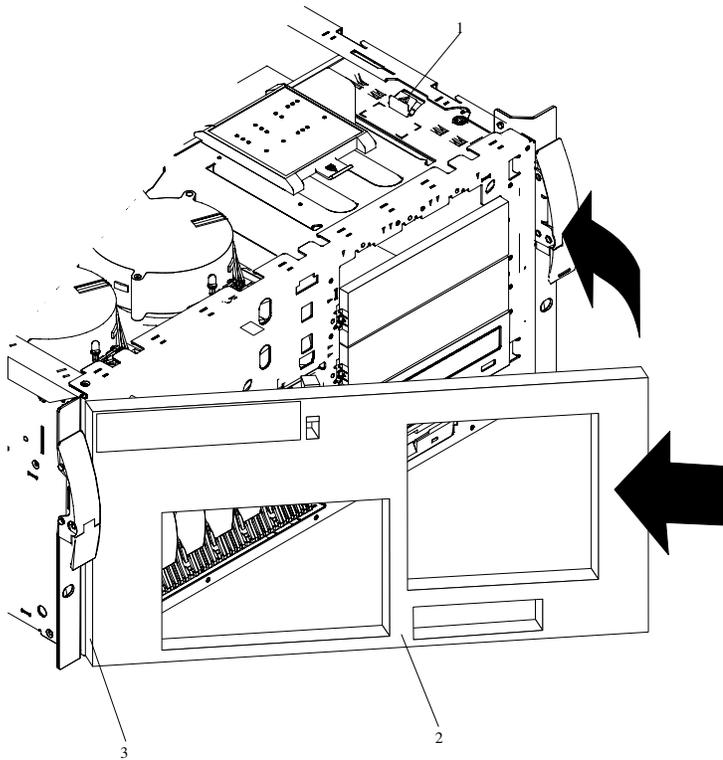
1	Bezel–release lever
2	Trim bezel
3	Slots (hidden by bezel)

Note: When replacing the bezel, check the serial number on the bezel with the serial number on the front of the system to ensure that you are installing the correct bezel on the correct system.

1. Place the tabs on the left side of the trim bezel in the slots (**3**) at the left front of the server.

2. Press the right end of the bezel toward the server until the bezel clicks into place.

Replacing the Service Access Covers

Service Access Cover (Model PL 220T)

Refer to the following illustration to install the service access cover.
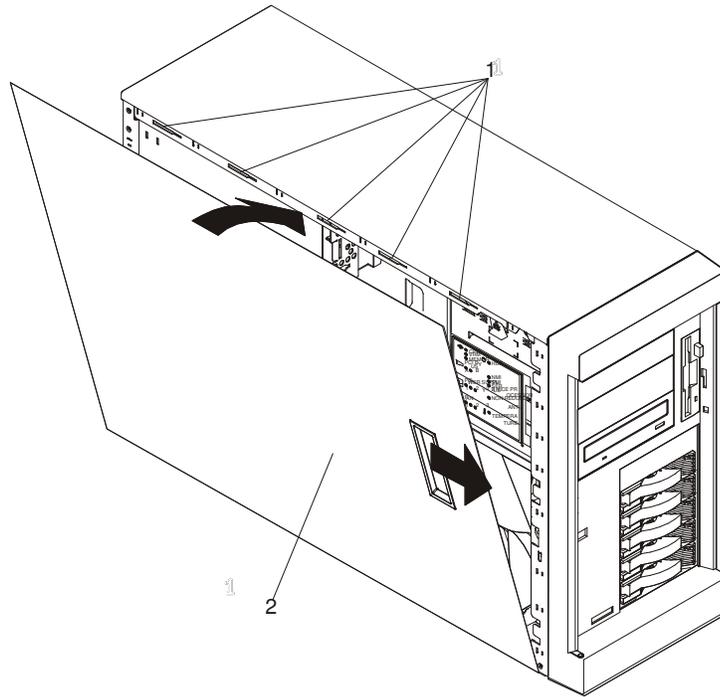
1	Slots
2	Service access cover

1. Align the left–side cover (**2**) with the left side of the server, about 25 mm (1 inch) from the front of the server; place the bottom of the left–side cover on the bottom rail of the left–side side of the chassis.

2. Insert the tabs at the top of the cover into the slots (**1**) at the top of the server side.

3. Hold the cover against the server, and slide the cover toward the front of the server until the cover clicks into place.

Service Access Cover (Model PL 220R)

Refer to the following illustration to install the service access cover.
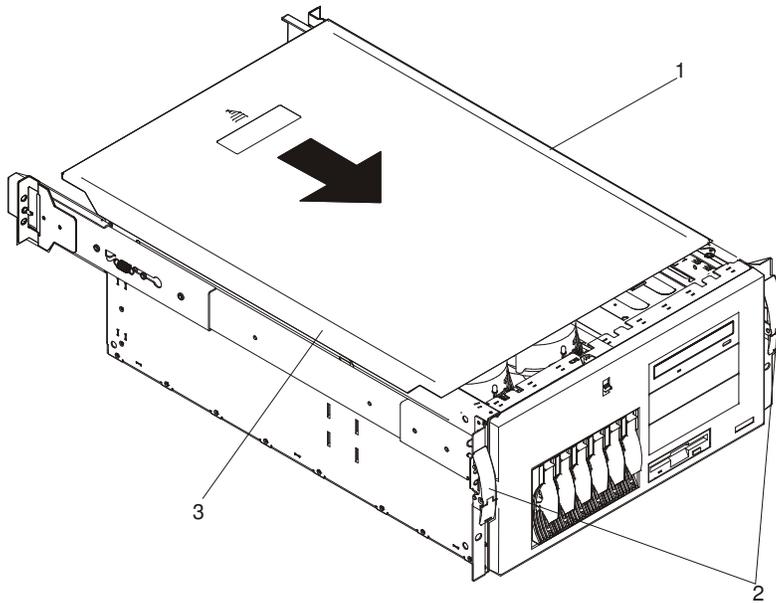
1	Service access cover
2	Side latches
3	Flanges

1. Align the service access cover (**1**) with the top of the server, about 25 mm (1 inch) from the front of the server. The flanges on the left and right sides of the cover should be on the outside of the server chassis.

2. Hold the cover against the server, and slide the cover toward the front of the server until the cover clicks into place.

Replacing the Battery

CAUTION:
A lithium battery can cause fire, explosion, or a severe burn. Do not recharge, disassemble, heat above 100 degrees C (212 degrees F), solder directly to the cell, incinerate, or expose cell contents to water. Keep away from children. Replace only with the part number specified for your system. Use of another battery may represent a risk of fire or explosion.

The battery connector is polarized; do not attempt to reverse the polarity.

Dispose of the battery according to local regulations.

1. If you have not already done so, shut down the system as described in "Stopping the System Unit" on page 3-1.

2. If you have not already done so, unplug the system unit power cables from the electrical outlets.

3. If your server is a Model PL 220R (rack mount), place the server in the service position as described in "Placing the Model PL 220R in the Service Position" on page 3-2.

4. If you have not already done so, remove the service access cover as described in "Removing the Service Access Covers" on page 3-3.

5. If you have not already done so, remove the processor and memory card cover as described in "Removing and Replacing Processor and Memory Card Cover" on page 3-7.

6. Locate the battery on the system board.

Plastic Battery Mount

Battery

Processor Card Connectors

Memory Card Connector

Rear Battery Clip

Battery P/N 15F8409
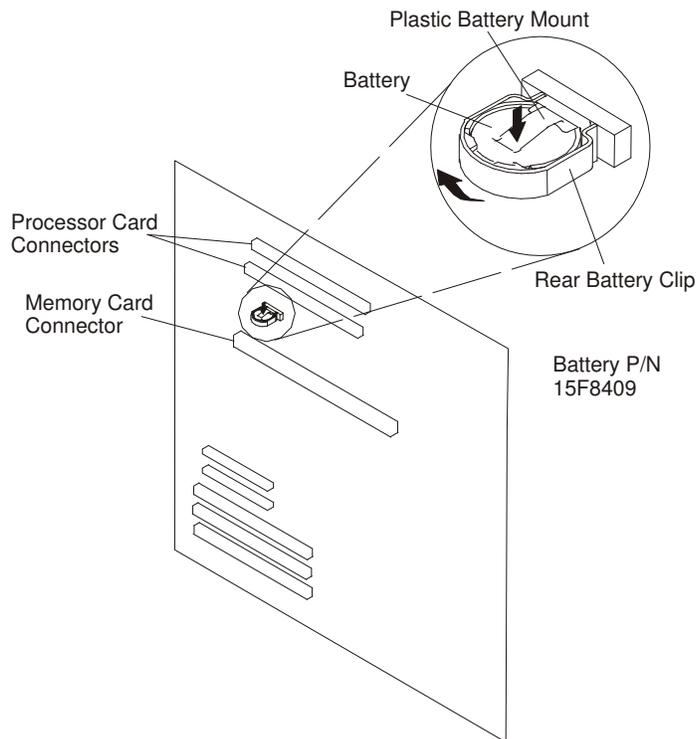
7. If needed, remove any processor cards or memory card to gain access to the battery.

8. Pry the battery out of its mount using your fingernail or a small blunt object. After the top of the battery has cleared the plastic mount, pull it up and out of the system board.

9. Ensure that the battery polarity is correct.

10. Using your thumb, gently press the battery into the battery mount. Use your index finger to support the back of the battery mount during this operation.

11. Replace any removed processor or memory cards.

12. Replace the processor and memory card cover as described in "Removing and Replacing Processor and Memory Card Cover" on page 3-7.

13. Replace the system unit covers as described in "Replacing the Service Access Covers" on page 3-31.

14. Reset the time and date.

15. If running AIX, the **bootlist** command may have to be run from AIX while logged in as root user. This restores the custom boot list and allow the option of Select Software under multiboot to start the operating system. The IP (Internet Protocol) parameters might have to be rebuilt also.

Connecting the Rack Indicator

The rack indicator feature signals when a drawer installed in a rack has a failure.

Connect the rack indicator cable.
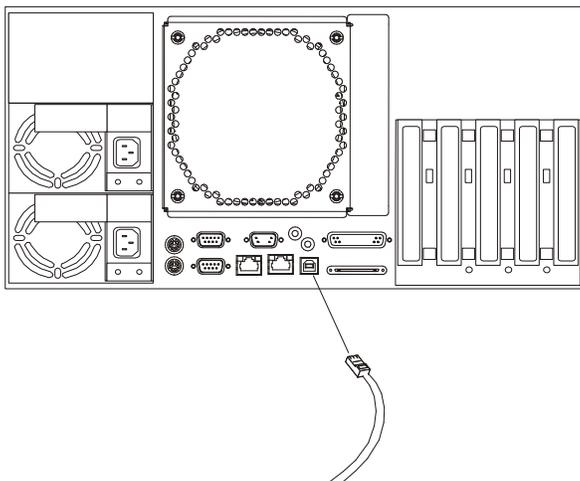
Chapter 4. Attention LED and Lighpath LEDs

The Attention and Lightpath LEDs provide for an obvious and intuitive means to identify failing components in your server.

Operator Panel Display

When a failing component is detected in your server, the Attention LED is turned on. To further help you identify the failing component, go to the indicator panel (see "Indicator Panel" on page 4-2) inside the server and check which LEDs are on. If either of the following conditions exists:

- No LEDs lit on the indicator panel
- PCI LED is the only LED lit on the indicator panel

Go to Step 3 in "Problem Determination Using the Standalone or Online Diagnostics" on page 5-1. Otherwise, continue with this procedure.
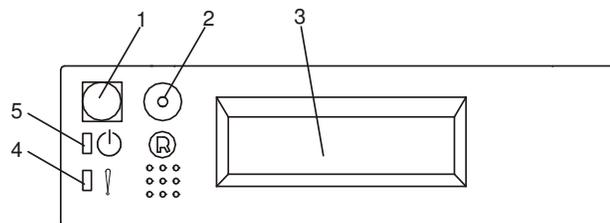
1	Power–On Switch
2	Reset Switch
3	Display
4	Attention LED
5	Power–On LED

Indicator Panel

You can access the indicator panel without any tools. The panel provides enough information to identify the area that needs attention. The panel contains a group of amber LEDs that indicate which functional area of the system is experiencing the fault (such as Power, CPUs, Memory, Fans). If one of these LEDs is on, the user or service representative is directed to the physical area of the server where they will find an additional LED on, indicating that the component is responsible for the current fault.
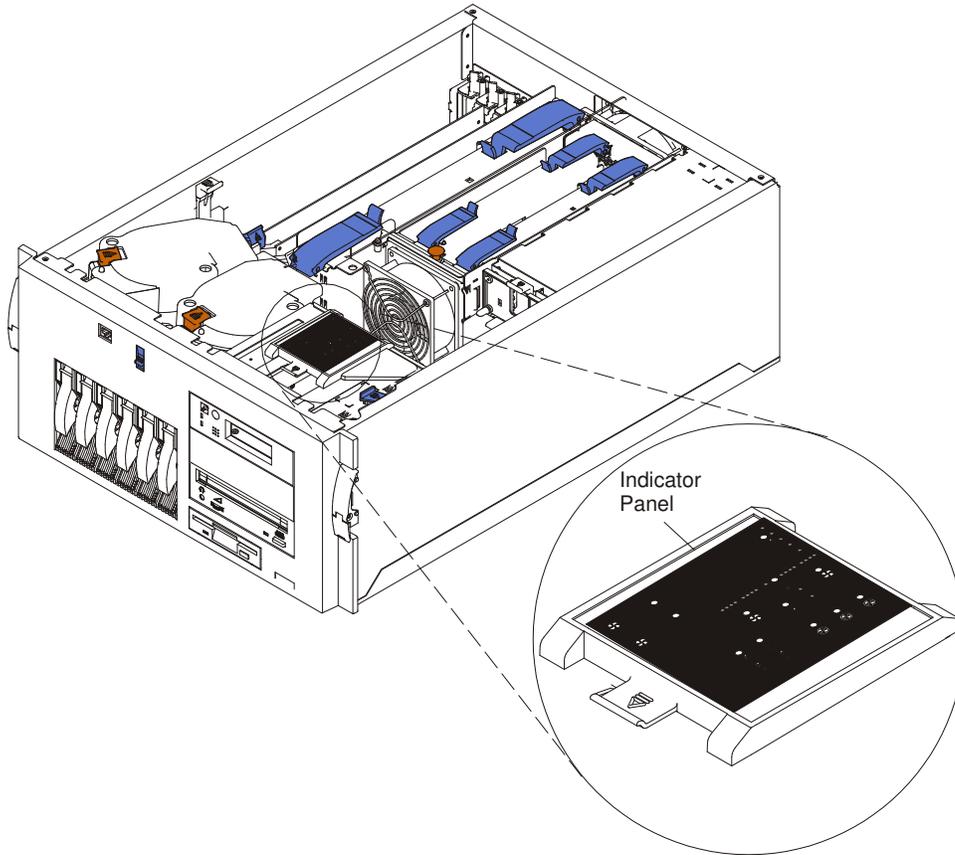
Indicator Panel

The following illustration shows the LEDs on the indicator panel, located inside the server.
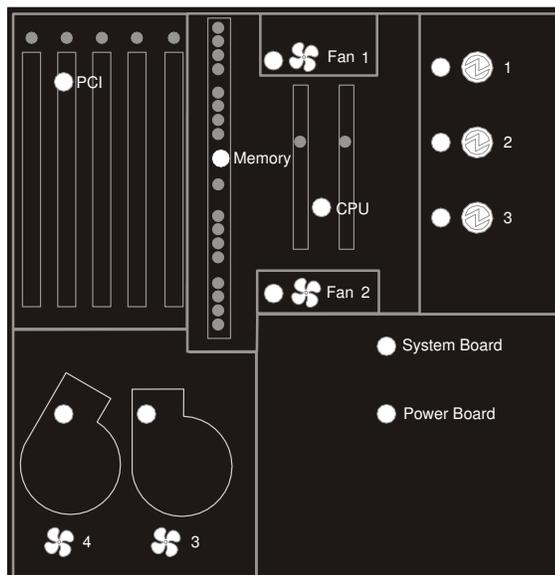
Component LEDs

In addition to the indicator panel or display, individual LEDs are located on or near the failing components. The LEDs are either on the component itself or on the carrier of the component (memory card, fan, memory module, CPU).

The LEDs are amber, except for the power supplies. For the power supplies, two green LEDs (AC Power Good and DC Power Good) indicate the fault condition for the power supply.

Reporting the Problem

After you have determined which component is failing, report the problem.

1. Record the following information before calling for service:

   – Machine type and model

   – Server serial number

   – Any error codes that appear in the operator panel display or console

   – Any LEDs lit on the indicator panel

2. Call for service. You will be given the choice to replace the failing component yourself or have a service representative replace it. If you are replacing the failing component, go to "Repair Action" below for instructions.

Repair Action

1. Replace the failing component with the new component. Refer to Chapter 3, "Installing Options in Your System" for instructions.

2. Log in as root user.

3. At the command line, type `diag`.

4. Select **Task Selection**.

5. Select **Log Repair Action**.

6. Select the device that was repaired ((If the device is not listed, select sysplanar0).

7. Press F10 to exit diagnostics.

If the Attention LED remains on after you have completed the repair action and reset the LEDs, call for service.

Chapter 5. Hardware Problem Determination

This chapter provides information on using Standalone or Online Diagnostics.

Problem Determination Using the Standalone or Online Diagnostics

Use this procedure to obtain a service request number (SRN) when you are able to load the Standalone or Online Diagnostics. If you are unable to load the Standalone or Online Diagnostics, go to "Problem Determination When Unable to Load Diagnostics" on page 5-7. The service organization uses the SRN to determine which field replaceable units (FRUs) are needed to restore the system to correct operation.

Step 1. Considerations before Running This Procedure

Note: See the operator manual for your ASCII terminal to find the key sequences you need to respond to the diagnostic programs.

- The diagnostics can use a display connected to the video port or an ASCII terminal attached to a serial port.

- This procedure asks you to select the type of diagnostics you want to run.

- Go to "Step 2".

Step 2

Is the Attention LED on?

NO   Go to "Step 3.

YES   Go to Chapter 4, "Attention LED and Lightpath LED".

Step 3

Are the Online Diagnostics installed on this system?

NO   Go to "Step 16".

YES   Go to "Step 4".

Step 4

Determine if the operating system is accepting commands.

Is the operating system accepting commands?

NO   The system must be turned off in order to run diagnostics.

Verify with the system administrator and users that the system may be turned off. If so, then turn off the system unit and go to Step 7.

YES   Go to "Step 5".

Step 5

Diagnostic tests can be run on many resources while the operating system is running. However, more extensive problem isolation is obtained by running Online Diagnostics in Service mode.

Do you want to run the Online Diagnostics in Service mode?

NO   Go to "Step 6".

YES   Do the following to shut down your system:

1. At the system prompt, stop the operating system using the appropriate command for your operating system. For AIX systems, use the `shutdown -F` command.
2. After the operating system is stopped, turn off the system unit.
3. Go to "Step 7".

Step 6

This step starts the Online Diagnostics in concurrent mode.

1. Log on as `root` user.
2. Enter the `diag` command.
3. Wait until the Diagnostic Operating Instructions are displayed, or wait for three minutes.

Are the Diagnostic Operating Instructions displayed without any obvious console display problems?

NO   Do the following to shut down your system:

1. At the system prompt, stop the operating system using the appropriate command for your operating system. For AIX systems, use the `shutdown -F` command.
2. After the operating system is stopped, turn off the system unit.
3. Go to "Step 7".

YES   Go to "Step 10".

Step 7

This step loads Online Diagnostics in service mode. If you are unable to load the diagnostics, go to "Step 8".

1. Turn the power on.

2. When the keyboard indicator (icon or text) displays, press F6 on the directly attached keyboard, or 6 on the ASCII terminal keyboard to indicate that online diagnostics are to be loaded.

3. Enter any requested passwords.

4. Follow any instructions to select a console.

Did the Diagnostics Operating Instructions display without any obvious display problem?

NO   Go to "Step 8".

YES   Go to "Step 10".

Step 8

Starting at the top of the following table, find your symptom and follow the instructions given in the Action column.

Symptom	Action
Display problem.	Go to "Step 9".
All other symptoms.	Go to "Problem Determination When Unable to Load Diagnostics" on page 5-7

Step 9

Find your type of console display in the following table, then follow the instructions given in the Action column.

Console Display	Action
Display Device	Go to the display documentation for problem determination.
ASCII terminal	Go to the documentation for problem determination for this type of terminal.

Step 10

The diagnostics loaded correctly.

Press the Enter key.

Is the Function Selection menu displayed?

NO   Go to "Step 11".

YES   Go to "Step 12".

Step 11

There is a problem with the keyboard.

Find the type of keyboard you are using in the following table, then follow the instructions given in the Action column.

Keyboard Type	Action
101–key keyboard. Identify by the type of Enter key used. The Enter key is within one horizontal row of keys.	Record error code M0KBD001 and report the problem to the service organization.
102–key keyboard. Identify by the type of Enter key used. The Enter key extends into two horizontal rows of keys.	Record error code M0KBD002 and report the problem to the service organization.
Kanji keyboard. Identify by the Japanese characters.	Record error code M0KBD003 and report the problem to the service organization.
ASCII–terminal keyboard. This applies to all attached terminals.	Go to the documentation for problem determination for this type terminal.

Step 12

1. If the terminal type has not been defined, you must use the `Initialize Terminal` option on the Function Selection menu to initialize the operating system environment before you can continue with the diagnostics. This is a separate and different operation than selecting the console display.

2. Select `Diagnostic Routines`.

3. Press the Enter key.

4. In the following table, find the menu or system response you received when you selected `Diagnostics`. Follow the instructions given in the Action column.

System Response	Action
The Diagnostic Mode Selection menu is displayed.	Select Problem Determination and go to "Step 13".
The Missing Resource menu is displayed.	Follow the displayed instructions until either the Diagnostic Mode Selection menu or an SRN is displayed. If the Diagnostic Mode Selection menu is displayed, select Problem Determination and go to "Step 13". If you get an SRN, record it, and go to "Step 15".

The New Resource menu is displayed.	Follow the displayed instructions.
	Note: Devices attached to serial ports S1 or S2 will not appear on the New Resource menu. Also, ISA adapters do not appear unless they have been identified and configured.
	If the Diagnostic Mode Selection menu is displayed, select Problem Determination and go to "Step 13".
	If you get an SRN, record it, and go to "Step 15".
	If you do not get an SRN, go to "Step 18".
The system does not respond to selecting **diagnostics**	Go to "Step 11".

Step 13

Did the Diagnostic Selection Menu display?

NO   If **Problem Determination** was selected from the Diagnostic Mode Selection menu, and if a recent error has been logged in the error log, the diagnostics automatically begin testing the resource.

Follow the displayed instructions.

. If the **No Trouble Found** screen is displayed, press Enter.

. If another resource is tested, repeat this step.

. If the **Diagnostic Selection** menu is displayed, go to "Step 14".

. If an SRN is displayed, record it, and go to "Step 15".

YES   Go to "Step 14".

Step 14

The **All Resources** option checks most of the configured adapters and devices.

Select and run the diagnostic tests on the resources you are having problems with or select the **All Resources** option check all of the configured resources. Find the response in the following table and take the Action for it.

Diagnostic Response	Action
An SRN is displayed.	Go to "Step 15".
The system hangs.	Report SRN 109–200.
The Testing Complete menu and the No trouble was found message is displayed, and you have not tested all of the resources.	Press Enter and continue with the testing.
The Testing Complete menu and the No trouble was found message displayed and you have tested all of the resources.	Go to "Step 18".

Step 15

The diagnostics produced an SRN for this problem.

1. Record the SRN and other numbers read out.

2. Report the SRN to the service organization.

3. **STOP**. You have completed these procedures.

Step 16

When you are loading the Standalone Diagnostics, the attributes for the terminal must be set to match the defaults of the diagnostic programs. The ASCII terminal must be attached to serial port 1 on the system unit.

Are you going to load Standalone Diagnostics and run them from a ASCII terminal?

NO   Go to ”Step 17”.

YES   Be sure your terminal attributes are set to work with the diagnostic programs.

                 Return to ”Step 17” when you finish checking the attributes. Record any settings that are changed.

Step 17

This step loads the Standalone Diagnostics. If you are unable to load the diagnostics, go to ”Step 8”.

1. Turn the power on.

2. Insert the diagnostic CD–ROM into the CD–ROM drive.

3. When the keyboard indicator displays, press F5 on the directly attached keyboard, or 5 on the ASCII keyboard to indicate that standalone diagnostics are to be loaded.

4. Enter any requested passwords.

5. Follow any instructions to select a console.

Did the Diagnostics Operating Instructions display without any obvious display problem?

NO   Go to ”Step 8”.

YES   Go to ”Step 10”.

Step 18

The diagnostics did not find a hardware problem. If you still have a problem, contact your software support center.

Problem Determination When Unable to Load Diagnostics

Use this procedure to obtain an error code. The service organization uses the error code to determine which field replaceable units (FRUs) are needed to restore the system to correct operation.

Step 1. Considerations before Running This Procedure

- The diagnostics can use a display connected to the video port or an ASCII terminal attached to a serial port.

- Go to "Step 2".

Step 2

Are the Online Diagnostics installed on this system?

NO   Go to "Step 4".

YES   Go to "Step 3".

Step 3

This step attempts to load Online Diagnostics in service mode.

1. Turn the power off.

2. Turn the power on.

3. If the keyboard indicator displays, press F6 on the directly attached keyboard, or 6 on the ASCII keyboard to indicate that diagnostics are to be loaded.

4. Enter any requested passwords.

5. Follow any instructions to select a console.

6. Wait until the diagnostics load or the system appears to stop.

Did the diagnostics load?

NO   Go to "Step 5".

YES   Go to "Step 6".

Step 4

This step attempts to load the Standalone diagnostics.

1. Turn the power off.
2. Turn the power on.
3. Insert the diagnostic CD–ROM into the CD–ROM drive.
4. If the keyboard indicator displays, press F5 on the directly attached keyboard, or 5 on the ASCII keyboard to indicate that diagnostics are to be loaded.
5. Enter any requested passwords.
6. Follow any instructions to select a console.
7. Wait until the diagnostics load or the system appears to stop.

Did the diagnostics load?

NO   Go to "Step 5".

YES   Go to "Step 6".

Step 5

Starting at the top of the following table, find your symptom and follow the instructions given in the Action column.

Symptom	Action
The power LED does not come on, or comes on and does not stay on.	Check the power cable to the outlet. Check the circuit breakers and check for power at the outlet. Assure the room temperature is within 60 – 90°F. If you do not find a problem, record error code M0PS0000 and report the problem to the service organization.
The system appears to be stopped and NO beep was heard from the system unit.	Processor POST failure. Report error code M0CPU000.
The system appears to be stopped and NO beep was heard from the system unit. E122, E123, or E124 is displayed on the operator panel display.	No good memory could be found. Report error code M0MEM000.
The system appears to be stopped. A beep was heard from the system unit.	No good memory could be found. Report error code M0MEM001.
The diagnostics are loaded and there was NO beep heard from the system unit during the IPL sequence.	Record error code M0SPK001.
The system stops with the Diagnostic Operating Instructions displayed.	Go to Step 6.
The diskette LED is blinking rapidly, or E1EA or E1EB is displayed on the operator panel.	The flash EPROM data is corrupted. Run the recovery procedure for the flash EPROM.

Symptom	Action
The system stops with a prompt to enter a password.	Enter the password. You are not allowed to continue until a correct password has been entered. When you have entered a valid password, wait for one of the other conditions to occur.
The system stops with an eight–digit error code(s) displayed on the console.	Record the error code(s) and report the problem to the service organization.
The system login prompt is displayed.	You may not have pressed the correct key, or you may not have pressed the key soon enough when you were to indicate a Service Mode boot of diagnostic programs. If this was the case, start over at the beginning of this step. If you are sure that you pressed the correct key in a timely manner, go to Step 7.
The system does not respond when the password is entered.	Go to Step 7.
The system stopped and an indicator is displayed on the system console and an eight–digit error code is not displayed.	If the indicator (text or icon) represents: • A keyboard, record error code M0KBD000 and report the problem to the service organization. • Memory, record error code M0MEM002 and report the problem to the service organization. • SCSI, record error code M0CON000 and report the problem to the service organization. • Network, record error code M0NET000 and report the problem to the service organization. • Speaker/Audio, record error code M0BT0000 and report the problem to the service organization.

The System Management Services menu is displayed.	The device or media that you are attempting to boot from might be faulty.
	
	1Check the SMS error log for any errors. To check the error log:
	
	  – Select **utilities**
	
	  – Select **error log**
	
	  – If an error is logged, check the time stamp.
	
	  – If the error was logged during the current boot attempt, record it and report it to your service representative.
	
	  – If no recent error is logged in the error log, continue to the next step below.
	
	2If you are attempting to load the Online Diagnostics, try loading the Standalone Diagnostics. Otherwise, record error code M0SCSI01 and report the problem to the service organization.

The system appears to be stopped, the disk activity light is on continuously, and a beep was heard from the system unit	Record error code M0MEM001 and report the problem to the service organization.

Symptom	Action
The system stops with the message `STARTING SOFTWARE PLEASE WAIT` displayed	Report error code M0BT0000.
The message `The system will continue the boot process` is displayed continuously on the system unit's console.	Report error code M0SCSI01.

Step 6

The diagnostics loaded correctly.

Go to "Problem Determination Using the Standalone or Online Diagnostics" on page 8-1.

Step 7

There is a problem with the keyboard.

Find the type of keyboard you are using in the following table, then follow the instructions given in the Action column.

| Keyboard Type	Action
101–key keyboard. Identify by the type of Enter key used. The Enter key is within one horizontal row of keys.	Record error code M0KBD001 and report the problem to the service organization.
102–key keyboard. Identify by the type of Enter key used. The Enter key extends into two horizontal rows of keys.	Record error code M0KBD002 and report the problem to the service organization.
Kanji keyboard. Identify by the Japanese characters.	Record error code M0KBD003 and report the problem to the service organization.
ASCII–terminal keyboard. This applies to all attached terminals.	Go to the documentation for problem determination for this type terminal.

Appendix A. System Records

Record the Identification Numbers

Record and retain the following information.

Product Name _____

Serial Number _____

Key Serial Number _____

The system unit's identification numbers are located on the front of the machine, as shown in the following illustration:

Serial Number
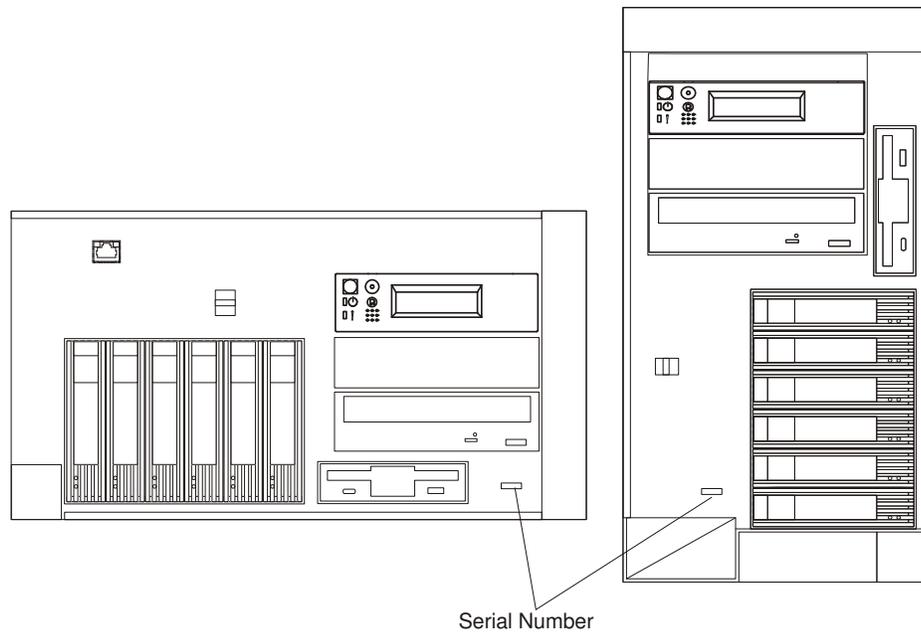
Device Records

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

Memory Card

128MB ( )	256MB ( )	512MB ( )	J15	J16	128MB ( )	256MB ( )	512MB ( )
128MB ( )	256MB ( )	512MB ( )	J13	J14	128MB ( )	256MB ( )	512MB ( )
128MB ( )	256MB ( )	512MB ( )	J11	J12	128MB ( )	256MB ( )	512MB ( )
128MB ( )	256MB ( )	512MB ( )	J9	J10	128MB ( )	256MB ( )	512MB ( )
128MB ( )	256MB ( )	512MB ( )	J7	J8	128MB ( )	256MB ( )	512MB ( )
128MB ( )	256MB ( )	512MB ( )	J5	J6	128MB ( )	256MB ( )	512MB ( )
128MB ( )	256MB ( )	512MB ( )	J3	J4	128MB ( )	256MB ( )	512MB ( )
128MB ( )	256MB ( )	512MB ( )	J1	J2	128MB ( )	256MB ( )	512MB ( )

Options

Location	Option Description
Mouse Connector	IBM Mouse ☐ Other:_____
Keyboard Connector	<u>Space Saving</u> ☐ <u>Enhanced</u> ☐ Other:_____
Expansion Slot 5	_____
Expansion Slot 4	_____
Expansion Slot 3	_____
Expansion Slot 2	_____
Expansion Slot 1	_____
Parallel Port	_____
Serial Port 1	_____
Serial Port 2	_____
Serial Port 3	_____
External SCSI	_____
Ethernet 1	_____
Ethernet 2	_____

SCSI IDs and Bay Locations
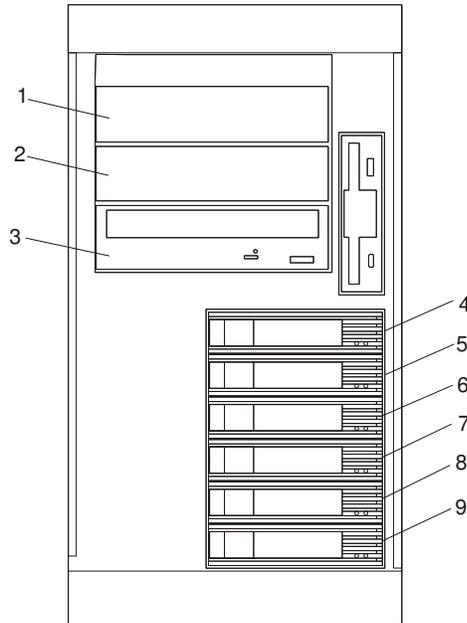
1	Bay D01 (Behind Operator Panel)
2	Bay D02
3	Bay D03
4	Disk Bay 1
5	Disk Bay 2
6	Disk Bay 3
7	Disk Bay 4
8	Disk Bay 5
9	Disk Bay 6

Note: If you install a disk drive or other media device in your system, record the definition in the drive definition field in the following table.

Drive	Location	SCSI ID	Drive Description
Disk Drive	Bay D01	0	_____
Media Device	Bay D02	1	_____
CD–ROM Drive	Bay D03	IDE Non–SCSI	CD–ROM Drive
SCSI Media Device	Bay D03	2	_____
Hot–Plug	Disk Bay 1	10	_____
Hot–Plug	Disk Bay 2	11	_____
Hot–Plug	Disk Bay 3	12	_____
Hot–Plug	Disk Bay 4	13	_____
Hot–Plug	Disk Bay 5	14	_____
Hot–Plug	Disk Bay 6	14	_____

Appendix B. PCI Adapter Placement Reference

This system is designed for customers to install adapters. Use this guide to determine if there are specific slot requirements for adapters that you may be installing.

PL 220T

PL 220R
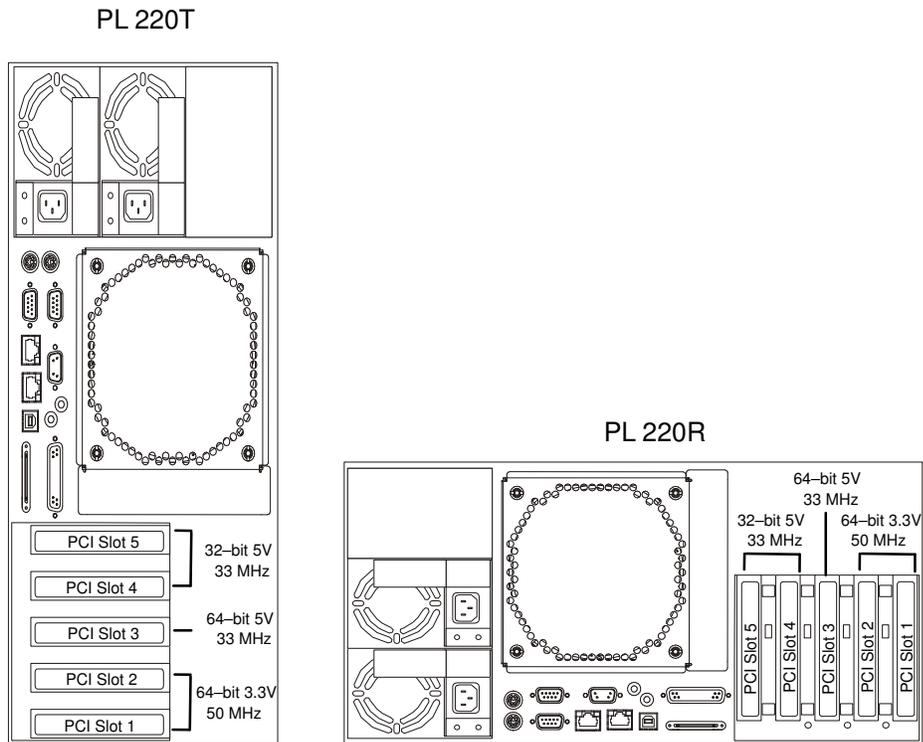
System Unit Rear View with Numbered Slots

Some adapters must be placed in specific system unit slots to function correctly at optimum performance. Use the table on next pages to determine where to install an adapter in your system unit.

Many of the following notes refer to optimizing system performance.

Use the rear–view diagram above to identify slot locations described in the following tables.

Adapter Placement Guide

Use the following table to identify specific slot location options for the following adapters in your system.

Adapter	FC	MI	Slot Usage	System Maximum	Hot Plug
PCI 64–Bit Copper Fibre Channel Adapter (type B4–A)	Bull	DCCG147–0000	Slots 1, 2, 3, 4, 5	2	Y
PCI 64–Bit Copper Fibre Channel Adapter (type B4–B)	Bull	DCCG148–0000	Slots 1, 2, 3, 4, 5	2	Y
PCI Dual Channel Ultra 3 SCSI (type 4–Y)	6203	MSCG048–0000	Slots 1, 2, 3, 4, 5	§	Y
Gigabit Ethernet–SX PCI (Type B5–N)	2969	DCCG144–0000	Slots 1, 2, 3, 4, 5	5 (see note 1)	Y
10/100/1000 Base–T Ethernet PCI (type A–A)	2975	DCCG150–0000	Slots 1, 2, 3, 4, 5	5 (see note 1)	Y
10/100 Mbps 4 Ports Ethernet PCI (type A–E)	4961	DCCG152–0000	Slots 5, 4, 3, 2, 1	5	Y
10/100 Mbps Ethernet PCI (type 9–P)	2668 4962	DCCG137–0000	Slots 5, 4, 3, 2, 1	5	Y
X.25 2 Port Multiprotocol com. (type B2–L)	2962	DCCG140–0000	Slots 5, 4, 3	2	Y
8–Port Asynchronous EIA–232E/RS–422A PCI (type 3–B)	2943	DCCG130–0000	Slots 5, 4, 3	1	Y
PCI 4–Channel Ultra3 SCSI RAID (type 4–X)	2498	MSCG047–0000	Slots 1, 2, 3, 4, 5	5	Y
X.25 1–port Sync. Communication Adapter (type B2–G)	Bull	DCCG097–0000	Slots 5, 4, 3	2	Y
X.25 4–port Sync. Communication Adapter (type B2–H)	Bull	DCCG098–0000	Slots 5,4,3	2	Y
High–Speed Token Ring PCI (type B5–R)	4959	DCCG135–0000	Slots 5, 4, 3, 2, 1	4	Y
PCI Universal Differential Ultra SCSI Adapter (type 4–U)	6204	MSCG044–0000	Slots 5, 4, 3, 2, 1	5	Y
Power GXT135P (type 1–X)	2848	GTFG050–0000	Slots 1, 2, 3, 4, 5	2	N

Note:

1. For optimum system performance, a combination of the following adapters should not exceed a maximum of one adapter per system:
   - FC 2969: Gigabit Ethernet–SX PCI (Type B5–N)
   - FC 2975: 10/100/1000 Base–T Ethernet PCI (Type A–A)

   Use 64–bit slots (3, 4, or 5) if available.

Appendix C. Firmware Updates

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

Check the Current System Firmware and Service Processor Firmware Levels

To verify the current levels that are installed on the system, use the following steps:

1. Log in as root user.

2. Type the following at the command line:

   ```
   lscfg –vp | grep –p alterable
   ```

3. Press Enter. This command produces a report similar to the following:

   ```
   ROM Level . (alterable) .ct010507 <===service processor F/W level
   ROM Level . (alterable) .CLT01198 <===system firmware level
   ```

Note: In the example above, if the current version of service processor firmware is ct010507, the last six characters of the ROM Level represent a date in a *yymmdd* format, where *yy* is the last two digits of the year, *mm* is the month and *dd* is the day of the firmware (Julian date).

Also in the example above, if the current version of system firmware is CLT01198, the last five characters of the ROM Level represent a date in a *yyddd* format, where *yy* is the last two digits of the year and *ddd* is the Gregorian date of the firmware.

Contact your service support representative for the latest level of downloadable firmware. If the version of system firmware installed on your system is older than (has an earlier date than) the system firmware shown on the web site, you should consider downloading and applying the update. If the version of service processor firmware installed on your system is older than (has an earlier date than) the service processor firmware shown on the web site, consider downloading and applying the update.

Updating System Firmware

To update the system firmware, perform the following steps:

1. Log in as root user.

2. If the directory **/tmp/fwupdate** does not exist, create it by issuing the following command: `mkdir /tmp/fwupdate`

3. The firmware update file must be written into the **/tmp/fwupdate** directory on the server. This can be done by using the **ftp** command to get the image from an ftp server, NFS–mounting the directory on the host server. Contact your sales or service representative for assistance.

   After the firmware update file has been written into the **/tmp/fwupdate** directory, verify its existence by entering the following command:

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

   The update file name will have the format *yydddcc.img*. The *cc* indicates that this is a combined image for a server, *yy* is the last two digits of the year, and *ddd* is the Julian date 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

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

Notes:

a. `yydddcc.img` is the file you identified in the previous step.

b. Make sure that you include the periods (.) in the commands shown above.

c. AIX commands are case–sensitive. Type them exactly as shown.

You are asked by the system for confirmation to proceed with the firmware update and the required reboot. If you confirm, the system applies the new firmware, reboots, and returns 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 appear on the system display. *Do not* turn off the system unit 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 as long as three minutes.

The firmware update is complete.

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Nº Reférence / **Reference Nº :**   86 A1 78EF 01

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__ __ ____ _ [__]		__ __ ____ _ [__]		__ __ ____ _ [__]	
__ __ ____ _ [__]		__ __ ____ _ [__]		__ __ ____ _ [__]	
__ __ ____ _ [__]		__ __ ____ _ [__]		__ __ ____ _ [__]	
__ __ ____ _ [__]		__ __ ____ _ [__]		__ __ ____ _ [__]	

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Utiliser les marques de découpe pour obtenir les étiquettes.
Use the cut marks to get the labels.

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