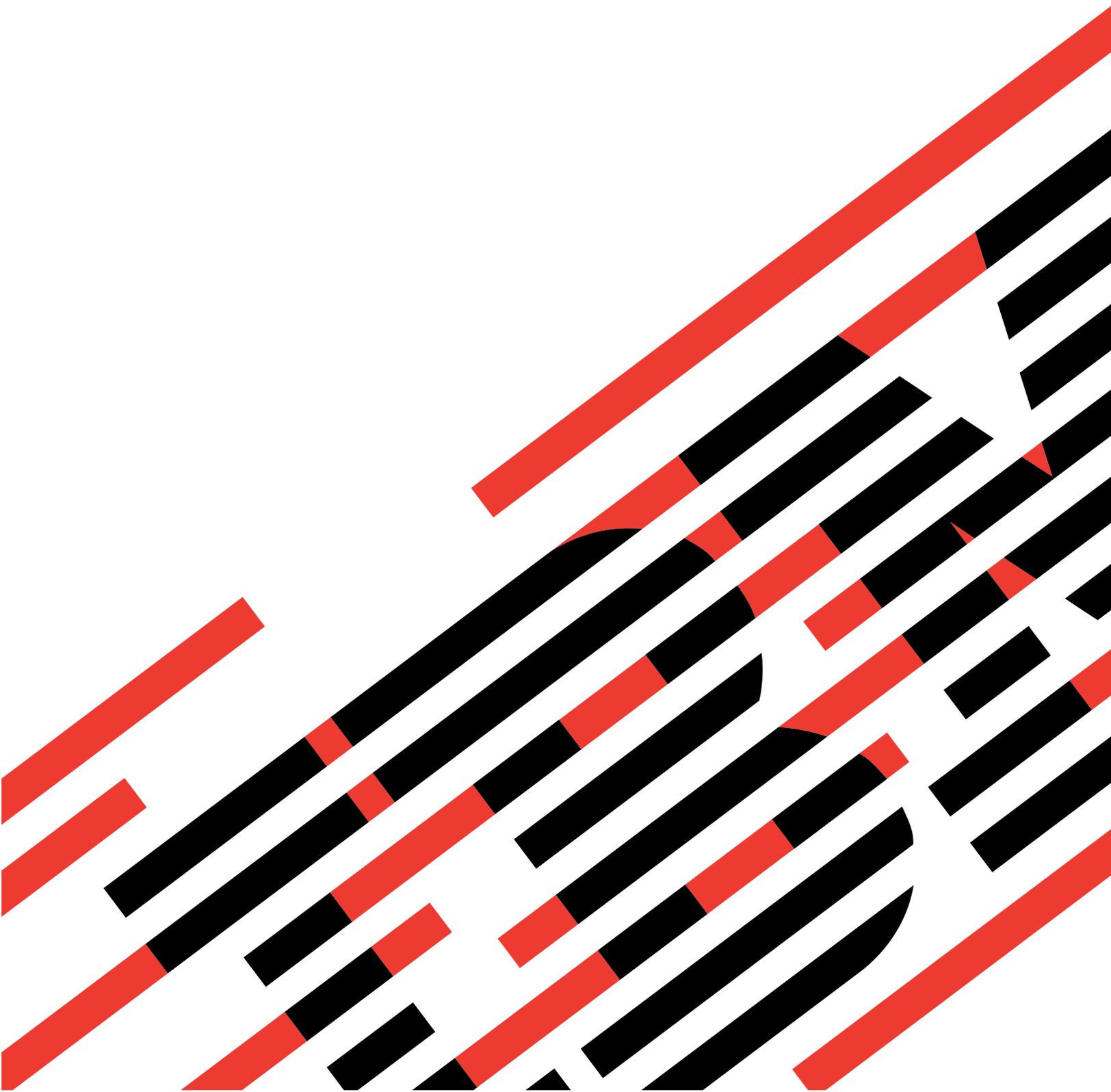# IBM

@server

xSeries 305
Type 8673

Option Installation Guide

IBM

@server

xSeries 305
Type 8673

Option Installation Guide

Note: Before using this information and the product it supports, be sure to read "Notices" on page 23.

Contents

Safety

Before installing this product, read the Safety Information.

قبل تركيب هذا المنتج، يجب قراءة الملاحظات الآمنية

Antes de instalar este produto, leia as Informações de Segurança.

在安装本产品之前，请仔细阅读 Safety Information
（安全信息）。

Prije instalacije ovog produkta obavezno pročitajte Sigurnosne Upute.

安裝本產品之前，請先閱讀「安全資訊」。

Před instalací tohoto produktu si přečtěte příručku bezpečnostních instrukcí.

Læs sikkerhedsforskrifterne, før du installerer dette produkt.

Lees voordat u dit product installeert eerst de veiligheidsvoorschriften.

Ennen kuin asennat tämän tuotteen, lue turvaohjeet kohdasta Safety Information.

Avant d'installer ce produit, lisez les consignes de sécurité.

Vor der Installation dieses Produkts die Sicherheitshinweise lesen.

Πριν εγκαταστήσετε το προϊόν αυτό, διαβάστε τις πληροφορίες ασφάλειας
(safety information).

לפני שתתקינו מוצר זה, קראו את הוראות הבטיחות.

A termék telepítése előtt olvassa el a Biztonsági előírásokat!

Prima di installare questo prodotto, leggere le Informazioni sulla Sicurezza.

製品の設置の前に、安全情報をお読みください。

본 제품을 설치하기 전에 안전 정보를 읽으십시오.

Пред да се инсталира овој продукт, прочитајте информацијата за безбедност.

Les sikkerhetsinformasjonen (Safety Information) før du installerer dette produktet.

Перед установкой продукта прочтите инструкции по
технике безопасности.

Przed zainstalowaniem tego produktu, należy zapoznać się
z książką "Informacje dotyczące bezpieczeństwa" (Safety Information).

Pred inštaláciou tohto zariadenia si pečítaje Bezpečnostné predpisy.

Antes de instalar este produto, leia as Informações sobre Segurança.

Pred namestitvijo tega proizvoda preberite Varnostne informacije.

Antes de instalar este producto, lea la información de seguridad.

Läs säkerhetsinformationen innan du installerar den här produkten.

Statement 1:

DANGER

Electrical current from power, telephone, and communication cables is hazardous.

To avoid a shock hazard:
- **Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.**
- **Connect all power cords to a properly wired and grounded electrical outlet.**
- **Connect to properly wired outlets any equipment that will be attached to this product.**
- **When possible, use one hand only to connect or disconnect signal cables.**
- **Never turn on any equipment when there is evidence of fire, water, or structural damage.**
- **Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.**
- **Connect and disconnect cables as described in the following table when installing, moving, or opening covers on this product or attached devices.**

To Connect:	To Disconnect:
1. Turn everything OFF.	1. Turn everything OFF.
2. First, attach all cables to devices.	2. First, remove power cords from outlet.
3. Attach signal cables to connectors.	3. Remove signal cables from connectors.
4. Attach power cords to outlet.	4. Remove all cables from devices.
5. Turn device ON.	

Statement 2:

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

Do not:
- **Throw or immerse into water**
- **Heat to more than 100°C (212°F)**
- **Repair or disassemble**

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

Statement 3:

CAUTION:
When laser products (such as CD-ROMs, DVD drives, fiber optic devices, or transmitters) are installed, note the following:
- **Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.**
- **Use of controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.**

DANGER

> **Some laser products contain an embedded Class 3A or Class 3B laser diode. Note the following.**
>
> **Laser radiation when open. Do not stare into the beam, do not view directly with optical instruments, and avoid direct exposure to the beam.**

Class 1 Laser Product
Laser Klasse 1
Laser Klass 1
Luokan 1 Laserlaite
Appareil À Laser de Classe 1

Statement 4:

≥ 18 kg (39.7 lb)   ≥ 32 kg (70.5 lb)   ≥ 55 kg (121.2 lb)

CAUTION:
Use safe practices when lifting.

Statement 5:

CAUTION:
The power control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

2
1
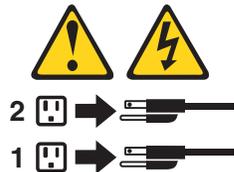
Statement 8:

CAUTION:
Never remove the cover on a power supply or any part that has the following label attached.

Hazardous voltage, current, and energy levels are present inside any component that has this label attached. There are no serviceable parts inside these components. If you suspect a problem with one of these parts, contact a service technician.

Chapter 1. Introduction

This *Option Installation Guide* contains instructions for installing, removing, and connecting optional devices that your server supports.

The latest version of this publication is available from the IBM Web site. Go to http://www.ibm.com/ and click **Support & downloads**. In the **Technical support** keyword search field, type 8673 and click **Go**. A list of publications for your server is displayed.

Related publications

The following documentation comes with your server:

*   *User's Guide*

    This publication is in Portable Document Format (PDF) on the IBM® *xSeries Documentation* CD. It contains general information about your server.
*   *Installation Guide*

    This printed publication contains instructions for setting up your server and basic instructions for installing some options.
*   *Option Installation Guide*

    This publication is in PDF on the IBM *xSeries Documentation* CD. It contains detailed instructions for installing, removing, and connecting optional devices that your server supports.
*   *Safety Information Book*

    This publication is in PDF on the IBM *xSeries Documentation* CD. It contains translated caution and danger statements. Each caution and danger statement that appears in the documentation has a number that you can use to locate the corresponding statement in your language in the *Safety Information Book*.
*   *Rack Installation Instructions*

    This printed publication contains instructions for installing your server in a rack.
*   *Hardware Maintenance Manual and Troubleshooting Guide*

    This publication is in PDF on the IBM *xSeries Documentation* CD. It contains information to help you solve problems yourself, and it contains information for service technicians.

Depending on your server model, additional publications might be included on the IBM *xSeries Documentation* CD.

Notices and statements used in this book

The caution and danger statements used in this book also appear in the multilingual *Safety Information* book provided on the *IBM xSeries Documentation* CD. Each caution and danger statement is numbered for easy reference to the corresponding statements in the safety book.

The following types of notices and statements are used in this book:

*   **Note:** These notices provide important tips, guidance, or advice.
*   **Important:** These notices provide information or advice that might help you avoid inconvenient or problem situations.

- **Attention:** These notices indicate possible damage to programs, devices, or data. An attention notice is placed just before the instruction or situation in which damage could occur.
- **Caution:** These statements indicate situations that can be potentially hazardous to you. A caution statement is placed just before the description of a potentially hazardous procedure step or situation.
- **Danger:** These statements indicate situations that can be potentially lethal or extremely hazardous to you. A danger statement is placed just before the description of a potentially lethal or extremely hazardous procedure step or situation.

Major components of the xSeries 305 Type 8673

The following illustration shows the locations of major components in your server.

Note: The illustrations in this document might differ slightly from your hardware.

Captive screws

Air baffle

Adapter-support bracket

Heat sink

Microprocessor

DIMM

SCSI adapter (some models)

Heat sink retaining clips

System board

CD-ROM drive

Fans

Diskette drive

Hard disk drive (some models)

Power supply
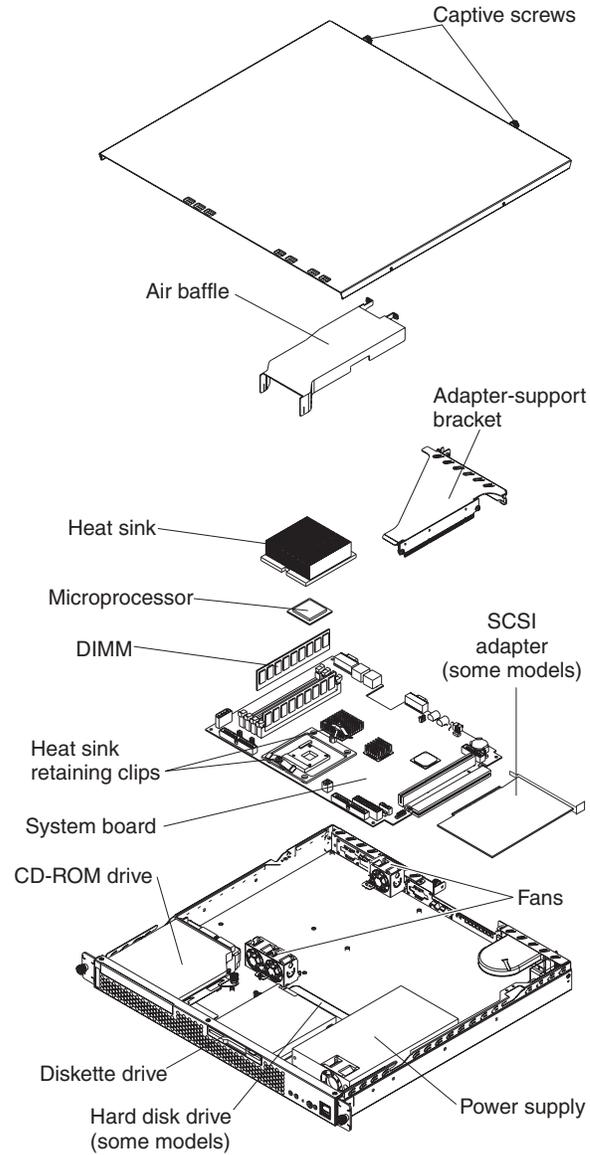
System-board illustrations

This section provides illustrations of the system-board and the riser-card option connectors, internal cables, external ports, switches, jumpers, and LEDs.

System-board and riser-card option connectors

The following illustration shows the location of the system-board connectors for user-installable options.
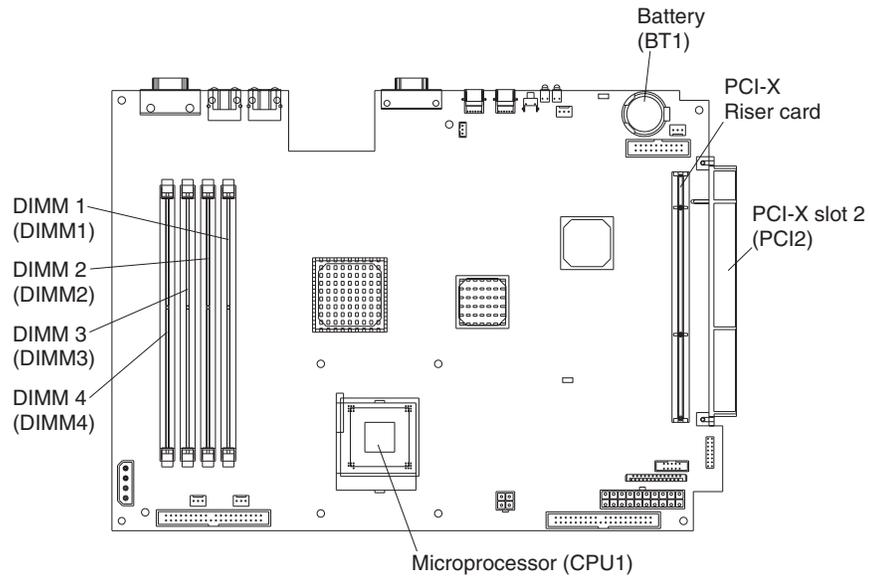
Note: Depending on the server model, the server might come with a SCSI adapter installed in PCI-X slot 2.

The following illustration shows the location of the PCI-X slot 1 connector on the riser card, which is attached to the adapter-support bracket.

System-board internal cable connectors

The following illustration identifies the internal connectors on the system board.

System fan 3
(SYSFAN3)   System fan 4
(SYSFAN4)

Remote
Supervisor
Adapter

Operator
information
panel

USB (CN6)

Diskette
drive signal (CN7)

Hard disk drive
power (JP5)

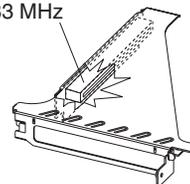System fan 2
(SYSFAN2)   Primary
IDE (CN3)   System fan 1
(SYSFAN1)   Secondary IDE (CN2)   Power
(12 V)
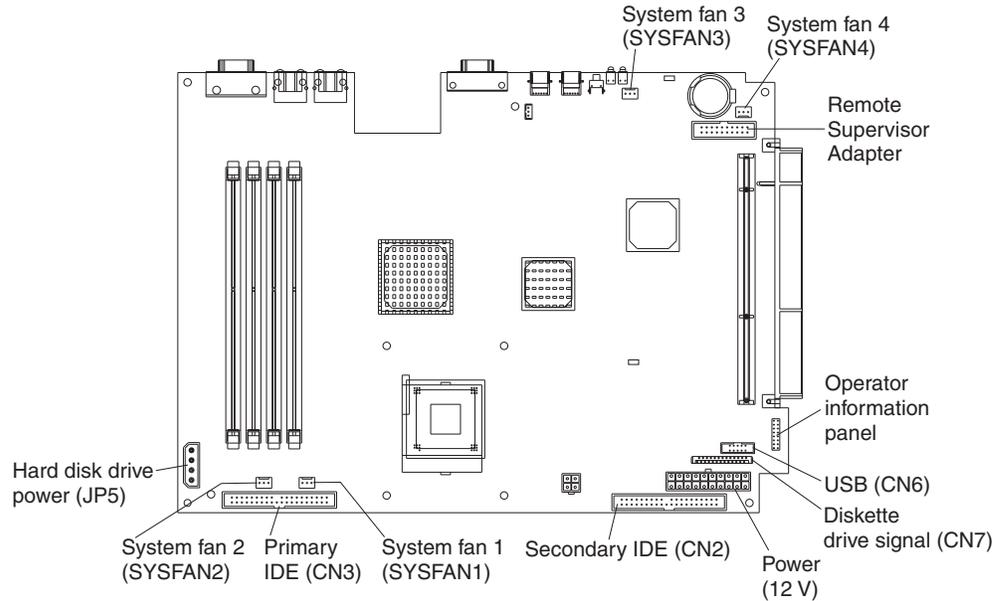
System-board external port connectors

The following illustration shows the location of the input/output external port connectors on the system board.

Note: The USB 1 and USB 2 ports are on the front of the server. For the location of the ports, see Chapter 3, "Input/output ports and connectors" on page 19.

Serial
(CN19)   Ethernet 2
(CN17)   Video
(CN20)   Mouse (JK2)

Ethernet 1
(CN18)   Keyboard (JK1)
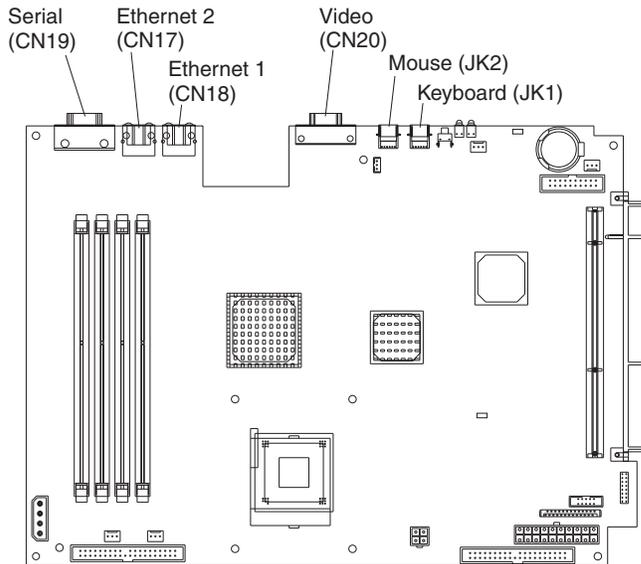
System-board switches and jumpers

The following illustration identifies the switches and jumpers on the system board.

NMI (SW1)
CMOS (JP3)

Boot block
recovery jumper (JP1)
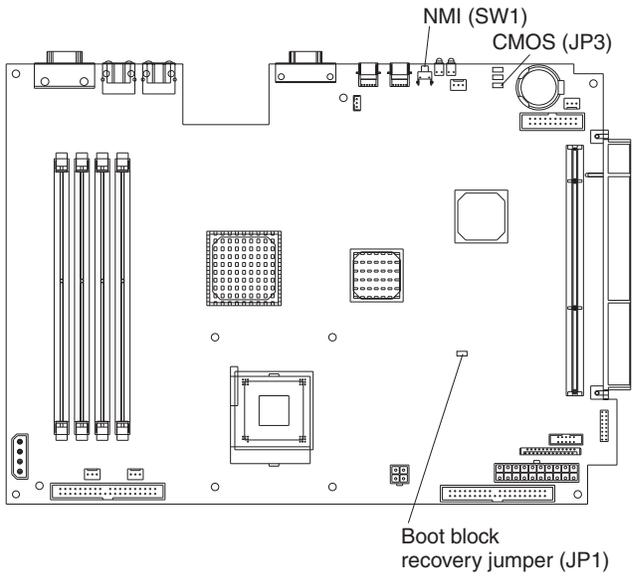
System-board LEDs

The following illustration shows the location of the LEDs on the system board.

Power (LED6)
System error (LED5)

Chapter 2. Installing options

This chapter provides detailed instructions for installing hardware options in your server.

Installation guidelines

Before you begin installing options in your server, read the following information:

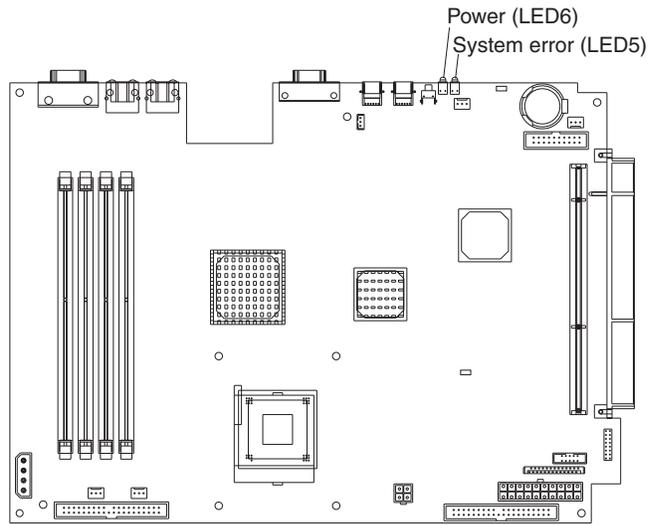- Read the safety information beginning on page v and the guidelines in "Handling static-sensitive devices". This information will help you work safely with your server and options.
- Make sure that you have an adequate number of properly grounded electrical outlets for your server, monitor, and other devices that you will connect to the server.
- Back up all important data before you make changes to disk drives.
- Have a small Phillips screwdriver available.
- For a list of supported options for your server, go to http://www.ibm.com/pc/compat/ on the World Wide Web.

System reliability guidelines

To help ensure proper system cooling and system reliability, make sure that:

- Each of the drive bays has a drive or a filler panel.
- Space is available around the server to allow the server cooling system to work properly. Refer to the documentation that comes with the rack.
- You have followed the cabling instructions that come with optional adapters.
- You have replaced a failed fan as soon as possible.

Handling static-sensitive devices

Attention: Static electricity can damage electronic devices, including your server. To avoid damage, keep static-sensitive devices in their static-protective packages until you are ready to install them.

To reduce the possibility of damage from electrostatic discharge, observe the following precautions:

- Limit your movement. Movement can cause static electricity to build up around you.
- Handle the device carefully, holding it by its edges or its frame.
- Do not touch solder joints, pins, or exposed circuitry.
- Do not leave the device where others can handle and damage it.
- While the device is still in its static-protective package, touch it to an unpainted metal part of the server for at least 2 seconds. This drains static electricity from the package and from your body.
- Remove the device from its package and install it directly into the server without setting down the device. If it is necessary to set down the device, place it back into its static-protective package. Do not place the device on your server cover or on a metal surface.
- Take additional care when handling devices during cold weather. Heating reduces indoor humidity and increases static electricity.

Removing the cover

Complete the following steps to remove the server cover:

1. Review the safety information beginning on page v and the "Installation guidelines" on page 7.

2. Turn off the server and all attached devices. Disconnect the power cord; then, disconnect all external cables.
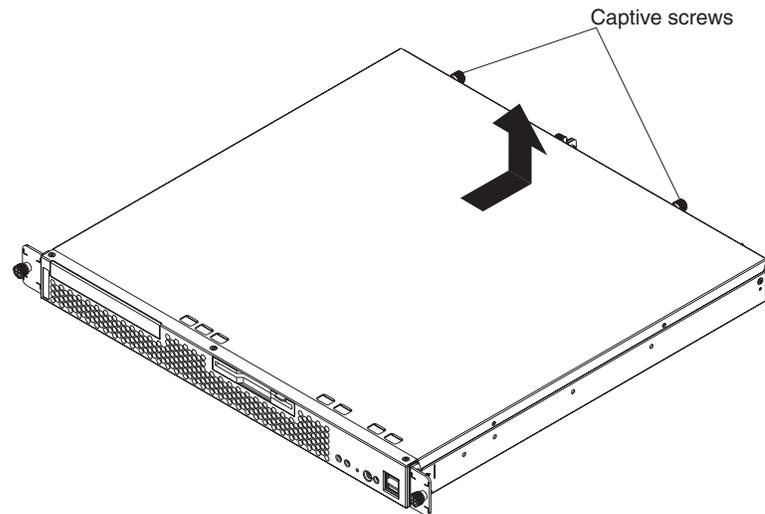
Captive screws

3. Loosen the two captive screws attached to the rear of the cover.

4. Slide the cover back; then, lift the cover off the server.

   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.

Working with adapters

This section provides information about the expansion slots on the system board, and the peripheral component interconnect-extended (PCI-X) adapters. Your server comes with two peripheral component interconnect-extended (PCI-X) adapter slots. PCI-X slot 1 is located on the riser card that is attached to the adapter-support bracket. PCI-X slot 2 is located on the system board. You must first remove the adapter-support bracket to access the PCI-X slot 1 connector.

Note: The illustrations in this document might differ slightly from your hardware.

The following illustration shows the location of the PCI-X expansion slot 1 located on the riser card that is attached to the adapter-support bracket.

PCI-X slot 1 (PCI1)
64-bit, 3.3 V, 66/100/133 MHz
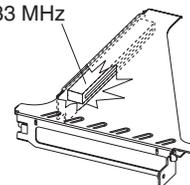
The following illustration shows the location of the PCI-X expansion slot 2 on the system board.

PCI-X slot 2 (PCI2)
64-bit, 3.3 V, 66/100/133 MHz

Note: When you install two 133 MHz adapters in the server, the maximum bus speed is 100 MHz.

Adapter considerations

Before you install adapters, review the following:
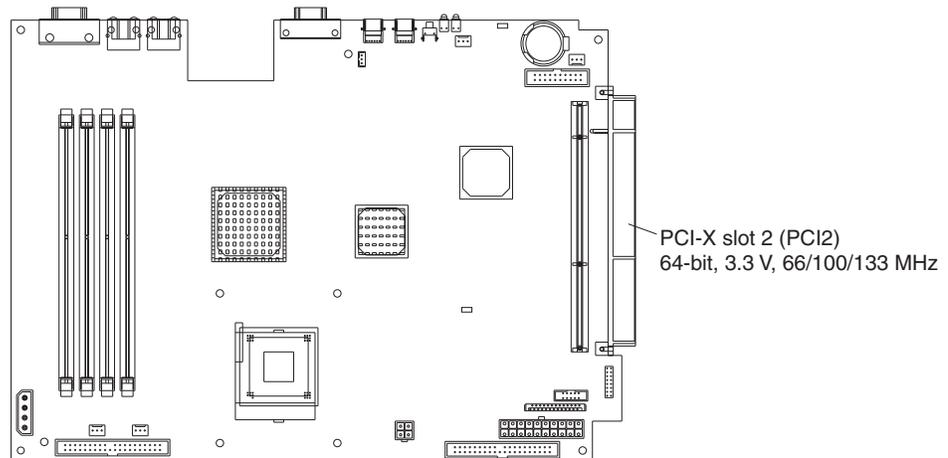
- Locate the documentation that comes with the adapter and follow those instructions in addition to the instructions in this chapter.
- If you need to change the switch settings or jumper settings on your adapter, follow the instructions that come with the adapter.
- There are two 64-bit, 66/100/133 MHz PCI-X slots.
- You can install one 64-bit one-half length full-height adapter in expansion slot 1. You can install one low profile adapter in expansion slot 2.
- Your server supports 3.3 V or universal adapters.
- Your server uses a rotational interrupt technique to configure PCI-X adapters. You can use this technique to install PCI-X adapters that currently do not support sharing of PCI-X interrupts.
- The system scans PCI-X slots to assign system resources. By default, the system starts (boots) the CD-ROM drive first and then the diskette drive. Then, the system scans PCI-X slot 2, PCI-X slot 1, and the integrated Ethernet.
- If the server is a SCSI model server, the server will have a SCSI adapter installed in PCI-X slot 2.

Note: Select **Start Options** from the Configuration/Setup Utility program main menu to change the boot precedence for your server.
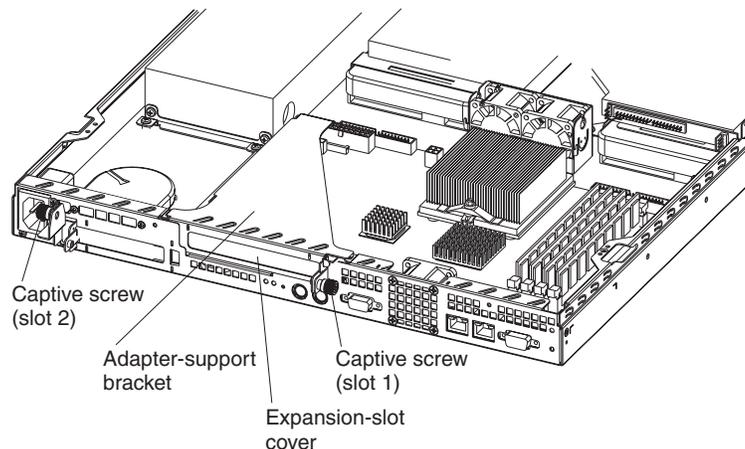
Installing an adapter

Complete the following steps to install an adapter:

Attention: When you handle static-sensitive devices, take precautions to avoid damage from static electricity. For details on handling these devices, see "Handling static-sensitive devices" on page 7.

1. Review the safety information beginning on page v, and the "Installation guidelines" on page 7.
2. Turn off the server and peripheral devices.
3. Disconnect the power cord; then, disconnect all external cables from the server.
4. Remove the server cover. See "Removing the cover" on page 8.
5. Determine which PCI-X expansion slot you will use for the adapter.

   Note: Check the instructions that come with the adapter for any requirements, restrictions, or cabling instructions. It might be easier for you to route cables before you install the adapter.

6. Loosen the adapter slot captive screw.
   a. If you are installing the adapter in PCI-X slot 1, loosen the captive screw that is near the video connector.

Captive screw (slot 2)

Adapter-support bracket

Captive screw (slot 1)

Expansion-slot cover

   b. If you are installing the adapter in PCI-X slot 2, loosen the captive screw that is near the power cord connector.
7. Remove the expansion-slot cover.
   Attention: A PCI expansion-slot cover must be installed on all vacant slots. This maintains the electronic emissions characteristics of the server and ensures proper cooling of server components.
   • If you are installing the adapter in PCI-X slot 1, lift the adapter-support bracket from the server; then, remove the expansion-slot cover from the bracket.
   • If you are installing the adapter in PCI-X slot 2, lift the captive-screw bracket; then, remove the expansion-slot cover.
8. Touch the static-protective package containing the adapter to any unpainted metal surface on the server. Then, remove the adapter from the static-protective package. Avoid touching the components and gold-edge connectors on the adapter.

9. Place the adapter, component-side up, on a flat, static-protective surface and set any jumpers or switches as described by the adapter manufacturer, if necessary.

   Attention: When you install an adapter in the server, be sure that it is completely and correctly seated in the PCI expansion slot before you turn on the server. Incomplete insertion might cause damage to the system board or the adapter.
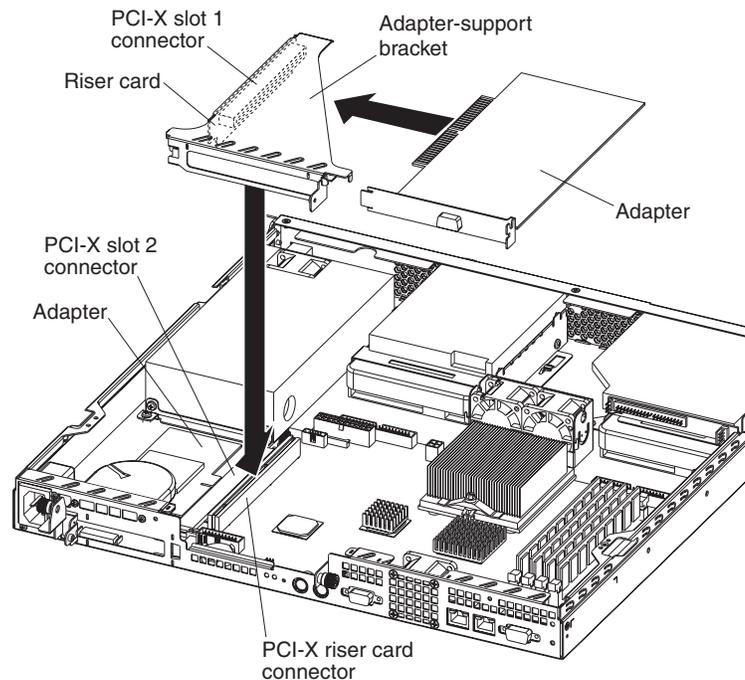
10. To install the adapter, carefully grasp the adapter by its top edge or upper corners, and align it with the PCI-X expansion slot; then, press the adapter *firmly* into the expansion slot.

    Note: When you install the adapter in PCI-X slot 2, you must slide the adapter underneath the system fan to properly align the adapter with the expansion-slot connector. Do not remove the system fan from the server.

11. If you installed an adapter in PCI-X slot 2, continue with the next step. If you removed the adapter-support bracket, reinstall it now. Make sure the riser card attached to the bracket is fully seated into the riser card connector on the system board.

12. Tighten the captive screw on the rear of the server.

13. Connect any required cables to the adapter. If you installed a Remote Supervisor Adapter, connect one end of the signal cable to the adapter and connect the other end of the signal cable to the Remote Supervisor connector (CN12) located on the system board. For the location of the Remote Supervisor Adapter connector, see "System-board internal cable connectors" on page 5.

14. If you have other options to install, do so now; otherwise, go to "Completing the installation" on page 14.

Hard disk drives

The server comes with one integrated drive electronics (IDE) CD-ROM drive, one 1.44 MB diskette drive, and a hard disk drive (IDE or SCSI, depending on the server model).

Installing or replacing a hard disk drive

Complete the following steps to install or replace a hard disk drive:

Attention: When you handle static-sensitive devices, take precautions to avoid damage from static electricity. For details on handling these devices, see "Handling static-sensitive devices" on page 7.

1. Inspect the new drive for any signs of damage.
2. Review the safety information beginning on page v and the "Installation guidelines" on page 7.
3. Check the instructions that come with the drive for more information about installing your drive.

   Notes:
   a. If you are installing an IDE hard disk drive, you must set the drive to primary (master) or secondary (subordinate), depending on the configuration of your server. See the documentation that comes with the drive for instructions.
   b. If you are installing a SCSI hard disk drive, refer to the documentation that comes with your drive before installing it.

4. Turn off the server and peripheral devices. Disconnect the power cord; then, disconnect all external cables.
5. Remove the server cover. See "Removing the cover" on page 8.
6. Loosen the captive screw on the side of the drive cage.

   Note: The illustrations in this document might differ slightly from your hardware.
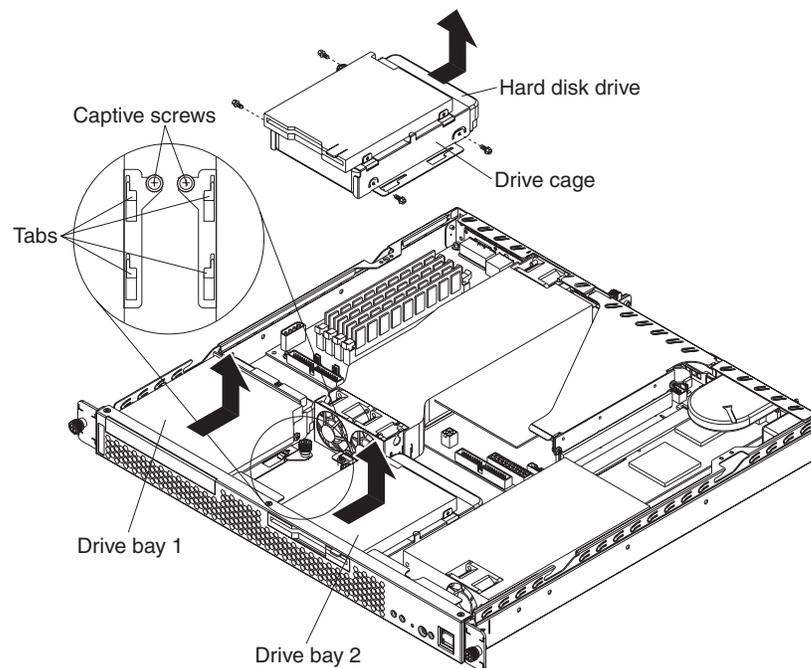
7. Slide the drive cage away from the front of the server until the tabs on the chassis are in the unlocked position. Then, lift the drive cage out of the server.

8. Install the new hard disk drive:
   a. Slide the hard disk drive into the bay in the drive cage.
   b. Secure the drive to the drive cage using the screws that came with the option.
   c. Slide the drive cage back into the server and tighten the captive screw.
   d. Connect the signal cable and power cable to the rear of the drive. Ensure that the cables do not obstruct the fan behind the drive bay. See "System-board internal cable connectors" on page 5 for more information about the location of the cable connectors.
9. If you have other options to install, do so now; otherwise, go to "Completing the installation" on page 14.

Installing DIMMs

Adding memory to your server is an easy way to make programs run faster. You can increase the amount of memory in your server by installing options that are called DIMMs. Your server uses a noninterleaved memory configuration.

Memory considerations:

- Your server comes with a DIMM installed on the system board in DIMM connector 4. When installing additional memory modules, install the second memory module in DIMM connector 3, the third in DIMM connector 2 and the fourth in DIMM connector 1. The DIMMs can be different sizes. (See "System-board illustrations" on page 4 for memory connector locations.)
- Your xSeries 305 server supports 256 MB, 512 MB, and 1 GB DIMMS. Your server supports a maximum of 4 GB of system memory. See the ServerProven® list at http://www.ibm.com/pc/compat for a list of memory modules for use with your server.
- The installing or removing of DIMMs changes the configuration information in the server. Therefore, you must change and save the new configuration information by using the Configuration/Setup Utility program. When you restart the server, the system displays a message indicating that the memory configuration has changed. Start the Configuration/Setup Utility program and select **Save Settings**. See the *User's Guide* on the *IBM xSeries Documentation* CD for more information about using the Configuration/Setup Utility program.
- The illustrations in this document might differ slightly from your hardware.

Complete the following steps to install a DIMM:

Attention: When you handle static-sensitive devices, take precautions to avoid damage from static electricity. For details on handling these devices, see "Handling static-sensitive devices" on page 7.

1. Review the safety information beginning on page v and the "Installation guidelines" on page 7.
2. Turn off the server and peripheral devices. Disconnect the power cord; then, disconnect all external cables. Remove the cover, see "Removing the cover" on page 8 for details.
3. Touch the static-protective package containing the DIMM to any unpainted metal surface on the server. Then, remove the DIMM from the package.

4. Install the DIMM:

   a. Open the retaining clip on each end of the DIMM connector. Turn the DIMM so that the pins align correctly with the connector.

DIMM 3

DIMM 4
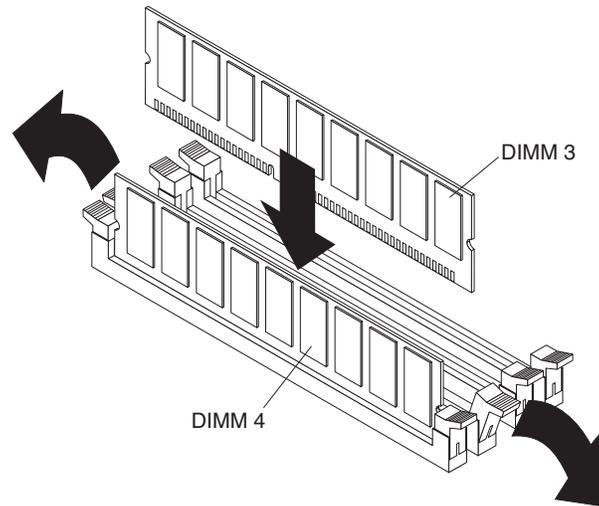
   Attention: To avoid breaking the retaining clips or damaging the DIMM connectors, open, and close the clips gently.

   b. Insert the DIMM into the connector by aligning the DIMM edges with the slots at each end of the DIMM connector. Firmly press the DIMM straight down into the connector by applying pressure on both ends of the DIMM simultaneously. Be sure that the retaining clips snap into the locked position when the DIMM is firmly seated in the connector.

   c. If a gap exists between the DIMM and the retaining clips, the DIMM has not been properly installed. In this case, open the retaining clips and remove the DIMM; then, reinsert the DIMM.

5. If you have other options to install, do so now; otherwise, go to Completing the Installation.

Completing the installation

To complete your installation, you must reinstall the server cover, connect all the cables, for certain options, run the Configuration/Setup Utility program. Follow the instructions in this section.

Attention: To maintain proper cooling and airflow, install the server cover before turning on the server.

Installing the cover

Complete the following steps to install the server cover:

1. Install the cover by placing it into position and sliding it forward.

Attention: Before sliding the cover forward, make sure that the cover will engage the ledge at the front of the server properly.
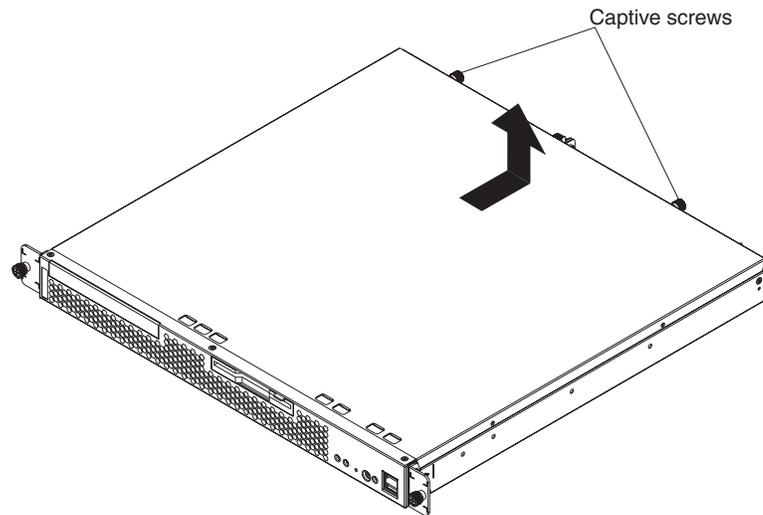
Captive screws

2. Tighten the captive screws to secure the cover as shown.
3. Install the server in the rack. See the *Rack installation instructions* included with your server documentation for instructions.
4. Connect all external cables and then, the power cord to the server. Plug the power cord into a properly grounded electrical outlet.

Note: Your server has one keyboard connector on the back of the server. Use this connector to connect the server to a keyboard or optional console switch. You can also connect a USB keyboard to the server using one of the USB ports. After installing a USB keyboard, you might need to use the Configuration/Setup utility program to enable keyboardless operation and prevent the POST error message 301 from being displayed during startup. For detailed information about this option and how to connect it to your server, refer to the documentation that comes with the option.

Updating your server configuration

When you start your server for the first time after you add or remove an internal option or an external SCSI device, you might see a message telling you that the configuration has changed. The Configuration/Setup Utility program automatically saves the new configuration information. See the *User's Guide* on the *IBM xSeries Documentation* CD for information about the Configuration/Setup Utility program.

Some options have device drivers that you need to install. See the documentation that comes with your option for information about installing any required device drivers.

If your server has a RAID adapter installed and you have installed or removed a hard disk drive, see the documentation that comes with your RAID adapter for information about reconfiguring your disk arrays.

Replacing the battery

When replacing the battery, you must replace it with a lithium battery of the same type from the same manufacturer. To avoid possible danger, read and follow the safety statement below.

To order replacement batteries, call 1-800-772-2227 within the United States, and 1-800-465-7999 or 1-800-465-6666 within Canada. Outside the U.S. and Canada, call your IBM reseller or IBM marketing representative.

Note: After you replace the battery, you must reconfigure your system and reset the system date and time.

Statement 2:

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

Do not:
- **Throw or immerse into water**
- **Heat to more than 100°C (212°F)**
- **Repair or disassemble**

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

Complete the following steps to replace the battery.
1. Read the safety information beginning on page v, and follow any special handling and installation instructions supplied with the replacement battery.
2. Turn off the server and peripheral devices. Disconnect the power cord and then, all external cables.
3. Remove the cover. See "Removing the cover" on page 8.
4. Remove the battery:
   a. Press the battery release tab to release the battery from the socket.
   b. Lift the battery out of the socket.
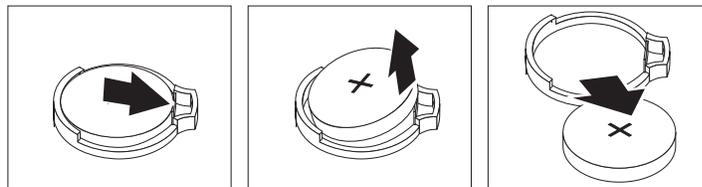
5. Insert the new battery:
   a. Tilt the battery so that you can insert it into the socket.
   b. Press down on the battery after you insert it into the socket.
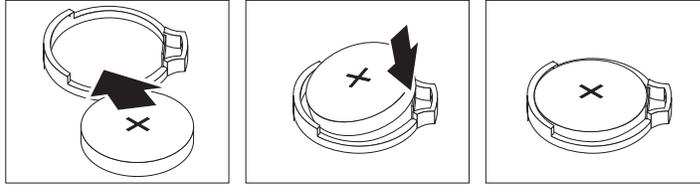
6. Reinstall the server cover, see "Installing the cover" on page 14.

7. Reconnect the external cables and power cords; then, turn on the peripheral devices and the server.

8. Start the Configuration/Setup Utility program and set configuration parameters.

   • Set the system date and time and the power-on password.

   • Reconfigure your server.

Chapter 3. Input/output ports and connectors

Your server has the following I/O connectors on the front and rear of the server:

- Serial connector
- Universal Serial Bus (USB) connectors
- Keyboard connector
- Video connector
- Auxiliary-device (pointing device) connector
- Ethernet connectors
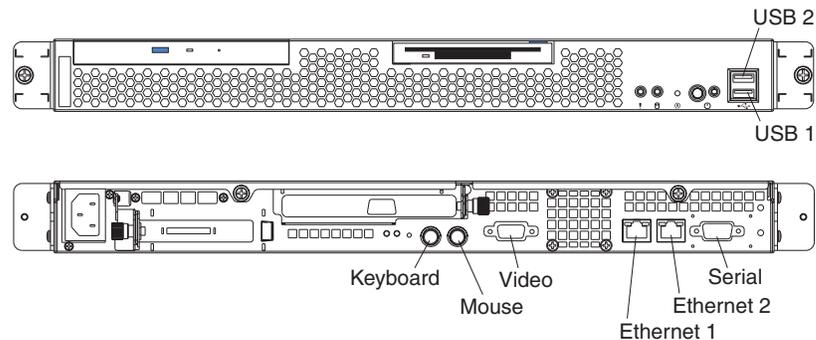
Serial port

Your server has one standard serial port. Some application programs require specific ports, and some modems function properly only at certain serial port addresses. Use the Configuration/Setup Utility program to change the port address assignments and prevent conflicts.

Viewing or changing the serial-port assignments

Complete the following steps to view or change the serial-port assignments:

1. Restart the server and watch the monitor screen.
2. When the message `Press F1 for Configuration/Setup` appears, press F1.
3. From the main menu, select **Devices and I/O Ports**; then, press Enter.

   Note: The Devices and I/O Ports choice appears only on the full configuration menu. If you set two levels of passwords, you must enter the administrator password to access the full configuration menu.

4. Select the serial port; then, use the arrow keys to advance through the settings available.
5. Select **Save Settings**; then, select **Exit Setup** to exit from the Configuration/Setup Utility main menu.

Serial-port connector

Your server has one serial-port connector located on the rear of the server.

The following illustration shows the pin-number assignments for the 9-pin, male D-shell serial-port connector on the rear of your server. These pin-number

assignments conform to the industry standard.
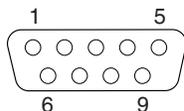
Universal Serial Bus ports

Your server has two Universal Serial Bus (USB) ports, which configure automatically. USB is an emerging serial interface standard for telephony and multimedia devices. It uses Plug and Play technology to determine the type of device attached to the connector.

USB cables and hubs

You need a 4-pin cable to connect devices to USB 1 or USB 2. If you plan to attach more than two USB devices, you must use a hub to connect the devices. The hub provides multiple connectors for attaching additional external USB devices.

USB technology provides up to 12 megabits-per-second (Mbps) speed with a maximum of 127 external devices and a maximum signal distance of five meters (16 ft). per segment.

USB-port connectors

Each USB port has an external connector on the front of the server for attaching USB-compatible devices.

The following illustration shows the pin-number assignments for the USB-port connectors on the front of your server.
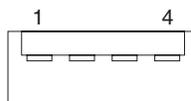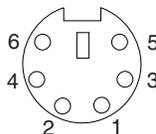

Keyboard connector

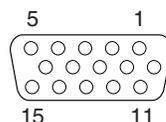There is one keyboard connector on the rear of the server.

Note: If you attach a standard keyboard to the keyboard connector, the USB ports, and devices will be disabled during the power-on self-test (POST).

The following illustration shows the pin-number assignments for the keyboard connector on the end of the cable.

Video connector

The following illustration shows the pin-number assignments for the 15-pin analog video connector on the rear of the server.

Auxiliary-device (pointing device) connector

There is one auxiliary-device connector that supports a mouse or other pointing device located on the rear of the server just under the keyboard connector.

The following illustration shows the pin-number assignments for the auxiliary-device connector on the end of the cable.
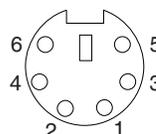
Gigabit Ethernet port

Your server comes with two integrated Gigabit Ethernet controllers. These controllers provide an interface for connecting to 10-Mbps, 100-Mbps, or 1000-Mbps networks and provide full-duplex (FDX) capability, which enables simultaneous transmission and reception of data on the Ethernet local area network (LAN).

To access the Ethernet port, connect a Category 3, 4, or 5 unshielded twisted-pair (UTP) cable to the RJ-45 connector on the rear of your server.

Note: The 100BASE-TX/1000BASE-T Fast Ethernet standard requires that the cabling in the network be Category 5 or higher.

The Ethernet (RJ-45) connector has two LEDs. The Ethernet link LED is on the right. When this green LED is on, there is an active connection on the Ethernet port. The Ethernet activity LED is on the left. When this green LED is on, there is activity between the server and the network.

Configuring the Gigabit Ethernet controller

The Ethernet controllers are integrated on the system board. These controllers provide an interface for connecting to 10-Mbps, 100-Mbps, or 1000-Mbps networks and provides full duplex (FDX) capability, which enables simultaneous transmission and reception of data on the Ethernet local area network (LAN). You do not need to set any jumpers or configure the controllers for your operating system before you use the Ethernet controllers. However, you must install a device driver to enable your operating system to address the Ethernet controllers. The device drivers are provided on the ServerGuide™ *Setup and Installation* CD.

When you connect your server to the network, the Ethernet controllers automatically detect the data-transfer rate (10 Mbps, 100 Mbps, or 1000 Mbps) on the network and then set the controllers to operate at the appropriate rate. In addition, if the Ethernet ports that your server is connected to support auto-negotiation, the Gigabit

Ethernet controllers will set the appropriate duplex state. That is, the Ethernet controllers will adjust to the network data rate, whether the data rate is standard Ethernet (10BASE-T), Fast Ethernet (100BASE-TX/1000BASE-T), half duplex (HDX), or full duplex (FDX). The controllers support half-duplex (HDX) and full-duplex (FDX) modes at both speeds.

For information about configuring your Ethernet controllers, see the *Broadcom NetXtreme Gigabit Ethernet Software CD* that comes with your server. For updated information about configuring your Ethernet controllers, go to the IBM Support Web site at http://www.ibm.com/pc/support and navigate to the area for your specific server type. From this area, you can download documentation, the most current device drivers for your server, and software that supports advanced networking functions. After downloading, run the downloaded program *launch.exe*.

High-performance Ethernet modes

Your Ethernet controllers support optional modes, such as teaming, priority packets, load balancing, fault tolerance, and virtual LANs, which provide higher performance, security, and throughput for your server. These modes apply to the integrated Ethernet controller and to the controllers on supported Ethernet adapters.

Ethernet port connector

The following illustration shows the pin-number assignments for the RJ-45 port. These assignments apply to the 10BASE-T, 100BASE-TX, and 1000BASE-T devices.

Activity LED (green)   Link LED (green)

8   1
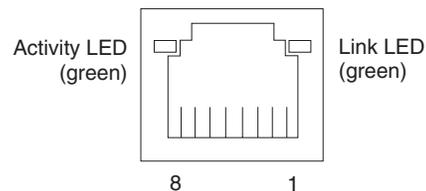
Cabling the server

Notes:

1. You must turn off the server before connecting any cables to or disconnecting any cables from the server.
2. See the documentation that comes with your options for additional cabling instructions. It might be easier for you to route cables before you install certain options.

Appendix. Notices

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When referring to processor storage, real and virtual storage, or channel volume, KB stands for approximately 1000 bytes, MB stands for approximately 1 000 000 bytes, and GB stands for approximately 1 000 000 000 bytes.

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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.

Industry Canada Class A emission compliance statement

This Class A digital apparatus complies with Canadian ICES-003.

Avis de conformité à la réglementation d'Industrie Canada

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Australia and New Zealand Class A statement

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.

United Kingdom telecommunications safety requirement

Notice to Customers

This apparatus is approved under approval number NS/G/1234/J/100003 for indirect connection to public telecommunication systems in the United Kingdom.

European Union EMC Directive conformance statement

This product is in conformity with the protection requirements of EU Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a nonrecommended modification of the product, including the fitting of non-IBM option cards.

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.

Taiwanese Class A warning statement

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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。

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For your safety, IBM provides a power cord with a grounded attachment plug to use with this IBM product. To avoid electrical shock, always use the power cord and plug with a properly grounded outlet.

IBM power cords used in the United States and Canada are listed by Underwriter's Laboratories (UL) and certified by the Canadian Standards Association (CSA).

For units intended to be operated at 115 volts: Use a UL-listed and CSA-certified cord set consisting of a minimum 18 AWG, Type SVT or SJT, three-conductor cord, a maximum of 15 feet in length and a parallel blade, grounding-type attachment plug rated 15 amperes, 125 volts.

For units intended to be operated at 230 volts (U.S. use): Use a UL-listed and CSA-certified cord set consisting of a minimum 18 AWG, Type SVT or SJT, three-conductor cord, a maximum of 15 feet in length and a tandem blade, grounding-type attachment plug rated 15 amperes, 250 volts.

For units intended to be operated at 230 volts (outside the U.S.): Use a cord set with a grounding-type attachment plug. The cord set should have the appropriate safety approvals for the country in which the equipment will be installed.

IBM power cords for a specific country or region are usually available only in that country or region.

IBM power cord part number	Used in these countries and regions
13F9940	Argentina, Australia, China (PRC), New Zealand, Papua New Guinea, Paraguay, Uruguay, Western Samoa
13F9979	Afghanistan, Algeria, Andorra, Angola, Austria, Belgium, Benin, Bulgaria, Burkina Faso, Burundi, Cameroon, Central African Rep., Chad, China (Macau S.A.R.), Czech Republic, Egypt, Finland, France, French Guiana, Germany, Greece, Guinea, Hungary, Iceland, Indonesia, Iran, Ivory Coast, Jordan, Lebanon, Luxembourg, Malagasy, Mali, Martinique, Mauritania, Mauritius, Monaco, Morocco, Mozambique, Netherlands, New Caledonia, Niger, Norway, Poland, Portugal, Romania, Senegal, Slovakia, Spain, Sudan, Sweden, Syria, Togo, Tunisia, Turkey, former USSR, Vietnam, former Yugoslavia, Zaire, Zimbabwe
13F9997	Denmark
14F0015	Bangladesh, Burma, Pakistan, South Africa, Sri Lanka

IBM power cord part number	Used in these countries and regions
14F0033	Antigua, Bahrain, Brunei, Channel Islands, China (Hong Kong S.A.R.), Cyprus, Dubai, Fiji, Ghana, India, Iraq, Ireland, Kenya, Kuwait, Malawi, Malaysia, Malta, Nepal, Nigeria, Polynesia, Qatar, Sierra Leone, Singapore, Tanzania, Uganda, United Kingdom, Yemen, Zambia
14F0051	Liechtenstein, Switzerland
14F0069	Chile, Ethiopia, Italy, Libya, Somalia
14F0087	Israel
1838574	Thailand
6952301	Bahamas, Barbados, Bermuda, Bolivia, Brazil, Canada, Cayman Islands, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Japan, Korea (South), Liberia, Mexico, Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Saudi Arabia, Suriname, Taiwan, Trinidad (West Indies), United States of America, Venezuela

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