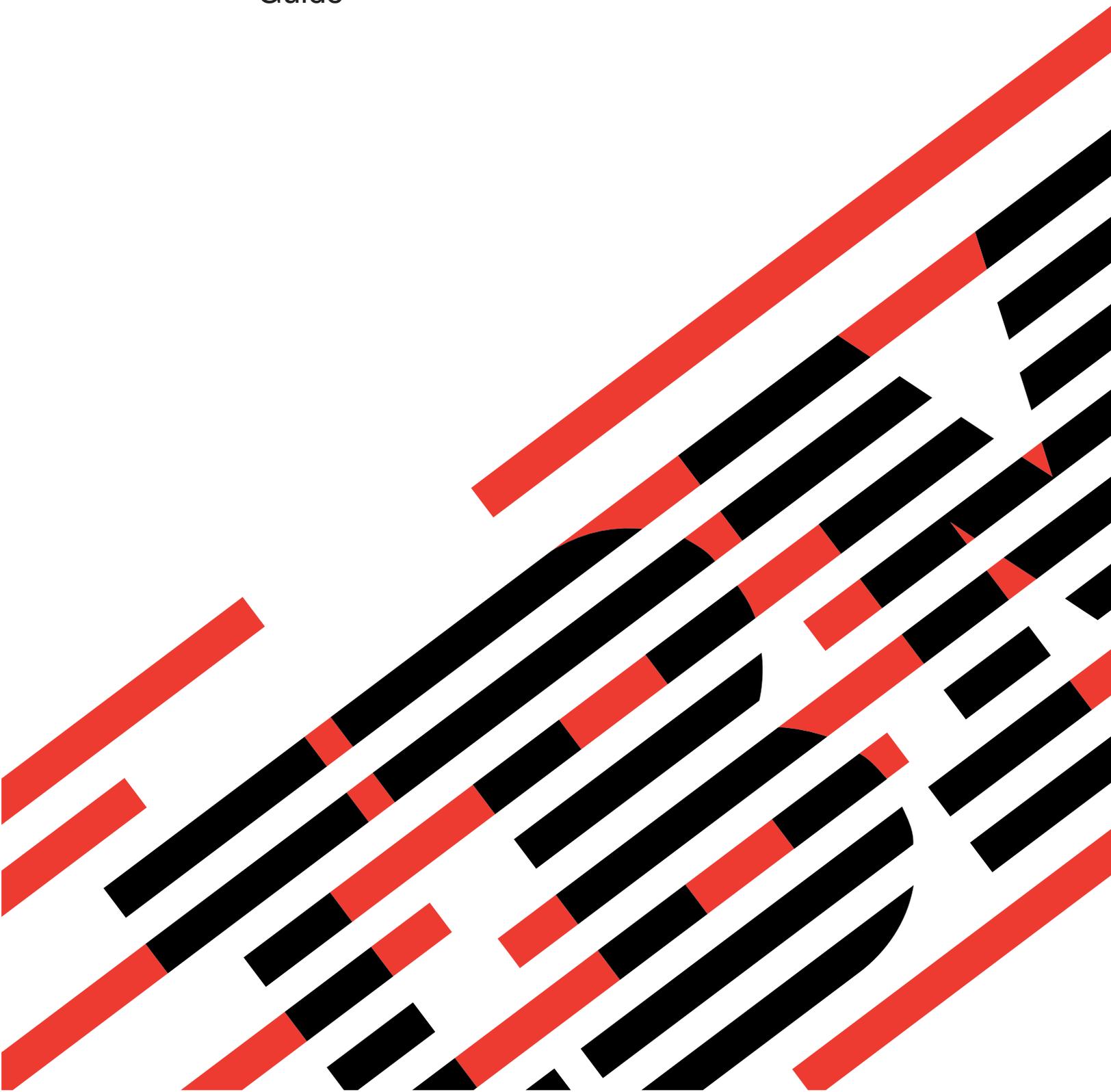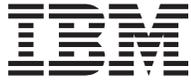# IBM

@server

IBM xSeries 205
Type 8480

Hardware Maintenance Manual and Troubleshooting
Guide

IBM

@server

IBM xSeries 205
Type 8480

Hardware Maintenance Manual and Troubleshooting
Guide

IBM

> **Note**
>
> Before using this information and the product it supports, read Appendix C, "Notices," on page 155.

About this manual

This manual contains diagnostic information, a Symptom-to-FRU index, service information, error codes, error messages, and configuration information for the IBM® @server™ xSeries® 205.

Important: The field replaceable unit (FRU) procedures are intended for trained servicers who are familiar with IBM xSeries products. See the parts listing in "System" on page 112 to determine if the component being replaced is a customer replaceable unit (CRU) or a field replaceable unit (FRU).

Important safety information

Be sure to read all caution and danger statements in this book before performing any of the instructions.

Leia todas as instruções de cuidado e perigo antes de executar qualquer operação.

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

安裝本產品之前，請先閱讀「安全資訊」。

Prenez connaissance de toutes les consignes de type Attention et

Danger avant de procéder aux opérations décrites par les instructions.

Lesen Sie alle Sicherheitshinweise, bevor Sie eine Anweisung ausführen.

Accertarsi di leggere tutti gli avvisi di attenzione e di pericolo prima di effettuare qualsiasi operazione.

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.

Lea atentamente todas las declaraciones de precaución y peligro ante de llevar a cabo cualquier operación.

WARNING: Handling the cord on this product or cords associated with accessories sold with this product, will expose you to lead, a chemical known to the State of California to cause cancer, and birth defects or other reproductive harm. *Wash hands after handling.*

ADVERTENCIA: El contacto con el cable de este producto o con cables de accesorios que se venden junto con este producto, pueden exponerle al plomo, un elemento químico que en el estado de California de los Estados Unidos está considerado como un causante de cancer y de defectos congénitos, además de otros riesgos reproductivos. *Lávese las manos después de usar el producto.*

Online support

You can download the most current diagnostic, BIOS flash, and device driver files from http://www.ibm.com/pc/support.

Contents

Chapter 1. General information

Your IBM @server xSeries 205 Type 8480 server is a high-performance server that can be upgraded to a symmetric multiprocessing (SMP) server through a microprocessor upgrade. It is ideally suited for networking environments that require superior microprocessor performance, efficient memory management, flexibility, and reliable data storage.

The xSeries 205 server contains several IBM X-Architecture™ technologies, which help increase server performance and reliability.

Your server comes with a limited warranty. If you have access to the World Wide Web, you can obtain up-to-date information about your server model and other IBM server products at http://www.ibm.com/pc/us/eserver/xseries/.

Your server serial number and model number are located on labels on the bottom of the server and on the front below the bezel. You will need these numbers when you register your server with IBM. The information label containing the serial number, machine type, model number, and agency marks for your server is located on the bottom of the server.

Related publications

This *Hardware Maintenance Manual and Troubleshooting Guide* contains information to help you solve the problem yourself or to provide helpful information to a service technician.

In addition to this *Hardware Maintenance Manual and Troubleshooting Guide*, the following xSeries 205 Type 8480 documentation is provided with your server:

- *Installation Guide*
  This printed publication contains setup and installation instructions.
- *Rack Installation Instructions*
  This printed publication contains the instructions to install your server in a rack.
- *Safety Book*
  This multilingual publication is provided in Portable Document Format (PDF) on the IBM *xSeries Documentation* CD. It contains translated versions of the caution and danger statements that appear in the documentation for your server. Each caution and danger statement has an assigned number, which you can use to locate the corresponding statement in your native language.
- *User's Guide*
  This publication is provided in PDF on the IBM *xSeries Documentation* CD. It contains general information about your server, including information about features, how to configure your server, how to use the *ServerGuide*™ *Setup and Installation* CD, and how to get help.

- *Option Installation Guide*
  This publication is provided in PDF on the IBM *xSeries Documentation* CD. It contains instructions to install, remove, and connect optional devices supported by your server.

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

Notices and statements 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.

Features and specifications

The following table provides a summary of the features and specifications for your server.

Microprocessor: Supports one microprocessor — Intel™ Pentium® 4 with 128 KB, 256 KB, or 512 KB Level-2 cache and 400 MHz or 533 MHz front side bus (FSB) **Memory:**
- Minimum: 128 MB
- Maximum: 2.0 GB
- Type: PC2100 266 MHz double-density RAM (DDR) DIMMs
- Slots: Two dual inline

Drives: (depending on your model)
- Diskette: 1.44 MB
- Hard disk drive: IDE or SCSI
- One of the following:
  – CD-ROM: IDE
  – DVD-ROM: IDE
  – CD-RW: IDE

Expansion bays: (depending on your model)
- Two 5.25-in. bays (one CD-ROM drive installed)
- Two 3.5-in. bays (one diskette drive installed)
- Three 3.5-in. hard disk drive bays: hot-swap drive bays (some models) or non-hot-swap drive bays with a hard disk drive installed (some models)

PCI expansion slots:
- Three 33 MHz/32-bit on the system board (some models come with a SCSI adapter installed)
- Two 33 MHz/32-bit on the PCI extender board

Video controller: ATI Rage XL video controller with 16 MB SDRAM video memory on the PCI extender card

Power supply: One 330 watt (90-240 V ac) power supply or one 340 watt (90-240 V ac) power supply

Size and weight:
- Height: 445 mm (17.5 in.)
- Depth: 498 mm (19.6 in.)
- Width: 165 mm (6.5 in.)
- Weight: approximately 19.5 kg (43 lb) when fully configured or 15.9 kg (35 lb) minimum

Integrated functions:
- Broadcom 5702 10/100/1000 Ethernet controller on the system board with RJ-45 Ethernet port
- Two serial ports
- One parallel port
- Two USB ports
- Keyboard port
- Mouse port
- Audio ports
  – Line out
  – Line in
  – Mic
- Dual-channel bus mastering IDE controller
- Support for IBM Remote Supervisor Adapter

Acoustical noise emissions:
- Sound power, idling: 5.1 bel maximum
- Sound power, operating: 5.3 bel maximum

Environment:
- Air temperature:
  – Server on: 10° to 35°C (50.0° to 95.0°F). Altitude: 0 to 2133 m (6998.0.7 ft)
  – Server off: 10° to 43°C (50.0° to 109.4°F). Maximum altitude: 2133 m (6998.0 ft)
- Humidity:
  – Computer on: 8% to 80%
  – Computer off: 8% to 80%

Heat output: Approximate heat output in British thermal units (Btu) per hour
- Minimum configuration: 341 Btu (100 watts)
- Maximum configuration: 1604 Btu (470 watts)

Electrical input:
- Sine-wave input (50-60 Hz) required
- Input voltage low range:
  – Minimum: 90 V ac
  – Maximum: 137 V ac
- Input voltage high range:
  – Minimum: 180 V ac
  – Maximum: 265 V ac
- Input kilovolt-amperes (kVA) approximately:
  – Minimum: 0.095 kVA
  – Maximum: 0.470 kVA

Notes:

1. Power consumption and heat output vary depending on the number and type of optional features installed and the power-management optional features in use.

2. These levels were measured in controlled acoustical environments according to the procedures specified by the American National Standards Institute (ANSI) S12.10 and ISO 7779 and are reported in accordance with ISO 9296. Actual sound-pressure levels in a given location might exceed the average values stated because of room reflections and other nearby noise sources. The declared sound-power levels indicate an upper limit, below which a large number of computers will operate.

Server controls, LEDs, and connectors

This section describes the controls, light-emitting diodes (LEDs), and connectors on your server.

Server controls and LEDs

The following illustration shows the controls and LEDs on the server.

Note: The front bezel door is not shown so that the drive bays are visible.

Front View:
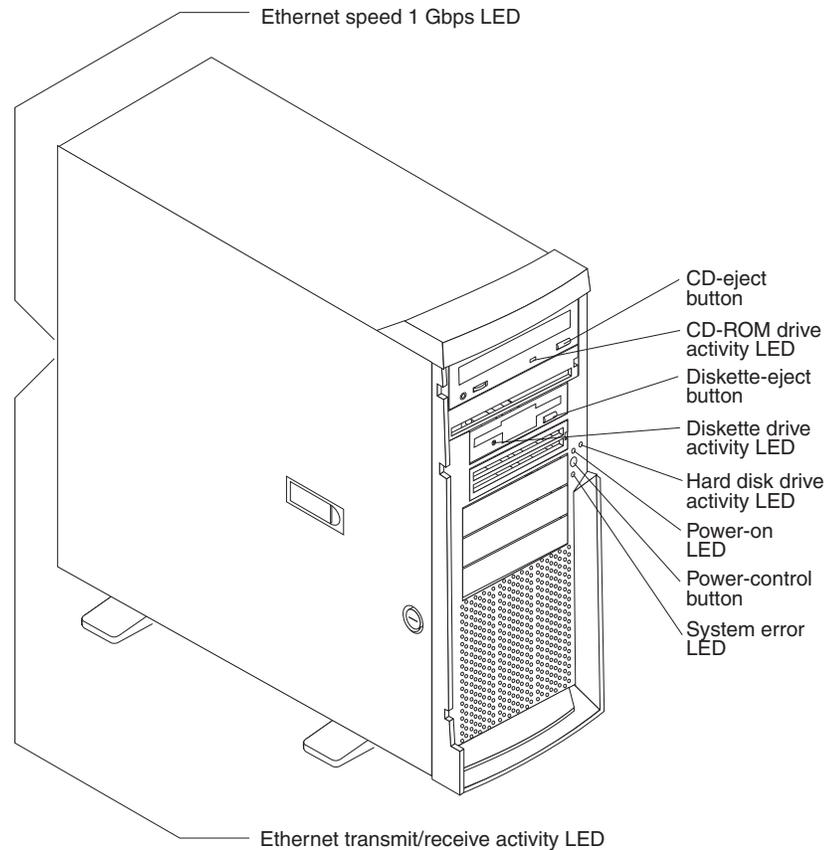
Ethernet speed 1 Gbps LED: When this LED on the Ethernet connector is lit, it indicates that the Ethernet network speed is 1 Gbps. When this LED is off, it indicates that the Ethernet network speed is 10 Mbps or 100 Mbps.

CD-eject button: Press this button to release a CD from the CD-ROM drive.

CD-ROM drive activity LED: When this LED is lit, it indicates that the CD-ROM drive is in use.

Diskette-eject button: Press this button to release a diskette from the diskette drive.

Diskette drive activity LED: When this LED is lit, it indicates that the diskette drive is in use.

Hard disk drive activity LED: When this LED is flashing, it indicates that the hard disk drive is in use.

Power-on LED: When this LED is lit, it indicates that the server is turned on.

Power-control button: Press this button to turn the server on and off manually.

Ethernet transmit/receive activity LED: When this LED on the Ethernet connector is lit, it indicates that there is activity between the server and the network.

Server connectors

The following illustration shows the connectors on the rear of the server.

Rear View:
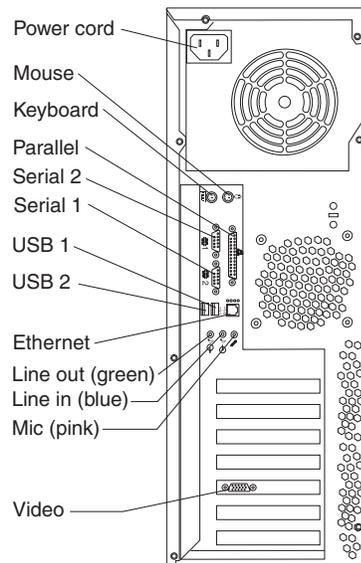
Power-cord connector: Connect the power cord to this connector.

Mouse connector: Connect a mouse or other PS/2® device to this connector.

Keyboard connector: Connect a PS/2 keyboard to this connector.

Parallel connector: Connect a parallel device to this connector.

Serial 2 connector: Connect a 9-pin serial device to this connector.

Serial 1 connector: Connect a 9-pin serial device to this connector

USB 1 connector: Connect a USB device to this connector.

USB 2 connector: Connect a USB device to this connector.

Ethernet connector: Use this connector to connect the server to a network.

Mic connector (pink): Connect a microphone to this connector.

Line out connector (green): Connect an audio output device, such as speakers, to this connector.

Line in connector (blue): Connect an audio input device, such as a stereo, to this connector.

Video connector: Connect a monitor to this connector.

If you have an optional Remote Supervisor Adapter (system-management adapter) installed in PCI slot 1, your server has additional connectors and LEDs. See the *Option Installation Guide* for more information about these connectors and LEDs.

Server power features

When you connect the server to an ac power source, the server goes into Standby mode. After approximately 20 seconds, the power-control button becomes active, and you can turn on the server and start the operating system by pressing the power-control button. The following section describes other ways in which the server can be turned on.

A power-control-button shield comes with your server. You can install this disk-shaped shield to prevent the server from being turned off accidentally.

Turning on the server

After the server is connected to an ac power source, it can be turned on in any of the following ways:

- You can press the power-control button.
- If a power failure occurs while the server is turned on, the server will restart automatically when power is restored.
- If your operating system supports the system-management software for an optional Remote Supervisor Adapter, the system-management software can turn on the server.
- If your operating system supports the Wake on LAN® feature, the Wake on LAN feature can turn on the server.

Turning off the server

Some operating systems require an orderly shutdown before you turn off the server. See your operating-system documentation for information about shutting down the operating system.

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.
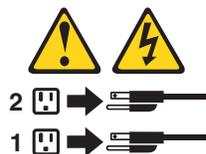
The server can be turned off in any of the following ways:

- You can press the power-control button to start an orderly shutdown of the operating system, if your operating system supports this feature, and turn off the server.
- If the operating system stops functioning, you can press and hold the power-control button for more than 4 seconds to turn off the server.
- If the Wake on LAN feature turned on the server, the Wake on LAN feature can turn off the server.
- You can remove all power from the computer by disconnecting the server from the ac power source.

Standby mode

When the server is connected to an ac power source but has not been turned on, it is in Standby mode. When the server is in Standby mode, the operating system is not running, and all core logic except for the service processor is shut down. The power-on LED flashes to indicate that the server is in Standby mode. The server can respond to requests from the service processor, such as a remote request to turn on the server.

To put the server into Standby mode when the server is turned on, shut down the operating system (see your operating-system documentation), and press the power-control button.

You can also put the server into Standby mode through a request from the service processor.

Chapter 2. Configuring your server

You can use the following configuration programs to customize your server hardware:

- **Configuration/Setup Utility program**

  The Configuration/Setup Utility program is part of the *basic input/output system* (*BIOS*) code that comes with your server. You can use this program to configure serial port assignments, change interrupt request (IRQ) settings, change the device startup sequence, set the date and time, and set passwords.

- **Broadcom NetXtreme Gigabit Ethernet Boot Agent**

  The Broadcom NetXtreme Gigabit Ethernet Boot Agent is part of the BIOS code that comes with your server. You can enable the Broadcom NetXtreme Gigabit Ethernet Boot Agent in the Configuration/Setup Utility program. The Broadcom NetXtreme Gigabit Ethernet Boot Agent enables you to configure the network as a startable device and customize where the network option appears in your startup sequence.

- **ServerGuide Setup and Installation CD**

  The *ServerGuide Setup and Installation* CD provides software setup tools and installation tools that are specifically designed for your IBM server. Use this CD during the initial installation of your server to configure basic hardware features and to simplify your network operating system (NOS) installation. See "Using the ServerGuide Setup and Installation CD" on page 13 for more information.

- **Ethernet controller configuration process**

  To configure the Ethernet controller, see "Configuring the Gigabit Ethernet controller" on page 16.

- **SCSISelect Utility program (some models)**

  If your server comes with a SCSI controller on the PCI extender card, you can use the SCSISelect Utility program to configure devices that are attached to the SCSI controller. Use this program to change default values, resolve configuration conflicts, and perform a low-level format on a SCSI hard disk drive.

- **Boot Menu program**

  The Boot Menu program is part of the BIOS code that comes with your server. You can use the Boot Menu program to change startup sequence for one startup session without changing settings in the Configuration/Setup Utility program.

Using the Configuration/Setup Utility program

This section provides the instructions for starting the Configuration/Setup Utility program and descriptions of the menu choices that are available.

Starting the Configuration/Setup Utility program

The Configuration/Setup Utility program starts automatically when POST detects that newly installed or removed hardware is not reflected in your current configuration. A power-on-self-test (POST) error message is displayed. See the *Hardware Maintenance Manual and Troubleshooting Guide* for details about the POST error messages.

Complete the following steps to start the Configuration/Setup Utility program:

1. Turn on the server and watch the monitor screen. If your server is already on when you start this procedure, you must shut down the operating system, turn off the server, wait a few seconds until all in-use LEDs go off, and restart the server. Do not use Ctrl+Alt+Del to restart the server.

2. When the message `Press F1 for Configuration/Setup`, `Press F12 for Boot Menu` appears at the bottom of the screen during startup, press F1. (This prompt appears on the screen for only a few seconds. You must press F1 quickly.)

   Note: If you have set both administrator and user passwords, you must type the administrator password to access the full Configuration/Setup Utility menu.

3. Follow the instructions that appear on the screen.

Use the Up Arrow (↑)and Down Arrow (↓) keys to select menu choices in any Configuration/Setup Utility menu. Some menu choices provide information only. Some menu choices show fields that you can change. These fields are enclosed by square brackets. You can change the settings in these fields by using Left Arrow (←) and Right Arrow (→) keys to change the settings, or you can type information in the field.

To reload the current setting for a menu item, press F9. To reload the default setting for a menu item, press F10.

Using passwords

The **System Security** choice appears only on the full Configuration/Setup Utility menu. After you select this choice, you can implement an administrator password.

The administrator password provides access to all choices on the Configuration/Setup Utility main menu. You can set, change, or delete the administrator password.

The administrator password has the following features:
- No password is required to start the system.
- Type the password to access the Configuration/Setup Utility program.
- All choices are available on the Configuration/Setup Utility main menu.

Complete the following steps to set an administrator password:

1. From the Configuration/Setup Utility main menu, select **System Security** and press Enter.

2. Select **Administrator Password** and press the Right Arrow (→) key.

3. Type the password you want to set in the **Enter Password** field and press Enter.

4. Type the password again in the **Enter Password again** field and press Enter.

5. Press Enter to **Set or Change Password**. The setting in the **Administrator Password** field changes to **Present**.

6. Press Esc until you return to the main menu.

7. Select **Save Settings** and Press Enter.

After you have set an administrator password, you can then set a user password to authorize a user to operate the server. You must set an administrator password to set a user password.

You can use any combination of up to seven characters (A Z, a z, 0 9, and blanks) for your user password. Keep a record of your password in a secure place. If you forget the user password, you can regain access to the server through one of the following methods:

- Type the administrator password at the power-on prompt. Start the Configuration/Setup Utility program and change the user password.
- Change the position of the password check jumper (JP1) as described in "Setting the password check jumper."
- Remove the battery and then install the battery. See the *Hardware Maintenance Manual and Troubleshooting Guide* for instructions.

To set a user password, complete the following steps:

1. Set an administrator password. See the instructions on page 10.
2. Select **User Password** and press the Right Arrow (→) key.
3. Type the password you want to set in the **Enter Password** field and press Enter.
4. Type the password again in the **Enter Password Again** field and press Enter.
5. Press Enter to **Set or Change Password**. The setting in the **User Password** field changes to **Present**.
6. Select **Save Settings** and press Enter.

If you set a user password, you can then enable Password on Boot. If you enable this setting, you must type a user password when you start the server.

Setting the password check jumper

The following illustration shows the location of the password check jumper (JP1) on the system board.

Password check
jumper (JP1)

CMOS clear
jumper (JP3)

Boot block
jumper (JP6)
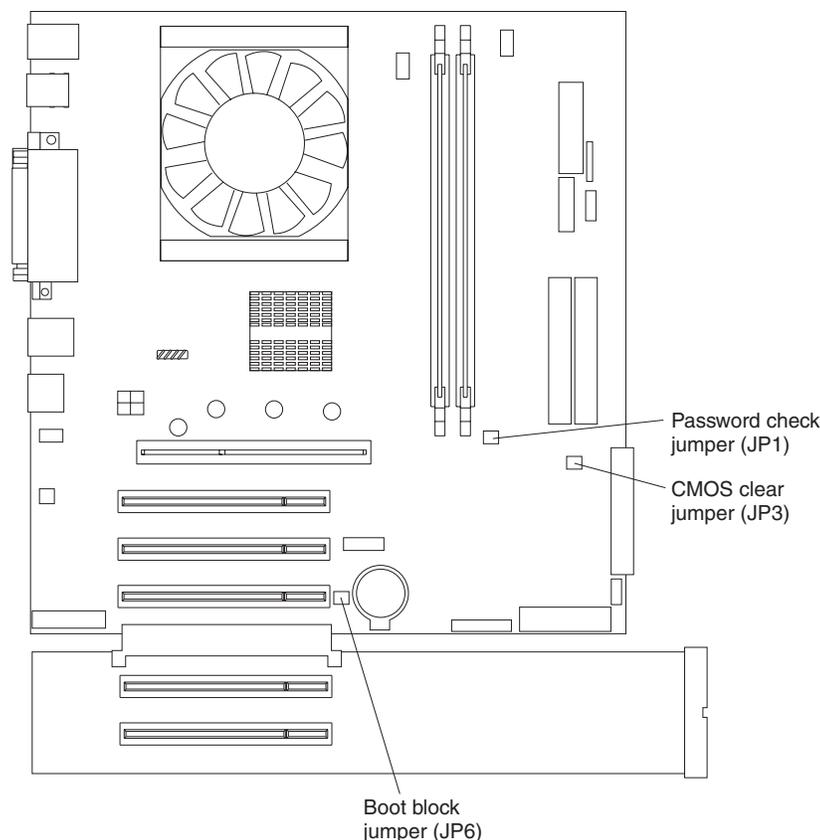
Complete the following steps to set the password check jumper:

1. Review the "Safety information" on page 119.
2. Turn off the server and peripheral devices and disconnect all external cables and power cords; then, remove the cover. See the *Option Installation Guide* for instructions.
3. Move the jumper from pins 1 and 2 to pins 2 and 3. This clears the power-on password for one boot cycle.

   You can now start the server one time without having to use the user password, but if you do not use the Configuration/Setup Utility program to change or delete the password, the next time you start the server, the original power-on password will be reinstated.
4. Connect the server to a power source, keyboard, monitor, and mouse.
5. Turn on the server.

You can now start the Configuration/Setup Utility program and either delete the old password or set a new user password.

Enabling Broadcom NetXtreme Gigabit Ethernet Boot Agent

The Broadcom NetXtreme Gigabit Ethernet Boot Agent is part of the BIOS code that comes with your server. You can enable the Broadcom NetXtreme Gigabit Ethernet Boot Agent in the Configuration/Setup Utility program. The Broadcom NetXtreme Gigabit Ethernet Boot Agent enables you to configure the network as a startable device and customize where the network appears in your startup order.

To enable Broadcom NetXtreme Gigabit Ethernet Boot Agent, complete the following steps:

1. From the Configuration/Setup Utility main menu, select **Devices and I/O Ports** and press Enter.
2. Select **System Board Ethernet PXE/DHCP** and use the Right Arrow (→) key to set it to Enabled.
3. Select **Save Settings** and press Enter.

Using the ServerGuide Setup and Installation CD

The *ServerGuide Setup and Installation* CD includes an easy-to-use setup and installation program that is specifically designed for your server. The ServerGuide program detects the server model and hardware options that are installed and uses that information during setup to configure the hardware. The ServerGuide program simplifies operating-system installations by providing updated device drivers and, in some cases, installing them automatically.

If a later version of the ServerGuide program is available, you can download a free image of the *ServerGuide Setup and Installation* CD, or you can purchase the CD. To download the latest ServerGuide program, go to the IBM ServerGuide Web page at http://www.ibm.com/pc/qtechinfo/MIGR-4ZKPPT.html. To purchase the latest *ServerGuide Setup and Installation* CD, see the "ServerGuide Updates" flyer that comes with your server library, or go to the ServerGuide fulfillment Web site at http://www.ibm.com/pc/coupon/.

The ServerGuide program has the following features to make setup easier:
- An easy-to-use interface with online help
- Diskette-free setup, and configuration programs that are based on detected hardware
- Performance Optimizer program, which easily tunes your SCSI RAID adapter settings for your server environment
- A system BIOS update program, which updates the BIOS code directly from the CD
- Device drivers that are provided for your server model and detected hardware

ServerGuide features

Features and functions can vary slightly with different versions of the ServerGuide program. To learn more about the version that you have, start the *ServerGuide Setup and Installation* CD and view the online overview. Not all features are supported on all server models.

The ServerGuide program requires a supported IBM server with an enabled startable (bootable) CD-ROM drive. In addition to the *ServerGuide Setup and Installation* CD, you must have your operating-system CD to install your operating system.

The ServerGuide program has the following features:
- Sets system date and time.
- Detects the SCSI RAID adapter or controller and runs the SCSI RAID configuration program.
- Updates the licensed internal code (firmware) level without diskettes.
- Checks the system BIOS code and microcode (firmware) levels of supported options to determine whether a later level is available from the CD. You can perform updates without using diskettes.
- Provides the Performance Optimizer program to easily tune your SCSI RAID adapter settings for your server environment.

- Detects installed hardware options and provides updated device drivers for most adapters and devices.
- Creates a setup-replication diskette for replicating setup selections for other servers of the same model.
- Provides diskette-free installation for supported operating systems.
- Provides a replicated installation path for multiple installations of supported operating systems.
- Includes an online README file with links to tips for your hardware and operating-system installation.

Setup and configuration overview

When you use the *ServerGuide Setup and Installation* CD, you do not need setup diskettes. You can use the CD to configure any supported IBM server model. The ServerGuide program checks your system BIOS, service processors, and other system hardware to determine if system updates are available. The setup program provides a list of tasks that are required to set up your server model. On SCSI RAID servers, you can run the SCSI RAID configuration program to create logical drives.

Note: Features and functions can vary slightly with different versions of the ServerGuide program.

When you start the *ServerGuide Setup and Installation* CD, the program performs the following tasks:

- The ServerGuide program prompts you for your language, country, and keyboard layout. (This information is stored and later passed to the operating-system installation program.)
- The ServerGuide program displays choices for running the configuration programs. For example:
  - The Express Configuration method runs the required programs for your server, based on the hardware that is detected.
  - The Custom Configuration method displays all programs that are available for your server, and you decide which programs to run.
  - The Replicated Configuration method provides the option of duplicating your setup selections to other servers that are the same model.
- If you select the Custom Configuration method, the following features are optional. If you select the Express Configuration method, some or all of these features are run, depending on the hardware that is detected:
  - The Set Date and Time feature is provided so that you do not have to use the Configuration/Setup Utility program to access these settings.
  - The Clear Hard Disks feature is provided so you can delete all partitions on all hard disk drives. If the server has a SCSI RAID adapter installed, you can select to restore the configuration on the SCSI RAID adapter to the factory default settings.
  - The ServerGuide program checks the system BIOS code and microcode (firmware) levels for supported options and then checks the CD for a newer level. The CD content might be newer than the BIOS code and firmware level. The ServerGuide program can perform a flash update of the BIOS code and supported microcode (firmware) options without using diskettes.
  - The SCSI RAID configuration program starts, leading you through the entire configuration process.
  - The Performance Optimizer program easily tunes your server for your environment.

- The ServerGuide program displays a confirmation summary, so that you will know when you have completed all the required tasks. Then, you are ready to install your operating system.

Notes:

1. Plug and Play adapters are configured automatically. Non-Plug and Play adapters might require switch settings, additional device drivers, and installation after the operating system is installed. See the documentation that comes with the adapter.

2. Diagnostics for your server come in BIOS code or on a separate diagnostics CD.

Typical operating-system installation

You can use the ServerGuide program to shorten your installation time. The ServerGuide program provides the device drivers that are required for your hardware and for the operating system that you are installing. This section describes a typical ServerGuide operating-system installation.

Note: Features and functions can vary slightly with different versions of the ServerGuide program.

1. After you have completed the setup process, the operating-system installation program starts. (You will need your operating-system CD to complete the installation.)

2. The ServerGuide program stores information about the server model, service processor, hard disk drive controllers, and network adapters. Then, the program checks the CD for newer device drivers. This information is stored and then passed to the operating-system installation program.

3. With some operating-system installations, you can create an operating-system-replication diskette for setting up additional servers. This diskette contains the Internet protocol (IP) address, server name, and other selections.

4. If you are installing the operating system from diskette, the ServerGuide program lists the diskettes that you must create and the optional diskettes that you might want to create. The diskettes that you can create are the device-driver diskettes for the installed adapters or controllers.

5. The ServerGuide program prompts you to insert your operating-system CD and restart the server. At this point, the installation program for the operating system takes control to complete the installation.

Setting up or updating multiple servers

You can use the ServerGuide program to create diskettes that help you set up or update multiple servers. You can modify information on the diskettes as you use them to set up or update other servers.

Note: Availability and function can vary by server model and by the hardware that is installed.

You can create a setup-replication diskette, which contains your hardware configuration selections. Use this diskette to replicate selections to other servers that are of the same model.

You can create an operating-system-replication diskette, which contains information that you need to complete multiple installations. Not all operating systems support operating-system-replication diskettes.

Installing your operating system without ServerGuide

If you have already configured the server hardware and you decide not to use the ServerGuide program to install your operating system, complete the following steps to download the latest operating-system installation instructions from the IBM Support Web page:

1. Go to http://www.ibm.com/pc/support/.
2. Under **Browse**, click **Servers**.
3. From the **Family** drop-down list, select your server model.
4. If NOS installation instructions are available for your server model, **OS installation** is in the list in the upper-left corner of the Web page. Click **OS installation** and select the instructions for your operating system.

Configuring the Gigabit Ethernet controller

The server comes with an integrated Ethernet controller. This controller provides 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 Ethernet controller for your operating system before you use the Ethernet controller. However, you must install a device driver to enable your operating system to address the Ethernet controller. The device drivers are provided on the *Device Drivers and IBM Enhanced Diagnostics* CD.

When you connect your server to the network, the Ethernet controller automatically detects the data-transfer rate (10-Mbps, 100-Mbps, or 1000-Mbps) on the network and then sets the controller to operate at the appropriate rate. In addition, if the Ethernet ports that your server is connected to support auto-negotiation, the Gigabit Ethernet controller will set the appropriate duplex state. That is, the Ethernet controller 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 controller supports half-duplex (HDX) and full-duplex (FDX) modes at both speeds.

For information about configuring your Ethernet controller, see the *Device Drivers and IBM Enhanced Diagnostics* CD that comes with your server. For updated information about configuring your Ethernet controller, 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*.

You Ethernet controller supports 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.

Using the SCSISelect Utility program

SCSISelect is a menu-driven configuration utility program for servers that come with a SCSI adapter installed. You can use SCSISelect to:

- View the default SCSI IDs
- Locate and correct configuration conflicts
- Perform a low-level format on a SCSI hard disk

The following sections provide instructions for starting the SCSISelect Utility program and descriptions of the menu choices available.

Starting the SCSISelect Utility program

Complete the following steps to start the SCSISelect utility program:

1. Turn on the server.
2. When the `<<< Press <CTRL><A> for SCSISelect Utility! >>>` prompt appears, press Ctrl+A.

   Note: If an administrator password has been set, you are prompted to type the password to start the SCSISelect Utility program.

3. When the `Would you like to configure the host adapter or run the SCSI disk utility?` question appears, make your selection and press Enter.
4. Use the arrow keys to select a choice from the menu.
5. Follow the instructions on the screen to change the settings of the selected items, and press Enter.

SCSISelect menu choices

The following choices appear on the SCSISelect Utility menu:

- **Configure/View Host Adapter Settings**

  Select this choice to view or change the SCSI controller settings. To reset the SCSI controller to its default values, press F6; then, follow the instructions that appear on the screen.

  You can view or change the following controller settings:

  - **Host Adapter SCSI ID**

    Select this choice to view the SCSI controller ID, normally 7.

  - **SCSI Parity Checking**

    This choice is set to **Enabled** and cannot be changed.

  - **Host Adapter SCSI Termination**

    This choice is set to **Enabled** and cannot be changed.

  - **Boot Device Options**

    Select this choice to configure startable device parameters. Before you can make updates, you must know the ID of the device for which you want to configure parameters.

  - **SCSI Device Configuration**

    Select this choice to configure SCSI device parameters. Before you can make updates, you must know the ID of the device whose parameters you want to configure.

    Note: The Maximum Sync Transfer Rate represents the transfer rate for Ultra SCSI devices.

    - The transfer rate for Ultra3 SCSI LVD devices is 160 MBps.
    - The transfer rate for Ultra2 SCSI LVD devices is 80 MBps.
    - The transfer rate for Fast SCSI devices is 20 MBps.

  - **Advanced Configuration Options**

    Select this choice to view or change the settings for advanced configuration options.

- **SCSI Disk Utilities**

  Select this choice to view the SCSI IDs that are assigned to each device or to format a SCSI device.

  To use the utility program, select a drive from the list. Read the screens carefully before making a selection.

  Note: If you press Ctrl+A before the selected drives are ready, an Unexpected SCSI Command Failure screen might appear. Restart the server and watch the SCSISelect messages as each drive spins up. After the drive that you want to view or format spins up, press Ctrl+A.

Using the Boot Menu program

The Boot Menu program is a built-in, menu-driven configuration utility program that you can use to temporarily redefine the first startup device without changing settings in the Configuration/Setup Utility program.

Complete the following steps to use the Boot Menu program to change the startup sequence of your server:

1. Turn off the server.
2. Restart the server.
3. Press F12.
4. Select the startup device.

The next time the server is started, it returns to the startup sequence set in the Configuration/Setup Utility program.

Chapter 3. Diagnostics

This section provides basic troubleshooting information to help you resolve some common problems that might occur with your server.

If you cannot locate and correct the problem using the information in this section, see Appendix A, "Getting help and technical assistance," on page 117 for more information.

General checkout

The server diagnostic programs are stored on the IBM *Enhanced Diagnostics CD*. These programs provide the primary methods of testing the major components of the server.

If you cannot determine whether a problem is caused by the hardware or by the software, you can run the diagnostic programs to confirm that the hardware is working properly.

When you run the diagnostic programs, a single problem might cause several error messages. When this occurs, work to correct the cause of the first error message. After the cause of the first error message is corrected, the other error messages might not occur the next time you run the test.

A failed system might be part of a shared DASD cluster (two or more systems sharing one or more external storage devices). Before you run diagnostics, verify that the failing system is not part of a shared DASD cluster.

A system might be part of a cluster if:
- The system is identified as part of a cluster.
- One or more external storage units are attached to the system and at least one of the attached storage units is also attached to another system or unidentifiable source.
- One or more systems are located near the failing system.

If the failing system is suspected to be part of a shared DASD cluster, you can run all diagnostic tests except the diagnostic tests that test the storage unit (DASD residing in the storage unit) or the storage adapter attached to the storage unit.

Notes:
1. For systems that are part of a shared DASD cluster, run one test at a time in looped mode. Do not run all tests in looped mode, because this could enable the DASD diagnostic tests.
2. If multiple error codes are displayed, diagnose the first error code that is displayed.
3. If the computer stops with a POST error, go to "POST error codes" on page 97.
4. If the computer stops and no error is displayed, go to "Undetermined problems" on page 108.
5. For power supply problems, see "Power checkout" on page 29.
6. For safety information, see "Safety information" on page 119.
7. For intermittent problems, check the error log.

Checkout procedure

Follow the steps in this procedure to identify system problems.

`001` **IS THE SYSTEM PART OF A CLUSTER?**

YES. Schedule maintenance for the system. Shut down all systems related to the cluster. Run the storage test.

NO. Go to step `002`.

`002` **IF THE SYSTEM IS NOT PART OF A CLUSTER:**
1. Turn off the server and all external devices.
2. Check all cables and power cords.
3. Set all display controls to the middle position.
4. Turn on all external devices.
5. Turn on the server.
6. Record any POST error messages that are displayed on the screen. If an error is displayed, look up the first error in the "POST error codes" on page 97.
7. Check the System Error log. If an error was recorded by the system, see Chapter 6, "Symptom-to-FRU index," on page 85.
8. Start the diagnostic programs.
9. Check for the following responses:
   - One beep.
   - Readable instructions or the main menu.

`003` **DID YOU RECEIVE BOTH OF THE CORRECT RESPONSES?**

NO. Find the failure symptom in Chapter 6, "Symptom-to-FRU index," on page 85.

YES. Run the diagnostic programs. If necessary, see "Diagnostic programs and error messages" on page 25.

If you receive an error, see Chapter 6, "Symptom-to-FRU index," on page 85.

If the diagnostic programs were completed successfully and you still suspect a problem, see "Undetermined problems" on page 108.

Diagnostic tools overview

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

- **POST beep codes and error messages**

  The power-on self-test (POST) generates beep codes and messages to indicate successful test completion or the detection of a problem. See "POST" for more information.

- **Error log**

  The POST error log contains the three most recent error codes and messages that the system has generated during POST. The System Error Log contains all the error messages that were issued during POST.

  To view the contents of the error logs, start the Configuration/Setup Utility program; then, select **Error Logs** from the main menu. See "Viewing the System Error log" on page 28 for more information.

- **ServerGuide error symptoms**

  ServerGuide error symptoms are explained at "ServerGuide error symptoms" on page 24.

- **Diagnostic programs and error messages**

  The server diagnostic programs are stored on the IBM *Enhanced Diagnostics CD*. These programs are the primary method of testing the major components of your server. See "Diagnostic programs and error messages" on page 25 for more information.

- **Customized support page**

  You can create a customized support page that is specific to your hardware, complete with Frequently Asked Questions, Parts Information, Technical Hints and Tips, and Downloadable files. In addition, you can choose to receive electronic mail (e-mail) notifications whenever new information becomes available about your registered products.

  After you register and profile your xSeries products, you can diagnose problems using the IBM Online Assistant, and you can participate in the IBM discussion forum. For more detailed information about registering and creating a customized profile for your IBM products, go to the following addresses on the Web:
  - http://www.ibm.com/pc/register
  - http://www.ibm.com/pc/support

POST

When you turn on the server, it performs a series of tests to check the operation of server components and some of the options installed in the server. This series of tests is called the power-on self-test, or POST.

Notes:

1. If you have a user password or administrator password set, you must type the password and press Enter, when prompted, before POST will continue.

2. A single problem might cause several error messages. When this occurs, work to correct the cause of the first error message. After you correct the cause of the first error message, the other error messages usually will not occur the next time you run the test.

POST beep codes

POST generates beep codes to indicate successful completion or the detection of a problem.

- One short beep indicates the successful completion of POST.
- More than one beep indicates that POST detected a problem. For more information, see "Beep symptoms" on page 86.

If POST detects a problem (more than one beep sounds), an error message appears on your screen. See "Beep symptoms" on page 86 and "POST error codes" on page 97 for more information.

Error logs

A POST error log is available when an optional service processor adapter has been installed in the server.

The POST error log contains the three most recent error codes and messages that the system generated during POST. The System Error log contains all messages issued during POST and all system status messages from the service processor.

You can view the contents of the System Error log from the Configuration/Setup Utility program or from the diagnostic programs.

Viewing error logs from the Configuration/Setup Utility program

Start the Configuration/Setup Utility program; then, select **Error Logs** from the main menu. See Chapter 2, "Configuring your server," on page 9 for more information.

Viewing error logs from diagnostic programs

Start the diagnostic programs; select **Hardware Info** from the top of the diagnostic programs screen; select **System Error Log** from the list that appears; then, follow the instructions on the screen. See "Starting the diagnostic programs" on page 26 for more information.

ServerGuide error symptoms

Look for the symptom in the left column of the chart. Probable solutions to the problem are in the right column.

Table 1. ServerGuide Setup and Installation CD

Symptom	Suggested action
The *ServerGuide Setup and Installation* CD will not start.	• Ensure that the server is supported and has a startable (bootable) CD-ROM drive. • If the startup (boot) sequence settings have been altered, ensure that the CD-ROM drive is first in the startup sequence. • If more than one CD-ROM drive is installed, ensure that only one drive is set as the primary drive. Start the CD from the primary drive.
The SCSI RAID program cannot view all installed drives, or the NOS cannot be installed.	• Ensure that there are no duplicate SCSI IDs or IRQ assignments. • Ensure that the hard disk drive is connected properly.

Table 1. ServerGuide Setup and Installation CD (continued)

Symptom	Suggested action
The Operating System Installation program continuously loops.	Make more space available on the hard disk.
The ServerGuide program will not start your NOS CD.	Ensure that the NOS CD you have is supported by the ServerGuide program. See the *ServerGuide Setup and Installation* CD label for a list of supported NOS versions.
The NOS cannot be installed; the option is not available.	Ensure that the NOS is supported on your server. If the NOS is supported, either there is no logical drive defined (SCSI RAID systems) or the ServerGuide System Partition is not present. Run the ServerGuide program, and ensure that setup is complete.

Small computer system interface messages

If you receive a SCSI error message, see "Diagnostic error codes" on page 90.

Note: If your server does not have a hard disk drive, ignore any message that indicates that the BIOS is not installed.

Diagnostic programs and error messages

The server diagnostic programs are stored on the IBM *Enhanced Diagnostics CD*. These programs are the primary method of testing the major components of your server.

Diagnostic error messages indicate that a problem exists; they are not intended to be used to identify a failing part. Troubleshooting and servicing of complex problems that are indicated by error messages should be performed by trained service personnel.

Sometimes the first error to occur causes additional errors. In this case, the server displays more than one error message. Always follow the suggested action instructions for the *first* error message that appears.

The following sections contain the error codes that might appear in the detailed test log and summary log when the diagnostic programs are run.

The error code format is as follows:

```
fff-ttt-iii-date-cc-text message
```

where:

fff   is the three-digit function code that indicates the function being tested when the error occurred. For example, function code 089 is for the microprocessor.

ttt   is the three-digit failure code that indicates the exact test failure that was encountered. (These codes are for trained service personnel; see "Diagnostic error codes" on page 90).

iii   is the three-digit device ID. (These codes are for trained service personnel; see "Diagnostic error codes" on page 90).

date   is the date that the diagnostic test was run and the error recorded.

cc   is the check value that is used to verify the validity of the information.

text message is the diagnostic message that indicates the reason for the problem.

Text messages

The diagnostic text message format is as follows:

```
Function Name: Result (test specific string)
```

where:

Function Name
> is the name of the function being tested when the error occurred. This corresponds to the function code (fff) shown in the error code format in the previous section.

Result
> can be one of the following:

Passed	This result occurs when the diagnostic test is completed without any errors.
Failed	This result occurs when the diagnostic test discovers an error.
User Aborted	This result occurs when you stop the diagnostic test before it is complete.
Not Applicable	This result occurs when you specify a diagnostic test for a device that is not present.
Aborted	This result occurs when the test could not proceed, for example, because of the system configuration.
Warning	This result occurs when a possible problem is reported during the diagnostic test, such as when a device driver is not found.

test specific string
> is additional information that you can use to analyze the problem.

Starting the diagnostic programs

The IBM Enhanced Diagnostics programs will isolate your server hardware from software that you have installed on your hard disk drive. The programs run independently of the operating system, and *must be run either from the CD or diskette*. This method of testing is generally used when other methods are not accessible or have not been successful in isolating a problem suspected to be hardware related.

An IBM *Enhanced Diagnostics* CD comes with the server. You can also download the latest image of the diagnostics from the World Wide Web at http://www.ibm.com/pc/support.

Note: When using diagnostics with a USB Keyboard and Mouse attached, go into Setup and enable USB emulation.

   1. Press F1 Config/Setup
   2. Select Devices and I/O Ports

3. Select USB Setup
4. Make sure USB Keyboard and Mouse are enabled.

Using the diagnostics CD
To start the IBM Enhanced Diagnostics using the CD, do the following:
1. Turn off your server and any peripheral devices.
2. Turn on all attached devices; then, turn your server on.
3. When you see `Press F1 For Configuration/Setup`, press the F1 key.
4. When the Configuration/Setup Utility menu appears, select **Start Options**.
5. From the Start Options menu, select **Startup Sequence**.
6. Note the device selected as the First Startup Device. Later, you must restore this setting.
7. Select **CD-ROM** as the First Startup Device.
8. Press Esc two times to return to the Configuration/Setup Utility menu.
9. Place the IBM *Enhanced Diagnostics* CD in the CD-ROM drive.
10. Select **Save & Exit Setup** and follow the prompts. The diagnostics will load. Follow the instructions on the screen to run the diagnostics.

> **Important:** When you finish running the diagnostics and utilities, remove the CD from the CD-ROM drive and turn off the server. You must restore the First Startup Device to the original setting. Use steps 2 through 8 of this procedure to do this.

Downloading the diagnostics program
Do the following to download the latest image of the IBM Enhanced Diagnostics from the World Wide Web and create a startable Enhanced Diagnostics diskette:
1. Go to the following World Wide Web site: http://www.ibm.com/pc/support/
2. Download the diagnostics file for your server to a hard disk drive directory (not to a diskette).
3. Go to a DOS prompt and change to the directory where the file was downloaded.
4. Insert a blank high-density diskette in diskette drive A.
5. Type in the following, and then press Enter: *filename* a: where *filename* is the name of the file you downloaded from the Web.

The downloaded file is self-extracting and will be copied to the diskette. When the copy completes, you have a startable IBM Enhanced Diagnostics diskette.

Using the diagnostic diskette
Do the following to start the IBM Enhanced Diagnostics using the diagnostics diskette, do the following:
1. Turn off your server and any peripheral devices.
2. Insert the IBM Enhanced Diagnostics diskette into the diskette drive.
3. Turn on all attached devices; then, turn on the server.
4. Follow the instructions on the screen.
5. Place the IBM *Enhanced Diagnostics* CD in the CD-ROM drive. The diagnostics will load. Follow the instructions on the screen to run the diagnostics.

When the tests have completed, you can view the Test Log by selecting **Utility** from the top of the screen.

If the hardware checks out OK but the problem persists during normal server operations, a software error might be the cause. If you suspect a software problem, refer to the information that comes with the software package.

Viewing the test log

The test log records data about system failures and other pertinent information. The test log will not contain any information until after the diagnostic program has run.

Note: If you already are running the diagnostic programs, begin with step 4

1. Insert the *IBM Enhanced Diagnostics* CD.
2. Turn on the system and watch the screen.

   If the system is on, shut down your operating system and restart the system.
3. If a power-on password is set, the system prompts you for it. Type in the appropriate password; then, press Enter.
4. Run the appropriate diagnostics program and when the Diagnostic Programs screen appears, select **Utility**.
5. Select **View Test Log** from the list that appears; then, follow the instructions on the screen.
6. You can save the test log to a file on a diskette or to your hard disk drive.

   Note: The system maintains the test-log data while the system is powered on. When you turn off the power to the server, the test log is cleared.

Viewing the System Error log

With the optional service processor adapter, you can also view the System Error log from the diagnostic programs. See the instructions in "POST" on page 23.

Diagnostic error message tables

For descriptions of the error messages that might appear when you run the diagnostic programs, see "Diagnostic error codes" on page 90.

Notes:

1. Depending on your server configuration, some of the error messages might not appear when you run the diagnostic programs.
2. If diagnostic error messages appear that are not listed in the tables, make sure that your server has the latest levels of BIOS, Advanced System Management Processor, ServeRAID™, and diagnostics microcode installed.

Recovering from a POST/BIOS update failure

If power to your server is interrupted while POST/BIOS is being updated (flash update), your server might not restart correctly. If this happens, perform the following procedure:

1. Turn off the server and all attached devices.
2. Unplug all power cords from electrical outlets and remove the server cover and the support bracket. See the *Option Installation Guide* for instructions.
3. Locate the boot block and password check jumpers on the system board, removing any adapters that impede access to the jumpers. See "System and PCI extender boards" on page 34 for the location of the boot block and password check jumpers.
4. Move both jumpers to the adjacent pair of jumper pins.
5. Replace any adapters that were removed and replace the support bracket and the cover. See the *Option Installation Guide* for instructions. Reconnect the power cords for the server and monitor to electrical outlets.
6. Insert the POST/BIOS update (flash) diskette into drive A, and turn on the server and monitor.
7. After the update session completes, remove the diskette from the diskette drive, and turn off the server and monitor.
8. Unplug all power cords from electrical outlets, and remove the cover.
9. Remove any adapters that impede access to the boot block and password check jumpers.
10. Replace the boot block and password check jumpers to their original positions.
11. Replace any adapters that were removed.
12. Replace the cover, and reconnect all cables that were disconnected.
13. Turn on the server to restart the operating system.

Power checkout

Power problems can be difficult to solve. For example, a short circuit can exist anywhere on any of the power distribution buses. Usually a short circuit will cause the power subsystem to shut down because of an overcurrent condition.

A general procedure for troubleshooting power problems is as follows:

1. Turn off the server and disconnect all ac power cords.
2. Check for loose cables in the power subsystem. Also check for short circuits, for example, if there is a loose screw causing a short circuit on a circuit board.
3. Remove adapters and disconnect the cables and power connectors to all internal and external devices until the server is at the minimum configuration required to start the server (see "Minimum operating requirements" on page 96).
4. Reconnect all ac power cords and turn on the server. If the server starts up successfully, replace adapters and devices one at a time until the problem is isolated. If the server does not start up from the minimal configuration, replace FRUs of minimal configuration one at a time until the problem is isolated.

To use this method, it is important to know the minimum configuration required for a system to start (see page 96).

Troubleshooting the Ethernet controller

This section provides troubleshooting information for problems that might occur with the 10/100/1000 Mbps Ethernet controller.

Network connection problems

If the Ethernet controller cannot connect to the network, check the following conditions:

- Make sure that the cable is installed correctly.

  The network cable must be securely attached at all connections. If the cable is attached but the problem remains, try a different cable.

  If you set the Ethernet controller to operate at either 100 Mbps or 1000 Mbps, you must use Category 5 or higher cabling.

- Determine whether the hub supports auto-negotiation. If it does not, try configuring the integrated Ethernet controller manually to match the speed and duplex mode of the hub.

- Check the Ethernet controller LEDs on the operator information panel and on the rear of the server.

  These LEDs indicate whether a problem exists with the connector, cable, or hub.
  - The Ethernet transmit/receive activity LED, on the operator information panel, is lit when the Ethernet controller sends or receives data over the Ethernet Network. If the Ethernet transmit/receive activity LED is off, make sure that the hub and network are operating and that the correct device drivers are installed.
  - The Ethernet link status LED, on the rear of the server, is lit when the Ethernet controller receives a LINK pulse from the hub. If the LED is off, there might be a defective connector or cable or a problem with the hub.

- Make sure that you are using the correct device drivers which are supplied with your server.

- Check for operating-system-specific causes for the problem.

- Make sure that the device drivers on the client and server are using the same protocol.

- Test the Ethernet controller.

  The way the Ethernet controller is tested depends on which operating system you are using (see the Ethernet controller device driver README files).

Ethernet controller troubleshooting chart

Use the following troubleshooting chart to find solutions to 10/100/1000 Mbps Ethernet controller problems that have definite symptoms.

Table 2. Ethernet troubleshooting chart

Ethernet controller problem	FRU/actions
The server stops running when loading device drivers.	The PCI BIOS interrupt settings are incorrect. Check the following: • Determine if the interrupt (IRQ) setting assigned to the Ethernet controller is also assigned to another device in the Configuration/Setup Utility program. Although interrupt sharing is allowed for PCI devices, some devices do not function well when they share an interrupt with a dissimilar PCI device. Try changing the IRQ assigned to the Ethernet controller or the other device. For example, for NetWare Versions 3 and 4, it is recommended that disk controllers not share interrupts with LAN controllers. • Make sure that you are using the most recent device driver available from the World Wide Web. • Reseat or replace the adapter.
Ethernet link status LED does not work.	Check the following: • Make sure that the hub is turned on. • Check all connections at the Ethernet controller and the hub. • Use another port on the hub. • If the hub does not support auto-negotiation, manually configure the Ethernet controller to match the hub. • If you manually configured the Duplex mode, make sure that you also manually configure the speed. • Reseat or replace the adapter.
The Ethernet transmit/receive activity LED does not work.	Check the following: • Make sure that you have loaded the network device drivers. • The network might be idle. Try sending data from this server.
Data is incorrect or sporadic.	Check the following: • Make sure that you are using Category 5 or higher cabling when operating the server at 100 Mbps or at 1000 Mbps. • Make sure that the cables do not run close to noise-inducing sources like fluorescent lights.
The Ethernet controller stopped working when another adapter was added to the server.	Check the following: • Make sure that the cable is connected to the Ethernet controller. • Make sure that your PCI system BIOS code is current. • Reseat the adapter. • Determine if the interrupt (IRQ) setting assigned to the Ethernet adapter is also assigned to another device in the system. Use the Configuration/Setup Utility program to determine if this is the case. Although interrupt sharing is allowed for PCI devices, some devices do not function well when they share an interrupt with a dissimilar PCI device. Try changing the IRQ assigned to the Ethernet adapter or the other device. • Reseat or replace the adapter.
The Ethernet controller stopped working without apparent cause.	Check the following: • Try a different connector on the hub. • Reinstall the device drivers. See your operating-system documentation and the ServerGuide information. • Reseat or replace the adapter.

Ethernet controller messages

The integrated Ethernet controller might display messages from certain device drivers. The latest information available concerning these messages will be made available at the IBM Support Web site at http://www.ibm.com/pc/support.

Chapter 4. Installing options

This section provides instructions for installing options in an IBM @server xSeries 205 Type 8480.

System reliability considerations

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

- Each of the drive bays has a drive or a filler panel and electromagnetic compatibility (EMC) shield installed.
- There is adequate space around the server to allow the server cooling system to work properly. Leave approximately 51 mm (2 in.) of open space around the front and rear of the server. Do not place objects in front of the fans.
- You have followed the instructions for cabling provided with optional adapters.
- You have replaced a failed fan as soon as possible.

Major components of the IBM @server xSeries 205 Type 8480

The following illustration shows the locations of major components in the IBM @server xSeries 205 Type 8480 server.

Note: The illustrations in this document might look slightly different from your hardware.
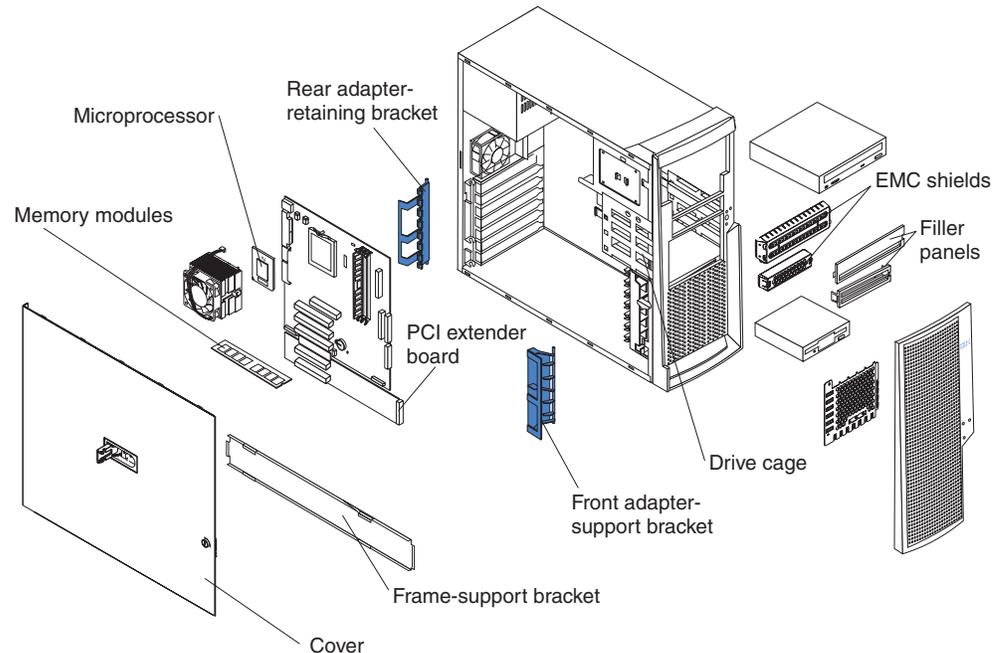
System and PCI extender boards

This illustration identifies parts of the system board and PCI extender board. Depending on installed options, your system board and PCI extender board might look slightly different.

Microprocessor and fan (U6)

DIMM 2

DIMM 1

AGP

PCI 1

PCI 2

PCI 3

PCI 4

PCI 5

Battery
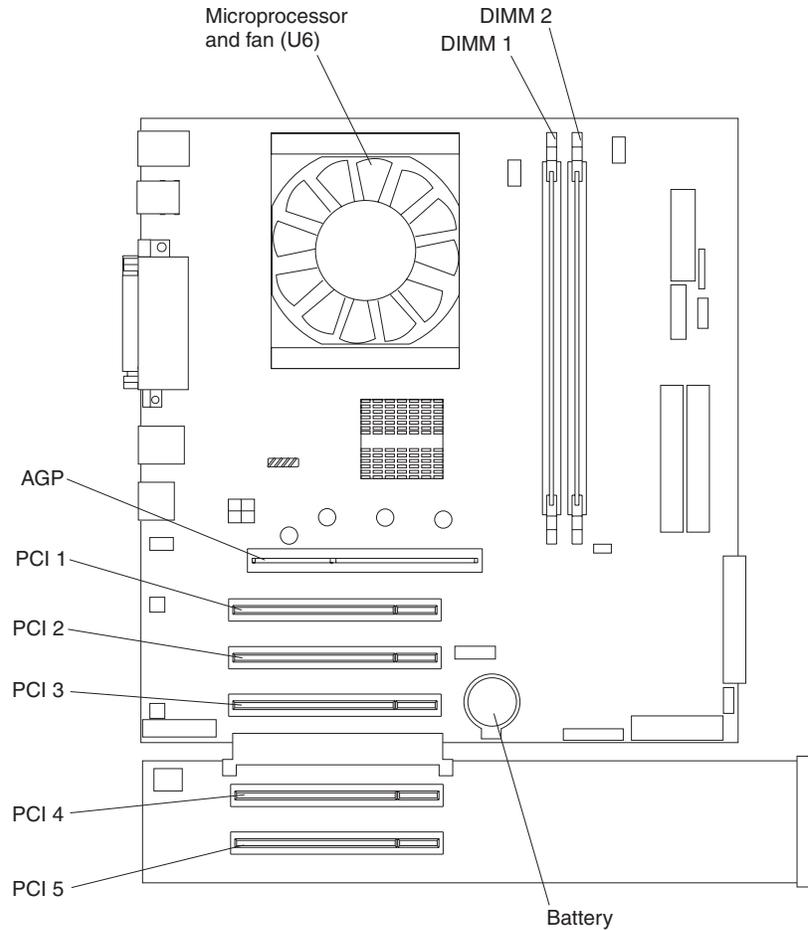
System board internal cable connectors

The following illustration identifies system board connectors for internal cables.

Microprocessor fan
connector (CN3)

Front fan
connector (CN2)

Main power

SCSI LED
connector

Primary IDE
(PRI IDE)

Secondary IDE
(SEC IDE)

Rear fan
(CN19)

Password check
jumper (JP1)

CMOS
clear jumper (JP3)

Microprocessor
power

Diskette drive

Internal speaker
connector

Wake on LAN®
connector

Video
connector

Boot block
jumper (JP6)

SCSI drive connector
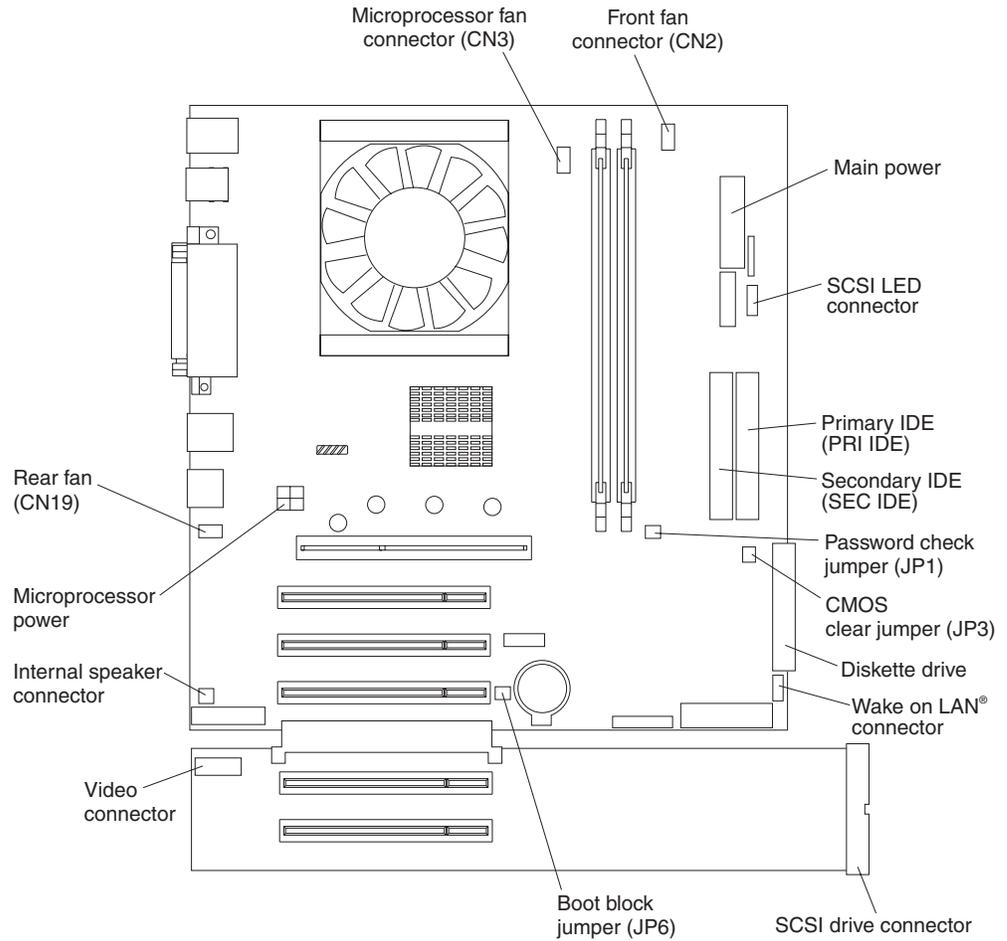
System board external connectors

The following illustration identifies system board connectors for external cables.

Keyboard

Mouse

Serial ports

Parallel

USB ports

Ethernet

Audio
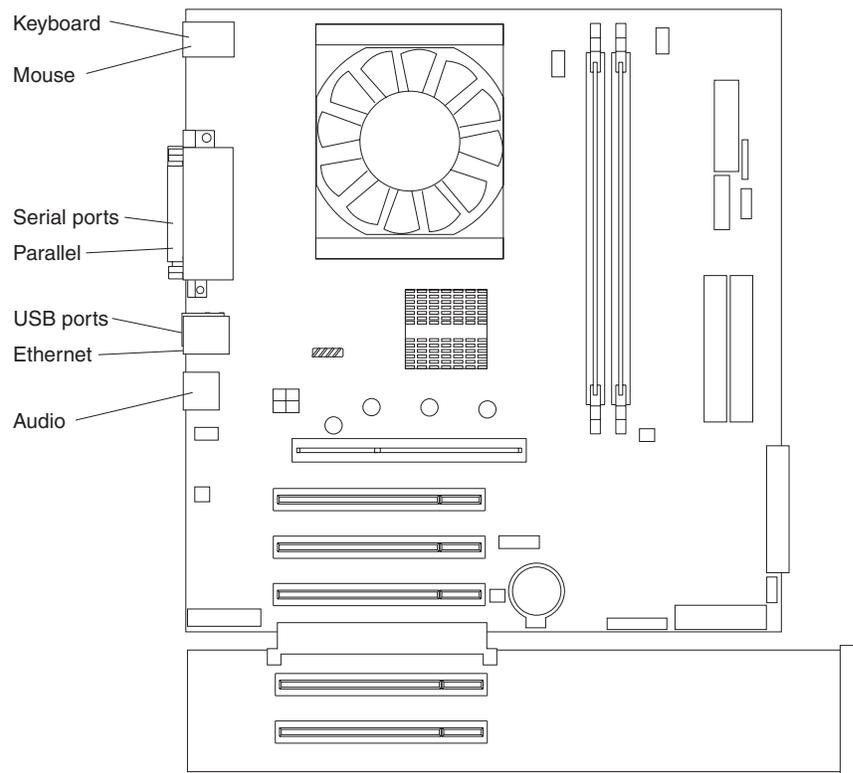
Optional system-management adapter component locations

The following illustration shows the connectors and LEDs for the optional system-management adapter that you can install in PCI slot 1 on the system board.

Ethernet link status
LED (green)

Ethernet port
(RJ-45)

Ethernet activity
LED (green)

Serial port
(COM)

ASM Interconnect port
(RJ-14)

P - P

Error LED
(amber)

Power LED
(green)

External power
supply connector
(not used)
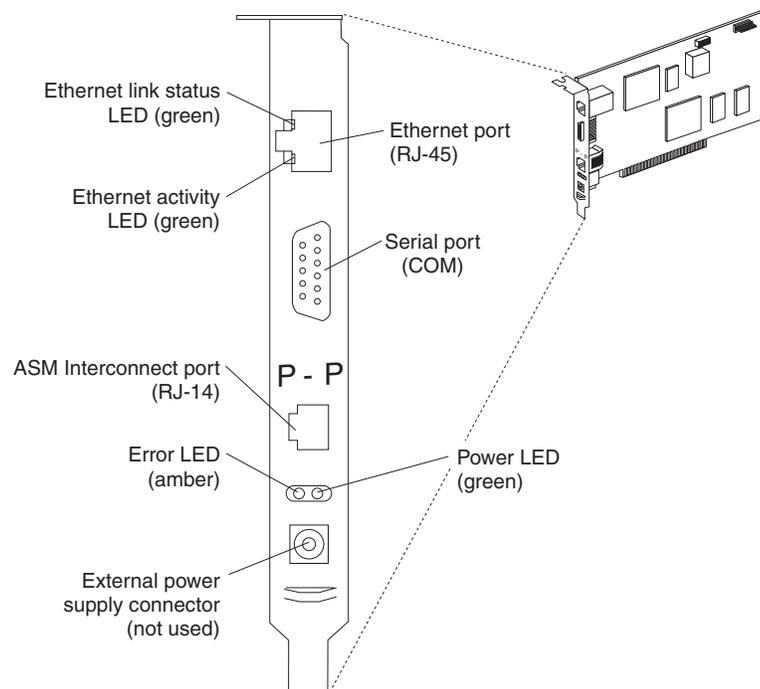
Installation guidelines

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

- Read the handling guidelines in "Handling static-sensitive devices," and read the safety statements in "Safety information" on page 119. These guidelines 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 options that you intend to install.
- Back up all important data before you make changes to disk drives.
- Have a small, flat-blade screwdriver available.
- Before accessing the inside of the IBM @server xSeries 205 Type 8480 server, rotate the two front stabilizing feet a quarter turn towards the server, so they do not break. Before placing the server in an upright position, rotate the two front feet a quarter turn outward from the server. See "Moving the stabilizing feet" on page 38.
- For a list of supported options for your server, go to http://www.ibm.com/pc/support/ on the World Wide Web.

System reliability considerations

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

- Each of the drive bays has a drive or a filler panel and electromagnetic compatibility (EMC) shield installed.
- There is adequate space around the server to allow the server cooling system to work properly. Leave approximately 51 mm (2 in.) of open space around the front and rear of the server. Do not place objects in front of the fans.
- You have followed the instructions for cabling provided with optional adapters.
- You have replaced a failed fan as soon as possible.

Handling static-sensitive devices

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

To reduce the possibility of 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 printed circuitry.
- Do not leave the device where others can handle and possibly damage the device.
- 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 it down. If it is necessary to set the device down, place it in its static-protective package. Do not place the device on the server cover or on a metal table.
- Take additional care when handling devices during cold weather because heating reduces indoor humidity and increases static electricity.

Moving the stabilizing feet

The four feet on the bottom of the server provide additional stability when the feet are placed in the stabilizing position.

Complete the following steps to place the feet in the stabilizing position:

1. Place the server on its side.
2. Locate the release tab inside the foot; then, lift up on the tab.

> **Note:** The following illustration shows the rear feet located on the bottom rear of the server.

Release tab

Feet (unlocked position)

Release tab
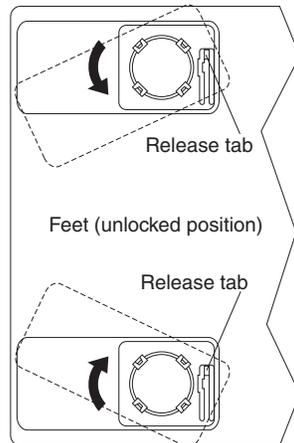
3. Rotate the foot inward to the unlocked position; then, remove the foot from the server.

4. Align the post in the center of the foot with the hole on the bottom of the server and place the foot between the guides as indicated.

   Note: The following illustration shows the rear feet located on the bottom rear of the server.

Guides

Feet (locked position)

Guides
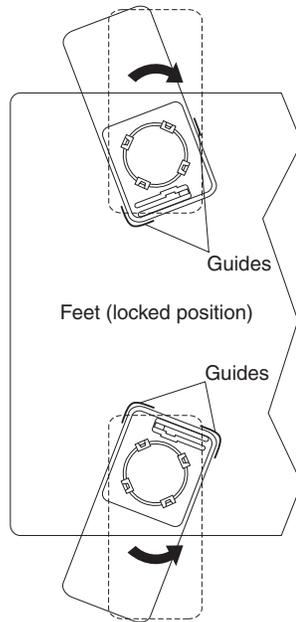
5. Rotate the foot outward until the foot locks into place.
6. Complete steps 2 through 5 for each foot.

   Attention: When you need to access the inside of the server to install options, you might find it easier to lay the server on its side. If you do so, make sure the feet are in the horizontal position (see the previous steps). Otherwise, the feet might break off from the server because of the weight of the server.

Removing the side cover

Complete the following steps to remove the side cover of the server.

Note: To remove the side cover, you might find it easier to lay the server on its side. If you do, move the stabilizing feet so that they do not break. See "Moving the stabilizing feet" on page 38.

1. Review the information in "Installation guidelines" on page 37 and "Safety information" on page 119.
2. Turn off the server and all attached devices.
3. Disconnect all external cables and power cords.
4. Pull the cover-release latch away from the server, and push the side cover toward the rear of the server.
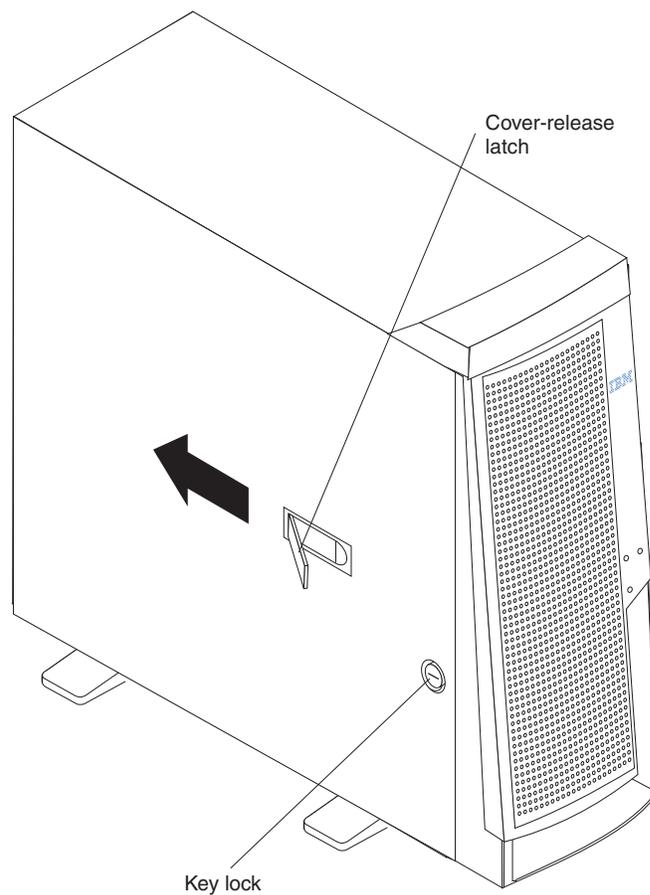
To replace the side cover, see "Replacing the side cover" on page 59.

Attention: For proper cooling and airflow, replace the side cover before turning on the server. Operating the server with the side cover removed might damage server components.

Removing the frame-support bracket

When working with some options, such as hard disk drives, adapters, and memory modules, you must first remove the frame-support bracket to access the existing option.

Complete the following steps to remove the frame-support bracket:

1. Pull out on the rear end of the frame-support bracket approximately 150 mm (6 in.).
2. Pull the rear end of the frame-support bracket away from the server and place the bracket aside.
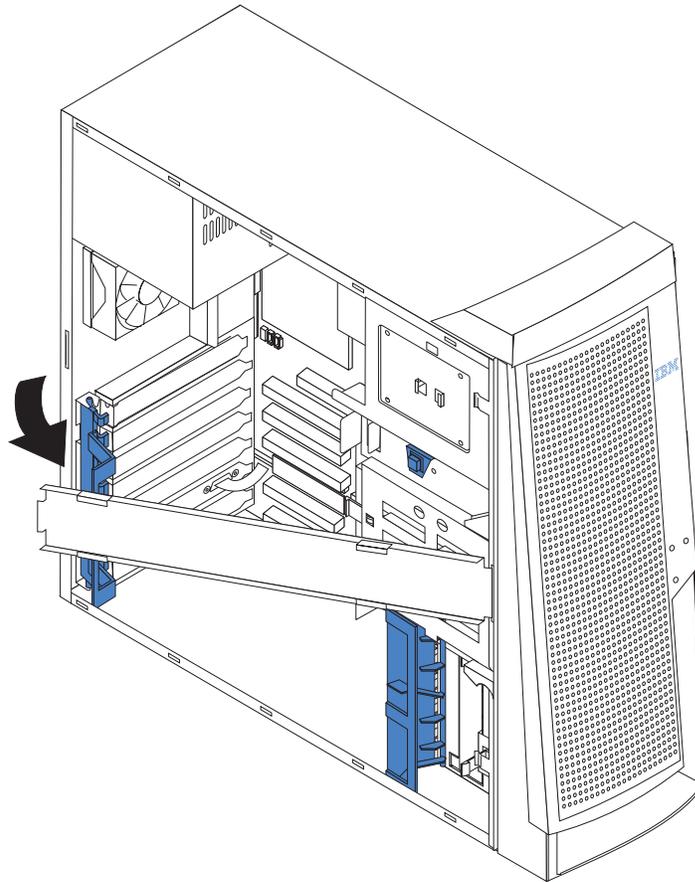
To reinstall the frame-support bracket, reverse the previous steps.

Working with adapters

Your server comes with five 32-bit, 33 MHz PCI adapter connectors or *slots* and one AGP slot. You can install an AGP video adapter in the AGP slot.

See "System and PCI extender boards" on page 34 for the location of PCI expansion slots on the system board and PCI extender board.

Adapter considerations

Before you install adapters, review the following:

- Follow the instructions that come with the adapter in addition to the instructions in this chapter. If you need to change the switch or jumper settings on your adapter, follow the instructions that come with the adapter.
- You can install full-length adapters in all five PCI slots.
- Your server supports 5.0 V and universal PCI adapters; it does not support 3.3 V adapters.
- Your server uses a rotational interrupt technique to configure PCI adapters. Therefore, you can install a variety of PCI adapters that currently do not support sharing of PCI interrupts.
- PCI slots 1 through 5 are on PCI bus 2.

  The system scans the AGP slot and PCI expansion slots 1 through 5 to assign system resources. Then, the system starts devices in the following order, if you have not changed the default startup sequence: the AGP slot, PCI expansion slots 1 and 2, system board integrated drive electronics (IDE) or SCSI devices, and then PCI expansion slots 3 through 5.
- The optional Remote Supervisor Adapter must be installed in PCI slot 1.
- For a list of supported options for your server, go to http://www.ibm.com/pc/support/ on the World Wide Web.

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 about handling these devices, see "Handling static-sensitive devices" on page 37.

1. Review the information in "Safety information" on page 119.
2. Turn off the server and all attached devices, and disconnect all external cables and power cords; then, remove the side cover. See "Removing the side cover" on page 40.

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

3. Remove the frame-support bracket. See "Removing the frame-support bracket" on page 41.
4. If you are installing a full-length adapter, rotate the front adapter-retaining bracket to the open position.
5. Rotate the rear adapter-retaining bracket to the open (unlocked) position, and remove it from the server.
6. From the rear of the server, press on the slot cover. Grasp it and pull the expansion-slot cover out of the expansion slot. Store it in a safe place for future use.

   Attention: Expansion-slot covers must be installed on all vacant slots. This maintains the electronic emissions standards of the server and ensures proper ventilation of server components.

7. Set any jumpers or switches on the adapter or system board as described by the adapter manufacturer.
8. Remove the adapter from the static-protective package, carefully grasp the adapter by the top edge or upper corners, and align it with the expansion slot guides; then, press the adapter *firmly* into the expansion slot.

   Note: It is best to move the adapter directly from the static-protective package to the adapter slot. If this is not possible, set the adapter down on its static-protective package on a hard surface. Avoid touching the components and gold-edge connectors on the adapter.

Attention: Be certain that the adapter is correctly seated in the expansion slot before you turn on the server. Incomplete installation of an adapter might damage the system board or the adapter.

Expansion-slot cover

Rear adapter-retaining bracket

Adapter

Front adapter-support bracket
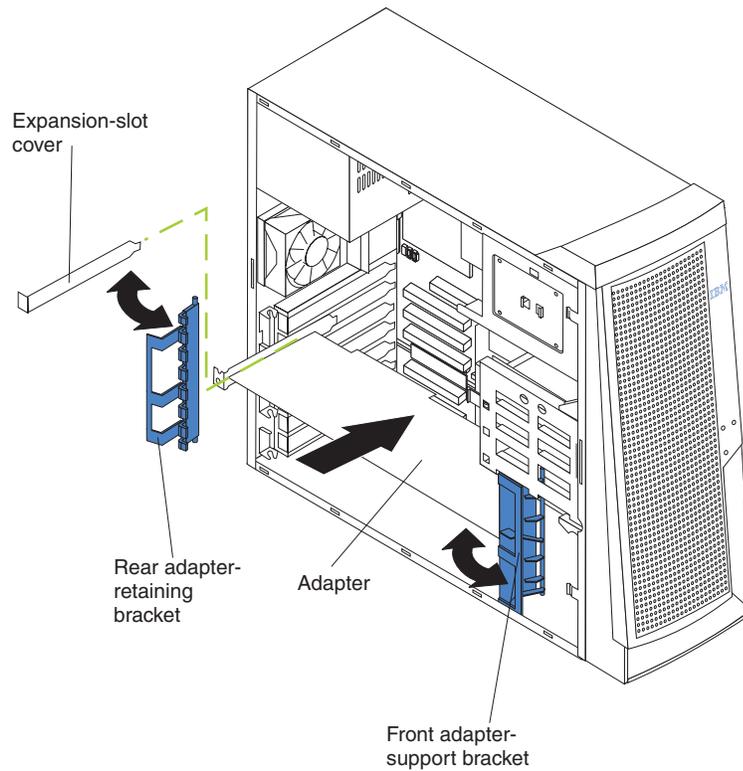
9. Connect required cables to the adapter. Route cables so that they do not block airflow from the fans.

10. If you have another adapter to install, repeat steps 1 through 10. If you have another option to install, do so now.

11. If you have installed a full-length adapter, rotate the front adapter-retaining bracket to the closed (locked) position.

12. Reinstall the rear adapter-retaining bracket; then, rotate the bracket to the closed (locked) position.

   Note: The rear adapter-retaining bracket rests against the side cover. You might find it easier to lay the server on its side to replace the side cover.

13. Replace the frame-support bracket.

14. Replace the side cover. See "Replacing the side cover" on page 59 for details.

15. Reconnect the external cables and power cords; then, turn on the attached devices and the server.

Installing a SCSI adapter

Complete the following steps to install a SCSI adapter:

1. Complete steps 1 through 9 of "Installing an adapter" on page 43.

2. Connect the SCSI signal cable to the adapter and one or more of the signal cable connectors to the rear of the SCSI devices.

3. Connect the SCSI activity indicator cable to the adapter and to the SCSI LED connector on the system board. See "System and PCI extender boards" on page 34 for the location of the SCSI LED connector.

SCSI cable

RAID adapter

SCSI connector

4. If you have other adapters or options to install or remove, do so now.

5. Rotate the front adapter-support bracket to the closed (locked) position.

6. Reinstall the rear adapter-support bracket; then, rotate it to the closed (locked) position.

7. Replace the frame-support bracket.

8. Replace the side cover. See "Replacing the side cover" on page 59 for details.

9. Reconnect the external cables and power cords; then, turn on the attached devices and the server.
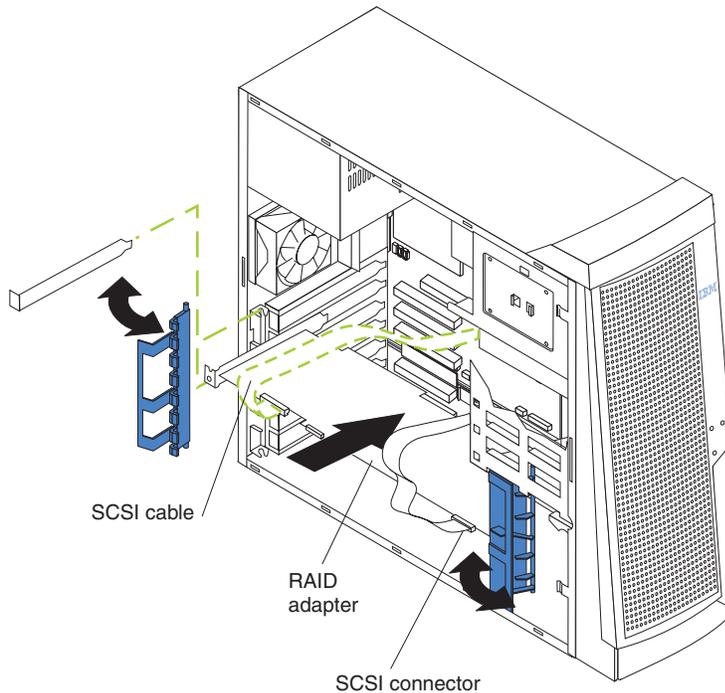
Cabling a RAID adapter or single SCSI channel using one hot-swap drive SCSI backplane

You can install an optional RAID adapter in your server to control the internal hot-swap hard disk drives. The illustrations in this section show the cabling for internal hot-swap hard disk drives. You can also cable a RAID adapter to external hard disk drives. See your RAID adapter option documentation for complete instructions for installing a RAID adapter in your server and for additional information about RAID adapters.

One end of the SCSI cable is attached to the connector on the standard SCSI backplane, and the other end is attached to the internal SCSI channel connector on the PCI extender board or RAID adapter.

If you are connecting the server to more than two SCSI channels, you might need to purchase additional SCSI cables. Consult your IBM marketing representative or reseller for additional information about the number and types of cables that your server configuration requires.

The following procedure describes the single-channel cable routing that is necessary when you install a RAID adapter. The illustrations in this section are examples. The cabling that you use for your server depends on your system configuration.

Notes:

1. See the documentation that comes with your adapter for any cabling instructions.
2. Cable identifiers are printed on the cables that come with your server and options. Use these identifiers to connect the cables to the correct connectors. For example, the hard disk drive cables are labeled "HDD option."

Complete the following steps to cable a single SCSI channel on an installed RAID adapter using the standard hot-swap drive SCSI backplane:

1. Determine the number of SCSI channels that you want to use on the RAID adapter.
2. Review the information in "Installation guidelines" on page 37 and "Safety information" on page 119.
3. Turn off the server and peripheral devices and disconnect all power cords and external cables; then, remove the side cover (see "Removing the side cover" on page 40).
4. If your server comes with a SCSI connector on the PCI extender board, disconnect the SCSI cable from the internal SCSI connector on the PCI extender board.

   Attention: When you route the SCSI cable, observe these precautions:
   - Do not block the ventilated space in front of the fan assembly.
   - Do not route the SCSI cable over the memory board assembly.

5. Route the SCSI cable from the backplane on the hot-swap drive cage (bays 5 to 7) to the internal channel connector on the RAID adapter.

SCSI cable

RAID adapter

SCSI connector
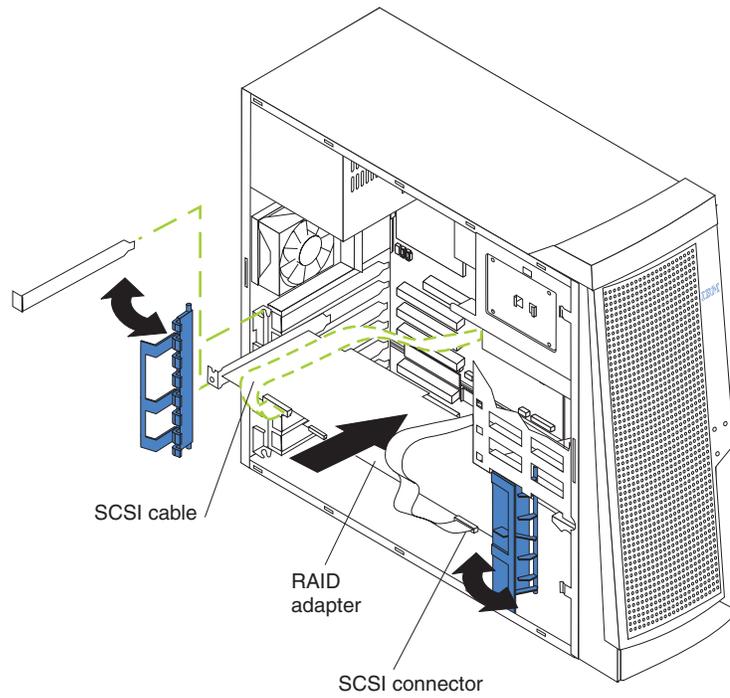
6. If you have other options to install or remove, do so now; otherwise, go to "Replacing the side cover" on page 59.

Installing internal drives

Depending on your server model, you might have one or more of the following drives installed.
- Diskette
- Hard disk
- CD-ROM or DVD-ROM

Internal drive bays

The IBM @server xSeries 205 Type 8480 server comes with an IDE CD-ROM or DVD-ROM drive in bay 1, a 3.5-in., 1.44 MB diskette drive in bay 3, and a hard disk drive installed in bay 4.

Bay 1
Bay 2
Bay 3
Bay 4
Bay 5
Bay 6
Bay 7
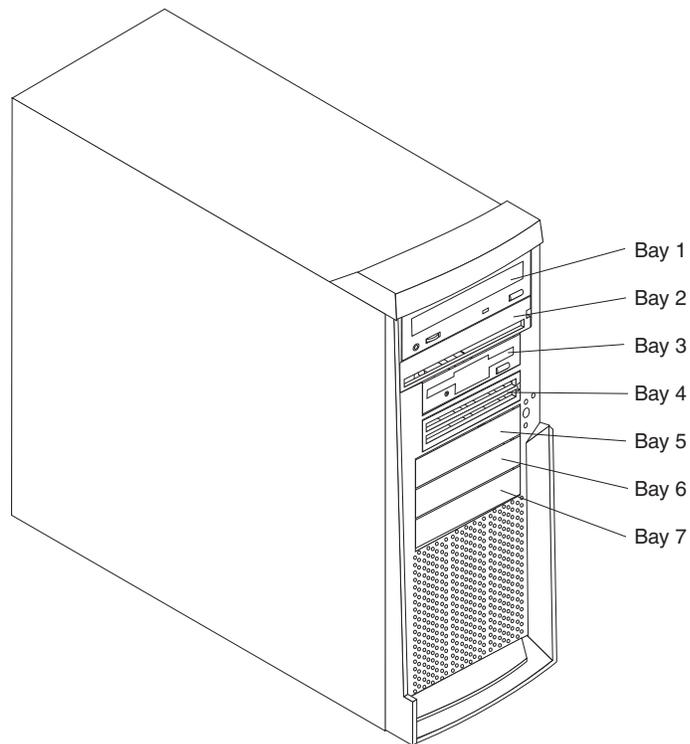
Before you install an internal drive, review the following information:

- Diskette drives, tape drives, CD-ROM, and DVD-ROM drives are examples of removable-media drives. You can install removable-media drives in bays 1, 2, 3, and 4 only.
- You can install a 3.5-in. slim-high, or a 5.25-in. half-high removable-media drive, such as a tape backup drive, in bay 2.
- You can install a 3.5-in. slim-high removable-media drive only in bay 4.
- The IBM xSeries 205 Type 8480 server supports only one diskette drive.
- To install a 3.5-in. drive in a 5.25-in. bay, you must use a 5.25 in. conversion kit, supplied with your option.

  Note: Only 3.5-in. options that come with proper mounting hardware are supported in the 5.25-in. bays.
- The electromagnetic interference (EMI) integrity and cooling of the server are protected by having all bays and PCI slots covered or occupied. When you install a drive or PCI adapter, save the EMC shield and filler panel from the bay or the PCI adapter slot cover in the event you later remove the option.
- For a complete list of supported options for your server, go to http://www.ibm.com/pc/support/ on the World Wide Web.

Preinstallation steps

Before you install drives in your server, verify that you have all the cables and other equipment specified in the documentation that comes with the drive. You might also need to perform certain preinstallation activities. Some of the steps are required only during the initial installation of an option.

Before installing a drive in bays 1, 2, 3, or 4, do the following:

1. Read "Safety information" on page 119, "Handling static-sensitive devices" on page 37, and the documentation that comes with your drive.
2. Choose the bay in which you want to install the drive.
3. Check the instructions that come with the drive to see if you need to set any switches or jumpers on the drive. If you are installing a SCSI device, be sure to set the SCSI ID for that device.

Power and signal cables for internal drives

Your server uses cables to connect IDE and SCSI devices to the power supply and to the system board. The following cables are provided:

- Four-wire power cables connect the drives to the power supply. At the end of these cables are plastic connectors of various sizes that can be attached to different drives.
- Flat signal cables, also called ribbon cables, connect IDE, SCSI, and diskette drives to the system board. Two or three sizes of ribbon cables come with your server:
  - The wider IDE signal cable has two or three connectors.
    - If the cable has three connectors, one of these connectors is attached to the drive, one is a spare, and the third is attached to the primary or secondary IDE connector on the system board.
    - If the cable has two connectors, one of these connectors is attached to the hard disk drive, and the other is attached to the primary or secondary IDE connector on the system board.

    Note: The CD-ROM drive is attached to an ATA 66 signal cable. The hard disk drive is attached to an ATA 100 signal cable. ATA 66 and ATA 100 signal cables are color-coded. The blue connector attaches to the system board. The black connector attaches to the primary device. If the cable has a gray middle connector, it attaches to the secondary device. If you are installing a hard disk drive, you must change the switch setting on the CD-ROM drive to secondary and change the connector used for the CD-ROM drive to the gray middle connector.

  - The narrower signal cable has two connectors, one to attach to the diskette drive, and the other to attach to the connector (FDD1) on the system board.
  - If your server comes with a SCSI connector on the extender board and SCSI hard disk drive, an Ultra160 twisted ribbon cable connects the internal Ultra160 SCSI hard disk drive to the SCSI connector on the PCI extender board. This cable has two additional connectors for attaching more internal SCSI devices.

To locate connectors on the system board, see "System board internal cable connectors" on page 35.

Review the following information before connecting power and signal cables to internal drives:

- The drives that are preinstalled in your server come with power and signal cables attached. If you replace any drives, remember which cable is attached to which drive.
- When you install a drive, ensure that the drive connector at one end of the signal cable is connected to the drive and that the drive connector at the other end is connected to the system board.
- If you have only one IDE device on a cable, it must be set as a primary device.
- If two IDE devices are used on a single cable, one must be designated as the primary device and the other as the secondary device; otherwise, the server might not recognize some of the IDE devices. The primary and secondary designation is determined by switch or jumper settings on each IDE device.
- If two IDE devices are on a single cable and only one is a hard disk drive, the hard disk drive must be set as a primary device.

- You must also set the SCSI ID for any SCSI device that you install in your server. Each SCSI device has its own methods and considerations for setting the SCSI ID. See the instructions that come with the SCSI device for details about setting the SCSI ID for the SCSI device.

Installing a drive in bay 1, 2, 3, or 4

Do the following to install a drive in bay 1, 2, 3, or 4:

Attention: When handling static-sensitive devices, take precautions to avoid damage from static electricity. For details on handling these devices, see "Handling static-sensitive devices" on page 37.

1. Read the information in "Preinstallation steps" on page 49.
2. Turn off the server and attached devices and disconnect the external cables and power cords.
3. Remove the side cover. See "Removing the side cover" on page 40 for details.
4. Remove the frame-support bracket. See "Removing the frame-support bracket" on page 41.
5. Use a screwdriver to pry the filler panel and EMC shield away from the server.

   Note: If you are installing a drive that contains a laser, observe the following safety precaution.

Statement 3

CAUTION:
When laser products (such as CD-ROMs, DVD-ROM 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.**

6. Touch the static-protective package containing the drive to any unpainted metal surface on the server; then, remove the drive from the package and place it on a static-protective surface.
7. Set any jumpers or switches on the drive according to the documentation that comes with the drive.

8. You might find it easier to install the new drive into the appropriate opening on the front, and then attach the cables.

9. If you are installing a 5.25-in. drive in bay 2, push the drive into the bay; then, use the two screws to attach the drive to the drive cage.

10. If you are installing a 3.5-in. drive in bay 2, you must attach the 5.25-in conversion kit, supplied with your option, to the 3.5-in. drive.

    Note: You can install only a 3.5-in. device in bay 4.

EMC shield

Filler panel
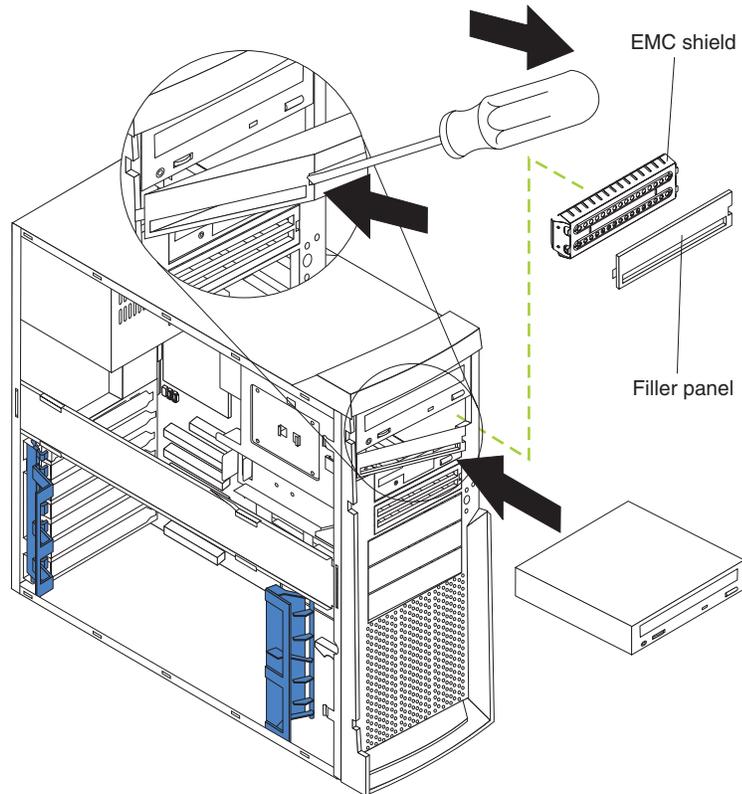
11. If the drive is an IDE device, connect one end of the IDE signal cable into the back of the drive and the other end of the cable into the IDE connector on the system board. For the location of the IDE connectors, see "System board internal cable connectors" on page 35. If the drive is a SCSI device, connect one end of the SCSI signal cable into the back of the drive and the other end of the cable into the 68-pin connector on the PCI connector on the extender board.

    Note: Route the signal cable so that it does not block the airflow to the rear of the drives or over the microprocessor.

12. Connect the power cable to the back of the drive. The connectors are keyed and can be inserted only one way.

13. If you have other options to install or remove, do so now.

14. Replace the frame-support bracket.

15. Replace the side cover. See "Replacing the side cover" on page 59 for details.

16. Reconnect the external cables and power cords; then turn on the attached devices and the server.

Installing a non-hot-swap hard disk drive in bay 5, 6, or 7

Bays 5, 6, and 7 are in the drive cage. The drive cage is located just above the front adapter-support bracket.

Note: You might find it useful to work with the server laying on its side.

Complete the following steps to install a non-hot-swap hard disk drive in bay 5, 6, or 7:

1. Review the safety precautions listed in "Safety information" on page 119.

2. Read the information in "Preinstallation steps" on page 49.

3. Turn off the server and all attached devices. Disconnect all external cables and power cords; then remove the side cover. See "Removing the side cover" on page 40 for details.

4. Remove the frame-support bracket and disconnect the fan cable from the connector on the system board. See "Removing the frame-support bracket" on page 41 for details.

5. If your server has hard disk drives preinstalled in the drive cage, disconnect the power and signal cables from the rear of the drives.

6. Rotate the drive cage out of the server until it locks into place with the drive-cage-retention tab. The open ends of the drive slots and installed drives will face you.

   Note: Ensure that the drive cage locks into place over the drive-cage-retention tab by pressing the drive cage all the way up.

7. Attach the guide rails to the side of the drive using the screws provided. If you obtained your optional drive from IBM, the guide rails are blue plastic.

8. Slide the drive into the drive cage until the plastic tabs on the drive guide rails lock into place in the drive cage. Clear any cables that might impede the replacement of the drive cage.

9. Press in on the drive-cage-retention tab, and rotate the cage back into the server.

Drive "cage"/
retention tab
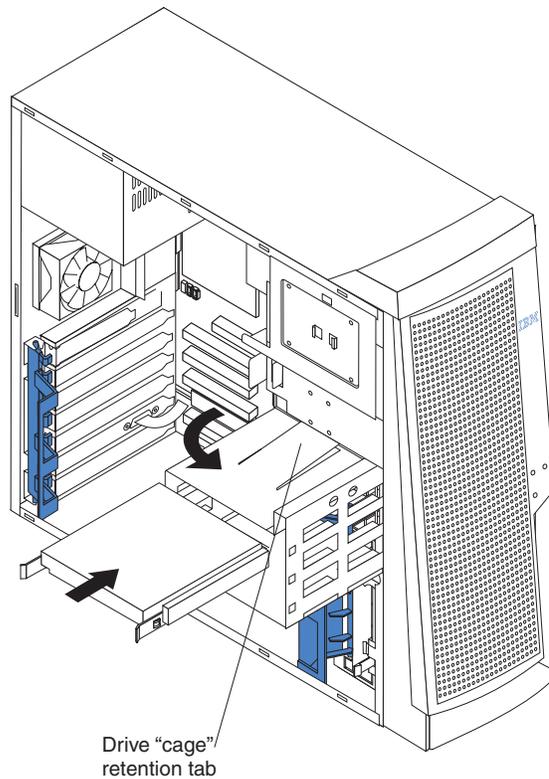
10. Connect the power and signal cables to the rear of each drive.

   Note: Route the signal cable so that it does not block the airflow to the rear of the drives or over the microprocessor.

11. If you have other options to install or remove, do so now.

12. Replace the frame-support bracket.

13. Replace the side cover. See "Replacing the side cover" on page 59 for details.

14. Reconnect the external cables and power cords; then, turn on the attached devices and the server.

Installing a hot-swap hard disk drive in bay 5, 6, or 7

If your server is a hot-swap model, you can replace a failed hard disk drive without turning off the server. Therefore, you can continue to operate your server while a hard disk drive is removed or installed. To do this, you must install a hot-swap hard disk drive. If a hot-swap disk drive is connected to an optional hot-swap RAID controller and if your hot-swap drive becomes defective, the RAID controller can rebuild the data from that drive onto another hot-swap drive. See the information that comes with your RAID controller for details.

Each hot-swap drive has a green hard disk drive activity LED and an amber hard disk drive status LED. When the hard disk drive activity LED is flashing, the controller is accessing the hard disk drive. When this occurs, the SCSI activity LED on the front of the server is also lit. The hard disk drive activity LED is illustrated and described in the *User's Guide*. If the hard disk drive status LED for a drive is lit continuously, that individual drive is faulty and requires replacement. When the hard disk drive status LED indicates a drive fault, you can replace a hot-swap drive without turning off the server.

Each hot-swap drive that you plan to install comes mounted in a hot-swap-drive tray. The drive must have a single connector attachment (SCA) connector. Hot-swap-drive trays come with hot-swap drives.

The hot-swap bays are connected to a SCSI backplane. This backplane is the printed circuit board behind the bay. The backplane controls the SCSI IDs for the hot-swap drives.

The following illustration shows the hot-swap-drive backplane component locations, as viewed from the front of the server.

Hard disk drive activity LED (green)

Hard disk drive status LED (amber)

SCSI hot-swap hard disk drive connector
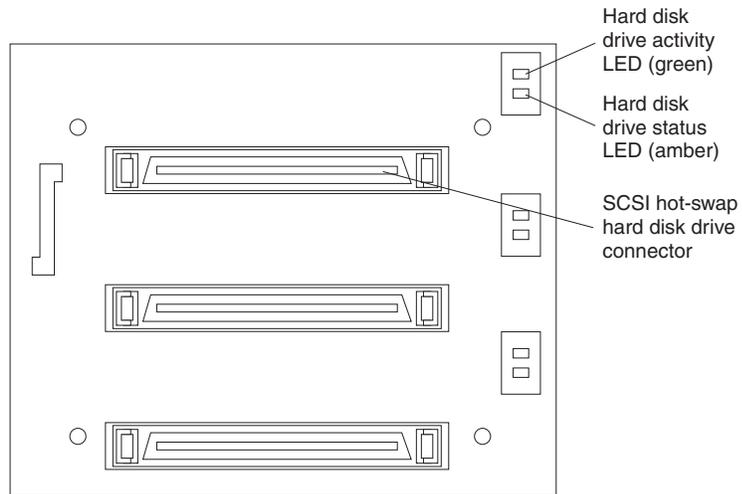
Note: The hard disk drive activity LED and hard disk drive status LED on the backplane match the hard disk drive activity LED and hard disk drive status LED on the hot-swap drive.

The following illustration shows the rear connectors on the hot-swap-drive backplane, as viewed from the rear of the server.

SCSI cable connector

SCSI power cable connector

I^2C cable connector
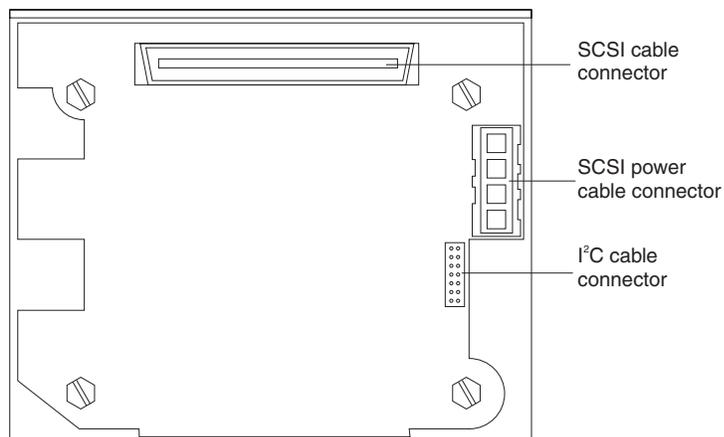
When you install hot-swap hard disk drives, install them in the following order: bay 7, bay 6, and bay 5.

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 37.
- To maintain proper system cooling, do not operate the server for more than 10 minutes without either a drive or a filler panel installed in each bay.

Complete the following steps to install a hot-swap hard disk drive in bay 5, 6, or 7.

Note: You do not have to turn off the server to install hot-swap hard disk drives in these bays.

1. Read the information in "Preinstallation steps" on page 49.
2. Remove the filler panel 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 it away from the server.
3. Install the hard disk in the hot-swap bay:
    a. Ensure that the tray handle is open (that is, perpendicular to the drive).
    b. Align the drive-tray assembly with the guide rails in the bay.
    c. Gently push the drive-tray assembly into the bay until the drive stops.
    d. Push the tray handle to the closed (locked) position.

Filler panel

Drive tray assembly

Drive tray handle (in open position)
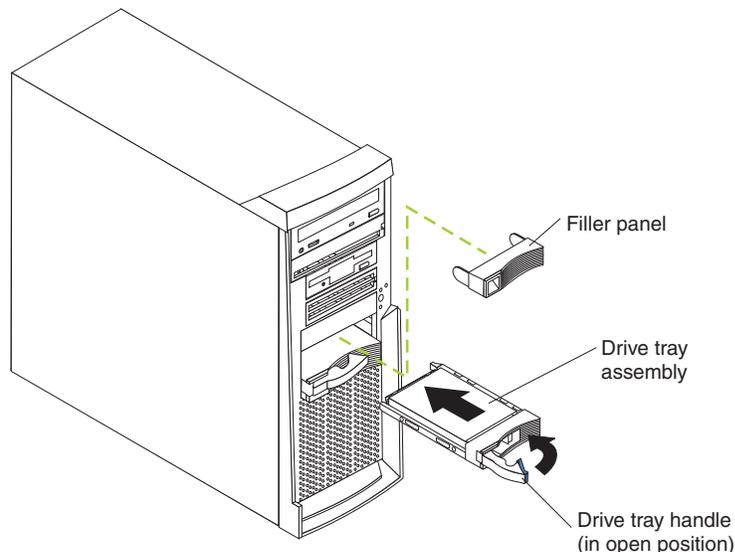
    e. Check the hard disk drive status LED to verify that the hard disk drive is operating properly.

    If the amber disk drive status LED for the drive is lit continuously, that individual drive is faulty and needs to be replaced. If the green hard disk drive activity LED is flashing, the drive is being accessed.

    Note: If your server has a RAID adapter, you might need to reconfigure your disk arrays after installing hard disk drives. See the information that comes with your RAID adapter.

4. If you have other options to install or remove, do so now.

Installing memory modules

You can increase the amount of memory in your server by installing memory modules. Your IBM xSeries 205 Type 8480 server uses industry-standard dual inline memory modules (DIMMs).

Complete the following steps to install a DIMM:

Attention: When handling static-sensitive devices, take precautions to avoid damage from static electricity. For details on handling these devices, see "Handling static-sensitive devices" on page 37.

1. Review the safety precautions listed in the "Safety information" on page 119.
2. Turn off the server and all attached devices. Disconnect all external cables and power cords; then remove the side cover. See "Removing the side cover" on page 40 for details.
3. Remove the frame-support bracket. See "Removing the frame-support bracket" on page 41.
4. Touch the static-protective package containing the DIMM to any unpainted metal surface on the server. Then remove the new DIMM from the package.
5. Open the retaining clips and, if necessary, remove any existing DIMM.
6. Turn the DIMM so that the pins align correctly with the connector, and firmly press the DIMM straight down into the connector by applying pressure on both ends of the DIMM simultaneously. The retaining clips snap into the locked position when the DIMM is firmly seated in the connector.

DIMM connector 1

DIMM connector 2
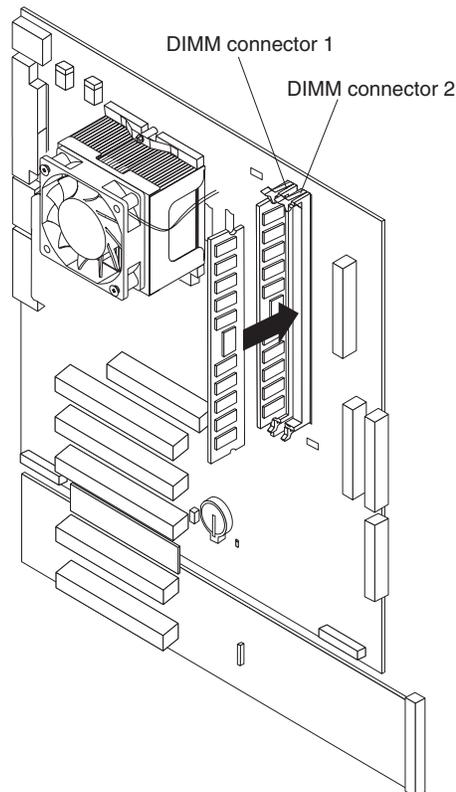
7. If there is a gap between the DIMM and the retaining clips, the DIMM has not been correctly installed. Open the retaining clips, remove the DIMM, then reinsert it.

8. If you have other options to install or remove, do so now.

9. Replace the frame-support bracket.

10. Replace the side cover. See "Replacing the side cover" on page 59.

11. Reconnect the external cables and power cords. Turn on the attached devices, and turn on the server.

Installing a security rope clip

To help prevent theft, you can add a security rope clip and cable to your server.

Complete the following steps to install the rope clip:

1. Review the safety precautions listed in "Safety information" on page 119.

2. Turn off the server and all attached devices. Disconnect all external cables and power cords; then, remove the side cover. See "Removing the side cover" on page 40 for details.

3. Use a screwdriver to remove the two metal knockouts.

4. Insert the rope clip through the rear panel; then attach and tighten the nuts.

5. Thread the cable through the rope clip and around an object that is not part of or permanently secured to the building structure or foundation and from which the cable cannot be removed. Fasten the cable ends together with a lock. After you add the security cable, be certain it does not interfere with other cables connected to the server.

Rope clip
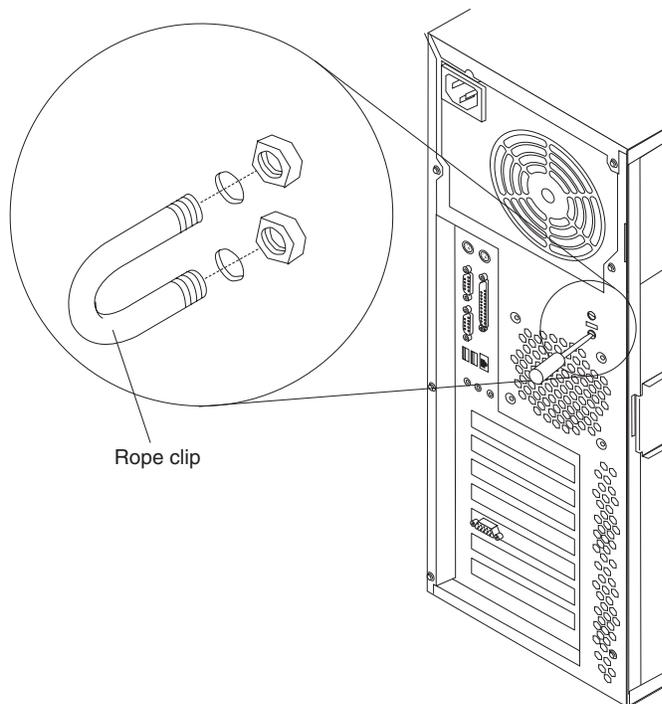
6. Reconnect the external cables and power cords, and turn on the attached devices, and then the server.

Replacing the side cover

Complete the following steps to replace the side cover of the server.

Note: If you removed the frame-support bracket, reinstall it before you replace the side cover. See "Removing the frame-support bracket" on page 41 for details.

1. Clear any cables that might impede the replacement of the side cover.

2. Install the side cover by placing it into position on the server. Be certain the notches on the underside of the side cover match up to the holes along the sides of the server. Press down on the cover-release latch button as you close the cover-release latch to lock the side cover.

Cover-release latch

Key lock
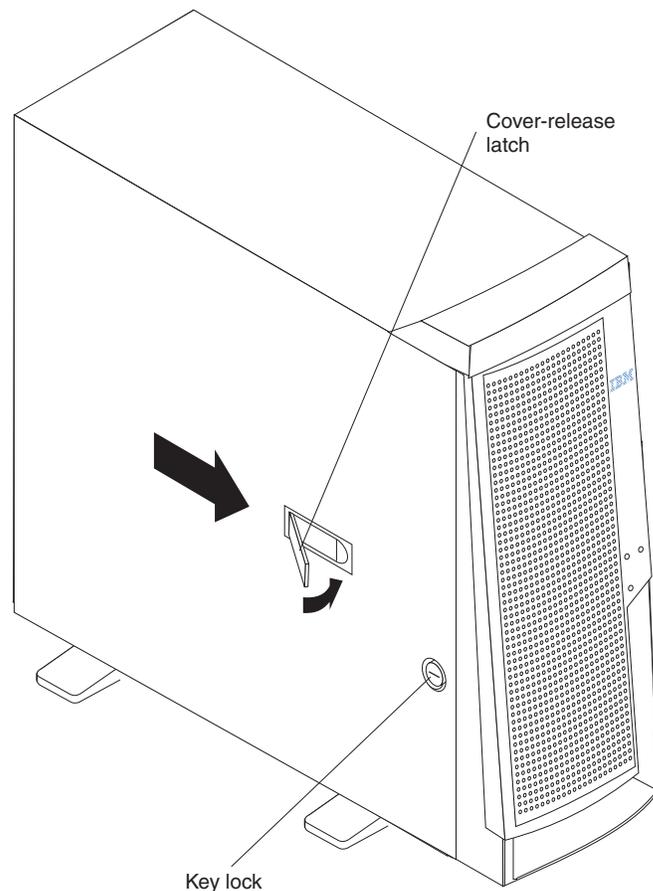
3. If you have not done so already, make sure that the two front stabilizing feet are rotated outward so that they properly support the server. Rotate each individual foot outward 90 degrees.

4. Reconnect the external cables and power cords to the server; then, connect the power cords to electrical outlets.

5. Turn on the attached devices; then, turn on the server.

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 information in "Safety information" on page 119.

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 server and reset the system date and time.

Complete the following steps to replace the battery:

1. Follow any special handling and installation instructions supplied with the replacement battery.
2. Turn off the server and all attached devices. Disconnect all external cables and power cords; then, remove the side cover and frame-support bracket. See "Removing the side cover" on page 40 and "Removing the frame-support bracket" on page 41.
3. Complete the following steps to remove the battery:
   a. Use one fingernail to press the top of the battery clip away from the battery. The battery pops up when released.
   b. Use your thumb and index finger to lift the battery from the socket.
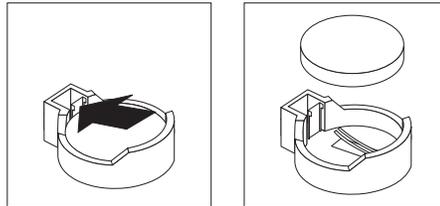
4. Complete the following steps to insert the new battery:
   a. Tilt the battery so that you can insert it into the socket on the side opposite the battery clip.
   b. Press the battery down into the socket until it clicks into place. Make sure the battery clip holds the battery securely.
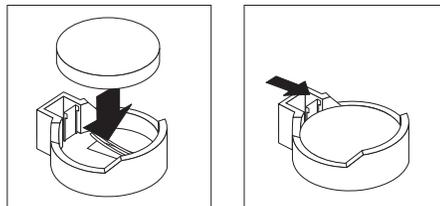
5. Replace the frame-support bracket and the side cover and connect the cables. See "Replacing the side cover" on page 59.
6. Turn on the server.
7. Start the Configuration/Setup Utility program and set configuration parameters.
   - Set the system date and time.
   - Set passwords if necessary.
   - Save the configuration.

Connecting external options

You can connect a number of optional external devices to the connectors on the rear of the server, such as a printer, a keyboard, or a mouse.

You can connect a number of optional external devices to the connectors on the rear of the server, such as a printer, a keyboard, or a mouse.
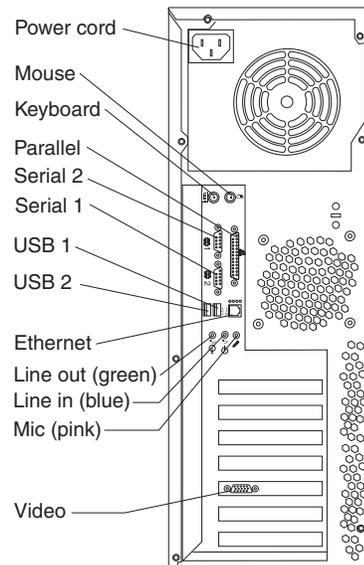
To attach an external device:

1. Read "Installation guidelines" on page 37, review the safety precautions listed in Statement 1 and Statement 5 in "Safety information" on page 119, and read the documentation that comes with your options.

2. Be sure that your server and all attached devices are turned off.

3. Follow the instructions that come with the option to prepare it for installation and to connect it to the server.

This section provides information about the input/output connectors on the rear of your server. These connectors are:
- One mouse
- One keyboard
- One parallel
- Two serial
- One Ethernet
- Two USB
- Line in
- Line out
- Microphone
- One video (Optional multiple connectors on some models)

Video connector

Your server uses a graphics controller located on the PCI extender card. The video connector is located on the rear of your server. See "System board external connectors" on page 36 for the location of this connector.
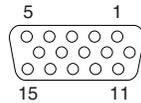
Some models come with a digital video interface (DVI) connector for connecting a digital monitor.
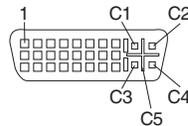
Keyboard connector

Your server has one keyboard connector. See "System board external connectors" on page 36 for the location of this connector.

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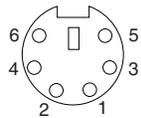
Mouse connector

Your server has one mouse connector that supports a mouse or other pointing device. The mouse connector is located on the rear of your computer. See "System board external connectors" on page 36 for the location of this connector.
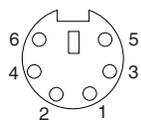
Parallel connector

Your server has one 25-pin, female D-shell parallel connector. This connector supports three standard Institute of Electrical and Electronics Engineers (IEEE) 1284 modes of operation: standard parallel port (SPP), enhanced parallel port (EPP), and extended capability port (ECP). See "System board external connectors" on page 36 for the location of this connector.
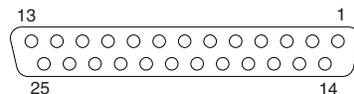
Use the Configuration/Setup Utility program to configure the parallel connector as bidirectional. With this configuration, data can be read from and written to a device. In bidirectional mode, the server supports the ECP and EPP modes.

Serial connectors

Your server has two standard 9-pin D-shell serial connectors: Serial connector 1 and Serial connector 2. See "System board external connectors" on page 36 for the location of this connector.
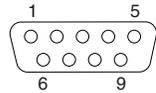
Gigabit Ethernet port

Your server comes with an integrated Gigabit Ethernet controller. This controller provides 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).
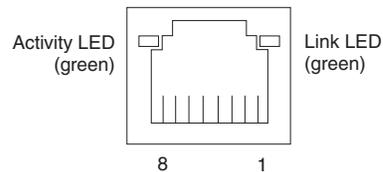
To access the Ethernet port, connect a Category 3, 4, or 5 unshielded twisted-pair (UTP) cable to the RJ-45 connector on the rear of your server.

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 status LED is on the left. When this green light is on, there is an active connection on the Ethernet port. The Ethernet transmit/receive activity LED is on the right. When this amber LED is on, there is activity between the server and the network. These LEDs have the same functions as the Ethernet-link status LED and the Ethernet transmit/receive activity LED on the rear of the server (see the *User's Guide*).

Configuring the Gigabit Ethernet controller

The Ethernet controller is a PCI Plug and Play device. You do not need to set any jumpers or configure the controller for your operating system before you use the Ethernet controller. However, you must install a device driver to enable your operating system to address the Ethernet controller. The device drivers are provided on the *Device Drivers and IBM Enhanced Diagnostics* CD.

When you connect your server to the network, the Ethernet controller automatically detects the data-transfer rate (10 Mbps, 100 Mbps, or 1000 Mbps) on the network and then sets the controller to operate at the appropriate rate. In addition, if the Ethernet ports that your server is connected to support auto-negotiation, the Gigabit Ethernet controller will set the appropriate duplex state. That is, the Ethernet controller 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 controller supports half-duplex (HDX) and full-duplex (FDX) modes at both speeds.

High-performance Ethernet modes

Your Ethernet controller supports optional modes, such as teaming, 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.

Universal Serial Bus (USB) connectors

Your server has two Universal Serial Bus (USB) 2.0 connectors for optional telephony and multimedia devices. USB 2.0 devices configure automatically with Plug and Play technology.
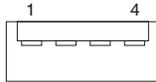
Notes:
1. If you attach a standard (non-USB) keyboard to the keyboard connector, the USB 2.0 connectors and devices will be disabled during the power-on self-test.
2. If you install a USB keyboard that has a mouse connector, the USB keyboard emulates a mouse, and you will not be able to disable the mouse settings in the Configuration/Setup Utility program.

USB cables

Use a 4-pin USB cable to connect external devices to USB connectors.

USB 2.0 technology transfers data at up to 128 megabits per second (Mbps) with a maximum of 127 external devices and a maximum signal distance of 5 meters (16 ft) per segment. You must use devices that support USB 2.0 in order to obtain this maximized data transfer rate.

Audio connectors

The audio connectors are used to connect external audio equipment to your server.

Mic (pink)

Line in (blue)

Line out (green)
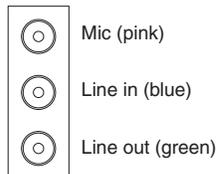
Line out

This connector is used to send audio signals from the server to external devices, such as powered speakers with built-in amplifiers, headphones, multimedia keyboards, or the audio Line in connector on a stereo system.

Note: The internal speaker in your server is disabled when any device is attached to this connector.

Line in

This connector is used to accept audio signals from external devices, such as line output from external audio equipment into the server sound system.

Microphone

This connector is used to connect a microphone to your server when you want to record sounds on the hard disk drive or use speech recognition software.

Optional system-management adapter ports

The following illustration shows the connectors and LEDs for the Remote Supervisor Adapter (optional system-management adapter). See the Remote Supervisor Adapter option documentation for detailed information about the advanced system management (ASM) interconnect network.
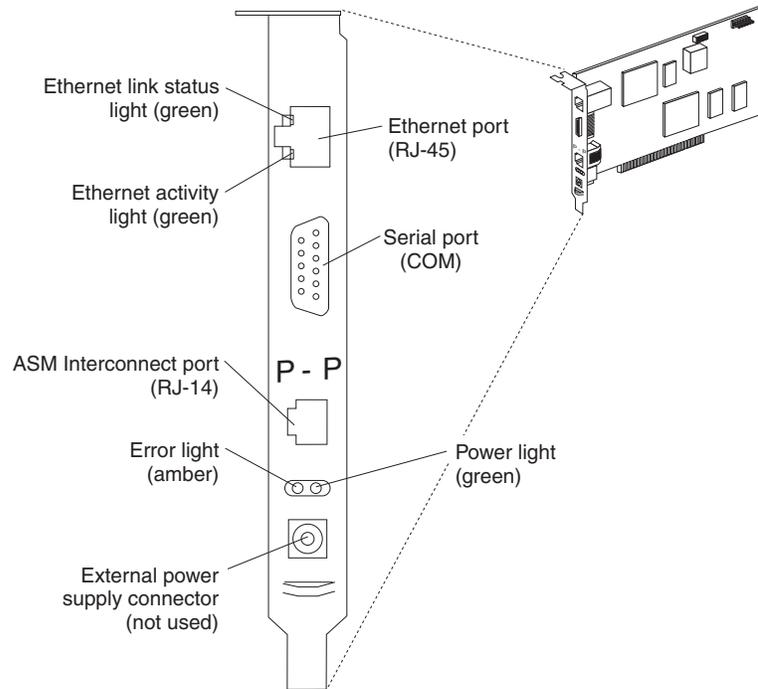
Chapter 5. Field replaceable units

The following information describes procedures for removing and installing certain components inside the system. Only a qualified service technician is authorized to access the components described in this section.

Important: The field replaceable unit (FRU) procedures are intended for trained servicers who are familiar with IBM xSeries products. See the parts listing in "System" on page 112 to determine if the component being replaced is a customer replaceable unit (CRU) or a FRU.

Note: Before servicing this system, read "Installation guidelines" on page 37..

Removing the front bezel

The following illustration shows how to remove the bezel from the server.

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

Do the following to remove the bezel:

1. Review the information in "System reliability considerations" on page 33.
2. Turn off the server and peripheral devices and disconnect all power cords and then all external cables.
3. Remove the side cover (see "Removing the side cover" on page 40).
4. Press the bezel-release latch at the top of the server to disconnect the top of the bezel from the server.
5. Release the two tabs at the top edge of the bezel and pull the top of the bezel slightly away from the server.
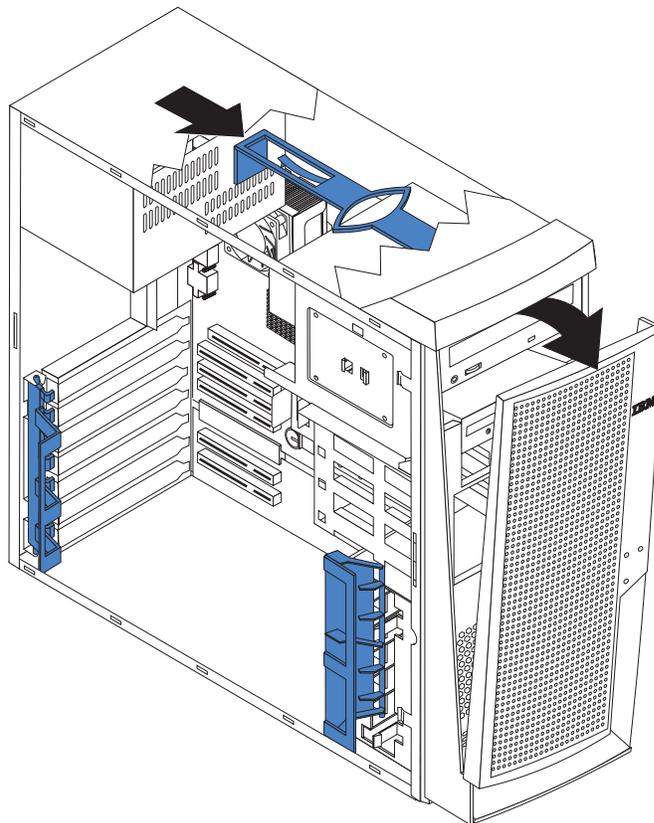
6. Pull the bezel up to release the two tabs at the bottom edge of the bezel. Store the bezel in a safe place.

Power button

To remove the power button, complete the following steps:

1. Turn off the server, if it is on.
2. Unplug the server.
3. Remove the side cover. See "Removing the side cover" on page 40.
4. Remove the front bezel. See "Removing the front bezel" on page 68.
5. If your server has hot-swap hard disk drives installed, remove them. See "Hot-swap hard disk drive cage" on page 72.

   Note: Be sure to remove the hot-swap drive bay filler panels so that they are not damaged.

6. Rotate the drive cage outward until it locks in the vertical position, so that you can reach through to the other side of the power-switch and LED panel cable.
7. To remove the power-switch and LED panel, press in on the tab on the left side of the panel; then, squeeze the top and bottom of the right-side of the panel and carefully pull the panel away from the system.
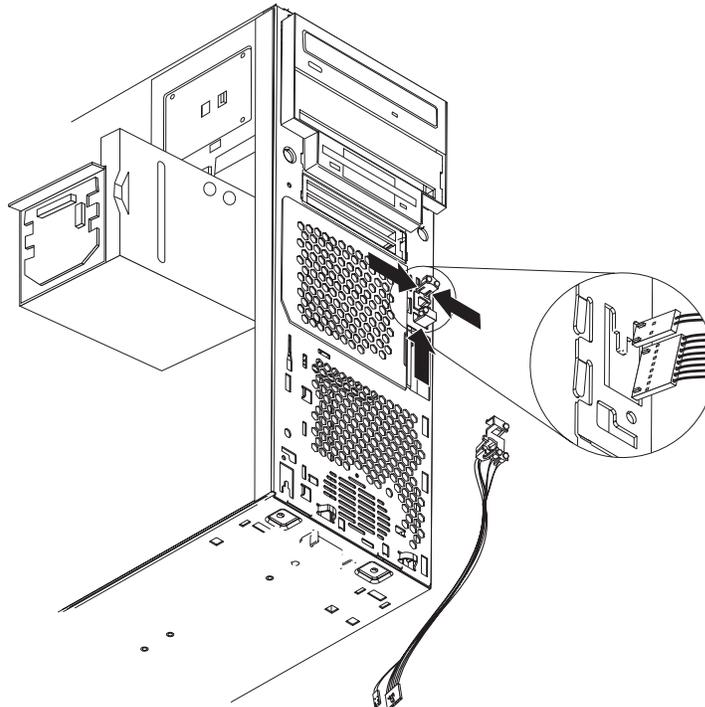
8. Note where the power-switch and LED panel cable connects to the system board; then, carefully disconnect the cable from the system board.

   Notes:

   a. You might need to remove the diskette and IDE cables to access the power switch and LED panel cable connector.
   b. Some cables might have two connectors for you to disconnect.
   c. See the system service label for system board connector locations.

9. Disconnect the cable of the power button from the system board.

10. Place a screwdriver against the bottom release latch of the power button and gently press upward and slide the latch through the aperture.

11. Gently pinch together the upper release latches and slide the latches through the aperture and remove the power button.

Hot-swap backplane

Note:

- Read "Safety information" on page 119.
- Read "System reliability considerations" on page 33.
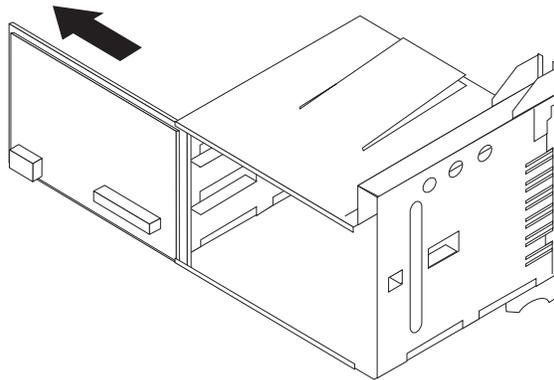
To remove the hot-swap backplane, complete the following steps:

1. Turn off the server, if it is on.
2. Unplug the server.
3. Remove the front bezel. See "Removing the front bezel" on page 68.
4. Remove the side cover. See "Removing the side cover" on page 40.
5. Remove the support-bracket assembly. See "Removing the side cover" on page 40.
6. Remove any hard disk drives or drive fillers from the drives.
7. Disconnect the hard disk drive cables that connect to the system board.
8. Swing the cage out.
9. Slide the backplane out of the cage.

Microprocessor / fan sink

Note:

- Read "Safety information" on page 119.
- Read "System reliability considerations" on page 33.

To remove the microprocessor and fan sink, do the following:

1. Power-off the computer and remove external cables.
2. Remove the cover and support bracket (see "Removing the side cover" on page 40 and "Removing the frame-support bracket" on page 41).
3. Disconnect any cables that impede access to the processor.
4. Remove the fan sink from the processor:

   Note: The fan sink and underlying heat sink are attached and do not need to be separated from each other. Remove the fan sink/heat sink assembly from the processor as a single unit.

   a. Detach the fan sink cable.
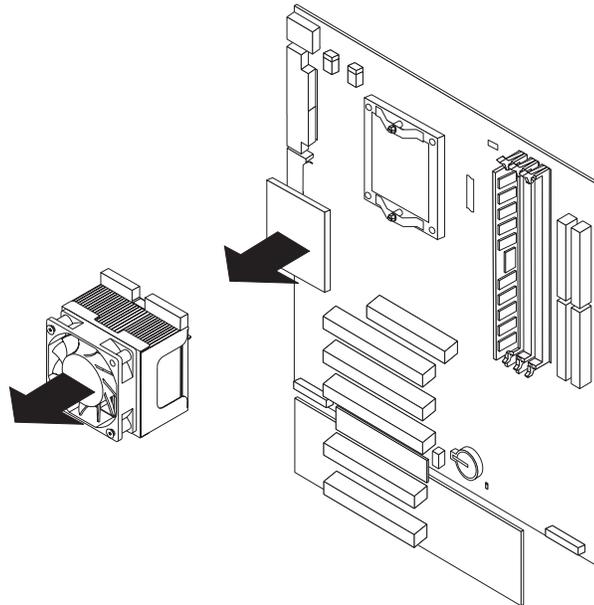
   b. Loosen the two captive screws on either side (in leaf spring enclosures) of the fan sink.
   c. With the two captive screws loosened, pivot the leaf spring assemblies outward and out of the notches on the fan sink assembly.
   d. Lift the fan sink up and out of the computer.

      Note: It may be necessary to gently twist the fan sink to loosen it from the processor.

      Important: Be careful when handling the adhesive material on the processor. If the adhesive material on the processor will be reused, do not contaminate it. If replacement adhesive material is provided with the replacement part, be sure to remove all traces of existing adhesive material from the processor before applying the new adhesive material.

5. Free the processor from the system board by rotating the processor socket lever arm upward to its maximum vertical position.
6. Lift the processor up and out of the computer.
7. To install a processor, reverse the previous steps.

   Note: When reconnecting the fan sink cable to the system board, be sure to connect the cable to the connector marked ″CPU fan″.

Hot-swap hard disk drive cage

Note:
- Read "Safety information" on page 119.
- Read "System reliability considerations" on page 33.

Note: The illustration above may differ slightly from your server.

To remove the hot-swap hard disk drive, complete the following steps:
1. Turn off the server, if it is on.
2. Unplug the server.
3. Remove the front bezel. See "Removing the front bezel" on page 68.
4. Remove the side cover. See "Removing the side cover" on page 40.
5. Remove the support-bracket assembly. See "Removing the side cover" on page 40.
6. Remove any hard disk drives or drive fillers from the drives.
7. Disconnect the hard disk drive cables that connect to the system board.
8. Remove the screws from the front of the hard disk drive cage.
9. Move the cage slightly in and up until it is free of the chassis and lift it out of the server.
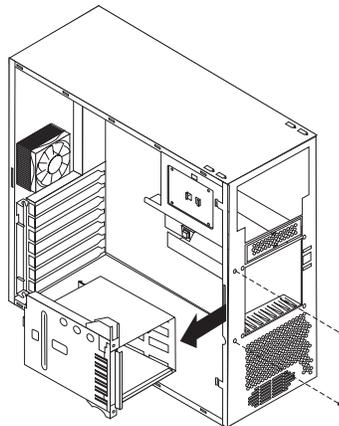
Note: Take care not to dislodge the memory when you remove the cage.

Power supply

Note:

- Read "Safety information" on page 119.
- Read "System reliability considerations" on page 33.

To remove the power supply, do the following:

1. Turn off the server, if it is on.
2. Unplug the server.
3. Remove the cover. See "Removing the side cover" on page 40.
4. Disconnect internal cables from the planar and drives.
5. Remove the screws from the rear of the server.
6. Gently move the power supply away from the chassis and lift it out of the server.

Rear fan

Note:

- Read "Safety information" on page 119.
- Read "System reliability considerations" on page 33.

To remove the rear fan, complete the following steps:

1. Turn off the server, if it is on.
2. Unplug the server.
3. Remove the cover. See "Removing the side cover" on page 40.
4. Remove the support-bracket assembly. See "Removing the side cover" on page 40.
5. Remove the fan cable from the system board.
6. Use side cutters to sever the four rubber extensions on the outside of the server.
7. Gently pry the fan away from the server and lift it up and out.
8. To install the new fan assembly, place the fan in position at the rear of the server.
9. Guide the rubber extensions through the apertures.
10. Use needle-nosed pliers to pull the extensions through the apertures.

11. Reconnect cables.

Extender card

Note:

- Read "Safety information" on page 119.
- Read "System reliability considerations" on page 33.

Note: It is recommended that the server be placed on its left side before performing this service procedure. Rotate the feet in toward the server so they do not detach due to the weight of the server.

To remove the system board, complete the following steps:

1. Turn off the server, if it is on.
2. Unplug the server.
3. Remove the side cover. See "Removing the side cover" on page 40.
4. Remove the support bracket. See "Removing the side cover" on page 40.
5. Disconnect the video connector cable.
6. Remove the extender card adapters (see "Installing an adapter" on page 43).
7. To remove the rear server foot, press the foot locking tab on the inside of the server and lift the foot out of the chassis.
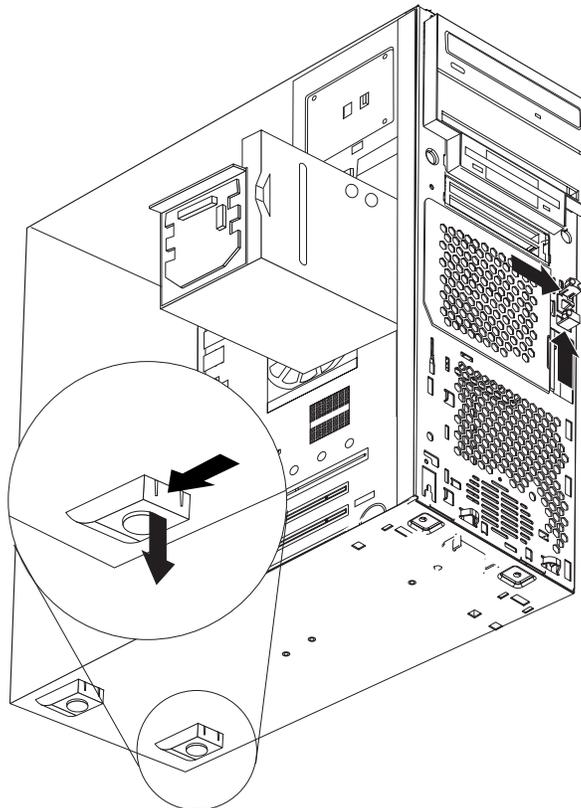
8. Remove the extender card screws.
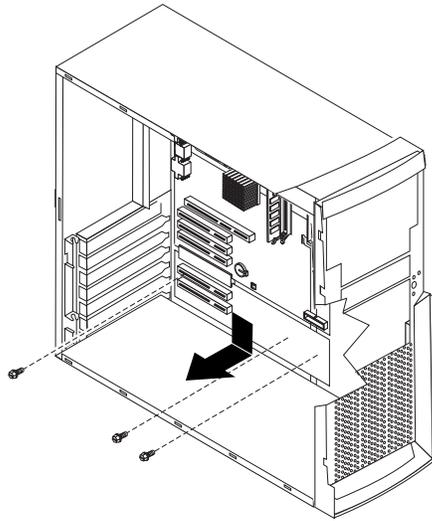
9. Disconnect the extender card connector from the system board edge connector: then, tilt the extender card and remove it from the server.

To install an extender card reverse this procedure.

System board

Notes:

1. Read "Safety information" on page 119.
2. Read "System reliability considerations" on page 33.
3. When replacing the system board, you must either update the system with the latest firmware or restore the pre-existing firmware that the customer provides on a diskette or CD image.
4. It is recommended that the server be placed on its left side before performing this service procedure. Rotate the feet in toward the server so they do not detach due to the weight of the server.

To remove the system board, complete the following steps:

1. Turn off the server, if it is on.
2. Unplug the server.
3. Remove the side cover. See "Removing the side cover" on page 40.
4. Remove the front bezel. See "Removing the front bezel" on page 68.
5. Remove the support bracket. See "Removing the side cover" on page 40.
6. Disconnect the cables.
7. Remove the adapter cards and both adapter retaining brackets (see "Installing an adapter" on page 43).
8. Remove the hot-swap hard disk drive cage. See "Hot-swap hard disk drive cage" on page 72.
9. Remove memory modules. See "Installing memory modules" on page 57.
10. Remove the microprocessor. See "Microprocessor / fan sink" on page 71.
11. Remove screws and lift the system board out of the server.
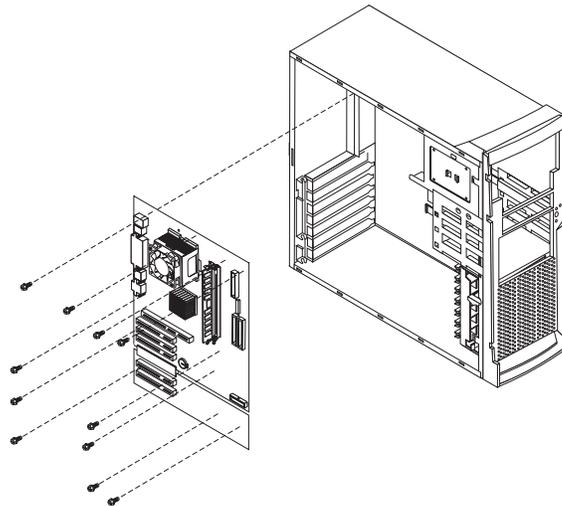
CD-ROM drive

Note:

- Read "Safety information" on page 119.
- Read "System reliability considerations" on page 33.

To remove the CD-ROM drive, complete the following steps:

1. Turn off the server, if it is on.
2. Unplug the server.
3. Remove the side cover. See "Removing the side cover" on page 40.
4. Disconnect the cables.
5. Remove the screws from the CD-ROM drive cage.
6. Gently slide the CD-ROM drive toward the front of the server and lift it out.
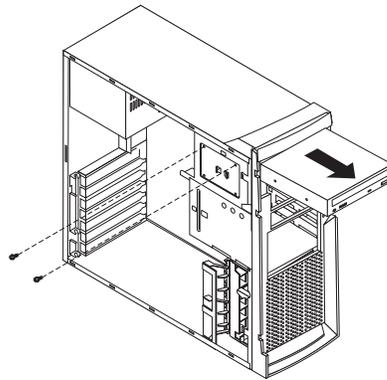
Diskette drive

To remove the diskette drive, complete the following steps:

1. Turn off the server, if it is on.
2. Unplug the server.
3. Remove the side cover. See "Removing the side cover" on page 40.
4. Disconnect the cables.
5. Remove the screws from the diskette drive cage.
6. Gently slide the floppy disk drive toward the front of the server and lift it out.
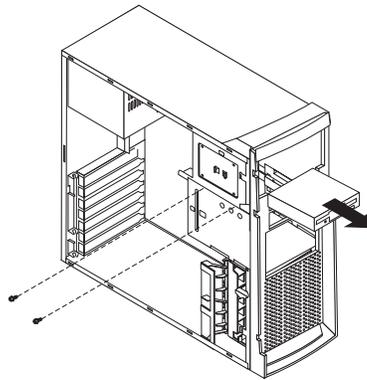
Bezel release latch

Note:

- Read "Safety information" on page 119.
- Read "System reliability considerations" on page 33.

To remove the bezel-release latch, complete the following steps:

1. Turn off the server, if it is on.
2. Unplug the server.
3. Remove the side cover. See "Removing the side cover" on page 40.
4. Remove the front bezel. See "Removing the front bezel" on page 68.
5. Remove the handle assembly. See "Handle assembly" on page 82.
6. Remove the top/side cover. See "Top/side cover" on page 81.
7. Press down on the tab.
8. From the underside, grasp the bezel release latch in the center and gently pull it back and away from the server.
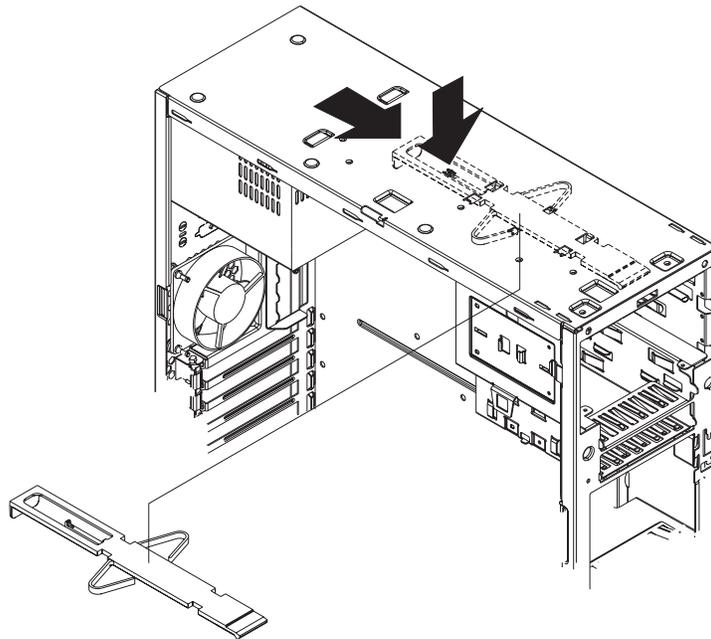
Top/side cover
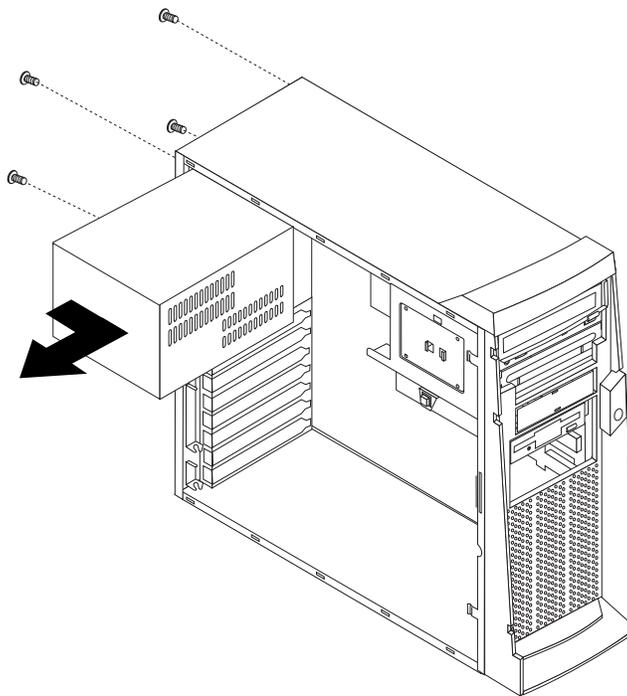
Note:

- Read "Safety information" on page 119.
- Read "System reliability considerations" on page 33.

To remove the top/side cover, complete the following steps:

1. Turn off the server, if it is on.
2. Unplug the server.
3. Remove the side cover. See "Removing the side cover" on page 40.
4. Remove the front bezel. See "Removing the front bezel" on page 68.
5. Remove the handle assembly. See "Handle assembly" on page 82.
6. Remove the four screws from the back of the server and put them in a safe place.
7. Using a screwdriver, gently pry the cover away from the server in the rear and slide the unit away from the server.
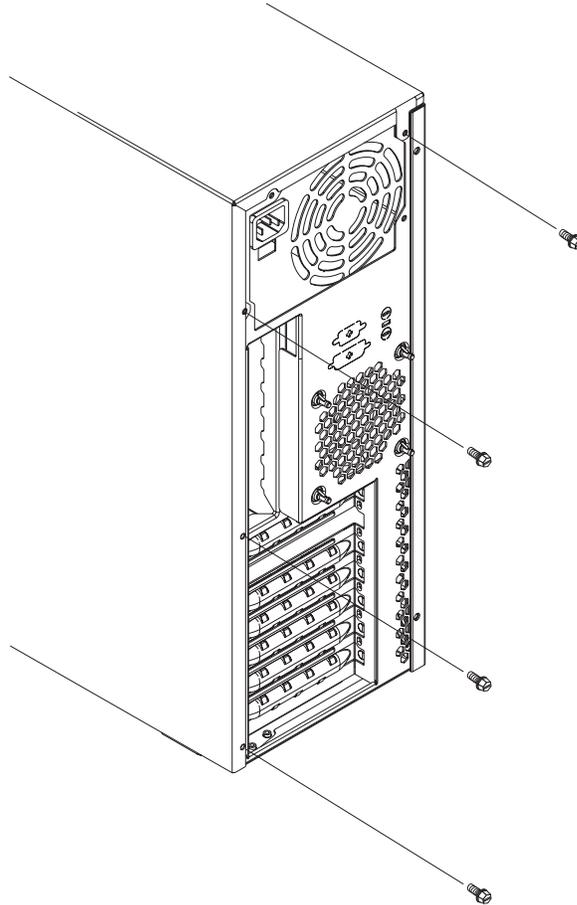
Handle assembly

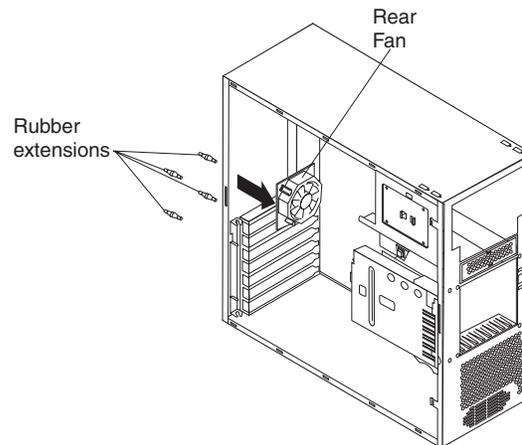**Note:**

- Read "Safety information" on page 119.
- Read "System reliability considerations" on page 33.

To remove the handle cap, complete the following steps:

1. Turn off the server, if it is on.
2. Unplug the server.
3. Use a flathead screwdriver to gently press in and down on the tabs located on the interior side wall of the handle.

Tab locations
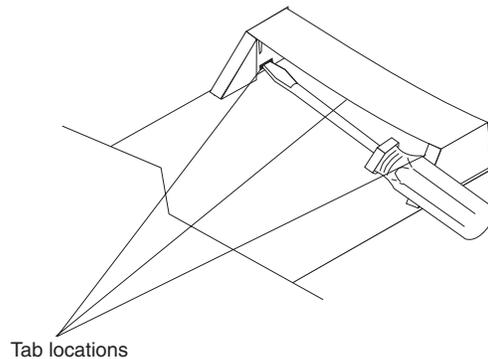
4. Lift up on the handle cap to separate it from the handle support.
5. Turn the system back to the tower-orientation; then, remove the top handle.

   a. Carefully use a flat-blade screwdriver to push in the tabs inside the plastic cover on the top of the system; then, remove the plastic cover. Store the cover for possible future use.

   b. Grasp the metal handle and slide it toward the rear of the system to remove it from your system. Store the metal handle for possible future use.

To remove the handle support, complete the following steps:

1. Turn off the server, if it is on.
2. Unplug the server.
3. Firmly grasp the handle support and slide it away from the front bezel.
4. Lift up on the handle support to remove it from the slots in the top of the chassis.
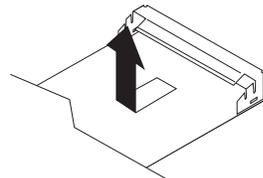
Adapter retainer

Note:

- Read "Safety information" on page 119.
- Read "System reliability considerations" on page 33.

To remove the adapter retainer, complete the following steps:

1. Turn off the server, if it is on.
2. Unplug the server.
3. Remove the side cover. See "Removing the side cover" on page 40.
4. Remove all adapters. See "Installing an adapter" on page 43.
5. Rotate the adapter retainer to the open position.
6. Grasp the adapter retainer and gently slide the top and bottom tabs out of the notches.

Chapter 6. Symptom-to-FRU index

This index supports xSeries 205 servers.

Notes:

1. Check the configuration before you replace a FRU. Configuration problems can cause false errors and symptoms.

2. For IBM devices not supported by this index, refer to the manual for that device.

3. Always start with "General checkout" on page 21.

The symptom-to-FRU index lists symptoms, errors, and the possible causes. The most likely cause is listed first. Use this symptom-to-FRU index to help you decide which FRUs to have available when servicing the computer.

The first column of the two-column tables in this index lists error codes or messages, and the second column lists one or more suggested actions or FRUs to replace. Take the action (or replace the FRU) suggested first in the list of the second column, then try the server again to see if the problem has been corrected.

Note: Try reseating a suspected component or reconnecting a cable before replacing the component.

The POST BIOS code displays POST error codes and messages on the screen.

Beep symptoms

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

Beeps	Description
1-2-3	• One beep • A pause (or break) • Two beeps • A pause (or break) • Three beeps
4	Four continuous beeps

One beep after successfully completing POST indicates the system is functioning properly.

Note: See "System" on page 112 to determine which components should be replaced by a field service technician.	
Beep/symptom	**FRU/action**
1-1-2 (Microprocessor register test failed.)	• **Microprocessor.**
1-1-3 (CMOS write/read test failed.)	1. **Battery** 2. System board
1-1-4 (BIOS EEPROM checksum failed.)	1. **Recover BIOS.** 2. System board
1-2-1 (Programmable Interval Timer failed.)	• **System board.**
1-2-2 (DMA page register test failed.)	• **System board.**
1-2-3 (DMA page register write/read failed.)	• **System board.**
1-2-4 (RAM refresh verification failed.)	1. **DIMM.** 2. System board
1-3-1 (First 64K RAM test failed.)	• **DIMM.** • Memory adapter
1-3-2 (First 64K RAM parity test failed.)	• **System board.** • System board
2-1-1 (Secondary DMA register failed.)	• **System board.**
2-1-2 (Primary DMA register failed.)	• **System board.**
2-1-3 (Primary interrupt mask register failed.)	• **System board.**
2-1-4 (Secondary interrupt mask register failed)	• **System board.**

Note: See "System" on page 112 to determine which components should be replaced by a field service technician.	
Beep/symptom	**FRU/action**
2-2-2 (Keyboard controller failed.)	1. **Keyboard.** 2. System board
2-4-1 (Video failed; screen believed operable.)	• **Extender card.**
3-1-1 (Timer tick interrupt failed.)	• **System board.**
3-1-2 (Interval timer channel 2 failed.)	• **System board.**
3-1-3 (RAM test failed above address OFFFFH.)	1. **DIMM.** 2. System board
3-1-4 (Time-Of-Day clock failed.)	1. **Battery.** 2. System board
3-2-1 (Serial port failed.)	• **System board.**
3-2-2 (Parallel port failed.)	• **System board.**
3-2-4 (Failure comparing CMOS memory size against actual.)	1. **DIMM.** 2. System board. 3. Battery.
3-3-1 (Memory size mismatch occurred.)	1. **DIMM.** 2. System board. 3. Battery
3-3-2 (Critical SMBUS error occurred, I2C error.)	1. **Disconnect the server power cord from outlet, wait 30 seconds and retry.** 2. System board. 3. Microprocessor. 4. DIMMs. 5. DASD backplane. 6. DASD power cable.
3-3-3 (No operational memory in system.)	1. **Install or reseat the memory modules, and then do a 3 boot reset.** (For more information on a 3 boot reset, see "Using the Configuration/Setup Utility program" on page 9.) 2. DIMMs. 3. System board.

No-beep symptoms

Note: See "System" on page 112 to determine which components should be replaced by a field service technician.	
No-beep symptom	**FRU/action**
No beep occurs during POST.	• **System board.**
No beep, no video, and the system attention LED is off.	• **System board.**

Note: See "System" on page 112 to determine which components should be replaced by a field service technician.	
No-beep symptom	**FRU/action**
No beep, no video, and the system attention LED is on.	• See "Diagnostic panel system error LED."
BIST failed.	• Microprocessor

Diagnostic panel system error LED

The system-error LED is lit when an error is detected. If the system-error LED is lit, remove the cover and check the diagnostic panel LEDs. The following table is a complete list of diagnostics panel LEDs followed by the FRU or action for correcting the problem. The information in the table is valid only when the system-error LED is lit.

Notes:
1. If a diagnostics panel LED is lit and the information LED panel system-error LED is off, there is probably an LED problem. Run LED diagnostics.
2. Check the System Error Log for additional information before replacing a FRU.
3. The DIMM error LEDs, microprocessor error LEDs, and VRM error LEDs turn off when the system is turned off.

Note: See "System" on page 112 to determine which components should be replaced by a field service technician.	
Diagnostics panel LED	**FRU/action**
All LEDs off. (Check System Error Log for error condition, then clear System Error Log when the problem is found.)	1. **System Error Log is 75% full; clear the log.** 2. PFA alert; check log for failure; clear PFA alert; remove ac power for at least 20 seconds, reconnect, then turn on the system. 3. Run light path diagnostics.
FAN LED on. (The LED next to the failing DIMM is on.)	1. **Failing fan.** 2. System board.
MEMORY LED on. (The LED next to the failing DIMM is on.)	1. **Failing DIMM.** 2. System board.
CPU LED on. (The LED next to the failing CPU is on.)	1. **Run the Configuration/Setup Utility program** to verify that all microprocessors have identical cache sizes, dock speeds and clock frequencies. 2. Microprocessor 1 or 2. 3. System board.
PCI BUS LED on.	1. **Remove all PCI adapters from slots on affected bus.** 2. System board.
VRM LED on. (The LED next to the failing VRM is on.)	1. **Voltage regulator module indicated by the lit VRM LED.** 2. Microprocessor indicated by the microprocessor LED.
DASD LED on (The LED located next to the drive bay that the failing drive is installed in is lit. Check the amber drive LED for the failing hard drive.)	1. **Be sure the fans are operating correctly and the airflow is good.** 2. If installed, reseat I2C cable between DASD backplane and DASD I2C on the system board (J10). 3. Failing drive. SCSI channel A has failed. (This is the SCSI channel for the hot-swap hard disk drives). 4. DASD backplane.

Note: See "System" on page 112 to determine which components should be replaced by a field service technician.	
Diagnostics panel LED	**FRU/action**
SERVICE PROCESSOR BUS LED.	1. **Unplug the server for 30 seconds, and then retry.** 2. Reflash or update firmware for ISMP, BIOS. 3. System board.
POWER SUPPLY 1 LED on.	1. **Check the dc good LED on power supply 1. If it is off, replace power supply 1.** 2. Power cage assembly, if installed.
POWER SUPPLY 2 LED on.	1. **Check the dc good LED on power supply 2. If it is off, replace power supply 2.** 2. Power cage assembly, if installed.
NONREDUNDANT LED on.	1. **Check the PS1 and PS2 LEDs and replace any indicated power supply.** 2. Install an additional power supply or remove optional devices from the server.
NMI LED on.	1. **Restart the server.** 2. Check the System Error Log.

TEMPERATURE LED on.	1. **Ambient temperature must be within normal operating specifications. See "Features and specifications" on page 3.**
	2. Ensure fans are operating correctly.
	3. Examine System Error Log.
	   a. System over recommended temperature
	      • Information LED panel
	   b. DASD over recommended temperature (DASD LED also on)
	      1) Overheating hard drive
	      2) DASD backplane
	   c. System over recommended temperature for CPU x (where x is 1 or 2) (CPU LED is also on)
	      1) CPU x
	      2) System board
	4. If the CPU LED on the diagnostics panel is also lit, one of the microprocessors has caused the error.

FAN LED on	1. **Check individual fan LEDs.** 2. Replace respective fan. 3. Fan cable. 4. System board. 5. Power cage assembly, if installed.

Diagnostic error codes

Note: In the following error codes, if *XXX* is *000*, *195*, or *197*, *do not* replace a FRU. The description for these error codes are:

000 The test passed.

195 The Esc key was pressed to stop the test.

197 Warning; a hardware failure might not have occurred.

For all error codes, replace the FRU or take the action indicated.

Note: See "System" on page 112 to determine which components should be replaced by a field service technician.	
Error code/symptom	**FRU/action**
001-XXX-000 (Failed core tests)	• **System board.**
001-XXX-001 (Failed core tests)	• **System board.**
001-250-000 (Failed system board ECC)	• **System board.**
001-250-001 (Failed system board ECC)	• **System board.**
005-XXX-000 (Failed video test)	• **Extender card.**
011-XXX-000 (Failed COM1 serial port test)	• **System board.**
011-XXX-001 (Failed COM2 serial port test)	• **System board.**
014-XXX-000 (Failed parallel port test)	• **System board.**
015-XXX-001 (USB interface not found, board damaged)	• **System board.**
015-XXX-015 (Failed USB external loopback test.)	1. **Make sure the parallel port is not disabled.** 2. Run the USB external loopback test again. 3. System board.
015-XXX-198 (USB device connected during USB test.)	1. **Remove USB devices from USB1 and USB2.** 2. Run the USB external loopback test again. 3. System board.
020-XXX-000 (Failed PCI interface test.)	• **System board.**
020-XXX-001 (Failed hot-swap slot 1 PCI latch test.)	1. **PCI hot-swap latch assembly** 2. System board.
020-XXX-002 (Failed Hot-swap slot 2 PCI latch test.)	1. **PCI hot-swap latch assembly.** 2. System board.
020-XXX-003 (Failed hot-swap slot 3 PCI latch test.)	1. **PCI hot-swap latch assembly.** 2. System board.
020-XXX-004 (Failed hot-swap slot 4 PCI latch test.)	1. **PCI hot-swap latch assembly.** 2. System board.

Note: See "System" on page 112 to determine which components should be replaced by a field service technician.	
Error code/symptom	**FRU/action**
030-XXX-000 (Failed internal SCSI interface test.)	• **System board**
035-XXX-099	1. **No adapters were found.** 2. If adapter is installed re-check connection.
035-XXX-S99 (Failed RAID test on PCI slot S. S = number of failing PCI slot. Check System Error Log before replacing a FRU.)	1. **Adapter.** 2. SCSI backplane. 3. Cable.
035-XXX-SNN (Check System Error Log before replacing a FRU. s = number of failing PCI slot, nn = SCSI ID of failing fixed disk.)	• **Hard disk drive with SCSI ID nn on RAID adapter in PCI slot s.**
035-253-S99 (RAID adapter initialization failure.)	1. **ServeRAID adapter in slot s is not configured properly.** Obtain the basic and extended configuration status and see the ServeRAID Hardware Maintenance Manual for more information. 2. Cable. 3. SCSI backplane. 4. Adapter.
075-XXX-000 (Failed power supply test.)	• **Power supply**
089-XXX-001 (Failed microprocessor test.)	1. **VRM 1 for microprocessor 1** 2. Microprocessor 1
089-XXX-002 (Failed optional microprocessor test.)	1. **VRM 2 for optional microprocessor 2.** 2. Optional microprocessor 2
166-198-000 System Management: Aborted (Unable to communicate with ASM. It may be busy. Run the test again.)	1. **Run the diagnostic test again.** 2. Correct other error conditions and retry. These include other failed system management tests and items logged in the System Error Log of the optional Remote Supervisor Adapter. 3. Disconnect all server and option power cords from the server, wait 30 seconds, reconnect, and retry. 4. Remote Supervisor Adapter, if installed. 5. System board.
166-201-001 System Management: Failed (I2C bus error(s) See SERVPROC and DIAGS entries in event log.)	1. **If installed, reseat the I2C cable between the Remote Supervisor Adapter (in PCI slot 1/J14) and system management connector on the PCI riser card.** 2. Reseat memory DIMMs. 3. Memory DIMMs. 4. System board.
166-201-002 System Management: Failed (I2C bus error(s) See SERVPROC and DIAGS entries in event log.)	1. **Reseat I2C cable between the operator information panel and the system board (J22).** 2. Reseat I2C cable between the diagnostics panel and the system board (J23). 3. Operator information panel. 4. Diagnostics panel. 5. System board.

Note: See "System" on page 112 to determine which components should be replaced by a field service technician.	
Error code/symptom	**FRU/action**
166-201-003 System Management: Failed (I2C bus error(s) See SERVPROC and DIAGS entries in event log.)	1. **Reseat cables between the system board and the power supply or power cage assembly, if installed.** 2. Power cage assembly, if installed. 3. System board.
166-201-004 System Management: Failed (I2C bus error(s) See SERVPROC and DIAGS entries in event log.)	1. **DASD backplane** 2. System board
166-201-005 System Management: Failed (I2C bus error(s) See SERVPROC and DIAGS entries in event log.)	1. **Reseat Memory DIMMs.** 2. Reseat microprocessors. 3. Memory DIMMs. 4. Microprocessors. 5. System board.
166-250-000 System Management: Failed (I2C cable is disconnected. Reconnect I2C cable between Remote Supervisor Adapter and system board.)	1. **If installed, reseat the I2C cable between the Remote Supervisor Adapter (in PCI slot 1/J14) and system management connector on the PCI riser card.** 2. I2C cables. 3. Advanced System Management adapter. 4. System board.
166-260-000 System Management: Failed (Restart ASM Error. After restarting, ASM communication was lost. Unplug and cold boot to reset ASM.)	1. **Disconnect all server and option power cords from the server, wait 30 seconds, reconnect, and retry.** 2. Reseat the Remote Supervisor Adapter (in PCI slot 1/J14). 3. Remote Supervisor Adapter.
166-342-000 System Management: Failed (ASM adapter BIST indicate failed tests.)	1. **Ensure the latest firmware levels for Remote Supervisor Adapter and BIOS.** 2. Disconnect all server and option power cords from server, wait 30 seconds, reconnect, and retry. 3. Remote Supervisor Adapter.
166-400-000 System Management: Failed (ISMP self test result failed tests: x where x = Flash, RAM, or ROM.)	1. **Reflash or update firmware for ISMP.** 2. System board.
180-XXX-000 (Diagnostics LED failure.)	• **Run diagnostics panel LED test for the failing LED.**
180-XXX-001 (Failed front LED panel test.)	1. **Operator information panel.** 2. System board.
180-XXX-002 (Failed diagnostics LED panel test.)	1. **Diagnostics panel.** 2. System board.
180-361-003 (Failed fan LED test.)	1. **Fan.** 2. System board.
180-XXX-003 (Failed system board LED test.)	• **System board.**
180-XXX-005 (Failed SCSI backplane LED test.)	1. **SCSI backplane.** 2. SCSI backplane cable. 3. System board.

Note: See "System" on page 112 to determine which components should be replaced by a field service technician.	
Error code/symptom	**FRU/action**
201-XXX-0NN (Failed memory test.)	1. **DIMM Location slots 1-6 where nn = DIMM location.** **Note:** nn 1=DIMM 1; 2=DIMM 2; 3=DIMM 3; 4=DIMM 4; 5=DIMM 5; 6=DIMM 6. 2. System board.
201-XXX-999 (Multiple DIMM failure, see error text.)	1. **See error text for failing DIMMs.** 2. System board.
202-XXX-001 (Failed system cache test.)	1. **VRM 1.** 2. Microprocessor 1.
202-XXX-002 (Failed system cache test.)	1. **VRM 2.** 2. Microprocessor 2.
206-XXX-000 (Failed diskette drive test.)	1. **Cable.** 2. Diskette drive. 3. System board.
215-XXX-000 (Failed IDE CD-ROM drive test.)	1. **CD-ROM drive cables.** 2. CD-ROM drive. 3. System board.
217-198-XXX (Could not establish drive parameters.)	1. **Check cable and termination.** 2. SCSI backplane. 3. Hard disk.
217-XXX-000 (Failed BIOS hard disk test) **Note:** If RAID is configured, the hard disk number refers to the RAID logical array.	• **Hard disk 1**
217-XXX-001 (Failed BIOS hard disk test) **Note:** If RAID is configured, the hard disk number refers to the RAID logical array.	• **Hard disk 2**
217-XXX-002 (Failed BIOS hard disk test.) **Note:** If RAID is configured, the hard disk number refers to the RAID logical array.	• **Hard disk 3**
217-XXX-003 (Failed BIOS hard disk test.) **Note:** If RAID is configured, the hard disk number refers to the RAID logical array.	• **Hard disk 4.**
217-XXX-004 (Failed BIOS hard disk test.) **Note:** If RAID is configured, the hard disk number refers to the RAID logical array.	• **Hard disk 5.**
217-XXX-005 (Failed BIOS hard disk test.) **Note:** If RAID is configured, the hard disk number refers to the RAID logical array.	• **Hard disk 6.**

Note: See "System" on page 112 to determine which components should be replaced by a field service technician.

Error code/symptom	FRU/action
264-XXX-0NN (Failed tape drive test.)	1. **Tape cartridge, if user executed the Read/Write Tape Drive test (failure code of XXX = 256).** 2. SCSI or power cable connected to tape drive with SCSI ID nn. 3. Tape drive with SCSI ID nn (refer to the Help and Service Information appendix of the tape drive's User Guide). 4. System board or SCSI controller (run SCSI controller diagnostic to determine if the SCSI bus is functioning properly.)
264-XXX-999 (Errors on multiple tape drives, see error text for more info.)	• **See error messages/text in the PC Doctor error log for detailed information on each individual tape drive error.**
301-XXX-000 (Failed keyboard test.)	• **Keyboard.**
405-XXX-000 (Failed Ethernet test on controller on the system board.)	1. **Verify that Ethernet is not disabled in BIOS.** 2. System board.
405-XXX-00N (Failed Ethernet test on adapter in PCI slot n.)	1. **Adapter in PCI slot n.** 2. System board.
415-XXX-000 (Failed Modem test.)	1. **Cable.** **Note:** Ensure modem is present and attached to server. 2. Modem. 3. System board.

Error symptoms

You can use the error symptom table to find solutions to problems that have definite symptoms.

If you cannot find the problem in the error symptom charts, go to "Starting the diagnostic programs" on page 26 to test the server.

If you have just added new software or a new option and your server is not working, complete the following steps before using the error symptom charts:

1. Remove the software or device that you just added.
2. Run the diagnostic tests to determine if your server is running correctly.
3. Reinstall the new software or new device.

In the following table, if the entry in the FRU/action column is a suggested action, perform that action; if it is the name of a component, reseat the component and replace it if necessary. The most likely cause of the symptom is listed first.

Note: See "System" on page 112 to determine which components should be replaced by a field service technician.	
CD-ROM drive problems	
Symptom	**FRU/action**
Microprocessor test failed.	• **Microprocessor.**
System timer test failed.	• **System board.**
Memory test failed.	• **DIMM.** • System board.
RAM refresh test failed.	• **System board.**
ECC controller logic.	• **System board.**
CMOS RAM test failed.	• **System board.**
Keyboard controller test failed.	• **System board.**
External cache test failed.	• **Microprocessor.**
PCI test failed.	• **System board.**
USB iterface test failed.	• **System board.**
USB port test failed.	• **System board.**
Video test failed.	• **Extender card.**
Serial port test failed.	• **System board.**
Parallel port test failed.	• **System board.**
SCSI controller test failed.	• **System board.**
Hard disk drive test failed.	1. **Hard disk drive.** 2. Hard disk drive cable.
Diskette drive test failed.	1. **Diskette drive.** 2. Diskette drive cable. 3. System board.
Integrated SP test failed.	• **System board.**

Note: See "System" on page 112 to determine which components should be replaced by a field service technician.	
CD-ROM drive problems	
Symptom	**FRU/action**
System management test failed.	1. **ASM adapter, if installed.** 2. System board.
CD0ROM test failed.	1. **CD-ROM/diskette drive assembly.** 2. System board.
Ethernet test failed.	• **System board.**
ServeRAID test failed.	• **RAID controller.**
Tape drive test failed.	• **Tape drive.**

Power-supply LED errors

Use the information in this section to solve power-supply problems.

Note: The minimum configuration required for the dc good light to be lit is:
- Power supply
- Power cage assembly, if installed.
- System board (set switch 7 of SW1 to bypass the power switch; see "System and PCI extender boards" on page 34.

Note: See "System" on page 112 to determine which components should be replaced by a field service technician.			
AC good LED	**DC good LED**	**Description**	**FRU/action**
Off	Off	No power to system or ac problem.	1. **Check ac power to the system.** 2. Power supply.

On	Off	Standby mode or dc problem.	1. **Check system board cable connectors J4 and J10.** Move switch 7 of SW 1 to bypass power control. If the dc good LED is lit, press Ctrl+Alt+Delete. Watch the screen for any POST errors. Check the System Error Log for any listed problems. If the system starts with no errors:
			  a. Power switch assembly
			  b. System board
			2. Remove the adapters and disconnect the cables and power connectors to all internal and external devices. Turn on the system. If the dc good LED is lit, replace the adapters and devices one at a time until you isolate the problem.
			3. Power supply.
			4. Power cage assembly, if installed.
			5. System board.

On	On	Power is working properly.	N/A

POST error codes

In the following error codes, *X* can be any number or letter.

Note: See "System" on page 112 to determine which components should be replaced by a field service technician.	
Error code/symptom	**FRU/action**
062 (Three consecutive boot failures using the default configuration.)	1. **Run the Configuration/Setup Utility program.** 2. Battery. 3. System board. 4. Microprocessor.
101, 102, 106 (System and processor error)	• **System board**
114 (Adapter read-only memory error)	1. **Failing adapter.** 2. Run diagnostics.
151 (Real time clock error)	1. **Run diagnostics.** 2. Battery. 3. System board.
161 (Real time clock battery error)	1. **Run the Configuration/Setup Utility program.** 2. Battery. 3. System board.
162 (Device configuration error) **Note:** Be sure to load the default settings and any additional desired settings; then, *save the configuration*.	1. **Run the Configuration/Setup Utility program.** 2. Battery. 3. Failing device. 4. System board.
163 (Real-time clock error)	1. **Run the Configuration/Setup Utility program.** 2. Battery. 3. System board.
164 (Memory configuration changed.)	1. **Run the Configuration/Setup Utility program.** 2. DIMM. 3. System board.
184 (Power-on password damaged)	1. **Run the Configuration/Setup Utility program.** 2. System board.
185 (Drive startup sequence information corrupted)	1. **Run the Configuration/Setup Utility program.** 2. System board.
187 (VPD serial number not set.)	1. **Set serial number in the Configuration/Setup Utility program.** 2. System board.
188 (Bad EEPROM CRC #2)	1. **Run the Configuration/Setup Utility program.** 2. System board.
189 (An attempt made to enter the system with invalid passwords)	1. **Run the Configuration/Setup Utility program.**
201 (Memory test error.)	1. **DIMM** 2. System board

Note: See "System" on page 112 to determine which components should be replaced by a field service technician.	
Error code/symptom	**FRU/action**
289 (DIMM disabled by the user or system.)	1. **Run the Configuration/Setup Utility program.** 2. DIMM. 3. System board.
301 (Keyboard or keyboard controller error)	1. **Keyboard** 2. System board
303 (Keyboard controller error)	• **System board**
602 (Invalid diskette boot record)	1. **Diskette** 2. Diskette drive 3. Drive cable. 4. System board
604 (Diskette drive error)	1. **Run the Configuration/Setup Utility program and diagnostics.** 2. Diskette drive. 3. Drive cable. 4. System board.
662 (Diskette drive configuration error)	1. **Run the Configuration/Setup Utility program and diagnostics.** 2. Diskette drive. 3. Drive cable. 4. System board.
962 (Parallel port error)	1. **Run the Configuration/Setup Utility program.** 2. System board.
11XX (System board serial port 1 or 2 error)	1. **Run the Configuration/Setup Utility program.** 2. System board.
1762 (Hard drive configuration error, IDE only.)	1. **Hard disk drive.** 2. Hard disk cables. 3. Run the Configuration/Setup Utility program. 4. System board.
178X (Hard drive error, IDE only.)	1. **Hard disk cables.** 2. Hard disk adapter. 3. Hard disk drive. 4. System board.
1800 (No more hardware interrupt available for PCI adapter.)	1. **Run the Configuration/Setup Utility program.** 2. Remove adapter.
1801 (No more ROM space available for PIC adapter.)	1. **Run the Configuration/Setup Utility program.** 2. Remove adapter. 3. Disable the adapter BIOs and run the Configuration/Setup Utility program.

Note: See "System" on page 112 to determine which components should be replaced by a field service technician.	
Error code/symptom	**FRU/action**
1962 (Drive does not contain a valid boot sector)	1. **Verify that a startable operating system is installed.** 2. Run diagnostics. 3. Hard disk drive. 4. SCSI backplane. 5. Cable. 6. System board.
5962 (IDE CD-ROM drive configuration error)	1. **Run the Configuration/Setup Utility program.** 2. CD-ROM drive. 3. CD-ROM power cable. 4. IDE cable. 5. System board. 6. Battery.
8603 (Pointing-device error)	1. **Pointing device.** 2. System board
00012000 (Machine check architecture error.)	1. **Microprocessor.** 2. System board.
00019701 (Microprocessor 1 failed)	1. **Microprocessor.** 2. System board
00180200 (No more I/O space available for PCI adapter.)	1. **Run the Configuration/Setup Utility program.** 2. Adapter. 3. System board.
00180300 (No more memory above 1MB for PCI adapter.)	1. **Run the Configuration/Setup Utility program.** 2. Adapter. 3. System board.
00180500 (PCI option ROM checksum error.)	1. **PCI adapter.** 2. System board.
00180600 (PCI device BIST failure. PCI bridge error.)	1. **Run the Configuration/Setup Utility program.** 2. Adapter. 3. System board.
00180700 (PCI device no responding.)	1. **System board.** 2. PCI adapter.
00181000 (General PCI error)	• **Adapter** • System board
I9990650 (AC power has been restored)	1. **Check cable.** 2. Check for interruption of power. 3. Power cable.

POST (ISPR) error procedures

Use the ISPR error procedures to help you solve ServeRAID problems. A complete list of error codes is listed at "ServeRAID error codes" on page 102.

Note: Where the ISPR Error Procedures refer to a Hard disk drive backplane, see the chapter of this publication that concerns service replaceable units.

EF10 (Default ISPR)
1. No ISPR error present.

9ZXX thru BZXX (SCSI bus error caused either by cables, termination, defective drives, etc.)
1. Isolate between SCSI subsystem and controller by disconnecting all hard disk drive cables from suspect card, and reboot.

    CAUTION:
    Do not press F5. Doing so changes the server's configuration.

    If an ISPR error is still present, perform the following actions until the error is no longer present:

    a. Reseat the controller
    b. Replace the controller

    Notes:

    a. SCSI channel cable details, if any, appear elsewhere in this publication.
    b. The adapter/controller detects a configuration change. **Do not** choose **Save Changes**. Instead, press **F10** to bypass any options to this effect.

2. If ISPR error is **EF10** after disconnecting cables:

    a. Identify which channel is causing the error by the second digit (Z) of the original ISPR code as indicated in the following table:

    Note: ServeRAID-4H controllers have 4 channels; ServeRAID-4L and -4Lx controllers have only one channel; and ServeRAID-4M and -4Mx controllers have 2 channels. ServeRAID-5i controllers have no channels. The ServeRAID-5i uses the channel connectors of the server's onboard integrated SCSI controller.

Table 3. SCSI identifier

SCSI Channel Code (z)	Descriptions
1	Channel 1
2	Channel 2
3	Channel 1 & 2
4	Channel 3
5	Channel 1 & 3
6	Channel 2 & 3
7	Channel 1, 2, & 3
8	Channel 4
9	Channel 1 & 4
A	Channel 2 & 4
B	Channel 1, 2, & 4
C	Channel 3 & 4

Table 3. SCSI identifier (continued)

SCSI Channel Code (z)	Descriptions
D	Channel 1, 3, & 4
E	Channel 2, 3, & 4
F	Channel 1, 2, 3, & 4

    b. Confirm that the channel(s) identified from the error in step 2a on page 100 is (are) the cause of the error by verifying that the error presents itself *only* when the offending channel is reconnected.

    c. Check termination of identified channel.

       Note: SCSI channel termination details, if any, appear elsewhere in this publication.

    d. Check for proper backplane jumper configuration.

       Note: SCSI channel jumper details, if any, appear elsewhere in this publication.

    e. Check for proper cabling configuration in systems that use hard disk drive status cables. Reconnect all cables removed in step 1 on page 100.

    f. Disconnect one drive at a time attached to the channel identified in step 2a on page 100; then, reboot to determine which drive is causing the error.

    g. Replace hard disk drive cable.

    h. Replace hard disk drive backplane.

FFFF or other code not listed

1. Place download jumpers on the controller and try to flash the firmware code to the card.

2. Isolate between SCSI subsystem and controller by disconnecting all hard disk drive cables attached to the suspect card, and reboot.

    CAUTION:
    Do not press F5. Doing so will change the server's configuration.

    If ISPR code is **EF10** after disconnecting cables, follow the steps below until the error is eliminated:

    a. Identify which channel is causing the error by reconnecting cables one at a time and rebooting until the error returns.

    b. Check termination of identified channel in step 2a.

       Note: SCSI channel termination details, if any, appear elsewhere in this publication.

    c. Disconnect one drive at a time attached to channel identified in step 2a and reboot each time to determine which drive is causing the problem.

    d. Replace hard disk drive cable attached to channel identified in step 2a.

    e. Replace backplane attached to channel identified in step 2a.

3. If original ISPR code is still present after disconnecting all hard disk drive cables and rebooting, perform the following actions until the error is no longer present:

    • Reseat the controller

    • Replace the controller

ServeRAID error codes

In the following error codes, *x* can be any number or letter.

Note: See "System" on page 112 to determine which components should be replaced by a field service technician.	
Error code/symptom	**FRU/action**
1*xxx* (Microcode checksum error)	1. ServeRAID controller
2*xxx* (Code DRAM error)	1. Install download jumpers, flash latest level BIOS and firmware for controller. Remove jumpers. 2. ServeRAID controller.
3000-31*XX* (Code DRAM error)	1. Install download jumpers, flash latest level BIOS and firmware for controller. Remove jumpers. 2. ServeRAID controller.
3200 (Code DRAM error)	1. Install download jumpers, flash latest level BIOS code and firmware for controller. Remove jumpers. 2. ServeRAID controller.
3300 (ServeRAID-5i only)	1. Install ServeRAID-5i controller in an extended PCI option slot. See the documentation that came with the server for more information.
3E20 (ServeRAID-5i only)	1. Remove the ServeRAID-5i controller from its slot and install it in the proper PCI option slot. 2. Verify that the ServeRAID-5i controller is supported in this server. 3. ServeRAID-5i controller. 4. System board.
3E2x	1. Reseat the ServeRAID controller. 2. Flash latest level of BIOS code and firmware for controller. 3. ServeRAID-5i controller. 4. Integrated RAID controller on server).
4*xxx* thru 5*xxx* (Code DRAM error)	1. Install download jumpers, flash latest level BIOS code and firmware for controller; then, remove jumpers. 2. ServeRAID controller.
6*xxx* (Cache DRAM error) (ServeRAID-4H only)	1. Reseat daughter card. 2. Install download jumpers, flash latest level BIOS code and firmware for controller; then, remove jumpers. 3. ServeRAID controller.
7*xxx* thru 8*xxx* (Host/local PCI bus interface error)	1. Flash latest level of BIOS code and firmware for controller. 2. If ServeRAID-4x controller, replace controller. 3. If ServeRAID-5i controller, integrated RAID controller on the server.

Note: See "System" on page 112 to determine which components should be replaced by a field service technician.	
Error code/symptom	**FRU/action**
9003	1. Flash latest level of BIOS code and firmware for controller. 2. Confirm that this controller is a supported option for this system. 3. ServeRAID controller. 4. Integrated RAID controller on the server).
9*xxx* thru BZ*xx* (SCSI bus error caused by cables, termination, defective drives, etc.). *Z* refers to the specific channel or channels that cause the error.	1. Follow indications at "POST (ISPR) error procedures" on page 100. Follow those instructions before continuing with the next steps listed in this index. 2. Hard disk drive cable. 3. Hard disk drive backplane. 4. Hard disk drive. 5. ServeRAID controller.
EFFE (Firmware code corrupt or download jumpers are in place)	1. Flash latest level BIOS and firmware for controller; then, remove jumpers. 2. ServeRAID controller.
FFFF or other code not listed	1. Follow indications at "POST (ISPR) error procedures" on page 100. 2. Hard disk drive cable. 3. Hard disk drive backplane. 4. Hard disk drive. 5. ServeRAID controller.

Service processor error codes

When viewed from POST, service processor error codes will appear in hexadecimal form (generally beginning with A2, A3, A4, A5, A6, A7, AD, AE, or E1). However, when viewed from the System Error Log, the messages will appear as text. To determine a possible error condition for the service processor, see the System Error Log (see "Viewing error logs from diagnostic programs" on page 24).

SCSI error codes

Error code	**FRU/action**
All SCSI Errors One or more of the following might be causing the problem: • A failing SCSI device (adapter, drive, controller) • An improper SCSI configuration or SCSI termination jumper setting • Duplicate SCSI IDs in the same SCSI chain • A missing or improperly installed SCSI terminator • A defective SCSI terminator • An improperly installed cable • A defective cable	1. **External SCSI devices must be turned on before you turn on the server.** 2. Make sure that the cables for all external SCSI devices are connected correctly. 3. If you have attached an external SCSI device to the server, make sure the external SCSI termination is set to automatic. 4. Make sure that the last device in each SCSI chain is terminated correctly. 5. Make sure that the SCSI devices are configured correctly.

Temperature error messages

Note: See "System" on page 112 to determine which components should be replaced by a field service technician.	
Message	**Action**
DASD Over Temperature (level-critical; direct access storage device bay x was over temperature)	• **Ensure that the system is being properly cooled**; see "System reliability considerations" on page 37.
DASD Over recommended Temperature (sensor x) (level-warning; DASD bay x had over temperature condition)	• **Ensure that the system is being properly cooled**; see "System reliability considerations" on page 37.
DASD under recommended temperature (sensor x) (level-warning; direct access storage device bay x had under temperature condition)	• **Ambient temperature must be within normal operating specifications**; see "Features and specifications" on page 3.
DASD Over Temperature (level-critical; sensor for DASD1 reported temperature over recommended range)	• **Ensure system is being properly cooled**; see "System reliability considerations" on page 37.
Power supply x Temperature Fault (level-critical; power supply x had over temperature condition)	1. **Ensure system is being properly cooled;** see "System reliability considerations" on page 37. 2. Replace power supply *x*
System board is over recommended temperature (level-warning; system board is over recommended temperature)	1. **Ensure system is being properly cooled**; see "System reliability considerations" on page 37. 2. Replace the system board.
System board is under recommended temperature (level-warning; system board is under recommended temperature)	• **Ambient temperature must be within normal operating specifications**; see "Features and specifications" on page 3.
System over temperature for CPU x (level-warning; CPU x reporting over temperature condition)	• **Ensure system is being properly cooled;** see "System reliability considerations" on page 37.
System under recommended CPU x temperature (level - warning; system reporting under temperature condition for CPU x)	• **Ambient temperature must be within normal operating specifications**; see "Features and specifications" on page 3.

Fan error messages

Note: See "System" on page 112 to determine which components should be replaced by a field service technician.	
Message	**Action**
Fan x failure (level-critical; fan x had a failure)	1. **Check connections to fan x.** 2. Replace fan x.
Fan x fault (level-critical; fan x beyond recommended RPM range)	1. **Check connections to fan x.** 2. Replace fan *x*.
Fan x outside recommended speed action	1. **Replace fan x.**

Power error messages

Note: See "System" on page 112 to determine which components should be replaced by a field service technician.

Message	Action
Power supply x current share fault (level-critical; excessive current demand on power supply x)	• **Replace power supply x.**
Power supply x DC good fault (level-critical; power good signal not detected for power supply x)	• **Replace power supply x.**
Power supply x temperature fault	• **Replace power supply x.**
Power supply x removed	• **No action required - information only**.
Power supply x fan fault (level-critical; fan fault in power supply x)	• **Replace power supply x.**
Power supply x 12 V fault (level-critical; overcurrent condition detected)	• **See "Power checkout" on page 29.**
Power supply x 3.3 V fault (level-critical; 3.3 V power supply x had an error)	• **See "Power checkout" on page 29.**
Power supply x 5 V fault (level-critical; 5 V power supply x had an error)	• **See "Power checkout" on page 29.**
System running non-redundant power (level-noncritical; system does not have redundant power)	1. **Add another power supply.** 2. Remove options from system. 3. System can continue to operate without redundancy protection if steps1 and 2 are not followed.
System under recommended voltage for x (level-warning; indicated voltage supply under nominal value; value for x can be +12, -12, or +5)	1. **Check connections to the power subsystem.** 2. Power supply. 3. Power cage assembly, if installed.

System shutdown

Refer to the following tables when experiencing system shutdown related to voltage or temperature problems.

Voltage related system shutdown

Note: See "System" on page 112 to determine which components should be replaced by a field service technician.

Message	Action
System shutoff due to x current over max value (level-critical; system drawing too much current on voltage x bus)	• **See "Power checkout" on page 29.**
System shutoff due to x V over voltage (level-critical; system shutoff due to x supply over voltage)	1. **Check the power-supply connectors** 2. Power supply. 3. Power cage assembly, if installed.
System shutoff due to x V under voltage (level-critical; system shutoff due to x supply under voltage)	1. **Check the power-supply connectors.** 2. Power supply. 3. Power cage assembly, if installed.

Note: See "System" on page 112 to determine which components should be replaced by a field service technician.	
Message	**Action**
System shutoff due to VRM x over voltage	• **Replace VRM x.**
System shutoff due to excessive (< 240 VA) loading	1. **See "Power checkout" on page 29.** 2. Cycle ac on/off.

Temperature related system shutdown

Note: See "System" on page 112 to determine which components should be replaced by a field service technician.	
Message	**Action**
System shutoff due to board over temperature (level-critical; board is over temperature)	1. **Ensure that the system is being properly cooled**; see "System reliability considerations" on page 37. 2. Replace board.
System shutoff due to CPU x over temperature (level-critical; CPU x is over temperature)	1. **Ensure that the system is being properly cooled**; see "System reliability considerations" on page 37. 2. Replace CPU x.
System shutoff due to CPU x under temperature (level-critical; CPU x is under temperature)	• **Ambient temperature must be within normal operating specifications**; see "Features and specifications" on page 3.
System shutoff due to DASD temperature (sensor x) (level-critical; DASD area reported temperature outside recommended operating range)	• **Ensure that the system is being properly cooled**; see "System reliability considerations" on page 37.
System shutoff due to high ambient temperature (level-critical; high ambient temperature)	• **Ambient temperature must be within normal operating specifications**; see "Features and specifications" on page 3.
System shutoff due to system board under temperature (level-critical; system board is under temperature)	• **Ambient temperature must be within normal operating specifications**; see "Features and specifications" on page 3.

DASD checkout

Note: See "System" on page 112 to determine which components should be replaced by a field service technician.	
Message	**Action**
Hard drive x removal detected (level-critical; hard drive x has been removed)	• **Information only, take action as appropriate.**

Host built-in self test (BIST)

Note: See "System" on page 112 to determine which components should be replaced by a field service technician.	
Message	**Action**
Host fail (level-informational; built-in self-test for the host failed)	1. **Reseat the microprocessor.** 2. Reseat the VRM. 3. Replace the microprocessor CPU.

Bus fault messages

Note: See "System" on page 112 to determine which components should be replaced by a field service technician.	
Bus fault messages	**Message Action**
Failure reading 12C device. Check devices on bus 0.	1. **If installed, reseat the I2C cable between Remote Supervisor Adapter (in PCI slot 1/J14) and the remote supervisor adapter connector on the PCI riser card.** 2. Memory DIMMs. 3. System board.
Failure reading 12C device. Check devices on bus 1.	1. **Reseat the I2C cable between the operator information panel and system board (J22).** 2. Operator information panel. 3. System board.
Failure reading 12C device. Check devices on bus 2.	1. **Reseat the cable between system board and the power supply (power cage assembly, if installed) (J10).** 2. Power cage assembly, if installed. 3. Power supply. 4. System board.
Failure reading 12C device. Check devices on bus 3.	1. **Reseat the cable between the DASD backplane and connector (J10) of system board.** 2. DASD backplane. 3. System board.
Failure reading I2C device. Check device on bus 4.	• **System board**

Undetermined problems

Use the information in this section if the diagnostic tests did not identify the failure, the devices list is incorrect, or the system is inoperative.

Notes:

1. Damaged data in CMOS can cause undetermined problems.
2. Damaged data in BIOS code can cause undetermined problems.

Check the LEDs on all the power supplies. If the LEDs indicate the power supplies are working correctly, complete the following steps:

1. Turn off the server.
2. Be sure the server is cabled correctly.
3. Remove or disconnect the following devices (one at a time) until you find the failure (turn on the server and reconfigure each time):
   Any external devices
   Surge suppressor device (on the server)
   Modem, printer, mouse, or non-IBM devices
   Each adapter
   Drives
   Memory modules (minimum requirement = 256 MB (2 banks of 128 MB DIMMs))

   Note: Minimum operating requirements are:
      a. One power supply
      b. Power cage assembly, if installed.
      c. System board
      d. One microprocessor and VRM
      e. Memory module (with a minimum of two 128 MB DIMMs)
4. Turn on the server. If the problem remains, suspect the following FRUs in the order listed:
   Power supply
   Power cage assembly, if installed
   System board

Notes:

1. If the problem goes away when you remove an adapter from the system and replacing that adapter does not correct the problem, suspect the system board.
2. If you suspect a networking problem and all the system tests pass, suspect a network cabling problem external to the system.

Problem determination tips

Due to the variety of hardware and software combinations that can be encountered, use the following information to assist you in problem determination. If possible, have this information available when requesting assistance from Service Support and Engineering functions.

- Machine type and model
- Microprocessor or hard disk upgrades
- Failure symptom
  - Do diagnostics fail?
  - What, when, where, single, or multiple systems?
  - Is the failure repeatable?
  - Has this configuration ever worked?
  - If it has been working, what changes were made prior to it failing?
  - Is this the original reported failure?
- Diagnostics version
  - Type and version level
- Hardware configuration
  - Print (print screen) configuration currently in use
  - BIOS level
- Operating system software
  - Type and version level

Note: To eliminate confusion, identical systems are considered identical only if they:

1. Are the exact machine type and models
2. Have the same BIOS level
3. Have the same adapters/attachments in the same locations
4. Have the same address jumpers/terminators/cabling
5. Have the same software versions and levels
6. Have the same diagnostics code (version)
7. Have the same configuration options set in the system
8. Have the same setup for the operation system control files

Comparing the configuration and software set-up between ″working″ and ″non-working″ systems will often lead to problem resolution.

Chapter 7. Parts listing Type 8480

This parts listing supports the xSeries 205 Type 8480.
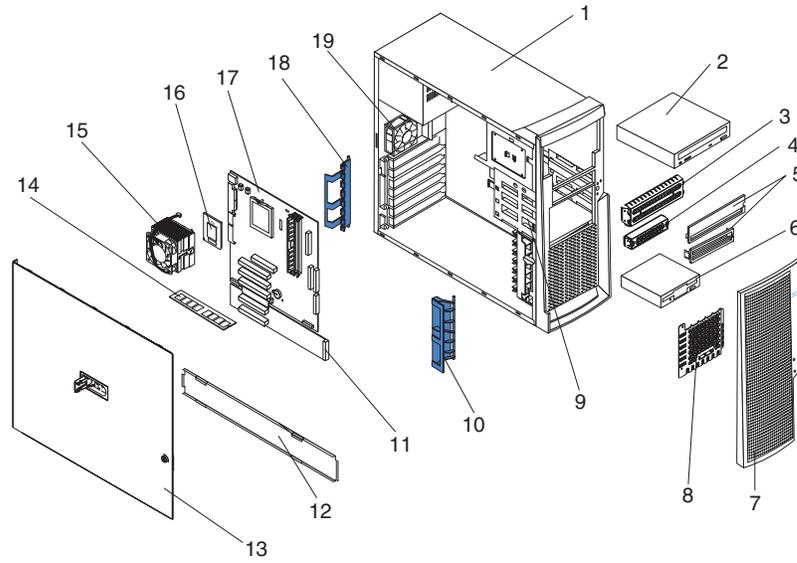
System

> **Note:** Field replaceable units (FRUs) should be serviced only by qualified field service technicians. Customer replacement units can be replaced by the customer.

Index	System, xSeries 205, Type 8480, Models 13x 22x 23x 2Ax 32x 33x 3Ax 42x 43x 4AG 4Ax 52x 53x 5Ax 62x 63x 6Ax 93x 94x 95x 96x.	FRU No.	CRU/FRU
1	Chassis (all models)	02R0810	FRU
2	CD-ROM drive, 48X XP, primary (all models)	33P3203	CRU
2	CD-ROM drive, 48X XP, alternate (all models)	33P3207	CRU
2	CD-ROM drive, 48X XP, alternate (all models)	33P3211	CRU
2	CD-ROM drive, 48X XP, alternate (all models)	33P3215	CRU
3	5.25 EMC shield (all models)	32P8503	FRU
4	3.5 EMC shield (all models)	32P8501	FRU
5	Bezel kit (all models) • Filler bezel (2) • Blank bezel (2)	00N7082	CRU
6	Hard disk drive, 18.2 GB SCSI (model 22x 42x)	19K1485	CRU
6	Hard disk drive, 36.4 GB SCSI (model 32x 52x)	19K1487	CRU
6	Hard disk drive, 40.0 GB IDE (models 13x 23x 33x 43x 53x 93x 94x 95x 96x)	19K1568	CRU
7	Front bezel (all models)	02R0813	CRU
8	EMC plate (all models)	32P8505	FRU
9	Hard disk drive cage assembly (all models)	19K4931	FRU
9	Hot-swap drive cage (models 2Ax 3Ax 4AG 4Ax 5Ax)	32P8507	FRU
10	Front adapter support (all models)	19K4936	FRU
11	Extender card, SCSI (models 22x 2Ax 32x 3Ax 42x 4AG 4Ax 52x 5Ax)	48P9012	CRU
11	Extender card, IDE (models 13x 23x 33x 43x 53x 93x 94x 95x 96x)	49P3081	CRU
12	Frame-support bracket (all models)	19K4963	CRU
13	Cover, side/top (all models)	49P1965	CRU
14	Memory, 128 MB ECC (model 94x 95x 96x)	10K0066	CRU
14	Memory, 256 MB PC2100 ECC DIMM (models 13x 22x 23x 2Ax 32x 33x 3Ax 42x 43x 4Ax 52x 53x 5Ax 93x)	10K0068	CRU
14	Memory, 512 MB DIMM (model 4AG)	10K0069	CRU
15	Heat sink/fan assembly (all models)	32P4004	FRU
16	Microprocessor, 400/1.8-128 (models 93x 94x)	58P9965	FRU
16	Microprocessor, 400/1.8-512 (model 13x)	58P9968	FRU
16	Microprocessor, 400/2.0-512, primary (models 22x 23x 2Ax 95x 96x)	02R4509	FRU
16	Microprocessor, 400/2.0-512, alternate (models 22x 23x 2Ax 95x 96x)	48P7205	FRU
16	Microprocessor, 400/2.0-512, alternate (models 22x 23x 2Ax 95x 96x)	59P7160	FRU
16	Microprocessor, 533/2.4-512 (models 32x 33x 3Ax)	48P7684	FRU
16	Microprocessor, 533/2.67-512 (models 42x 43x 4AG 4Ax)	74P1615	FRU
16	Microprocessor, 533/2.8-512 (models 52x 53x 5Ax)	01R3171	FRU
16	Microprocessor, 533/3.06-512 (models 62x 63x 6Ax)	24P7636	FRU
17	System board (all models)	48P9011	FRU
18	Rear adapter-retaining bracket (all models)	19K4945	FRU
19	Fan 80mm (all models)	59P2572	FRU
	Battery (all models)	33F8354	CRU
	Bezel blanks kit (all models) • Plug, front • Plug, USB	19K4951	CRU
	Bezel door assembly (all models)	02R0812	CRU
	Cable, 2-drop SCSI (models 2Ax 3Ax 4AG 4Ax 5Ax)	06P5849	FRU
	Cable, 5-drop SCSI (models 22x 32x 42x 52x)	01K1549	FRU
	Cable, hard disk drive, ATA66 2-drop (all models)	37L5098	FRU
	Cable, C2 switch (all models)	09K9827	FRU

Index	System, xSeries 205, Type 8480, Models 13x 22x 23x 2Ax 32x 33x 3Ax 42x 43x 4AG 4Ax 52x 53x 5Ax 62x 63x 6Ax 93x 94x 95x 96x.	FRU No.	CRU/FRU
	Cable, audio, CD-ROM drive (all models)	75H9219	FRU
	Cable, video with tailstock (all models)	02R0814	FRU
	Diskette drive, black, primary (all models)	76H4091	FRU
	Diskette drive, black, alternate (all models)	06P5227	FRU
	Diskette drive cable (all models)	03K9340	FRU
	Fan 60mm (models 2Ax 3Ax 4AG 4Ax 5Ax)	59P8495	CRU
	Feet (all models)	59P8537	FRU
	Handle cap (all models)	02R0811	FRU
	Hard disk drive backplane (models 2Ax 3Ax 4AG 4Ax 5Ax)	00N8953	FRU
	Hard disk drive slim blank bezel (all models)	00N7259	CRU
	Hard disk drive rail (all models)	23P1328	CRU
	Cable, hot-swap kit (models 2Ax 3Ax 4AG 4Ax 5Ax)	06P5850	CRU
	• Power jumper cable (1)		
	• I2C cable (1)		
	Keylock assembly (all models)	24P1751	FRU
	Lock bar (all models)	24P1746	FRU
	Microprocessor clip (all models)	49P1956	FRU
	Miscellaneous hardware kit (all models)	09N5764	CRU
	• Screw, M3.5 (7)		
	• Gasket, EMC two position (1)		
	• Bracket, I/O blank (1)		
	• Bracket, power supply (1)		
	• Support, blank isolator (4)		
	• Bracket, key holder (1)		
	• Screw, M3X5 slotted (4)		
	• Clip (1)		
	• Spacer, system board (4)		
	• Clamp, SCSI cable (1)		
	• Screw, M3.5 slotted (6)		
	Mouse assembly, 2 button (all models)	24P0383	CRU
	Mouse assembly, 3 button (all models)	76H6620	CRU
	Control panel assembly (all models)	24P2621	FRU
	Power button kit (all models)	19K4940	FRU
	Power supply, 330 watt (all models)	49P2040	FRU
	Power supply, 340 watt (all models)	74P4433	FRU
	Release bar (all models)	19K4946	FRU
	System service label (all models)	02R8528	CRU
	Power cord (all models)	93F2364	CRU

Keyboard CRUs

Keyboard	CRU No.
US English	37L2551
French Canadian	37L2552
LA Spanish	37L2553
Arabic	37L2555
Belgium/French	37L2556
Belgium/UK	37L2557
Bulgarian	37L2558
Czech	37L2559
Danish	37L2560
Dutch	37L2561
French	37L2562

Keyboard	CRU No.
German	37L2563
Greek	37L2564
Hebrew	37L2565
Hungarian	37L2566
Korean	02K0901
Iceland	37L2567
Italy	37L2568
Norwegian	37L2569
Polish	37L2570
Portuguese	37L2571
Romanian	37L2572
Russian	37L2573
Serbian/Cyrillic	37L2574
Slavic	37L2575
Spanish	37L2576
Swedish/Finn	37L2577
Swiss, French/German	37L2578
Turkish	37L2579
Turkish	37L2580
UK English	37L2581
Yugosl/Lat	37L2582
US English-EMEA	37L2583
Chinese/US	37L2585
Thailand	37L2587
French Canadian	37L0913

Power cords

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
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

Appendix A. Getting help and technical assistance

If you need help, service, or technical assistance or just want more information about IBM products, you will find a wide variety of sources available from IBM to assist you. This appendix contains information about where to go for additional information about IBM and IBM products, what to do if you experience a problem with your xSeries or IntelliStation® system, and whom to call for service, if it is necessary.

Before you call

Before you call, make sure that you have taken these steps to try to solve the problem yourself:

- Check all cables to make sure that they are connected.
- Check the power switches to make sure that the system is turned on.
- Use the troubleshooting information in your system documentation, and use the diagnostic tools that come with your system.
- Go to the IBM Support Web site at http://www.ibm.com/pc/support/ to check for technical information, hints, tips, and new device drivers.
- Use an IBM discussion forum on the IBM Web site to ask questions.

You can solve many problems without outside assistance by following the troubleshooting procedures that IBM provides in the online help or in the publications that are provided with your system and software. The information that comes with your system also describes the diagnostic tests that you can perform. Most xSeries and IntelliStation systems, operating systems, and programs come with information that contains troubleshooting procedures and explanations of error messages and error codes. If you suspect a software problem, see the information for the operating system or program.

Using the documentation

Information about your IBM xSeries or IntelliStation system and preinstalled software, if any, is available in the documentation that comes with your system. That documentation includes printed books, online books, README files, and help files. See the troubleshooting information in your system documentation for instructions for using the diagnostic programs. The troubleshooting information or the diagnostic programs might tell you that you need additional or updated device drivers or other software. IBM maintains pages on the World Wide Web where you can get the latest technical information and download device drivers and updates. To access these pages, go to http://www.ibm.com/pc/support/ and follow the instructions. Also, you can order publications through the IBM Publications Ordering System at
http://www.elink.ibmlink.ibm.com/public/applications/publications/cgibin/pbi.cgi.

Getting help and information from the World Wide Web

On the World Wide Web, the IBM Web site has up-to-date information about IBM xSeries and IntelliStation products, services, and support. The address for IBM xSeries information is http://www.ibm.com/eserver/xseries/. The address for IBM IntelliStation information is http://www.ibm.com/pc/intellistation/.

You can find service information for your IBM products, including supported options, at http://www.ibm.com/pc/support/. If you click **Profile** from the support page, you can create a customized support page. The support page has many sources of information and ways for you to solve problems, including:

- Diagnosing problems, using the IBM Online Assistant
- Downloading the latest device drivers and updates for your products
- Viewing Frequently Asked Questions (FAQ)
- Viewing hints and tips to help you solve problems
- Participating in IBM discussion forums
- Setting up e-mail notification of technical updates about your products

Software service and support

Through IBM Support Line, you can get telephone assistance, for a fee, with usage, configuration, and software problems with xSeries servers, IntelliStation workstations, and appliances. For information about which products are supported by Support Line in your country or region, go to http://www.ibm.com/services/sl/products/.

For more information about Support Line and other IBM services, go to http://www.ibm.com/services/, or go to http://www.ibm.com/planetwide/ for support telephone numbers.

Hardware service and support

You can receive hardware service through IBM Integrated Technology Services or through your IBM reseller, if your reseller is authorized by IBM to provide warranty service. Go to http://www.ibm.com/planetwide/ for support telephone numbers.

In the U.S. and Canada, hardware service and support is available 24 hours a day, 7 days a week. In the U.K., these services are available Monday through Friday, from 9 a.m. to 6 p.m.

Appendix B. Related service information

Note: The service procedures are designed to help you isolate problems. They are written with the assumption that you have model-specific training on all computers, or that are familiar with the computers, functions, terminology, and service information provided in this manual.

Safety information

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

General safety

Follow these rules to ensure general safety:

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

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

Electrical safety

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

Observe the following rules when working on electrical equipment.

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

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

- Find the room emergency power-off (EPO) switch, disconnecting switch, or electrical outlet. If an electrical accident occurs, you can then operate the switch or unplug the power cord quickly.
- Do not work alone under hazardous conditions or near equipment that has hazardous voltages.
- Disconnect all power before:
  - Performing a mechanical inspection
  - Working near power supplies
  - Removing or installing main units
- Before you start to work on the machine, unplug the power cord. If you cannot unplug it, ask the customer to power-off the wall box that supplies power to the machine and to lock the wall box in the off position.
- If you need to work on a machine that has exposed electrical circuits, observe the following precautions:
  - Ensure that another person, familiar with the power-off controls, is near you.
    Remember: Another person must be there to switch off the power, if necessary.
  - Use only one hand when working with powered-on electrical equipment; keep the other hand in your pocket or behind your back.
    Remember: There must be a complete circuit to cause electrical shock. By observing the above rule, you may prevent a current from passing through your body.
  - When using testers, set the controls correctly and use the approved probe leads and accessories for that tester.
  - Stand on suitable rubber mats (obtained locally, if necessary) to insulate you from grounds such as metal floor strips and machine frames.
  Observe the special safety precautions when you work with very high voltages; these instructions are in the safety sections of maintenance information. Use extreme care when measuring high voltages.
- Regularly inspect and maintain your electrical hand tools for safe operational condition.

- Do not use worn or broken tools and testers.
- *Never assume* that power has been disconnected from a circuit. First, *check* that it has been powered-off.
- Always look carefully for possible hazards in your work area. Examples of these hazards are moist floors, nongrounded power extension cables, power surges, and missing safety grounds.
- Do not touch live electrical circuits with the reflective surface of a plastic dental mirror. The surface is conductive; such touching can cause personal injury and machine damage.
- Do not service the following parts with the power on when they are removed from their normal operating places in a machine:
  - Power supply units
  - Pumps
  - Blowers and fans
  - Motor generators

  and similar units. (This practice ensures correct grounding of the units.)
- If an electrical accident occurs:
  - Use caution; do not become a victim yourself.
  - Switch off power.
  - Send another person to get medical aid.

Safety inspection guide

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

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

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

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

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

5. Check for any obvious non-IBM alterations. Use good judgment as to the safety of any non-IBM alterations.

6. Check inside the unit for any obvious unsafe conditions, such as metal filings, contamination, water or other liquids, or signs of fire or smoke damage.

7. Check for worn, frayed, or pinched cables.

8. Check that the power-supply cover fasteners (screws or rivets) have not been removed or tampered with.

Handling electrostatic discharge-sensitive devices

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

Notes:

1. Use product-specific ESD procedures when they exceed the requirements noted here.

2. Make sure that the ESD-protective devices you use have been certified (ISO 9000) as fully effective.

When handling ESD-sensitive parts:

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

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

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

Grounding requirements

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

Safety notices (multilingual translations)

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

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

Important: All caution and danger statements in this IBM documentation begin with a number. This number is used to cross reference an English caution or danger statement with translated versions of the caution or danger statement in this section.

For example, if a caution statement begins with a number 1, translations for that caution statement appear in this section under statement 1.

Be sure to read all caution and danger statements before performing any of the instructions.

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 procedure**s.
- **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-ROM 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.**

Statement 4
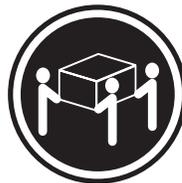
≥18 kg (37 lbs)   ≥32 kg (70.5 lbs)   ≥55 kg (121.2 lbs)
CAUTION:
Use safe practices when lifting.

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.
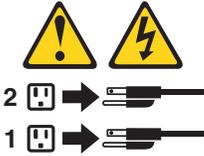
Statement 10
CAUTION:

Do not place any object weighing more than 82 kg (180 lbs.) on top of rack-mounted devices.

Importante:

Todas as instruções de cuidado e perigo da IBM documentation começam com um número. Este número é utilizado para fazer referência cruzada de uma instrução de cuidado ou perigo no idioma inglês com as versões traduzidas das instruções de cuidado ou perigo encontradas nesta seção.

Por exemplo, se uma instrução de cuidado é iniciada com o número 1, as traduções para aquela instrução de cuidado aparecem nesta seção sob a instrução 1.

Certifique-se de ler todas as instruções de cuidado e perigo antes de executar qualquer operação.

Instrução 1

PERIGO

A corrente elétrica proveniente de cabos de alimentação, de telefone e de comunicações é perigosa.

Para evitar risco de choque:
• Não conecte ou desconecte cabos e não realize instalação, manutenção ou reconfiguração deste produto durante uma tempestade com raios.
• Conecte todos os cabos de alimentação a tomadas elétricas corretamente instaladas e aterradas.
• Conecte todos os equipamentos ao qual esse produto será conectado a tomadas corretamente instaladas.
• Sempre que possível, utilize apenas uma das mãos para conectar ou desconectar cabos de sinal.
• Nunca ligue qualquer equipamento quando existir evidência de danos por fogo, água ou na estrutura.
• Desconecte cabos de alimentação, sistemas de telecomunicação, redes e modems antes de abrir as tampas dos dispositivos, a menos que especificado de maneira diferente nos procedimentos de instalação e configuração.
• Conecte e desconecte cabos conforme descrito na seguinte tabela, ao instalar ou movimentar este produto ou os dispositivos conectados, ou ao abrir suas tampas.

Para Conectar:	Para Desconectar:
1. DESLIGUE Tudo. 2. Primeiramente, conecte todos os cabos aos dispositivos. 3. Conecte os cabos de sinal aos conectores. 4. Conecte os cabos de alimentação às tomadas. 5. LIGUE os dispositivos.	1. DESLIGUE Tudo. 2. Primeiramente, remova os cabos de alimentação das tomadas. 3. Remova os cabos de sinal dos conectores. 4. Remova todos os cabos dos dispositivos.

Instrução 2

CUIDADO:

Ao substituir a bateria de lítio, utilize apenas uma bateria IBM, Número de Peça 33F8354 ou uma bateria de tipo equivalente, recomendada pelo fabricante. Se o seu sistema possui um móídulo com uma bateria de lítio, substitua-o apenas pelo mesmo tipo de mídulo, do mesmo fabricante. A bateria contém lítio e pode explodir se não for utilizada, manuseada e descartada de maneira correta.

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

Para descartar a bateria, entre em contato com a área de atendimento a clientes IBM, pelo telefone (011) 889-8986, para obter informações sobre como enviar a bateria pelo correio para a IBM.

Instrução 3

PRECAUCIÓN:

Quando produtos a laser (unidades de CD-ROM, unidades de DVD, dispositivos de fibra ítica, transmissores, etc.) estiverem instalados, observe o seguinte:
*   Não remova as tampas. A remoção das tampas de um produto a laser pode resultar em exposição prejudicial à radiação de laser. Nenhuma peça localizada no interior do dispositivo pode ser consertada.
*   A utilização de controles ou ajustes ou a execução de procedimentos diferentes dos especificados aqui pode resultar em exposição prejudicial à radiação.

PERIGO

Alguns produtos a laser contêm um diodo laser da Classe 3A ou Classe 3B embutido. Observe o seguinte:

Radiação de laser quando aberto. Não olhe diretamente para o raio a olho nu ou com instrumentos íticos, e evite exposição direta ao raio.

Instrução 4

≥18 kg (37 lbs)   ≥32 kg (70.5 lbs)   ≥55 kg (121.2 lbs)

CUIDADO:

Ao levantar a máquina, faça-o com segurança.

Instrução 5

CUIDADO:

Os botões Liga/Desliga localizados no dispositivo e na fonte de alimentação não desligam a corrente elétrica fornecida ao dispositivo. O dispositivo também pode ter mais de um cabo de alimentação. Para remover toda a corrente elétrica do dispositivo, assegure que todos os cabos de alimentação estejam desconectados da fonte de energia elétrica.

Instrução 10
CUIDADO:

Não coloque nenhum objeto com peso superior a 82 kg (180 lbs.) sobre dispositivos montados em rack.

重要：

      `Server Library` 中的所有提醒和危险条款前都有一个数字标识。该数字是用来交叉引用一个英文的提醒和危险条款及本部分中的与之对应的已翻译成其它文字的提醒和危险条款。

      例如，如果一个提醒条款前的数字为 1，则本部分中相应的译文也带有标号 1。

      在执行任何指示的操作之前，请确保您已经阅读了全部提醒和危险条款。

声明 1

危险

电源、电话和通信电缆中带有危险电流。

为避免电击：

雷电期间不要拆接电缆或安装、维修及重新配置本产品。

将所有电源线连接至正确布线并已安全接地的电源插座上。

将应与本产品连接的所有设备连接至正确布线的插座上。

尽量只使用单手拆接信号电缆。

有水、火及结构损坏迹象时，请勿打开任何设备。

除非在安装配置过程中有明确指示，否则，打开设备机盖前应先断开与电源线、远程通信系统、网络和调制解调器的所有连接。

安装、移动或打开本产品及其附带设备的机盖时，应按下表所述连接和断开电缆。

连接时：	断开连接时：
1. 关闭所有设备。	1. 关闭所有设备。
2. 首先将所有电缆连接至设备。	2. 首先从插座中拔出电源线。
3. 将信号电缆连接至接口。	3. 从接口上拔下信号电缆。
4. 将电源线连接至插座。	

声明 2

警告：

更换锂电池时，只能使用 IBM 产品号 33F8354 或者是厂商推荐的等同
类型的电池。

如果系统模块中含有锂电池，则只能使用同一厂商制造的同一类型的模
块进行更换。电池中含有锂。如果使用、拿放或处理不当，可能会发生
爆炸。

请勿对电池进行下列操作：
扔入或浸入水中 　　。
加热超过 100 （212 F）
进行修理或分解
请按本地法规要求处理电池。

声明 3

警告：

安装激光产品（如 CD-ROM、DVD 驱动器、光纤设备或送话器）时，应注
意以下事项：

不要拆除外盖。拆除激光产品的外盖可能会导致激光辐射的危险，本设备中
没有用户可维修的部件。

非此处指定的其它控制、调整或与性能有关的操作都有可能导致激光辐射的
危险。

危险

某些激光产品中包含内嵌的 3A 级或 3B 级激光二极管。请注意以下事项。

打开时会产生激光辐射。不要直视光束，不要使用光学仪器直接观看光束，
避免直接暴露于光束之下。

声明 4

≥18 kg (37 磅)　　≥32 kg (70.5 磅)　　≥ 55 kg (121.2 磅)

警告：
抬起时请采用安全操作方法。

声明 5

警告：

使用设备上的电源控制按钮和电源上的开关都不能断开本设备上的电流。
另外，本设备可能带有多条电源线。如要断开设备上的所有电流，请确
保所有电源线均已与电源断开连接。

2

1
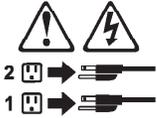
声明 6

警告：

如果在电源线连接设备的一端安装了固定松紧夹，则必须将电源线的另一端连接至
使用方便的电源。

声明 7

警告：

如果设备带有外门，则在移动或抬起设备前应将其拆除或固定
以避免造成人员伤害。外门支撑不了设备的重量。

声明 8

警告：
不要拆除电源外盖或贴有下列标签的任何部件。

贴有此标签的组件内部存在高电压、高电流的危险。这些组件中
没有用户可维修的部件。如果怀疑其中的部件存在问题，应与服
务技术人员联系。

声明 9

警告：

为避免人员伤害，拆除设备上的风扇前应拨下热插拨风扇电缆。

声明 10

警告：

机柜安装的设备上面不能放置重于 82kg（180 磅）的物品。

> 82 kg (180 磅)

声明 11

警告：

下面的标签表明附近有锋利的边、角或接头。

声明 12

警告：
下面的标签表明附近有高热表面。

重要資訊：

> *Server Library* 中所有「注意」及「危險」的聲明均以數字開始。此一數字是用來作為交互參考之用，英文「注意」或「危險」聲明可在本節中找到相同內容的「注意」或「危險」聲明的譯文。

> 例如，有一「危險」聲明以數字 1 開始，則該「危險」聲明的譯文將出現在本節的「聲明」1 中。

> 執行任何指示之前，請詳讀所有「注意」及「危險」的聲明。

聲明 1

危險

電源、電話及通信電纜上所產生的電流均有危險性。

欲避免電擊危險：

－在雷雨期間，請勿連接或切斷本產品上的任何電纜線，或安裝、維修及重新架構本產品。
－請將電源線接至接線及接地正確的電源插座。
－請將本產品隨附的設備連接至接線正確的插座。
－儘可能使用單手來連接或切斷信號電纜線。
－當設備有火燒或泡水的痕跡，或有結構性損害時，請勿開啟該設備的電源。
－在安裝及架構之時，若非非常熟悉，在開啟裝置蓋子之前，請切斷電源線、電信系統、網路及數據機。
－在安裝、移動本產品或附加裝置，或開啟其蓋子時，請依照下表中「連接」及「切斷」電纜線的步驟執行。

連接：	切斷：
1. 關閉所有開關。	1. 關閉所有開關。
2. 先將所有電纜線接上裝置。	2. 先自電源插座拔掉電源線。
3. 將信號電纜接上接頭。	3. 拔掉接頭上的所有信號電纜。
4. 再將電源線接上電源插座。	4. 再拔掉裝置上的所有電纜線。
5. 開啟裝置的電源。	

聲明 2

注意：
更換鋰電池時，只可使用 IBM 零件編號 33F8354 的電池，或製造商建議之相當類型的電池。若系統中具有包含鋰電池的模組，在更換此模組時，請使用相同廠商製造的相同模組類型。如未正確使用、處理或丟棄含有鋰的電池時，可能會引發爆炸。

請勿將電池：
－ 丟入或浸入水中
－ 加熱超過 100 ℃ (212 ℉)
－ 修理或拆開

請遵照當地法令規章處理廢棄電池。

聲明 3

注意：
安裝雷射產品 (如 CD-ROM、DVD 光碟機、光纖裝置或發射器) 時，請注意下列事項：
－ 請勿移開蓋子。移開雷射產品的蓋子，您可能會暴露於危險的雷射輻射之下。裝置中沒有需要維修的組件。
－ 不依此處所指示的控制、調整或處理步驟，您可能會暴露於危險的輻射之下。

危險

有些雷射產品含有內嵌式 Class 3A 或 Class 3B 雷射二極體。請注意下列事項：

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

聲明 4

≥ 18 公斤 (37 磅) **≥** 32 公斤 (70.5 磅)　**≥** 55 公斤 (121.2 磅)

注意：

抬起裝置時，請注意安全措施。

聲明 5

注意：
裝置上的電源控制按鈕及電源供應器上的電源開關均無法關閉裝置上的電流。
本裝置可能有一條以上的電源線。如要移除裝置上的所有電流，請確認所有電源線已與電源分離。

聲明 10

注意：
請勿將任何重量超過 82 公斤 (180 磅) 的物品置於已安裝機架的裝置上方。

> 82 公斤 (180 磅)

Important:

Toutes les consignes Attention et Danger indiquées dans la bibliothèque IBM documentation sont précédées d'un numéro. Ce dernier permet de mettre en correspondance la consigne en anglais avec ses versions traduites dans la présente section.

Par exemple, si une consigne de type Attention est précédée du chiffre 1, ses traductions sont également précédées du chiffre 1 dans la présente section.

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

Notice n° 1

DANGER

Le courant électrique passant dans les câbles de communication, ou les cordons téléphoniques et d'alimentation peut être dangereux.

Pour éviter tout risque de choc électrique:

- Ne manipulez aucun câble et n'effectuez aucune opération d'installation, d'entretien ou de reconfiguration de ce produit au cours d'un orage.
- Branchez tous les cordons d'alimentation sur un socle de prise de courant correctement câblé et mis à la terre.
- Branchez sur des socles de prise de courant correctement câblés tout équipement connecté à ce produit.
- Lorsque cela est possible, n'utilisez qu'une seule main pour connecter ou déconnecter les câbles d'interface.
- Ne mettez jamais un équipement sous tension en cas d'incendie ou d'inondation, ou en présence de dommages matériels.
- Avant de retirer les carters de l'unité, mettez celle-ci hors tension et déconnectez ses cordons d'alimentation, ainsi que les câbles qui la relient aux réseaux, aux systèmes de télécommunication et aux modems (sauf instruction contraire mentionnée dans les procédures d'installation et de configuration).
- Lorsque vous installez ou que vous déplacez le présent produit ou des périphériques qui lui sont raccordés, reportez-vous aux instructions ci-dessous pour connecter et déconnecter les différents cordons.

Connexion	Déconnexion
1. Mettez les unités hors tension.	1. Mettez les unités hors tension.
2. Commencez par brancher tous les cordons sur les unités.	2. Débranchez les cordons d'alimentation des prises.
3. Branchez les câbles d'interface sur des connecteurs.	3. Débranchez les câbles d'interface des connecteurs.
4. Branchez les cordons d'alimentation sur des prises.	4. Débranchez tous les câbles des unités.
5. Mettez les unités sous tension.	

Notice n° 2

ATTENTION:

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

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

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

Notice n° 3

ATTENTION:

Si des produits laser sont installés (tels que des unités de CD-ROM ou de DVD, des périphériques contenant des fibres optiques ou des émetteurs-récepteurs), prenez connaissance des informations suivantes:

- **N'ouvrez pas ces produits pour éviter une exposition directe au rayon laser. Vous ne pouvez effectuer aucune opération de maintenance à l'intérieur.**
- **Pour éviter tout risque d'exposition au rayon laser, respectez les consignes de réglage et d'utilisation des commandes, ainsi que les procédures décrites dans le présent document.**

DANGER

Certains produits laser contiennent une diode laser de classe 3A ou 3B. Prenez connaissance des informations suivantes:

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

Notice n° 4
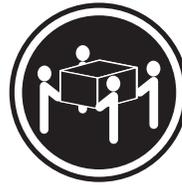
≥18 kg (37 lbs)   ≥32 kg (70.5 lbs)   ≥55 kg (121.2 lbs)

ATTENTION:

Faites-vous aider pour soulever ce produit.

Notice n° 5

ATTENTION:

Le bouton de mise sous tension/hors tension de l'unité et l'interrupteur d'alimentation du bloc d'alimentation ne coupent pas l'arrivée de courant électrique à l'intérieur de la machine. Il se peut que votre unité dispose de plusieurs cordons d'alimentation. Pour isoler totalement l'unité du réseau électrique, débranchez tous les cordons d'alimentation des socles de prise de courant.
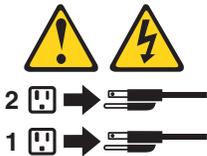
Notice n° 10
ATTENTION:

Ne posez pas d'objet dont le poids dépasse 82 kg sur les unités montées en armoire.

Wichtig:

Alle Sicherheitshinweise in dieser IBM documentation beginnen mit einer Nummer. Diese Nummer verweist auf einen englischen Sicherheitshinweis mit den übersetzten Versionen dieses Hinweises in diesem Abschnitt.

Wenn z. B. ein Sicherheitshinweis mit der Nummer 1 beginnt, so erscheint die übersetzung für diesen Sicherheitshinweis in diesem Abschnitt unter dem Hinweis 1.

Lesen Sie alle Sicherheitshinweise, bevor Sie eine Anweisung ausführen.

Hinweis 1

VORSICHT

Elektrische Spannungen von Netz-, Telefon- und Datenübertragungsleitungen sind gefährlich.

Aus Sicherheitsgründen:
- Bei Gewitter an diesem Gerät keine Kabel anschließen oder lösen. Ferner keine Installations-, Wartungs- oder Rekonfigurationsarbeiten durchführen.
- Gerät nur an eine Schutzkontaktsteckdose mit ordnungsgemäß geerdetem Schutzkontakt anschließen.
- Alle angeschlossenen Geräte ebenfalls an Schutzkontaktsteckdosen mit ordnungsgemäß geerdetem Schutzkontakt anschließen.
- Signalkabel möglichst einhändig anschließen oder lösen.
- Keine Geräte einschalten, wenn die Gefahr einer Beschädigung durch Feuer, Wasser oder andere Einflüsse besteht.
- Die Verbindung zu den angeschlossenen Netzkabeln, Telekommunikationssystemen, Netzwerken und Modems ist vor dem öffnen des Gehäuses zu unterbrechen. Es sei denn, dies ist in den zugehörigen Installations- und Konfigurationsprozeduren anders angegeben.
- Nur nach den nachfolgend aufgeführten Anweisungen arbeiten, die für Installation, Transport oder öffnen von Gehäusen von Personal Computern oder angeschlossenen Einheiten gelten.

Kabel anschlie*β*en:	Kabel lösen:
1. Alle Geräte ausschalten und Netzstecker ziehen.	1. Alle Geräte ausschalten.
2. Zuerst alle Kabel an Einheiten anschließen.	2. Zuerst Netzstecker von Steckdose lösen.
3. Signalkabel an Anschlußbuchsen anschließen.	3. Signalkabel von Anschlußbuchsen lösen.
4. Netzstecker an Steckdose anschließen.	4. Alle Kabel von Einheiten lösen.
5. Gerät einschalten.	

Hinweis 2

⚠️

ACHTUNG:

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

Die Batterie nicht:
- mit Wasser in Berührung bringen.
- über 100 C erhitzen.
- reparieren oder zerlegen.

Die örtlichen Bestimmungen für die Entsorgung von Sondermüll beachten.

Hinweis 3

⚠️

ACHTUNG:

Wenn ein Laserprodukt (z. B. CD-ROM-Laufwerke, DVD-Laufwerke, Einheiten mit Glasfaserkabeln oder Transmitter) installiert ist, beachten Sie folgendes.
- Das Entfernen der Abdeckungen des CD-ROM-Laufwerks kann zu gefährlicher Laserstrahlung führen. Es befinden sich keine Teile innerhalb des CD-ROM-Laufwerks, die vom Benutzer gewartet werden müssen. Die Verkleidung des CD-ROM-Laufwerks nicht öffnen.
- Steuer- und Einstellelemente sowie Verfahren nur entsprechend den Anweisungen im vorliegenden Handbuch einsetzen. Andernfalls kann gefährliche Laserstrahlung auftreten.

⚠️

VORSICHT

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

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

Hinweis 4

≥18 kg   ≥32 kg   ≥55 kg

ACHTUNG:

Beim Anheben der Maschine die vorgeschriebenen Sicherheitsbestimmungen beachten.

Hinweis 5

ACHTUNG:

Mit dem Betriebsspannungsschalter an der Vorderseite des Servers und dem Betriebsspannungsschalter am Netzteil wird die Stromversorgung für den Server nicht unterbrochen. Der Server könnte auch mehr als ein Netzkabel aufweisen. Um die gesamte Stromversorgung des Servers auszuschalten, muß sichergestellt werden, daß alle Netzkabel aus den Netzsteckdosen herausgezogen wurden.
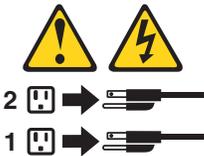
Hinweis 10
ACHTUNG:

Keine Gegenstände, die mehr als 82 kg wiegen, auf Rack-Einheiten ablegen.

Importante:

Tutti gli avvisi di attenzione e di pericolo riportati nella pubblicazione IBM documentation iniziano con un numero. Questo numero viene utilizzato per confrontare avvisi di attenzione o di pericolo in inglese con le versioni tradotte riportate in questa sezione.

Ad esempio, se un avviso di attenzione inizia con il numero 1, la relativa versione tradotta è presente in questa sezione con la stessa numerazione.

Prima di eseguire una qualsiasi istruzione, accertarsi di leggere tutti gli avvisi di attenzione e di pericolo.

Avviso 1

PERICOLO

La corrente elettrica circolante nei cavi di alimentazione, del telefono e di segnale è pericolosa.

Per evitare il pericolo di scosse elettriche:

- Non collegare o scollegare i cavi, non effettuare l'installazione, la manutenzione o la riconfigurazione di questo prodotto durante i temporali.
- Collegare tutti i cavi di alimentazione ad una presa elettrica correttamente cablata e munita di terra di sicurezza.
- Collegare qualsiasi apparecchiatura collegata a questo prodotto ad una presa elettrica correttamente cablata e munita di terra di sicurezza.
- Quando possibile, collegare o scollegare i cavi di segnale con una sola mano.
- Non accendere qualsiasi apparecchiatura in presenza di fuoco, acqua o se sono presenti danni all'apparecchiatura stessa.
- Scollegare i cavi di alimentazione, i sistemi di telecomunicazioni, le reti e i modem prima di aprire i coperchi delle unità, se non diversamente indicato nelle procedure di installazione e configurazione.
- Collegare e scollegare i cavi come descritto nella seguente tabella quando si effettuano l'installazione, la rimozione o l'apertura dei coperchi di questo prodotto o delle unità collegate.

Per collegare:	Per scollegare:
1. SPEGNERE tutti i dispositivi.	1. SPEGNERE tutti i dispositivi.
2. Collegare prima tutti i cavi alle unità.	2. Rimuovere prima i cavi di alimentazione dalle prese elettriche.
3. Collegare i cavi di segnale ai connettori.	3. Rimuovere i cavi di segnale dai connettori.
4. Collegare i cavi di alimentazione alle prese elettriche.	4. Rimuovere tutti i cavi dalle unità.
5. ACCENDERE le unità.	

Avviso 2

ATTENZIONE:

Quando si sostituisce la batteria al litio, utilizzare solo una batteria IBM con numero parte 33F8354 o batterie dello stesso tipo o di tipo equivalente consigliate dal produttore. Se il sistema di cui si dispone è provvisto di un modulo contenente una batteria al litio, sostituire tale batteria solo con un tipo di modulo uguale a quello fornito dal produttore. La batteria contiene litio e può esplodere se utilizzata, maneggiata o smaltita impropriamente.

Evitare di:

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

Smaltire secondo la normativa in vigore (D.Lgs 22 del 5/2/9) e successive disposizioni nazionali e locali.

Avviso 3

ATTENZIONE:

Quando si installano prodotti laser come, ad esempio, le unità DVD, CD-ROM, a fibre ottiche o trasmettitori, prestare attenzione a quanto segue:

- Non rimuovere i coperchi. L'apertura dei coperchi di prodotti laser può determinare l'esposizione a radiazioni laser pericolose. All'interno delle unità non vi sono parti su cui effettuare l'assistenza tecnica.
- L'utilizzo di controlli, regolazioni o l'esecuzione di procedure non descritti nel presente manuale possono provocare l'esposizione a radiazioni pericolose.

PERICOLO

Alcuni prodotti laser contengono all'interno un diodo laser di Classe 3A o Classe 3B. Prestare attenzione a quanto segue:

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

Avviso 4

≥18 kg   ≥32 kg   ≥55 kg

ATTENZIONE:

Durante il sollevamento della macchina seguire delle norme di sicurezza.

Avviso 5

ATTENZIONE:

Il pulsante del controllo dell'alimentazione situato sull'unità e l'interruttore di alimentazione posto sull'alimentatore non disattiva la corrente elettrica fornita all'unità. L'unità potrebbe disporre di più di un cavo di alimentazione. Per disattivare la corrente elettrica dall'unità, accertarsi che tutti i cavi di alimentazione siano scollegati dalla sorgente di alimentazione.
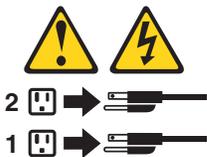
Avviso 10
ATTENZIONE:

Non poggiare oggetti che pesano più di 82 kg sulla parte superiore delle unità montate in rack.

重要：

Netfinity Server　ライブラリーにあるすべての注意および危険の記述は
数字で始まります。この数字は、英語版の注意および危険の記述と翻訳さ
れた注意および危険の記述を相互参照するために使用します。

例えば、もし注意の記述が数字の１で始まってる場合は、その注意の翻訳は、
記述１　の下にあります。

手順を実施する前に、すべての注意;

・記述　1

⚠ 危険

感電を防止するため、雷の発生時には、いかなるケーブルの
取り付けまたは取り外しも行わないでください。また導入、
保守、再構成などの作業も行わないでください。

感電を防止するため：

- 電源コードは正しく接地および配線が行われている
  電源に接続してください。

- 本製品が接続されるすべての装置もまた正しく配線
  された電源に接続されている必要があります。

できれば、信号ケーブルに取り付けまたは取り外しのとき
は片方の手のみで行うようにしてください。これにより、
電位差がある二つの表面に触ることによる感電を防ぐことが
できます。

電源コード、電話ケーブル、通信ケーブルからの電流は身体に
危険を及ぼします。設置、移動、または製品のカバーを開けたり
装置を接続したりするときには、以下のようにケーブルの接続 、
取り外しを行ってください。

接続するには	取り外すには
1. すべての電源を切る	1. すべての電源を切る
2. まず、装置にすべての ケーブルを接続する。	2. まず、電源コンセントから 電源コードを取り外す
3. 次に、通信ケーブルを コネクターに接続する	3. 次に、通信ケーブルを コネクターから取り外す。
4. その後、電源コンセントに 電源コードを接続する	4. その後、装置からすべての ケーブルを取り外す
5. 装置の電源を入れる。	

・記述 2

⚠ 注意

本製品には、システム・ボード上にリチウム電池が使用されています。電池の交換方法や取り扱いを誤ると、発熱、発火、破裂のおそれがあります。
電池の交換には、IBM部品番号33F8354の電池またはメーカー推奨の同等の電池を使用してください。
交換用電池の購入については、お買い求めの販売店または弊社の営業担当までお問い合わせください。
電池は幼児の手の届かない所に置いてください。
万一、幼児が電池を飲み込んだときは、直ちに医師に相談してください。
以下の行為は絶対にしないでください。
－水にぬらすこと
－100度C 以上の過熱や焼却
－分解や充電
－ショート
電池を廃棄する場合、および保存する場合にはテープなどで絶縁してください。他の金属や電池と混ざると発火、破裂の原因となります。電池は地方自治体の条例、または規則に従って廃棄してください。ごみ廃棄場で処分されるごみの中に捨てないでください。

・記述 3

⚠ 注意

レーザー製品(CD-ROM、DVD、または光ファイバー装置または送信器など)が組み込まれている場合は、下記に御注意ください。

－ここに記載されている制御方法、調整方法、または性能を超えて使用すると、危険な放射線を浴びる可能性があります。

－ドライブのカバーを開けると、危険な放射線を浴びる可能性があります。ドライブの内部に修理のために交換可能な部品はありません。カバーを開けないでください。

⚠ 危険

一部 CD-ROM ドライブは、Class 3A または Class 3B レーザー・ダイオードを使用しています。次の点に注意してください。

CD-ROMドライブのカバーを開けるとレーザーが放射されます。光線をみつめたり、光学器械を使って直接見たりしないでください。また直接光線を浴びないようにしてください。

・記述 4

⚠ 注意

18Kg 以上   32Kg 以上   55Kg 以上
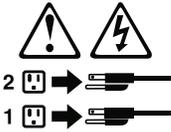
装置を持ち上げる場合は、安全に持ち上げる方法に従ってください。

・記述 5

⚠ 注意 ⚡

サーバーの前面にある電源制御ボタンは、サーバーに供給された
電流を遮断しません。
サーバーには、複数の電源コードが接続されているかもしれません。
サーバーから電流を完全に遮断するために、すべての電源コードが
電源から取り外されていることを確認してください。

・記述 10

⚠ 注意

ラック・モデルのサーバーの上に 82 Kg 以上の物を置かないで
ください。

중요:

본 *Server Library*에 있는 모든 주의 및 위험 경고문은 번호로
시작합니다. 이 번호는 영문 주의 혹은 위험 경고문과 이 절에 나오는
번역된 버전의 주의 혹은 위험 경고문을 상호 참조하는 데 사용됩니다.

예를 들어, 주의 경고문이 번호 1로 시작하면, 번역된 해당 주의
경고문을 본 절의 경고문 1에서 찾아볼 수 있습니다.

모든 지시사항을 수행하기 전에 반드시 모든 주의 및 위험 경고문을
읽으십시오.

경고문 1

⚠️ ⚡

위험

┌───┐
│ 전원, 전화 및 통신 케이블로부터 흘러 나오는 전류는   │
│ 위험합니다.   │
│   │
│ 전기 충격을 피하려면: │
│ - 뇌우를 동반할 때는 케이블의 연결이나 철수, 이 제품의 │
│   설치, 유지보수 또는 재구성을 하지 마십시오.   │
│   │
│ - 모든 전원 코드를 적절히 배선 및 접지해야 합니다.   │
│   │
│ - 이 제품에 연결될 모든 장비를 적절하게 배선된 콘센트에 │
│   연결하십시오.   │
│   │
│ - 가능한한 신호 케이블을 한 손으로 연결하거나   │
│   끊으십시오.   │
│   │
│ - 화재, 수해 또는 구조상의 손상이 있을 경우 장비를 켜지 │
│   마십시오.   │
│   │
│ - 설치 및 구성 프로시저에 다른 설명이 없는 한, 장치 덮개를│
│   열기 전에 연결된 전원 코드, 원거리 통신 시스템, 네트워크│
│   및 모뎀을 끊어 주십시오.   │
│   │
│ - 제품 또는 접속된 장치를 설치, 이동 및 덮개를 열 때   │
│   다음 설명에 따라 케이블을 연결하거나 끊도록 하십시오. │
└───┘

┌──────────────────────────────┬──────────────────────────────┐
│ 연결하려면: │ 연결을 끊으려면: │
│ 1. 모든 스위치를 끕니다.   │ 1. 모든 스위치를 끕니다.   │
│ 2. 먼저 모든 케이블을 장치에 │ 2. 먼저 콘센트에서 전원 코드를 뽑습니다. │
│   연결합니다.   │   │
│ 3. 신호 케이블을 커넥터에   │ 3. 신호 케이블을 커넥터에서 │
│   연결합니다.   │   제거합니다.   │
│ 4. 콘센트에 전원 코드를   │ 4. 장치에서 모든 케이블을   │
│   연결합니다.   │   제거합니다.   │
│ 5. 장치 스위치를 켭니다.   │   │
└──────────────────────────────┴──────────────────────────────┘

경고문 2

⚠️

주의:

리튬 배터리를 교체할 때는 IBM 부품 번호 33F8354 또는 제조업체에서
권장하는 동등한 유형의 배터리를 사용하십시오. 시스템에 리튬 배터리를
갖고 있는 모듈이 있으면 동일한 제조업체에서 생산된 동일한 모듈
유형으로 교체하십시오. 배터리에 리튬이 있을 경우 제대로 사용, 처리
또는 처분하지 않으면 폭발할 수 있습니다.

다음을 주의하십시오.

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

지역 법령이나 규정의 요구에 따라 배터리를 처분하십시오.

경고문 3

주의:
레이저 제품(CD-ROMs, DVD 드라이브, 광 장치 또는 트랜스미터 등과
같은)이 설치되어 있을 경우 다음을 유의하십시오.

- 덮개를 제거하지 마십시오. 레이저 제품의 덮개를 제거했을 경우
위험한 레이저 광선에 노출될 수 있습니다. 이 장치 안에는 서비스를
받을 수 있는 부품이 없습니다.

- 여기에서 지정하지 않은 방식의 제어, 조절 또는 실행으로 인해 위험한
레이저 광선에 노출될 수 있습니다.

위험

일부 레이저 제품에는 클래서 3A 또는 클래스 3B 레이저
다이오드가 들어 있습니다. 다음을 주의하십시오.

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

경고문 4

≥18 kg (37 lbs)   ≥ 32 kg (70.5 lbs)   ≥ 55 kg (121.2 lbs)

주의:
기계를 들 때는 안전하게 들어 올리십시오.

경고문 5

주의:
장치의 전원 제어 버튼 및 전원 공급기의 전원 스위치는 장치에
공급되는 전류를 차단하지 않습니다. 장치에 둘 이상의 전원 코드가
연결되어 있을 수도 있습니다. 장치에서 모든 전류를 차단하려면
모든 전원 코드가 전원으로부터 차단되어 있는 지 확인하십시오.

경고문 10

주의:
서랍형 모델의 장치 상단에 82 kg(180 lbs.)이 넘는 물체를 올려
놓지 마십시오.

> 82 kg (180 lbs)

Importante:

Todas las declaraciones de precauciín de esta IBM documentation empiezan con un número. Dicho número se emplea para establecer una referencia cruzada de una declaraciín de precauciín o peligro en inglés con las versiones traducidas que de dichas declaraciones pueden encontrarse en esta secciín.

Por ejemplo, si una declaraciín de peligro empieza con el número 1, las traducciones de esta declaraciín de precauciín aparecen en esta secciín bajo Declaraciín 1.

Lea atentamente todas las declaraciones de precauciín y peligro antes de llevar a cabo cualquier operaciín.

Declaración 1

PELIGRO

La corriente eléctrica de los cables telefínicos, de alimentaciín y de comunicaciones es perjudicial.

Para evitar una descarga eléctrica:

* No conecte ni desconecte ningún cable ni realice las operaciones de instalaciín, mantenimiento o reconfiguraciín de este producto durante una tormenta.
* Conecte cada cable de alimentaciín a una toma de alimentaciín eléctrica con conexiín a tierra y cableado correctos.
* Conecte a tomas de alimentaciín con un cableado correcto cualquier equipo que vaya a estar conectado a este producto.
* Si es posible, utilice una sola mano cuando conecte o desconecte los cables de sent.al.
* No encienda nunca un equipo cuando haya riesgos de incendio, de inundaciín o de daños estructurales.
* Desconecte los cables de alimentaciín, sistemas de telecomunicaciones, redes y mídems conectados antes de abrir las cubiertas del dispositivo a menos que se indique lo contrario en los procedimientos de instalaciín y configuraciín.
* Conecte y desconecte los cables tal como se describe en la tabla siguiente cuando desee realizar una operaciín de instalaciín, de traslado o de apertura de las cubiertas para este producto o para los dispositivos conectados.

Para la conexin	Para la desconexiín
1. APÁGUELO todo.	1. APÁGUELO todo.
2. En primer lugar, conecte los cables a los dispositivos.	2. En primer lugar, retire cada cable de alimentaciín de la toma de alimentaciín.
3. Conecte los cables de señal a los conectores.	3. Retire los cables de señal de los conectores.
4. Conecte cada cable de alimentaciín a la toma de alimentaciín.	4. Retire los cables de los dispositivos.
5. ENCIENDA el dispositivo.	

Declaración 2

PRECAUCIÓN:

Cuando desee sustituir la batería de litio, utilice únicamente el número de pieza 33F8354 de IBM o cualquier tipo de batería equivalente que recomiende el fabricante. Si el sistema tiene un mídulo que contiene una batería de litio, sustitúyalo únicamente por el mismo tipo de mídulo, que ha de estar creado por el mismo fabricante. La batería contiene litio y puede explotar si el usuario no la utiliza ni la maneja de forma adecuada o si no se desprende de la misma como corresponde.

No realice las acciones siguientes:

- Arrojarla al agua o sumergirla
- Calentarla a una temperatura que supere los 100°C (212°F)
- Repararla o desmontarla

Despréndase de la batería siguiendo los requisitos que exija el reglamento o la legislaciín local.

Declaración 3

PRECAUCIÓN:

Cuando instale productos láser (como, por ejemplo, CD-ROM, unidades DVD, dispositivos de fibra íptica o transmisores), tenga en cuenta las advertencias siguientes:

- No retire las cubiertas. Si retira las cubiertas del producto láser, puede quedar expuesto a radiaciín láser perjudicial. Dentro del dispositivo no existe ninguna pieza que requiera mantenimiento.
- El uso de controles o ajustes o la realizaciín de procedimientos que no sean los que se han especificado aquí pueden dar como resultado una exposiciín perjudicial a las radiaciones.

PELIGRO

Algunos productos láser contienen un diodo de láser incorporado de Clase 3A o de Clase 3B. Tenga en cuenta la advertencia siguiente.

Cuando se abre, hay radiaciín láser. No mire fijamente el rayo ni lleve a cabo ningún examen directamente con instrumentos ípticos; evite la exposiciín directa al rayo.

Declaración 4

≥18 kg   ≥32 kg   ≥55 kg

PRECAUCIÓN:

Tome medidas de seguridad al levantar el producto.

Declaración 5

PRECAUCIÓN:

El botín de control de alimentaciín del dispositivo y el interruptor de alimentaciín de la fuente de alimentaciín no apagan la corriente eléctrica suministrada al dispositivo. Es posible también que el dispositivo tenga más de un cable de alimentaciín. Para eliminar la corriente eléctrica del dispositivo, asegúrese de desconectar todos los cables de alimentaciín de la fuente de alimentaciín.
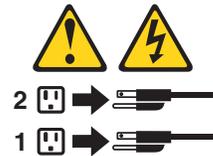
Declaración 10
PRECAUCIÓN:

No coloque ningún objeto que pese más de 82 kg (180 libras) encima de los dispositivos montados en bastidor.

Appendix C. Notices

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

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

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

> IBM Director of Licensing
> IBM Corporation
> North Castle Drive
> Armonk, NY 10504-1785
> U.S.A.

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some jurisdictions do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

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

Any references in this publication to non-IBM Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this IBM product, and use of those Web sites is at your own risk.

IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Edition notice

Trademarks

The following terms are trademarks of International Business Machines Corporation in the United States, other countries, or both:

Active Memory	PS/2
Active PCI	ServeRAID
Active PCI-X	ServerGuide
Alert on LAN	ServerProven
C2T Interconnect	TechConnect
Chipkill	ThinkPad
EtherJet	Tivoli
e-business logo	Tivoli Enterprise
@server	Update Connector
FlashCopy	Wake on LAN
IBM	XA-32
IntelliStation	XA-64
NetBAY	X-Architecture
Netfinity	XceL4
NetView	XpandOnDemand
OS/2 WARP	xSeries
Predictive Failure Analysis	

Lotus, Lotus Notes, and Domino are trademarks of Lotus Development Corporation and/or IBM Corporation in the United States, other countries, or both.

Intel, MMX, and Pentium are trademarks of Intel Corporation in the United States, other countries, or both.

Microsoft, Windows, and Windows NT are trademarks of Microsoft Corporation in the United States, other countries, or both.

UNIX is a registered trademark of The Open Group in the United States and other countries.

Java and all Java-based trademarks and logos are trademarks or registered trademarks of Sun Microsystems, Inc. in the United States, other countries, or both.

Other company, product, or service names may be trademarks or service marks of others.

Important notes

Processor speeds indicate the internal clock speed of the microprocessor; other factors also affect application performance.

CD-ROM drive speeds list the variable read rate. Actual speeds vary and are often less than the maximum possible.

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.

When referring to hard disk drive capacity or communications volume, MB stands for 1 000 000 bytes, and GB stands for 1 000 000 000 bytes. Total user-accessible capacity may vary depending on operating environments.

Maximum internal hard disk drive capacities assume the replacement of any standard hard disk drives and population of all hard disk drive bays with the largest currently supported drives available from IBM.

Maximum memory may require replacement of the standard memory with an optional memory module.

IBM makes no representation or warranties regarding non-IBM products and services that are ServerProven®, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. These products are offered and warranted solely by third parties.

IBM makes no representations or warranties with respect to non-IBM products. Support (if any) for the non-IBM products is provided by the third party, not IBM.

Some software may differ from its retail version (if available), and may not include user manuals or all program functionality.

Product recycling and disposal

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

This product may contain a sealed lead acid, nickel cadmium, nickel metal hydride, lithium, or lithium ion battery. Consult your user manual or service manual for specific battery information. The battery must be recycled or disposed of properly. Recycling facilities may not be available in your area. For information on disposal of batteries, contact your local waste disposal facility.

In the United States, IBM has established a collection process for reuse, recycling, or proper disposal of used IBM sealed lead acid, nickel cadmium, nickel metal hydride, and battery packs from IBM equipment. For information on proper disposal of these batteries, contact IBM at 1-800-426-4333. Have the IBM part number listed on the battery available prior to your call.

Electronic emission notices

IBM xSeries 205 Type 8480

Federal Communications Commission (FCC) statement

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an IBM authorized dealer or service representative for help.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Proper cables and connectors are available from IBM authorized dealers. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

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

Responsible party:
International Business Machines Corporation
New Orchard Road
Armonk, NY 10504
Telephone: 1-919-543-2193

FC Tested To Comply
    With FCC Standards
FOR HOME OR OFFICE USE

Industry Canada Class B emission compliance statement

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

Avis de conformité à la réglementation d'Industrie Canada

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

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 B Information Technology Equipment according to CISPR 22/European Standard EN 55022. The limits for Class B equipment were derived for typical residential environments to provide reasonable protection against interference with licensed communication devices.

Power cords

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
02K0546	China
13F9940	Australia, Fiji, Kiribati, Nauru, New Zealand, Papua New Guinea

IBM power cord part number	Used in these countries and regions
13F9979	Afghanistan, Albania, Algeria, Andorra, Angola, Armenia, Austria, Azerbaijan, Belarus, Belgium, Benin, Bosnia and Herzegovina, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo (Democratic Republic of), Congo (Republic of), Cote D'Ivoire (Ivory Coast), Croatia (Republic of), Czech Republic, Dahomey, Djibouti, Egypt, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Finland, France, French Guyana, French Polynesia, Germany, Greece, Guadeloupe, Guinea, Guinea Bissau, Hungary, Iceland, Indonesia, Iran, Kazakhstan, Kyrgyzstan, Laos (People's Democratic Republic of), Latvia, Lebanon, Lithuania, Luxembourg, Macedonia (former Yugoslav Republic of), Madagascar, Mali, Martinique, Mauritania, Mauritius, Mayotte, Moldova (Republic of), Monaco, Mongolia, Morocco, Mozambique, Netherlands, New Caledonia, Niger, Norway, Poland, Portugal, Reunion, Romania, Russian Federation, Rwanda, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, Slovakia, Slovenia (Republic of), Somalia, Spain, Suriname, Sweden, Syrian Arab Republic, Tajikistan, Tahiti, Togo, Tunisia, Turkey, Turkmenistan, Ukraine, Upper Volta, Uzbekistan, Vanuatu, Vietnam, Wallis and Futuna, Yugoslavia (Federal Republic of), Zaire
13F9997	Denmark
14F0015	Bangladesh, Lesotho, Maceo, Maldives, Namibia, Nepal, Pakistan, Samoa, South Africa, Sri Lanka, Swaziland, Uganda
14F0033	Abu Dhabi, Bahrain, Botswana, Brunei Darussalam, Channel Islands, China (Hong Kong S.A.R.), Cyprus, Dominica, Gambia, Ghana, Grenada, Iraq, Ireland, Jordan, Kenya, Kuwait, Liberia, Malawi, Malaysia, Malta, Myanmar (Burma), Nigeria, Oman, Polynesia, Qatar, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Seychelles, Sierra Leone, Singapore, Sudan, Tanzania (United Republic of), Trinidad and Tobago, United Arab Emirates (Dubai), United Kingdom, Yemen, Zambia, Zimbabwe
14F0051	Liechtenstein, Switzerland
14F0069	Chile, Italy, Libyan Arab Jamahiriya
14F0087	Israel
1838574	Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, Bermuda, Bolivia, Brazil, Caicos Islands, Canada, Cayman Islands, Costa Rica, Colombia, Cuba, Dominican Republic, Ecuador, El Salvador, Guam, Guatemala, Haiti, Honduras, Jamaica, Japan, Mexico, Micronesia (Federal States of), Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Taiwan, United States of America, Venezuela
24P6858	Korea (Democratic People's Republic of), Korea (Republic of)
34G0232	Japan
36L8880	Argentina, Paraguay, Uruguay
49P2078	India
49P2110	Brazil

IBM power cord part number	Used in these countries and regions
6952300	Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, Bermuda, Bolivia, Caicos Islands, Canada, Cayman Islands, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guam, Guatemala, Haiti, Honduras, Jamaica, Mexico, Micronesia (Federal States of), Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Saudi Arabia, Thailand, Taiwan, United States of America, Venezuela

IBM

Part Number: 59P2108