



xSeries 200 Type 8479

Installation Guide

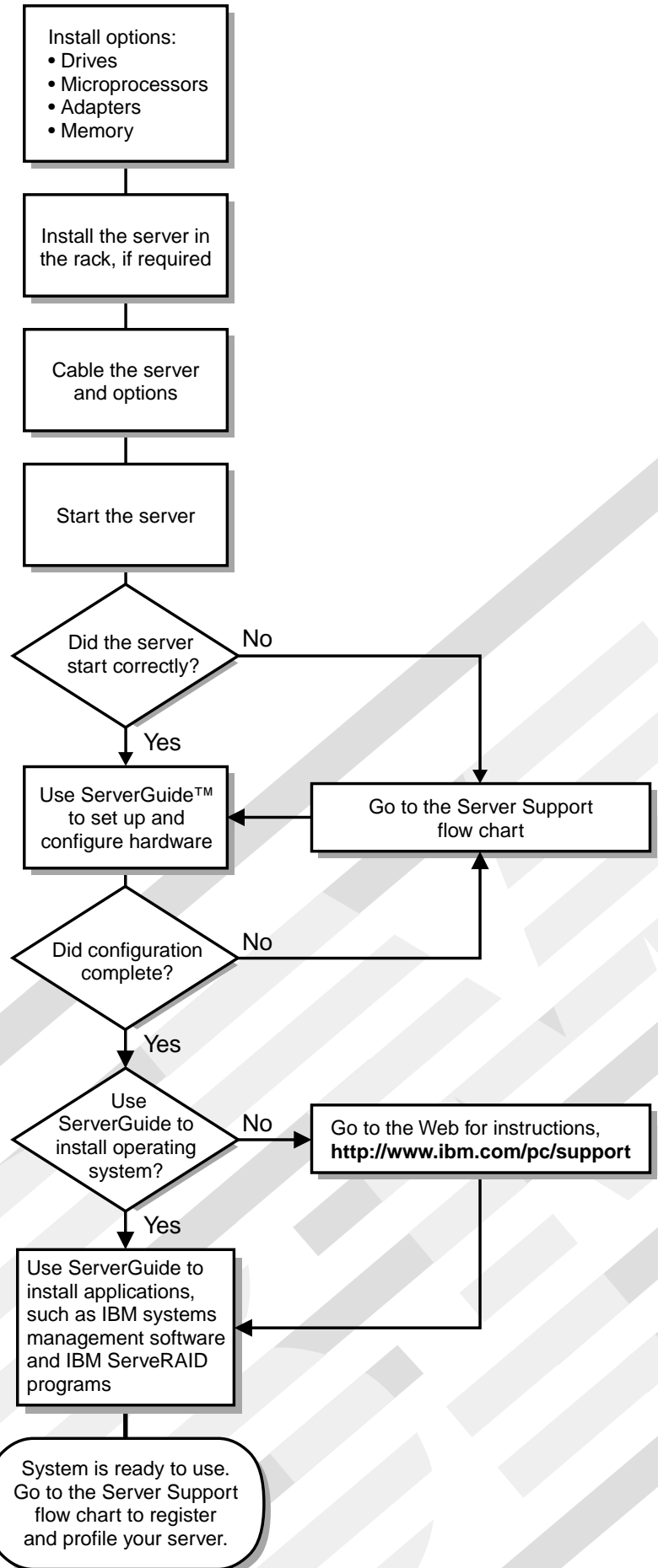
Welcome...

Thank you for buying an IBM xSeries server.

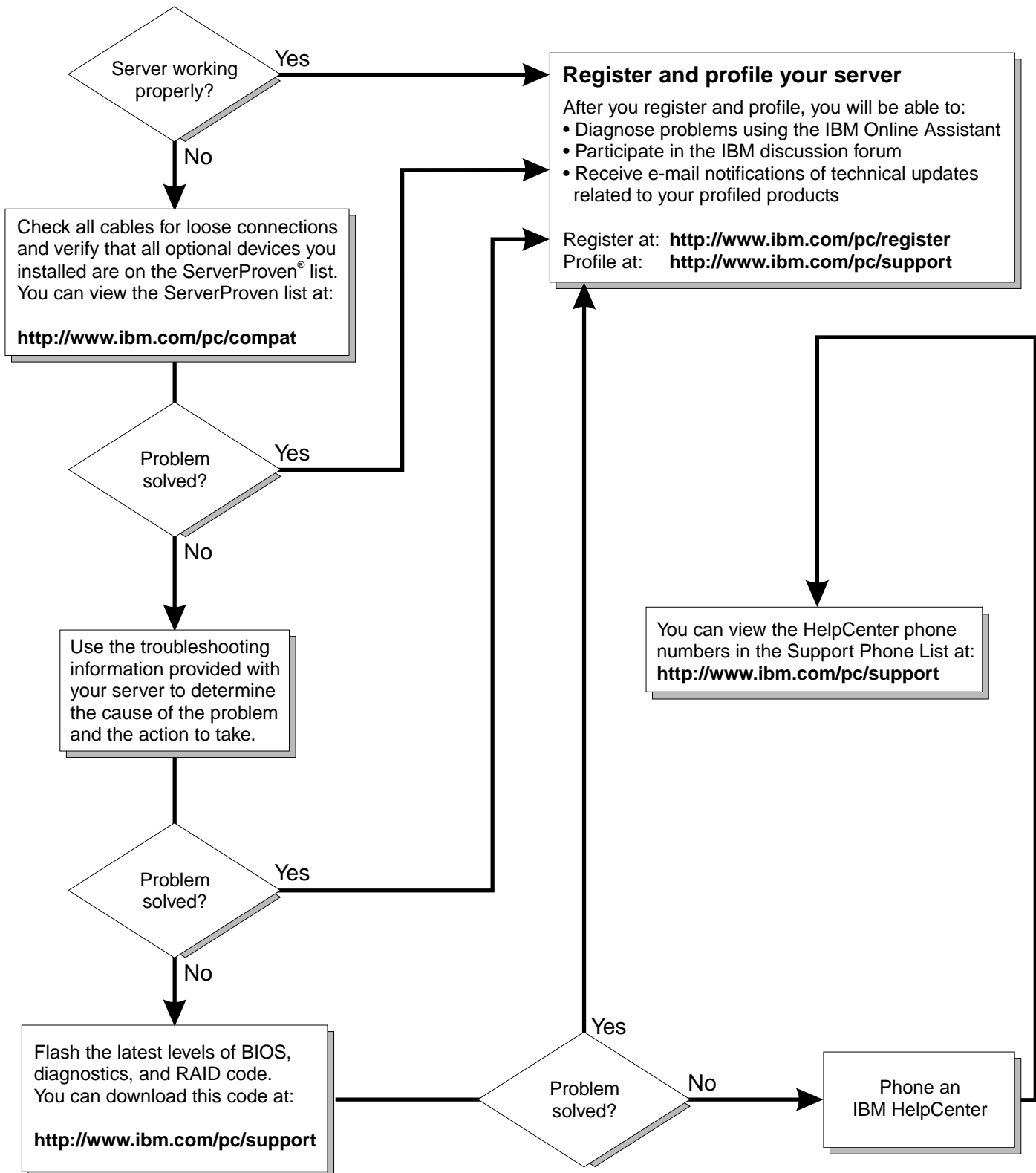
This server *Installation Guide* contains information for setting up and configuring your server.

For detailed information about your server, view the *User's Reference* on the Documentation CD.

You can also find the most current information about your server on the IBM Web site at: <http://www.ibm.com/pc/support>



Server Support



IBM xSeries 200



Installation Guide

Note:

Before using this information and the product it supports, be sure to read the general information in Appendix A, "Product warranty and notices," on page 35.

First Edition (August 2001)

© Copyright International Business Machines Corporation 2001. All rights reserved.

US Government Users Restricted Rights – Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

Contents

Safety	v
Chapter 1. Introduction	1
Features and specifications	2
Notices and statements used in this book	3
Handling static-sensitive devices	3
Major components of the xSeries 200	4
System board internal cable connectors	5
Chapter 2. Installing options	7
Moving the stabilizing feet	7
Removing the side cover	9
Removing the support-bracket assembly	10
Working with adapters	11
Adapter considerations	11
Installing an adapter	12
Installing a SCSI or ServeRAID adapter	14
Installing internal drives	15
Installing a drive in bay 2 or 4	16
Installing a hard disk drive in bay 5, 6, or 7	18
Installing memory modules	19
Installing a security U-bolt	21
Installing the cover	22
Cabling the server	23
Chapter 3. Server power, controls, and indicators	25
Turning on the server	25
Turning off the server	25
Server controls and indicators	26
Chapter 4. Configuring your server	27
Starting the utility programs	28
Using the Configuration/Setup Utility program	28
Using the SCSISelect utility program (some models)	28
Using the PXE boot agent utility program	29
Using the ServerGuide CDs	29
Chapter 5. Solving problems	31
Diagnostic tools overview	31
POST beep code descriptions	31
ServerGuide startup problems	32
Troubleshooting chart	33
Appendix A. Product warranty and notices	35
Warranty information	35
Warranty period	35
IBM Statement of Limited Warranty	35
Notices	43
Edition notice	44
Processing date data	44
Trademarks	44
Important notes	45
Electronic emission notices	45
Power cords	47

Index 49

Safety

Before installing this product, read the Safety Information.

مج، يجب قراءة دات السلامة

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

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

安裝本產品之前，請先閱讀「安全資訊」。

Prije instalacije ovog produkta obavezno pročitajte Sigurnosne Upute.

Před instalací tohoto produktu si přečtěte příručku bezpečnostních instrukcí.

Læs sikkerhedsforskrifterne, før du installerer dette produkt.

Lees voordat u dit product installeert eerst de veiligheidsvoorschriften.

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

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

Vor der Installation dieses Produkts die Sicherheitshinweise lesen.

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

לפני שתתקינו מוצר זה, קראו את הוראות הבטיחות.

A termék telepítése előtt olvassa el a Biztonsági előírásokat!

Prima di installare questo prodotto, leggere le Informazioni sulla Sicurezza

製品の設置の前に、安全情報をお読みください。

본 제품을 설치하기 전에 안전 정보를 읽으십시오.

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

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

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

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

Перед установкой продукта прочтите инструкции по технике безопасности.

Pred inštaláciou tohto zariadenia si pečítajte Bezpečnostné predpisy.

Pred namestitvijo tega proizvoda preberite Varnostne informacije.

Antes de instalar este producto lea la información de seguridad.

Läs säkerhetsinformationen innan du installerar den här produkten.

Statement 1



DANGER

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

To avoid a shock hazard:

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

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

Statement 2



CAUTION:

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

Do not:

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

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

Statement 3



CAUTION:

When laser products (such as CD-ROMs, DVD drives, fiber optic devices, or transmitters) are installed, note the following:

- Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.
- Use of controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.

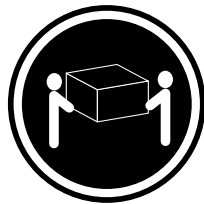


DANGER

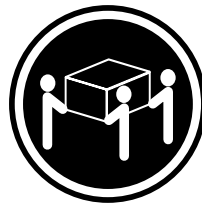
Some laser products contain an embedded Class 3A or Class 3B laser diode. Note the following.

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

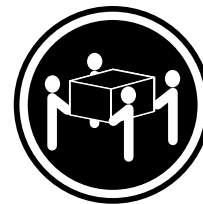
Statement 4



≥ 18 kg (39.7 lb)



≥ 32 kg (70.5 lb)



≥ 55 kg (121.2 lb)

CAUTION:

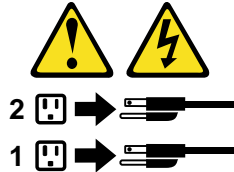
Use safe practices when lifting.

Statement 5



CAUTION:

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



Statement 8



CAUTION:

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



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

Statement 13



DANGER

Overloading a branch circuit is potentially a fire hazard and a shock hazard under certain conditions. To avoid these hazards, ensure that your system electrical requirements do not exceed branch circuit protection requirements. Refer to the information that is provided with your device for electrical specifications.

Chapter 1. Introduction

Thank you for purchasing an IBM® eServer xSeries 200 server. This *Installation Guide* provides the information that is needed to:

- Set up and cable your server
- Start and configure your server
- Install your network operating system (NOS)

Packaged with the *Installation Guide* are software CDs that help you to configure hardware, install device drivers, and install the network operating system.

Also included is an *IBM xSeries Documentation* CD, which provides detailed information about your server.

Your server comes with a limited warranty and IBM Server Start Up Support. If you have access to the World Wide Web, you can obtain up-to-date information about your xSeries 200 model and other IBM server products at the following World Wide Web address: <http://www.ibm.com/eserver/xseries>.

Record your product information in this table.	
Product name	_____
Machine type	_____
Model number	_____
Serial number	_____
Key serial number	_____
Key manufacturer	_____
Key phone number	_____

The server model and serial numbers are located on labels on the bottom of the server and on the lower-right side of the bezel.

Note: Your server keys cannot be duplicated by locksmiths. If you lose them, order replacement keys from the key manufacturer. The key serial number and the telephone number of the manufacturer are on a tag attached to the keys.

If you plan to install your server in a rack, you need to purchase a *Tower-to-Rack Kit* conversion kit. For a list of supported options for your server, see the ServerProven™ list at <http://www.ibm.com/pc/compat>.

Features and specifications

The following table provides a summary of the features and specifications of your xSeries 200 server. Depending on your server model, some features and specifications might not apply.

Table 1. Features and Specifications.

<p>Microprocessor: Supports one microprocessor (depending on your model)</p> <ul style="list-style-type: none"> • Intel® Pentium® III with 256 KB or 512 KB Level-2 cache and MMX™ (MMX2) technology or • Intel® Celeron™ with 128 KB Level-2 cache and MMX (MMX2) technology <p>Memory:</p> <ul style="list-style-type: none"> • Minimum: 128 MB • Maximum: 1.5 GB • Type: PC133 MHz, ECC SDRAM, unregistered DIMMs • Slots: Three dual inline <p>Drives: (depending on your model)</p> <ul style="list-style-type: none"> • Diskette: 1.44 MB • CD-ROM: IDE • Hard disk drive <p>Expansion bays: (depending on your model)</p> <ul style="list-style-type: none"> • Two 5.25-in. bays (one CD-ROM drive installed) • Two 3.5-in. bays (one diskette drive installed) • Three 3.5-in. slim-high bays available <p>PCI expansion slots:</p> <ul style="list-style-type: none"> • 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 <p>AGP slot:</p> <p>Accelerated graphics port (AGP) (contains the video adapter)</p>	<p>Power supply:</p> <p>One 330 watt (90-240 V ac)</p> <p>Video:</p> <ul style="list-style-type: none"> • ATI Rage XL video adapter • Compatible with SVGA and VGA • 8 MB SDRAM video memory <p>Size:</p> <ul style="list-style-type: none"> • Height: 470 mm (18.5 in.) • Depth: 508 mm (19.9 in.) • Width: 165 mm (6.5 in.) • Weight: approximately 19.5 kg (43 lb) when fully configured or 15.9 kg (35 lb) minimum <p>Integrated functions:</p> <ul style="list-style-type: none"> • One 10BASE-T/ 100BASE-TX, Intel Ethernet controller with Alert on LAN™ and Wake on LAN® support • Two serial ports • Parallel port • Two USB ports • Keyboard port • Mouse port • MIDI port • Audio ports <ul style="list-style-type: none"> — Line out — Line in — Mic • Dual-channel bus mastering IDE controller <p>Acoustical noise emissions:</p> <ul style="list-style-type: none"> • Sound power, idling: 5.1 bel maximum • Sound power, operating: 5.3 bel maximum 	<p>Environment:</p> <ul style="list-style-type: none"> • Air temperature: <ul style="list-style-type: none"> — Server on: 10° to 35° C (50.0° to 95.0° F). Altitude: 0 to 914 m (2998.7 ft) — Server on: 10° to 32° C (50.0° to 89.6° F). Altitude: 914 m (2998.7 ft) to 2133 m (6998.0 ft) — Server off: 10° to 43° C (50.0° to 109.4° F). Maximum altitude: 2133 m (6998.0 ft) • Humidity: <ul style="list-style-type: none"> — Server on: 8% to 80% — Server off: 8% to 80% <p>Heat output:</p> <p>Approximate heat output in British thermal units (Btu) per hour</p> <ul style="list-style-type: none"> • Minimum configuration: 341 Btu (100 watts) • Maximum configuration: 1604 Btu (470 watts) <p>Electrical input:</p> <ul style="list-style-type: none"> • Sine-wave input (50-60 Hz) required • Input voltage low range: <ul style="list-style-type: none"> — Minimum: 90 V ac — Maximum: 137 V ac • Input voltage high range: <ul style="list-style-type: none"> — Minimum: 180 V ac — Maximum: 265 V ac • Input kilovolt-amperes (kVA) approximately: <ul style="list-style-type: none"> — Minimum: 0.095 kVA — Maximum: 0.470 kVA
---	--	---

Notices and statements used in this book

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

The notice and statement definitions are as follows:

- **Notes:** These notices provide important tips, guidance, or advice.
- **Important:** These notices provide information 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.

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.

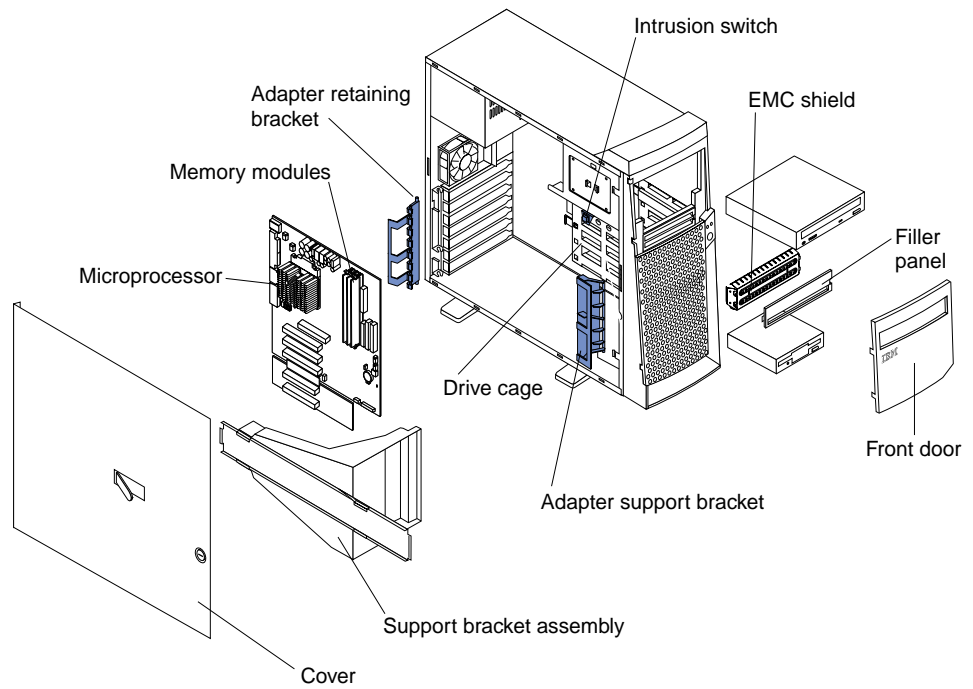
To reduce the possibility of electrostatic discharge, observe the following precautions:

- 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 system unit for at least two seconds. (This drains static electricity from the package and from your body.)
- Remove the device from its package and install it directly into your system unit 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 your system unit cover or on a metal table.
- Take additional care when handling devices during cold weather; heating reduces indoor humidity and increases static electricity.

Major components of the xSeries 200

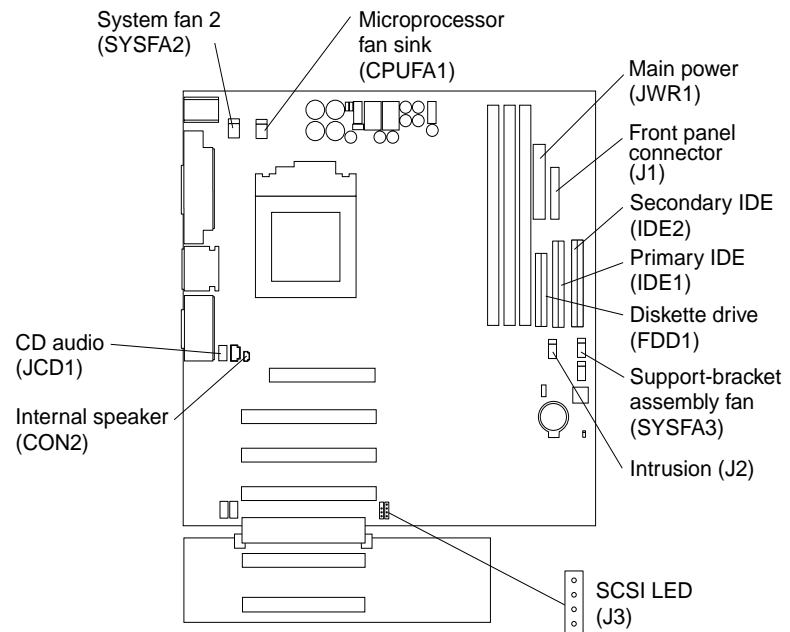
The following illustration shows the locations of major components in your server.

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



System board internal cable connectors

The following illustration identifies system and extender board connectors for internal cables.



Chapter 2. Installing options

This chapter provides instructions to help you install hardware options in your server. This section is for all users, but is written with the experienced user in mind. If you need more detailed installation information for options, refer to the *User's Reference* on the *IBM xSeries Documentation CD*.

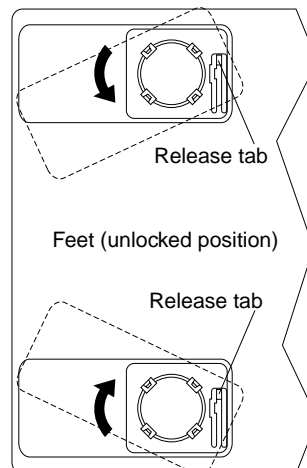
Moving the stabilizing feet

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.

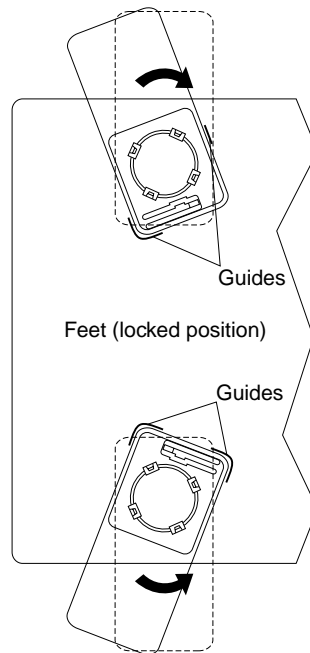
Note: The following illustration shows the rear feet located on the bottom rear of the server.



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

- 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.



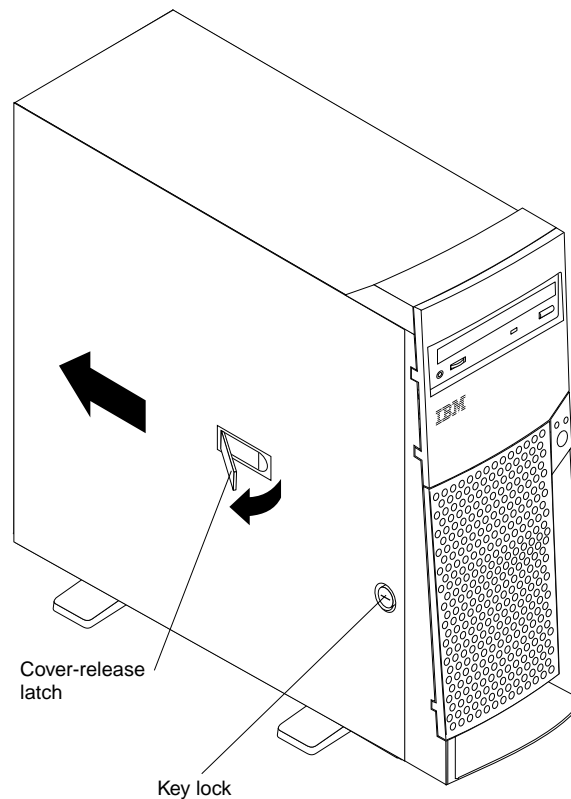
- Rotate the foot outward until the foot locks into place.
- Complete steps 2 through 5 for each foot.

Note: 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 the server because of the weight of the server.

Removing the side cover

The following information describes how to remove the side cover.

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



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

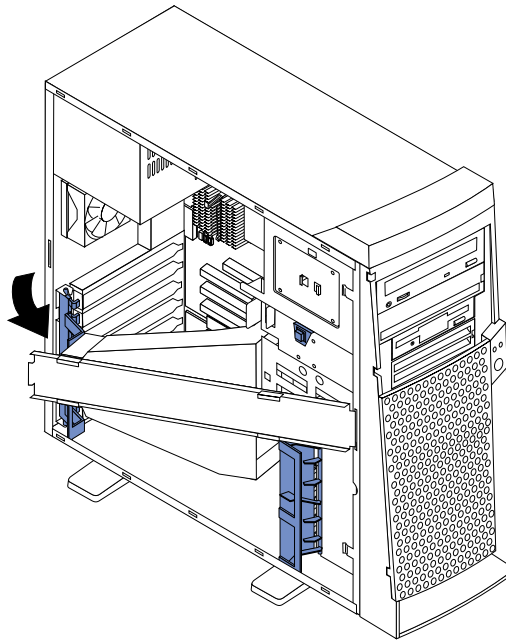
1. Review the safety precautions listed in “Safety” on page v.
2. Turn off the server and peripheral devices and disconnect all external cables and power cords.
3. If necessary, unlock the server cover.
4. Pull out on the cover-release latch, which will slide the cover toward the rear of the server about 12.7 mm (0.5 in.). Then, remove the cover from the server and set it aside.

To replace the side cover, see “Installing the cover” on page 22.

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

Removing the support-bracket assembly

When working with some options such as hard disk drives, microprocessors, and memory modules, you must first remove the support-bracket assembly to access the location of the option.



Complete the following steps to remove the support-bracket assembly.

1. Review the safety precautions listed in “Safety” on page v.
2. Turn off the server and peripheral devices and disconnect all external cables and power cords; then, remove the side cover. See “Removing the side cover” on page 9 for details.
3. Disconnect the support-bracket assembly fan cable from the connector (SYSFA3) on the system board. For the location of the fan cable connector, see “System board internal cable connectors” on page 5.
4. Locate the end of the support-bracket assembly near the rear of the server. Pull it out approximately 152.4 mm (6 in.).
5. Pull the front end of the support-bracket assembly away from the server and place the assembly aside.

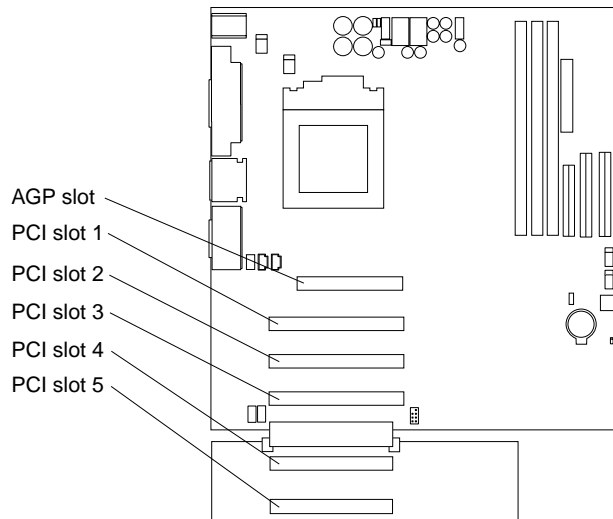
To reinstall the support-bracket assembly, reverse these steps.

Working with adapters

Your server comes with adapter connectors, called *slots*. The AGP video adapter is installed in the AGP slot and some server models come with a SCSI adapter installed in PCI expansion slot 2. You can install up to five PCI adapters in PCI expansion slots 1 through 5. All PCI expansion slots are 32-bit, 33 MHz slots.

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

The following illustration shows the location of the PCI expansion slots on the system and PCI extender boards.



Adapter considerations

Before you install an adapter, review the following:

- Locate the documentation that comes with the adapter and follow those instructions in addition to the instructions given in this chapter. If you need to change 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 expansion slots.
- Your server supports 5.0V and universal PCI adapters; it does not support 3.3V adapters.
- Your server uses a rotational interrupt technique to configure PCI adapters. Because of this technique, you can install a variety of PCI adapters that currently do not support sharing of PCI interrupts.
- If you are installing or replacing an adapter that will control your startup (boot) drive, install the adapter in PCI expansion slot 2.
- PCI expansion slots 1 through 5 are on PCI bus 0.

The system scans the AGP slot and PCI expansion slots 1 through 5 to assign system resources; then, the system starts (boots) the PCI devices in the following order, if you have not changed the default boot sequence: PCI expansion slots 1 through 5; then, the system board integrated drive electronics (IDE) or SCSI devices.

Note: To change the startup sequence for PCI devices, start the Configuration/Setup Utility program, select **Start Options** from the main menu, select **Startup Sequence**; then, select **Second device (SCSI)** to designate the adapter boot sequence. See Chapter 4, "Configuring your

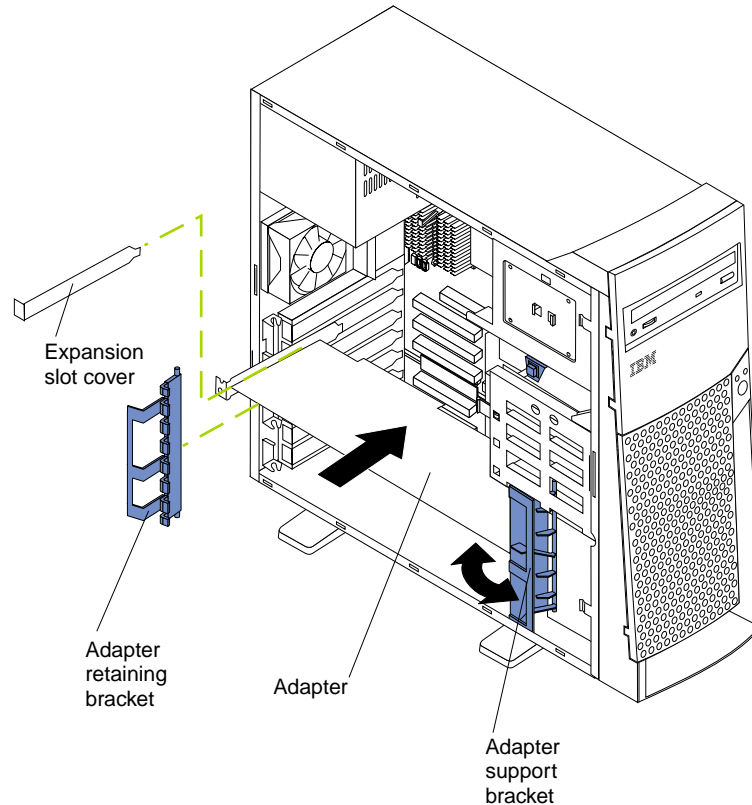
server,” on page 27 for details on using the Configuration/Setup Utility program.

- For a list of supported options for your server, refer to <http://www.ibm.com/pc/compat> on the World Wide Web.

Installing an adapter

Refer to the following illustration to install an adapter.

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



Complete the following steps to install an adapter.

Attention: When you handle static-sensitive devices, take precautions to avoid damage from static electricity. For details on handling these devices, see “Handling static-sensitive devices” on page 3.

1. Review the safety precautions listed in “Safety” on page v.
2. Turn off the server and peripheral devices and disconnect all external cables and power cords; then, remove the side cover. For more information about removing the side cover, see “Removing the side cover” on page 9.
3. Determine which PCI expansion slot you will use for the adapter.

Note: If you are installing or replacing an adapter that will control your startup (boot) drive, install the adapter in PCI expansion slot 2.

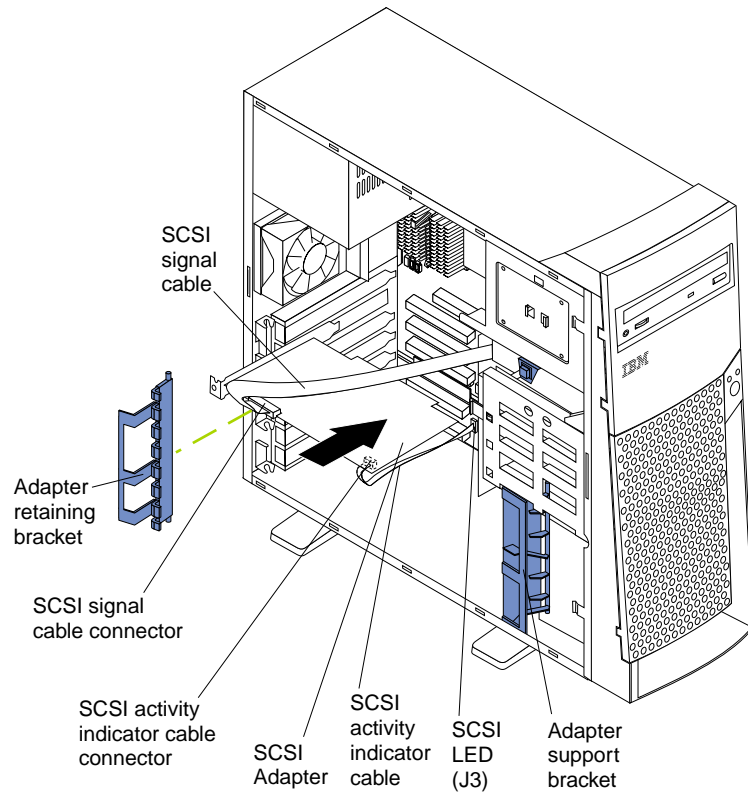
4. If you are installing a full-length adapter, rotate the front adapter support bracket to the open (unlocked) position.
5. Rotate the rear adapter retaining bracket to the open (unlocked) position, and then remove it from the server.

6. Remove the PCI expansion-slot cover. From the rear of the server, press in on the slot cover. Grasp it and pull it out of the slot. Store it in a safe place for future use.
Attention: PCI expansion-slot covers must be installed on all vacant slots. This maintains the electronic emissions characteristics of the server and ensures proper cooling of server components.
7. Touch the static-protective package containing the adapter to any unpainted metal surface on the server. Then, remove the adapter from the static-protective package. Avoid touching the components and gold-edge connectors on the adapter.
8. Place the adapter, component-side up, on a flat, static-protective surface.
9. Set any jumpers or switches as described by the adapter manufacturer.
10. To install the adapter, carefully grasp the adapter by its top edge or upper corners, and align it with the expansion slot guides; then, press the adapter *firmly* into the PCI expansion slot.
Attention: When you install an adapter in the server, be sure that it is completely and correctly seated in the PCI expansion slot before you turn on the server. Incomplete insertion might cause damage to the system board or the adapter.
11. Connect required cables to the adapter.
Attention: Route cables so that they do not block the flow of air from the fans.
12. If you have another adapter to install, do so now.
13. If you have installed a full-length adapter, rotate the front adapter support bracket to the closed (locked) position.
14. Reinstall the rear adapter retaining bracket; then, rotate the bracket to the closed (locked) position.
15. If you have other options to install, do so now.
16. Reinstall the side cover (see “Installing the cover” on page 22 for details).
17. Reconnect the external cables and power cords; then, turn on the peripheral devices and the server.

Installing a SCSI or ServeRAID adapter

Complete the following steps to install a SCSI or ServeRAID adapter.

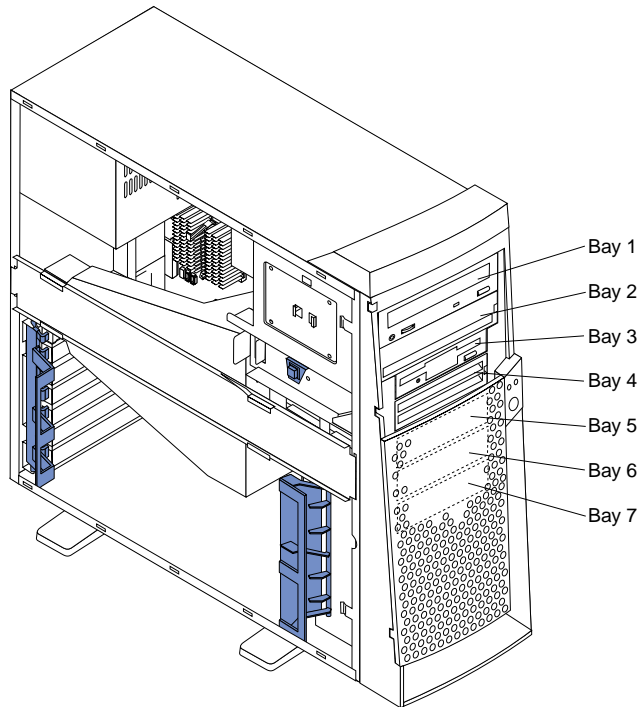
1. If you have not already installed the SCSI adapter, complete steps 1 through 10 of “Installing an adapter” on page 12. Then, return here to complete the installation.



2. Connect one end of the SCSI signal cable (purchased separately) to the adapter; then, connect one or more of the signal cable connectors to the rear of the SCSI devices.
3. Connect the SCSI activity indicator cable (purchased separately) to the adapter and to the SCSI LED connector (J3) on the system board. See “System board internal cable connectors” on page 5.
Note: If you are installing or replacing an adapter that will control your startup (boot) drive, install the adapter in PCI expansion slot 2.
4. If you have another adapter to install or remove, do so now.
5. If you have installed a full-length adapter, rotate the front adapter support bracket to the closed (locked) position.
6. Reinstall the rear adapter retaining bracket; then, rotate the bracket to the closed (locked) position.
7. If you have other options to install, do so now.
8. Reinstall the side cover. See “Installing the cover” on page 22 for details.
9. Reconnect the external cables and power cords; then, turn on the peripheral devices and the server.

Installing internal drives

Your server comes with an IDE CD-ROM drive installed in bay 1, and a 3.5-in., 1.44 MB diskette drive in bay 3. Some sever models have a hard disk drive installed in bay 5.



Drive considerations:

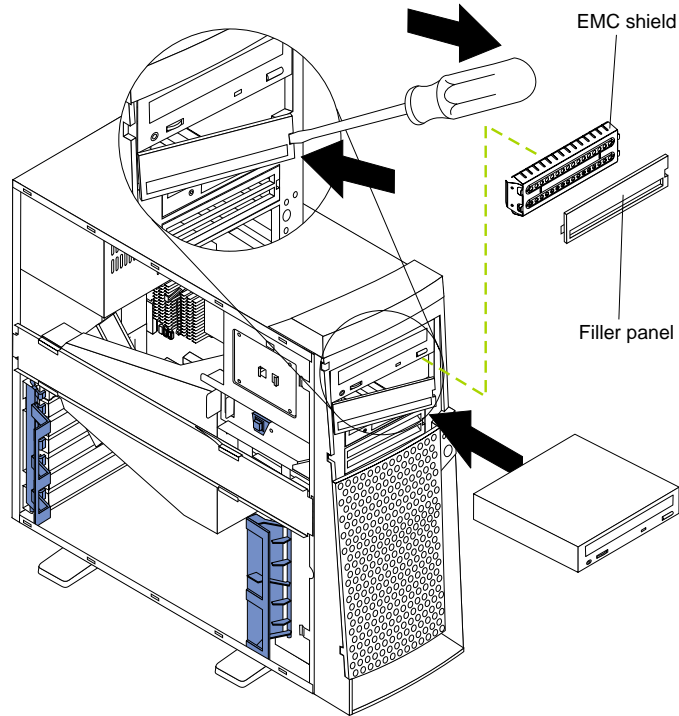
- Diskette drives, tape drives, and CD-ROM drives are removable-media drives. You can install removable-media drives in bays 1, 2, 3, and 4.
- You can install a 3.5-in., slim-high or a 5.25-in., half-high, removable-media drive, such as a tape backup drive, in bay 2.
- You can install only a 3.5-in., slim-high, removable-media drive in bay 4.
- The xSeries 200 server supports only one diskette drive, which uses 1 MB and 2 MB diskettes.
- Before you install a 3.5-in. drive in a 5.25-in. bay, you must attach the 5.25 in. conversion kit, supplied with your option, to the 3.5-in. drive. Refer to the documentation that comes with the option for the conversion kit installation instructions.
Note: Only 3.5-in. options that ship with proper mounting hardware can be supported in the 5.25-in. bays.
- If you have a tape backup drive in your server, use a dry process cleaning cartridge to clean the tape head two hours after you first use a new data cartridge. Then, clean the tape head once a month, or after each eight hours of continuous read/write operations, whichever occurs first. For complete details about the tape backup drive, refer to the documentation that comes with your server or your backup option.
- The electromagnetic interference (EMI) integrity and cooling of the server are both protected by having bays 1 through 4 covered or occupied. When you install

a drive, save the EMC shield and filler panel from the bay, in case you later remove the drive and do not replace it with another.

- For a list of supported options for your server, refer to <http://www.ibm.com/pc/compat> on the World Wide Web.

Installing a drive in bay 2 or 4

Complete the following steps to install a drive in bay 2 or 4.



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 3.

1. Review the safety precautions listed in “Safety” on page v.
2. Turn off the server and peripheral devices and disconnect the external cables and power cords; then, remove the side cover (see “Removing the side cover” on page 9 for details).
3. Remove the support-bracket assembly and disconnect the fan cable from the connector (SYSFA3) on the system board. See “Removing the support-bracket assembly” on page 10 for details. See “System board internal cable connectors” on page 5 for the location of the fan cable connector.
4. Use a screwdriver to gently pry the filler panel and EMC shield away from the server.

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

Statement 3



CAUTION:

When laser products (such as CD-ROMs, DVD drives, fiber optic devices, or transmitters) are installed, note the following:

- **Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.**
- **Use of controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.**



Danger

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

5. 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.
6. Set any jumpers or switches on the drive according to the documentation that comes with the drive.
7. Install the drive:
 - If you are installing a 5.25-in. drive in bay 2, push the drive into the bay. Then, use the two screws that come with your option to attach the drive to the drive cage.
 - 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.

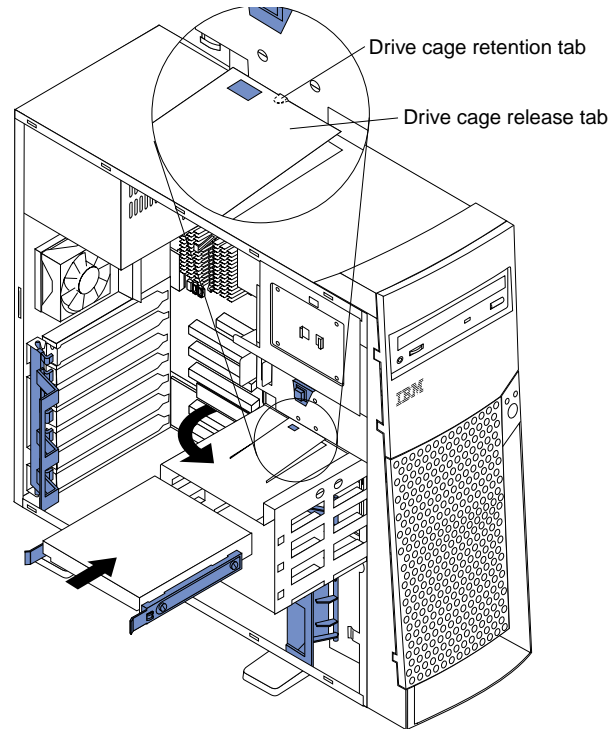
Note: You can only install a 3.5-in. device in bay 4.
8. Cable the drive:
 - If the drive is an IDE device, plug one connector of the IDE signal cable into the back of the drive and the other end of the cable into the IDE connector (IDE1) on the system board. For the location of the IDE connectors, see “System board internal cable connectors” on page 5.
 - If the drive is a SCSI device, your server must have a SCSI adapter installed. Plug one connector of the SCSI signal cable into the back of the drive and the other end of the cable into the connector on the SCSI adapter. See “Installing an adapter” on page 12.

Note: Make sure to route the signal cable so that it does not block the air flow to the rear of the drives or over the microprocessor.
9. If you have another drive to install or remove, do so now.
10. Plug one of the power cables from the power supply into the back of the drive. The connectors are keyed and can be inserted only one way.

11. Replace the support-bracket assembly and reconnect the fan cable to the connector (SYSFA3) on the system board. See “System board internal cable connectors” on page 5 for the location of the fan cable connector.
12. If you have other options to install, do so now.
13. Reinstall the side cover. See “Installing the cover” on page 22 for details.
14. Reconnect the external cables and power cords; then, turn on the peripheral devices and the server.

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

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



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 3.

1. Review the safety precautions listed in “Safety” on page v.
2. Turn off the server and peripheral devices and disconnect all external cables and power cords; then, remove the cover (see “Removing the side cover” on page 9 for details).
3. Remove the support-bracket assembly and disconnect the fan cable from the connector (SYSFA3) on the system board. See “Removing the support-bracket assembly” on page 10 for details. See “System board internal cable connectors” on page 5 for the location of the fan cable connector.
4. Access the drive cage.
 - a. If your server has hard disk drives installed in the drive cage, disconnect the power and signal cables from the rear of the drives.
 - b. Rotate the drive cage out of the server until it locks into place over the drive cage retention tab.

Note: Before you install a hard disk drive, ensure that the drive cage locks into place over the drive cage retention tab by pressing on the side of the drive cage.

5. 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.
6. Set any jumpers or switches on the drive according to the documentation that comes with the drive.
7. Attach the blue plastic guide rails to the sides of the drive using the screws and guide rails provided in the drive cage.
8. Slide the drive into the drive cage until the plastic tabs on the guide rails lock into place in the drive cage.
9. Lift the drive cage up and press in on the drive cage release tab; then, rotate the drive cage back into the server.

Note: Clear any cables that might impede the replacement of the drive cage.

10. Connect the power and signal cables to the rear of each drive.

Note: Make sure to route the signal cable so that it does not block the air flow to the rear of the drives or over the microprocessor.

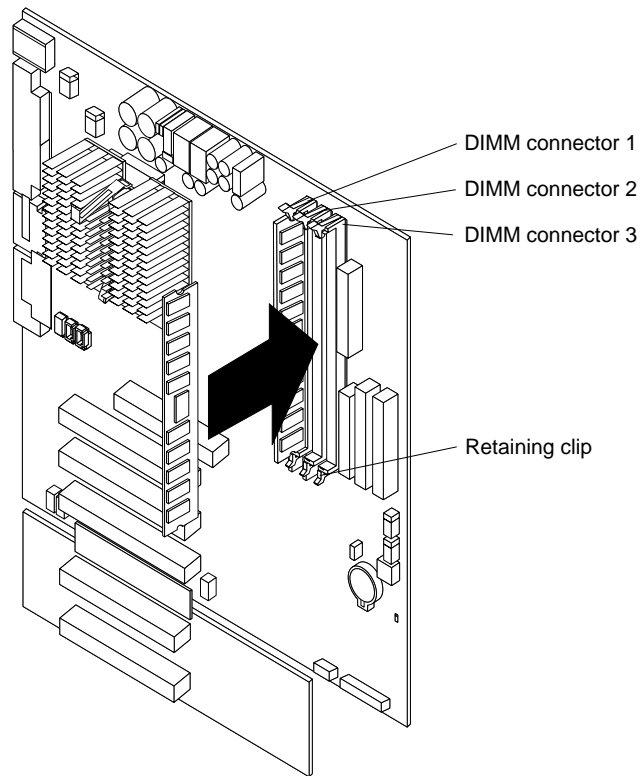
11. If you have other options to install or remove, do so now.
12. Replace the support-bracket assembly and reconnect the fan cable to the connector (SYSFA3) on the system board. See “Removing the support-bracket assembly” on page 10 for details. See “System board internal cable connectors” on page 5 for the location of the fan cable connector.
13. Reinstall the side cover. See “Installing the cover” on page 22 for details.
14. Reconnect the external cables and power cords; then, turn on the peripheral devices and the server.

Installing memory modules

Your server comes with a dual in-line memory module (DIMM) installed on the system board in DIMM connector 1.

Memory considerations:

- When installing additional memory modules, install the second memory module in DIMM connector 2, and the third in DIMM connector 3. (See the illustration in this section for memory connector locations.)
- Your xSeries 200 server supports 128 MB, 256 MB, and 512 MB DIMMs. Your server supports a minimum of 128 MB and a maximum of 1.5 GB of system memory. See the ServerProven list at <http://www.ibm.com/pc/compat> for a list of memory modules for use with your server.
- Installing or removing DIMMs changes the configuration information in the server. Therefore, after installing or removing a DIMM, you must change and save the new configuration information by using the Configuration/Setup Utility program. When you restart the server, the system displays a message indicating that the memory configuration has changed. Start the Configuration/Setup Utility program and select **Save Settings**. See “Configuring your server” on page 27 for more information.
- The illustrations in this document might differ slightly from your hardware.



Complete the following steps to install a DIMM.

Attention: When you handle static-sensitive devices, take precautions to avoid damage from static electricity. For details on handling these devices, see “Handling static-sensitive devices” on page 3.

1. Review the safety precautions listed in “Safety” on page v.
2. Turn off the server and peripheral devices and disconnect all external cables and power cords; then, remove the cover (see “Removing the side cover” on page 9 for details).
3. Remove the support-bracket assembly and disconnect the fan cable from the connector (SYSFA3) on the system board. See “Removing the support-bracket assembly” on page 10 for details. See “System board internal cable connectors” on page 5 for the location of the fan cable connector.
4. Install the DIMM:
 - a. If you are installing a DIMM in connector 1, remove the AGP video adapter.
Remove the AGP video adapter only if you are replacing the DIMM in connector 1. See “Working with adapters” on page 11 for the location of the AGP slot.
 - b. Open the retaining clip on each end of the DIMM connector.
Attention: To avoid breaking the retaining clips or damaging the DIMM connectors, open and close the clips gently.
 - c. Touch the static-protective package containing the DIMM to any unpainted metal surface on the server. Then, remove the DIMM from the package.
 - d. Turn the DIMM so that the pins align correctly with the connector.
 - e. Insert the DIMM into the connector by aligning the DIMM edges with the slots at each end of the DIMM connector. Firmly press the DIMM straight down into the connector by applying pressure on both ends of the DIMM simultaneously.

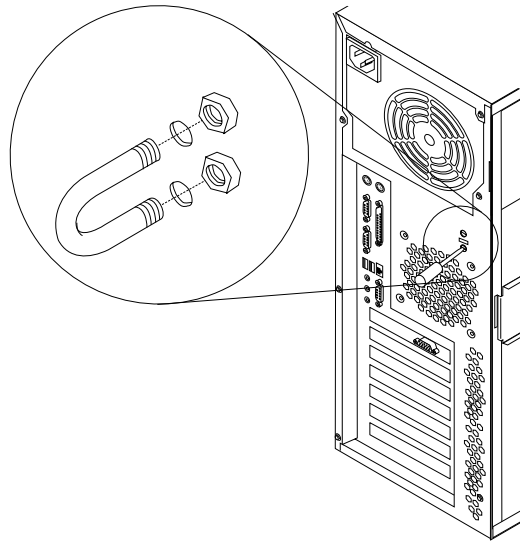
Be sure that the retaining clips snap into the locked position when the DIMM is firmly seated in the connector.

- f. If a gap exists between the DIMM and the retaining clips, the DIMM has not been properly installed. In this case, open the retaining clips and remove the DIMM; then, reinsert the DIMM.
 - g. If you removed the AGP video adapter, reinstall it now. See “Installing an adapter” on page 12.
5. If you have other options to install or remove, do so now.
 6. Replace the support-bracket assembly and reconnect the fan cable to the connector (SYSFA3) on the system board. See “Removing the support-bracket assembly” on page 10 and “System board internal cable connectors” on page 5 for the location of the fan cable connector.
 7. Replace the side cover. See “Installing the cover” on page 22.
 8. Reconnect the external cables and power cords; then, turn on the peripheral devices and the server.

If you want to remove a DIMM, reverse these steps.

Installing a security U-bolt

To help prevent hardware theft, you can add a security U-bolt and cable to your server. After you add the security cable, make sure that it does not interfere with other cables that are connected to the server.



Before you begin:

- Obtain the following items:
 - A flat-blade screwdriver
 - An adjustable wrench
 - A 19 mm (0.75 in.) U-bolt or wire rope (similar to National Manufacturing No. 3230, Stock No. 176-735)
 - Threaded nuts that fit the U-bolt
 - A security cable

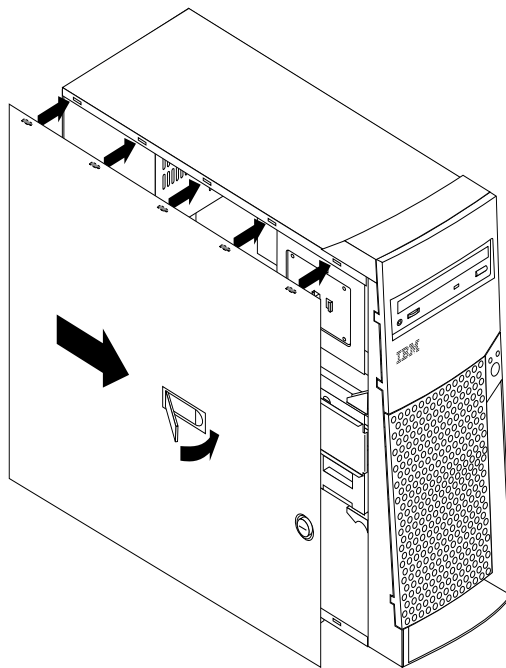
- A lock, such as a combination lock or padlock
- Read “Safety” on page v and “Handling static-sensitive devices” on page 3.

Complete the following steps to install a U-bolt.

1. Turn off the server and peripheral devices and disconnect all external cables and power cords; then, remove the cover (see “Removing the side cover” on page 9 for details).
2. Use a screwdriver to remove the two metal knockouts.
3. Insert the U-bolt through the rear panel; then, attach and tighten the nuts.
4. If you have other options to install or remove, do so now.
5. Reinstall the side cover. See “Installing the cover” for details.
6. Thread the cable through the U-bolt and around an object that is a part of or permanently secured to the building structure or foundation, and from which it cannot be removed; then, fasten the cable ends together with a lock.
7. Reconnect the external cables and power cords; then, turn on the peripheral devices and the server.

Installing the cover

The following information describes the cover installation procedure.



Notes:

1. The illustrations in this document might differ slightly from your hardware.
2. If you removed the support-bracket assembly after you removed the cover, reinstall it before you install the cover. See “Removing the support-bracket assembly” on page 10 for details.

Complete the following steps to install the server cover.

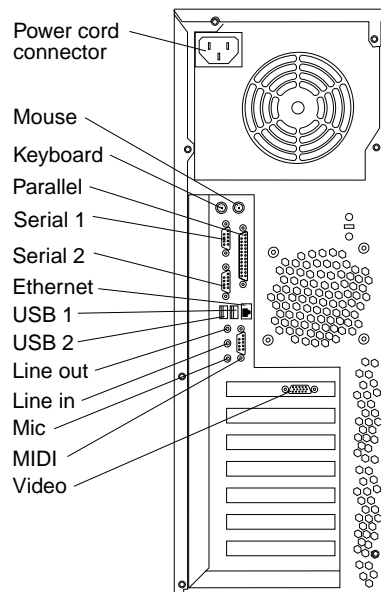
1. Clear any cables that might impede the reinstallation of the cover.
2. Install the side cover:
 - Note:** The cover-release latch must be in the unlocked (opened) position before reinstalling the cover on the sever.
 - a. Insert the tabs located inside the cover into the slots located on the server chassis.
 - b. Close the cover-release latch to secure the cover in place.
- Note:** Make sure each tab on the cover is in its corresponding slot before closing the cover-release latch.
3. Lock the cover.
4. If you have not done so already, make sure the stabilizing feet are in the stabilizing position so that they properly support the server. See “Moving the stabilizing feet” on page 7.
5. Reconnect the external cables and power cords to the server, and then plug the power cords into properly grounded electrical outlets.
6. Turn on the peripheral devices; then, turn on the server.

Cabling the server

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

If your server cables and connector panel have color-coded connections, match the color of the cable end with the color of the connector. For example, match a blue cable end with a blue panel connector, a red cable end with a red connector, and so on.

The following illustration shows the I/O connectors on the rear of the server.



Chapter 3. Server power, controls, and indicators

This chapter describes how to turn on and turn off the server, and what the controls and indicators mean.

Turning on the server

After you plug one end of the server power cord into the power supply connector on the rear of the server, and the other end of the power cord into an electrical outlet, the server can start as follows:

- You can press the power-control button on the front of the server to start the server.
 - If the server is turned on and a power failure occurs, the server will start automatically when power is restored.
-

Turning off the server

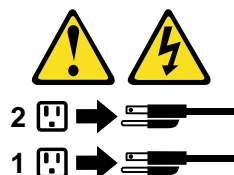
You can turn off the server as follows:

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.



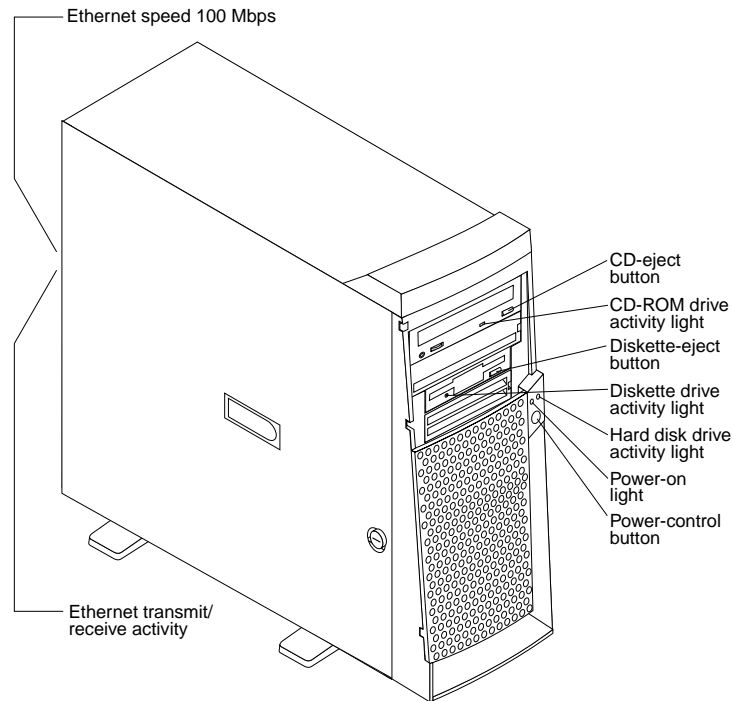
- You can press the power-control button on the front of the server. This starts an orderly shutdown of the operating system, if this feature is supported by your operating system, and places the server in standby mode.

Note: After turning off the server, wait at least 5 seconds before you press the power-control button to turn on the server again.

- You can press and hold the power-control button for more than 4 seconds to cause an immediate shutdown of the server and place the server in standby mode. You can use this feature if the operating system stops functioning.
- You can disconnect the server power cords from the electrical outlets to shut off all power to the server.

Note: After disconnecting the power cords, wait approximately 15 seconds for your system to stop running.

Server controls and indicators



CD-eject button: Push this button to open the tray to insert or remove a CD.

CD-ROM drive activity light: When this light is on, the CD-ROM drive is in use.

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

Diskette drive activity light: When this light is on, the diskette drive is in use.

Ethernet speed 100 Mbps: When this light is on, the Ethernet speed is 100 Mbps. When the light is off, the Ethernet speed is 10 Mbps. The Ethernet speed light is located on the Ethernet (RJ-45) connector on the rear of the server.

Ethernet transmit/receive activity: When this light is on, there is activity between the server and the network. The Ethernet transmit/receive activity light is located on the Ethernet (RJ-45) connector on the rear of the server.

Hard disk drive activity light: When this light is on, the hard disk drive is in use.

Power-on light: This status indicator lights when you turn on your server.

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

Chapter 4. Configuring your server

The following configuration programs are provided with your server.

- **Configuration/Setup Utility**

This program is part of the basic input/output system (BIOS) code that comes with your server. You can use this program to configure serial- and parallel-connector assignments, change the drive startup sequence, set the date and time, and set passwords. For more information on how to start this utility, see “Starting the Configuration/Setup Utility program” on page 28.

- **SCSISelect Utility (some models)**

With the SCSISelect Utility program, you can configure the devices that are connected to the optional SCSI adapter. Use this program to change default values, resolve configuration conflicts, and perform a low-level format on a SCSI hard disk drive. For information on how to start this utility, see “Starting the SCSISelect utility program” on page 28.

- **PXE Boot Agent Utility**

The Preboot eXecution Environment (PXE) Boot Agent Utility program is part of the BIOS code that comes with your server. You can use this program to select legacy operating-system wake-up support, to set menu wait times, and to select whether to display the PXE setup prompt or disable it. For information on how to start this utility, see “Starting the PXE boot agent utility program” on page 29.

Attention: The network startup protocols and startup order options are not supported on this product.

- **ServerGuide™ CDs**

The ServerGuide CDs include software setup and installation tools that are specifically designed for IBM xSeries servers. You can use these CDs during the initial installation of your server to configure the server hardware and to simplify your NOS installation. The ServerGuide CDs also contain a collection of application programs, which you can install after your server is up and running. See “Using the ServerGuide CDs” on page 29.

Attention: Refer to the *User's Reference* on the *IBM xSeries Documentation* CD for detailed instructions for using the configuration programs and *ServerGuide* CDs.

Starting the utility programs

This section provides the instructions for starting the utility programs. For more detailed information about these utility programs, refer to the *User's Reference* on the *IBM xSeries Documentation CD*.

Using the Configuration/Setup Utility program

Configuration/Setup is a menu-driven utility that is part of the BIOS code that comes with your server. You can use it to:

- Configure serial connector assignments
- Change the drive startup sequence
- Enable USB keyboard and mouse support
- Resolve configuration conflicts
- Set the date and time
- Set passwords

Starting the Configuration/Setup Utility program

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

1. Turn on the server and watch the monitor screen.
2. When the message `Press F1 for Configuration/Setup` appears, press the F1 key.
3. Follow the instructions that appear on the screen.

Using the SCSISelect utility program (some models)

SCSISelect is a built-in, menu-driven configuration utility program that you can use to:

- View the default SCSI IDs
- Locate and correct configuration conflicts

Note: If your server has a redundant arrays of independent disks (RAID) adapter installed, use the configuration method that is supplied with the RAID adapter to view or change SCSI settings for devices attached to the adapter.

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`.
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.
 - Press `Esc` to exit the SCSISelect Utility program.
 - Press the `F5` key to switch between color and monochrome modes (if your monitor permits).
5. Follow the instructions on the screen to change the settings of the selected items; then, press `Enter`.

Using the PXE boot agent utility program

The PXE boot agent is a built-in, menu-driven configuration utility program that you can use to:

- Select whether to display setup prompt
- Set menu wait time
- Select legacy operating-system wake-up support

Attention: The network startup protocols and startup order are not supported on this product.

Starting the PXE boot agent utility program

The following sections provide the instructions needed to start the PXE Boot Agent Utility and descriptions of the menu choices available.

To start the PXE Boot Agent Utility program:

1. Turn on the server.
2. When the Initializing Intel (R) Boot Agent Version X.X.XX PXE 2.0 Build XXX (WfM 2.0) prompt appears, press Ctrl+S.
Note: By default, you will have 2 seconds after the prompt appears on the screen to press Ctrl+S.
3. Use the arrow keys or press Enter to select a choice from the menu.
 - Press Esc to return to the previous menu.
 - Press the F4 key to exit.
4. Follow the instructions on the screen to change the settings of the selected items; then, press Enter.

Using the ServerGuide CDs

The *ServerGuide* CDs provide state-of-the-art programs to detect the server model and hardware options that are installed, configure the server hardware, provide device drivers, and install your network operating system.

Note: If the *ServerGuide* CD does not start, see “ServerGuide startup problems” on page 32.

1. Insert the *Setup and Installation* CD, and restart the server.
2. Follow the instructions on the screens to:
 - a. Select your language.
 - b. Select your keyboard layout and country.
 - c. View the Overview to learn about ServerGuide features.
 - d. View the README file to review installation tips about your NOS and adapter.
 - e. Start the setup and hardware configuration programs.
 - f. Start the NOS installation. You will need your copy of the NOS CD.

Note: For information on the supported NOS versions, refer to the *Setup and Installation* CD label.

Chapter 5. Solving problems

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, refer to the "Solving problems" section in the *User's Reference* on the *IBM xSeries Documentation CD*.

Diagnostic tools overview

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

- **POST beep codes**

The power-on self-test (POST) beep codes indicate the detection of a problem. See "POST beep code descriptions" for more details.

- **Diagnostic programs and error messages**

The server-diagnostic programs are provided on the *IBM Enhanced Diagnostics CD*. These programs test the major components of your server.

Note: Refer to the "Solving Problems" section in the *User's Reference* on the *IBM xSeries Documentation CD* for more detailed information about the diagnostic programs.

- **Troubleshooting chart**

This chart lists problem symptoms and steps to correct the problems. See the "Troubleshooting chart" on page 33 for more information.

- **Customized support page**

You can create a customized support page on the World Wide Web that is specific to your hardware, including 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 200, 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, visit the following addresses on the Web:

- <http://www.ibm.com/pc/register>
- <http://www.ibm.com/pc/support>

POST beep code descriptions

The possible types of beep codes that your system might emit are:

Repeating long beeps

Indicates that a memory error has occurred. Ensure that all DIMMs are correctly installed.

One long beep and two short beeps

Indicates that a video error has occurred and the BIOS code cannot initialize the video screen to display any additional information. Ensure that the video adapter is correctly installed.

Note: Refer to the "Solving Problems" section in the *User's Reference* on the *IBM xSeries Documentation* CD for more detailed information about the POST beep codes.

ServerGuide startup problems

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

Setup and Installation CD

Symptom	Suggested action
Setup and Installation CD will not start.	<ul style="list-style-type: none"> Ensure that the system is a supported server with 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.
ServerRAID program cannot view all installed drives - or - cannot install NOS.	<ul style="list-style-type: none"> Ensure that there are no duplicate SCSI IDs or IRQ assignments. Ensure that the hard disk drive is connected properly.
The Operating System Installation program continuously loops.	Make more space available on the hard disk.
ServerGuide will not start <i>your</i> NOS CD.	Ensure that the NOS CD you have is supported by the ServerGuide program. See the <i>Setup and Installation</i> CD label for a list of supported NOS versions.
Cannot install NOS - option is unavailable.	Ensure that the NOS is supported on your server. If the NOS is supported, either there is no logical drive defined (ServeRAID systems) or the ServerGuide System Partition is not present. Run the ServerGuide setup and configuration program, and ensure that setup is complete.

System Updates and Applications CD

Symptom	Suggested action
Get "time out" or "Unknown host" errors	Be sure you have access to the Internet through FTP directly.

Troubleshooting chart

Notes:

1. See the "Solving Problems" section in the *User's Reference* on the *IBM xSeries Documentation* CD for more detailed troubleshooting charts.
2. If you cannot find the problem in the troubleshooting charts, run the diagnostic programs. If you have run the diagnostic test programs, or if running the tests does not reveal the problem, call for service.

Monitor	Suggested Action
The screen is blank.	Verify that: <ol style="list-style-type: none"> 1. The server power cord is plugged into the server and a working electrical outlet. 2. The monitor cables are connected properly. 3. The monitor is turned on, and the brightness and contrast controls are adjusted correctly. If the items above are correct and the screen remains blank, call for service.
Only the cursor appears.	Call for service.
The monitor works when you turn on the server, but goes blank when you start some application programs.	Verify that: <ol style="list-style-type: none"> 1. The primary monitor cable is connected to the video port. 2. You installed the necessary device drivers for the applications. Some IBM monitors have their own self-tests. If you suspect a problem with your monitor, refer to the information that comes with the monitor for adjusting and testing instructions. If the items above are correct and the screen remains blank, call for service.
Wavy, unreadable, rolling, distorted screen, or screen jitter.	If the monitor self-tests show the monitor is OK, consider the location of the monitor. Magnetic fields around other devices (such as transformers, appliances, fluorescent lights, and other monitors) can cause screen jitter or wavy, unreadable, rolling, or distorted screen images. If this happens, turn off the monitor. (Moving a color monitor while it is turned on might cause screen discoloration.) Then, move the device and the monitor at least 305 mm (12 in.) apart. Turn on the monitor. Notes: <ol style="list-style-type: none"> 1. To prevent diskette drive read/write errors, be sure the distance between monitors and diskette drives is at least 76 mm (3 in.). 2. Non-IBM monitor cables might cause unpredictable problems. 3. An enhanced monitor cable with additional shielding is available for the 9521 and 9527 monitors. For information about the enhanced monitor cable, see your IBM reseller or IBM marketing representative. If the problem remains, call for service.
Wrong characters appear on the screen.	If the wrong language is displayed, update the BIOS code with the correct language. If the problem remains, call for service.

Power	Suggested action
The server does not power on.	Verify that: <ol style="list-style-type: none"> 1. The power cables are properly connected to the server. 2. The electrical outlet functions properly. 3. The type of memory that is installed is correct. 4. If you just installed an option, remove it, and restart the server. If the server now turns on, you might have installed more options than the power supply supports. If the problem remains, call for service.
Memory	Suggested action
The amount of memory displayed is less than the amount of memory installed.	Verify that: <ol style="list-style-type: none"> 1. The memory modules are seated properly. 2. You have installed the correct type of memory. 3. If you changed the memory, you must update the memory configuration with the Configuration/Setup Utility program. 4. All banks of memory on the DIMMs are enabled. The server might have automatically disabled a DIMM bank if it detected a problem, or a DIMM bank could have been manually disabled. If the problem persists, call for service.
Option	Suggested action
An IBM option that was just installed does not work.	Verify that: <ol style="list-style-type: none"> 1. The option is designed for the server. 2. You followed the installation instructions that came with the option. 3. The option is installed correctly. 4. You have not loosened any other installed options or cables. 5. You updated the configuration information in the Configuration/Setup Utility program. Whenever memory or an option is changed, you must update the configuration. If the problem remains, call for service.
Expansion enclosure	Suggested action
The SCSI expansion enclosure used to work, but does not work now.	Verify that: <ol style="list-style-type: none"> 1. The cables for all external SCSI options are connected correctly. 2. The last option in each SCSI chain, or the end of the SCSI cable, is terminated correctly. 3. External SCSI options are turned on. You must turn on an external SCSI options before turning on the server. For more information, see your SCSI and expansion enclosure documentation.

Appendix A. Product warranty and notices

This appendix contains warranty and emission notices. It also contains trademarks and general-information notices.

Warranty information

This section contains the warranty period for your product and the IBM Statement of Limited Warranty.

Warranty period

The warranty period varies by country or region.

Contact your place of purchase for warranty service information. Some IBM Machines are eligible for on-site warranty service depending on the country or region where service is performed.

A warranty period of 3 years on parts and 1 year on labor means that IBM will provide warranty service without charge for:

1. parts and labor during the first year of the warranty period
2. parts only, on an exchange basis, in the second and third years of the warranty period.

IBM will charge you for any labor it provides in performance of the repair or replacement.

IBM @server xSeries 200 - Machine Type - 8479

Country or region	Warranty period
United States, Canada, and Japan	Parts - 3 years, labor - 1 year
All other countries	Parts - 3 years, labor - 3 years

IBM Statement of Limited Warranty

Z125-4753-06 8/2000

Part 1 - General Terms

This Statement of Limited Warranty includes Part 1 - General Terms and Part 2 - Country-unique Terms. The terms of Part 2 replace or modify those of Part 1. The warranties provided by IBM in this Statement of Limited Warranty apply only to Machines you purchase for your use, and not for resale, from IBM or your reseller. The term "Machine" means an IBM machine, its features, conversions, upgrades, elements, or accessories, or any combination of them. The term "Machine" does not include any software programs, whether pre-loaded with the Machine, installed subsequently or otherwise. Unless IBM specifies otherwise, the following warranties apply only in the country where you acquire the Machine. Nothing in this Statement of Limited Warranty affects any statutory rights of consumers that cannot be waived or limited by contract. If you have any questions, contact IBM or your reseller.

The IBM Warranty for Machines

IBM warrants that each Machine 1) is free from defects in materials and workmanship and 2) conforms to IBM's Official Published Specifications ("Specifications"). The warranty period for a Machine is a specified, fixed period commencing on its Date of

Installation. The date on your sales receipt is the Date of Installation unless IBM or your reseller informs you otherwise.

If a Machine does not function as warranted during the warranty period, and IBM or your reseller are unable to either 1) make it do so or 2) replace it with one that is at least functionally equivalent, you may return it to your place of purchase and your money will be refunded.

Extent of Warranty

The warranty does not cover the repair or exchange of a Machine resulting from misuse, accident, modification, unsuitable physical or operating environment, improper maintenance by you, or failure caused by a product for which IBM is not responsible. The warranty is voided by removal or alteration of Machine or parts identification labels.

THESE WARRANTIES ARE YOUR EXCLUSIVE WARRANTIES AND REPLACE ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THESE WARRANTIES GIVE YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM JURISDICTION TO JURISDICTION. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF EXPRESS OR IMPLIED WARRANTIES, SO THE ABOVE EXCLUSION OR LIMITATION MAY NOT APPLY TO YOU. IN THAT EVENT, SUCH WARRANTIES ARE LIMITED IN DURATION TO THE WARRANTY PERIOD. NO WARRANTIES APPLY AFTER THAT PERIOD.

Items Not Covered by Warranty

IBM does not warrant uninterrupted or error-free operation of a Machine.

Any technical or other support provided for a Machine under warranty, such as assistance via telephone with "how-to" questions and those regarding Machine set-up and installation, will be provided **WITHOUT WARRANTIES OF ANY KIND**.

Warranty Service

To obtain warranty service for a Machine, contact IBM or your reseller. If you do not register your Machine with IBM, you may be required to present proof of purchase.

During the warranty period, IBM or your reseller, if approved by IBM to provide warranty service, provides without charge certain types of repair and exchange service to keep Machines in, or restore them to, conformance with their Specifications. IBM or your reseller will inform you of the available types of service for a Machine based on its country of installation. At its discretion, IBM or your reseller will 1) either repair or exchange the failing Machine and 2) provide the service either at your location or a service center. IBM or your reseller will also manage and install selected engineering changes that apply to the Machine.

Some parts of IBM Machines are designated as Customer Replaceable Units (called "CRUs"), e.g., keyboards, memory, or hard disk drives. IBM ships CRUs to you for replacement by you. You must return all defective CRUs to IBM within 30 days of your receipt of the replacement CRU. You are responsible for downloading designated Machine Code and Licensed Internal Code updates from an IBM Internet Web site or from other electronic media, and following the instructions that IBM provides.

When warranty service involves the exchange of a Machine or part, the item IBM or your reseller replaces becomes its property and the replacement becomes yours. You

represent that all removed items are genuine and unaltered. The replacement may not be new, but will be in good working order and at least functionally equivalent to the item replaced. The replacement assumes the warranty service status of the replaced item. Many features, conversions, or upgrades involve the removal of parts and their return to IBM. A part that replaces a removed part will assume the warranty service status of the removed part.

Before IBM or your reseller exchanges a Machine or part, you agree to remove all features, parts, options, alterations, and attachments not under warranty service.

You also agree to

1. ensure that the Machine is free of any legal obligations or restrictions that prevent its exchange;
2. obtain authorization from the owner to have IBM or your reseller service a Machine that you do not own; and
3. where applicable, before service is provided:
 - a. follow the problem determination, problem analysis, and service request procedures that IBM or your reseller provides;
 - b. secure all programs, data, and funds contained in a Machine;
 - c. provide IBM or your reseller with sufficient, free, and safe access to your facilities to permit them to fulfill their obligations; and
 - d. inform IBM or your reseller of changes in a Machine's location.

IBM is responsible for loss of, or damage to, your Machine while it is 1) in IBM's possession or 2) in transit in those cases where IBM is responsible for the transportation charges.

Neither IBM nor your reseller is responsible for any of your confidential, proprietary or personal information contained in a Machine which you return to IBM or your reseller for any reason. You should remove all such information from the Machine prior to its return.

Limitation of Liability

Circumstances may arise where, because of a default on IBM's part or other liability, you are entitled to recover damages from IBM. In each such instance, regardless of the basis on which you are entitled to claim damages from IBM (including fundamental breach, negligence, misrepresentation, or other contract or tort claim), except for any liability that cannot be waived or limited by applicable laws, IBM is liable for no more than

1. damages for bodily injury (including death) and damage to real property and tangible personal property; and
2. the amount of any other actual direct damages, up to the charges (if recurring, 12 months' charges apply) for the Machine that is subject of the claim. For purposes of this item, the term "Machine" includes Machine Code and Licensed Internal Code.

This limit also applies to IBM's suppliers and your reseller. It is the maximum for which IBM, its suppliers, and your reseller are collectively responsible.

UNDER NO CIRCUMSTANCES IS IBM LIABLE FOR ANY OF THE FOLLOWING: 1) THIRD-PARTY CLAIMS AGAINST YOU FOR DAMAGES (OTHER THAN THOSE UNDER THE FIRST ITEM LISTED ABOVE); 2) LOSS OF, OR DAMAGE TO, YOUR RECORDS OR DATA; OR 3) SPECIAL, INCIDENTAL, OR INDIRECT DAMAGES OR FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES, LOST PROFITS OR LOST SAVINGS, EVEN IF IBM, ITS SUPPLIERS OR YOUR RESELLER IS INFORMED OF THEIR POSSIBILITY. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL

DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

Governing Law

Both you and IBM consent to the application of the laws of the country in which you acquired the Machine to govern, interpret, and enforce all of your and IBM's rights, duties, and obligations arising from, or relating in any manner to, the subject matter of this Agreement, without regard to conflict of law principles.

Part 2 - Country-unique Terms

AMERICAS

BRAZIL

Governing Law: *The following is added after the first sentence:*

Any litigation arising from this Agreement will be settled exclusively by the court of Rio de Janeiro.

NORTH AMERICA

Warranty Service: *The following is added to this Section:*

To obtain warranty service from IBM in Canada or the United States, call 1-800-IBM-SERV (426-7378).

CANADA

Governing Law: *The following replaces "laws of the country in which you acquired the Machine" in the first sentence:*
laws in the Province of Ontario.

UNITED STATES

Governing Law: *The following replaces "laws of the country in which you acquired the Machine" in the first sentence:*
laws of the State of New York.

ASIA PACIFIC

AUSTRALIA

The IBM Warranty for Machines: *The following paragraph is added to this Section:*
The warranties specified in this Section are in addition to any rights you may have under the Trade Practices Act 1974 or other similar legislation and are only limited to the extent permitted by the applicable legislation.

Limitation of Liability: *The following is added to this Section:*

Where IBM is in breach of a condition or warranty implied by the Trade Practices Act 1974 or other similar legislation, IBM's liability is limited to the repair or replacement of the goods or the supply of equivalent goods. Where that condition or warranty relates to right to sell, quiet possession or clear title, or the goods are of a kind ordinarily acquired for personal, domestic or household use or consumption, then none of the limitations in this paragraph apply.

Governing Law: *The following replaces "laws of the country in which you acquired the Machine" in the first sentence:*
laws of the State or Territory.

CAMBODIA, LAOS, AND VIETNAM

Governing Law: *The following replaces "laws of the country in which you acquired the Machine" in the first sentence:*

laws of the State of New York.

The following is added to this Section:

Disputes and differences arising out of or in connection with this Agreement shall be finally settled by arbitration which shall be held in Singapore in accordance with the rules of the International Chamber of Commerce (ICC). The arbitrator or arbitrators designated in conformity with those rules shall have the power to rule on their own competence and on the validity of the Agreement to submit to arbitration. The arbitration award shall be final and binding for the parties without appeal and the arbitral award shall be in writing and set forth the findings of fact and the conclusions of law.

All proceedings shall be conducted, including all documents presented in such proceedings, in the English language. The number of arbitrators shall be three, with each side to the dispute being entitled to appoint one arbitrator.

The two arbitrators appointed by the parties shall appoint a third arbitrator before proceeding upon the reference. The third arbitrator shall act as chairman of the proceedings. Vacancies in the post of chairman shall be filled by the president of the ICC. Other vacancies shall be filled by the respective nominating party. Proceedings shall continue from the stage they were at when the vacancy occurred.

If one of the parties refuses or otherwise fails to appoint an arbitrator within 30 days of the date the other party appoints its, the first appointed arbitrator shall be the sole arbitrator, provided that the arbitrator was validly and properly appointed.

The English language version of this Agreement prevails over any other language version.

HONG KONG AND MACAU

Governing Law: *The following replaces "laws of the country in which you acquired the Machine" in the first sentence:*

laws of Hong Kong Special Administrative Region.

INDIA

Limitation of Liability: *The following replaces items 1 and 2 of this Section:*

1. liability for bodily injury (including death) or damage to real property and tangible personal property will be limited to that caused by IBM's negligence;
2. as to any other actual damage arising in any situation involving nonperformance by IBM pursuant to, or in any way related to the subject of this Statement of Limited Warranty, IBM's liability will be limited to the charge paid by you for the individual Machine that is the subject of the claim.

JAPAN

Governing Law: *The following sentence is added to this Section:*

Any doubts concerning this Agreement will be initially resolved between us in good faith and in accordance with the principle of mutual trust.

NEW ZEALAND

The IBM Warranty for Machines: *The following paragraph is added to this Section:*

The warranties specified in this Section are in addition to any rights you may have under the Consumer Guarantees Act 1993 or other legislation which cannot be

excluded or limited. The Consumer Guarantees Act 1993 will not apply in respect of any goods which IBM provides, if you require the goods for the purposes of a business as defined in that Act.

Limitation of Liability: *The following is added to this Section:*

Where Machines are not acquired for the purposes of a business as defined in the Consumer Guarantees Act 1993, the limitations in this Section are subject to the limitations in that Act.

PEOPLE'S REPUBLIC OF CHINA (PRC)

Governing Law: *The following replaces this Section:*

Both you and IBM consent to the application of the laws of the State of New York (except when local law requires otherwise) to govern, interpret, and enforce all your and IBM's rights, duties, and obligations arising from, or relating in any manner to, the subject matter of this Agreement, without regard to conflict of law principles.

Any disputes arising from or in connection with this Agreement will first be resolved by friendly negotiations, failing which either of us has the right to submit the dispute to the China International Economic and Trade Arbitration Commission in Beijing, the PRC, for arbitration in accordance with its arbitration rules in force at the time. The arbitration tribunal will consist of three arbitrators. The language to be used therein will be English and Chinese. An arbitral award will be final and binding on all the parties, and will be enforceable under the Convention on the Recognition and Enforcement of Foreign Arbitral Awards (1958).

The arbitration fee will be borne by the losing party unless otherwise determined by the arbitral award.

During the course of arbitration, this Agreement will continue to be performed except for the part which the parties are disputing and which is undergoing arbitration.

EUROPE, MIDDLE EAST, AFRICA (EMEA)

THE FOLLOWING TERMS APPLY TO ALL EMEA COUNTRIES:

The terms of this Statement of Limited Warranty apply to Machines purchased from IBM or an IBM reseller.

Warranty Service:

If you purchase an IBM Machine in Austria, Belgium, Denmark, Estonia, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland or United Kingdom, you may obtain warranty service for that Machine in any of those countries from either (1) an IBM reseller approved to perform warranty service or (2) from IBM. If you purchase an IBM Personal Computer Machine in Albania, Armenia, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Georgia, Hungary, Kazakhstan, Kirghizia, Federal Republic of Yugoslavia, Former Yugoslav Republic of Macedonia (FYROM), Moldova, Poland, Romania, Russia, Slovak Republic, Slovenia, or Ukraine, you may obtain warranty service for that Machine in any of those countries from either (1) an IBM reseller approved to perform warranty service or (2) from IBM.

If you purchase an IBM Machine in a Middle Eastern or African country, you may obtain warranty service for that Machine from the IBM entity within the country of purchase, if that IBM entity provides warranty service in that country, or from an IBM reseller, approved by IBM to perform warranty service on that Machine in that country. Warranty service in Africa is available within 50 kilometers of an IBM authorized

service provider. You are responsible for transportation costs for Machines located outside 50 kilometers of an IBM authorized service provider.

Governing Law:

The applicable laws that govern, interpret and enforce rights, duties, and obligations of each of us arising from, or relating in any manner to, the subject matter of this Statement, without regard to conflict of laws principles, as well as Country-unique terms and competent court for this Statement are those of the country in which the warranty service is being provided, except that in 1) Albania, Bosnia-Herzegovina, Bulgaria, Croatia, Hungary, Former Yugoslav Republic of Macedonia, Romania, Slovakia, Slovenia, Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan, the laws of Austria apply; 2) Estonia, Latvia, and Lithuania, the laws of Finland apply; 3) Algeria, Benin, Burkina Faso, Cameroon, Cape Verde, Central African Republic, Chad, Congo, Djibouti, Democratic Republic of Congo, Equatorial Guinea, France, Gabon, Gambia, Guinea, Guinea-Bissau, Ivory Coast, Lebanon, Mali, Mauritania, Morocco, Niger, Senegal, Togo, and Tunisia, this Agreement will be construed and the legal relations between the parties will be determined in accordance with the French laws and all disputes arising out of this Agreement or related to its violation or execution, including summary proceedings, will be settled exclusively by the Commercial Court of Paris; 4) Angola, Bahrain, Botswana, Burundi, Egypt, Eritrea, Ethiopia, Ghana, Jordan, Kenya, Kuwait, Liberia, Malawi, Malta, Mozambique, Nigeria, Oman, Pakistan, Qatar, Rwanda, Sao Tome, Saudi Arabia, Sierra Leone, Somalia, Tanzania, Uganda, United Arab Emirates, United Kingdom, West Bank/Gaza, Yemen, Zambia, and Zimbabwe, this Agreement will be governed by English Law and disputes relating to it will be submitted to the exclusive jurisdiction of the English courts; and 5) in Greece, Israel, Italy, Portugal, and Spain any legal claim arising out of this Statement will be brought before, and finally settled by, the competent court of Athens, Tel Aviv, Milan, Lisbon, and Madrid, respectively.

THE FOLLOWING TERMS APPLY TO THE COUNTRY SPECIFIED:

AUSTRIA AND GERMANY

The IBM Warranty for Machines: *The following replaces the first sentence of the first paragraph of this Section:*

The warranty for an IBM Machine covers the functionality of the Machine for its normal use and the Machine's conformity to its Specifications.

The following paragraphs are added to this Section:

The minimum warranty period for Machines is six months. In case IBM or your reseller is unable to repair an IBM Machine, you can alternatively ask for a partial refund as far as justified by the reduced value of the unrepaired Machine or ask for a cancellation of the respective agreement for such Machine and get your money refunded.

Extent of Warranty: *The second paragraph does not apply.*

Warranty Service: *The following is added to this Section:*

During the warranty period, transportation for delivery of the failing Machine to IBM will be at IBM's expense.

Limitation of Liability: *The following paragraph is added to this Section:*

The limitations and exclusions specified in the Statement of Limited Warranty will not apply to damages caused by IBM with fraud or gross negligence and for express warranty.

The following sentence is added to the end of item 2:

IBM's liability under this item is limited to the violation of essential contractual terms in cases of ordinary negligence.

EGYPT

Limitation of Liability: *The following replaces item 2 in this Section:*

as to any other actual direct damages, IBM's liability will be limited to the total amount you paid for the Machine that is the subject of the claim. For purposes of this item, the term "Machine" includes Machine Code and Licensed Internal Code.

Applicability of suppliers and resellers (unchanged).

FRANCE

Limitation of Liability: *The following replaces the second sentence of the first paragraph of this Section:*

In such instances, regardless of the basis on which you are entitled to claim damages from IBM, IBM is liable for no more than: *(items 1 and 2 unchanged).*

IRELAND

Extent of Warranty: *The following is added to this Section:*

Except as expressly provided in these terms and conditions, all statutory conditions, including all warranties implied, but without prejudice to the generality of the foregoing all warranties implied by the Sale of Goods Act 1893 or the Sale of Goods and Supply of Services Act 1980 are hereby excluded.

Limitation of Liability: *The following replaces items one and two of the first paragraph of this Section:*

1. death or personal injury or physical damage to your real property solely caused by IBM's negligence; and
2. the amount of any other actual direct damages, up to 125 percent of the charges (if recurring, the 12 months' charges apply) for the Machine that is the subject of the claim or which otherwise gives rise to the claim.

Applicability of suppliers and resellers (unchanged).

The following paragraph is added at the end of this Section:

IBM's entire liability and your sole remedy, whether in contract or in tort, in respect of any default shall be limited to damages.

ITALY

Limitation of Liability: *The following replaces the second sentence in the first paragraph:*

In each such instance unless otherwise provided by mandatory law, IBM is liable for no more than:

1. *(unchanged)*
2. as to any other actual damage arising in all situations involving nonperformance by IBM pursuant to, or in any way related to the subject matter of this Statement of Warranty, IBM's liability, will be limited to the total amount you paid for the Machine that is the subject of the claim.

Applicability of suppliers and resellers (unchanged).

The following replaces the third paragraph of this Section:

Unless otherwise provided by mandatory law, IBM and your reseller are not liable for any of the following: *(items 1 and 2 unchanged)* 3) indirect damages, even if IBM or your reseller is informed of their possibility.

SOUTH AFRICA, NAMIBIA, BOTSWANA, LESOTHO AND SWAZILAND

Limitation of Liability: *The following is added to this Section:*

IBM's entire liability to you for actual damages arising in all situations involving nonperformance by IBM in respect of the subject matter of this Statement of Warranty will be limited to the charge paid by you for the individual Machine that is the subject of your claim from IBM.

UNITED KINGDOM

Limitation of Liability: *The following replaces items 1 and 2 of the first paragraph of this Section:*

1. death or personal injury or physical damage to your real property solely caused by IBM's negligence;
2. the amount of any other actual direct damages or loss, up to 125 percent of the charges (if recurring, the 12 months' charges apply) for the Machine that is the subject of the claim or which otherwise gives rise to the claim;

The following item is added to this paragraph:

3. breach of IBM's obligations implied by Section 12 of the Sale of Goods Act 1979 or Section 2 of the Supply of Goods and Services Act 1982.

Applicability of suppliers and resellers (unchanged).

The following is added to the end of this Section:

IBM's entire liability and your sole remedy, whether in contract or in tort, in respect of any default shall be limited to damages.

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 states 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

© COPYRIGHT INTERNATIONAL BUSINESS MACHINES CORPORATION, 2001.
All rights reserved.

Note to U.S. Government Users — Documentation related to restricted rights — Use, duplication or disclosure is subject to restrictions set forth in GSA ADP Schedule Contract with IBM Corp.

Processing date data

This IBM hardware product and IBM software products that might be packaged with it have been designed, when used in accordance with their associated documentation, to process date data correctly within and between the 20th and 21st centuries, provided all other products (for example, software, hardware, and firmware) used with these products properly exchange accurate date data with them.

IBM cannot take responsibility for the date data processing capabilities of non-IBM products, even if those products are preinstalled or otherwise distributed by IBM. You should contact the vendors responsible for those products directly to determine the capabilities of their products and update them if needed. This IBM hardware product cannot prevent errors that might occur if software, upgrades, or peripheral devices you use or exchange data with do not process date data correctly.

The foregoing is a Year 2000 Readiness Disclosure.

Trademarks

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

Alert on LAN	ServeRAID
EtherJet	ServerGuide
e-business logo	ServerProven
HelpCenter	TechConnect
HelpWare	Tivoli
IBM	Update Connector
Light Path Diagnostics	Wake on LAN
NetView	xSeries
Predictive Failure Analysis	

OS/2 WARP

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

Intel, Celeron, MMX, LANDesk, Pentium, Pentium II Xeon, and Pentium III Xeon 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, and 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.

When referring to processor storage, real and virtual storage, or channel volume, KB stands for approximately 1000 bytes, MB stands for approximately 1000000 bytes, and GB stands for approximately 1000000000 bytes.

When referring to hard disk drive capacity or communications volume, MB stands for 1000000 bytes, and GB stands for 1000000000 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.

Unless otherwise stated, 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.

Electronic emission notices

Federal Communications Commission (FCC) statement

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

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. 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.

Industry Canada Class A emission compliance statement

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

Avis de conformité à la réglementation d'Industrie Canada

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

Australia and New Zealand Class A statement

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

United Kingdom telecommunications safety requirement

Notice to Customers

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

European Union EMC Directive conformance statement

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

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

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

Taiwan electrical emission statement

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

Japanese Voluntary Control Council for Interference (VCCI) statement

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づきクラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

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

Index

A

- acoustical noise emissions 2
- adapter
 - boot option 11
 - considerations 11
 - installing 12
 - PCI 11
 - PCI bus 11
- adapters
 - full length 11

B

- bay
 - filler panel 16
- bays 1, 2, 3, or 4 16
- bays 5, 6, or 7 18

C

- cabling
 - connectors on back 23
 - SCSI device 17, 19
- CD-ROM drive 2
 - installing 15
- Class A electronic emission notice 45
- components
 - location of 4
- Configuration/Setup Utility 28
- controls and indicators 26
- cover
 - installing 22
 - removing 9

D

- diagnostic tools 31
- DIMM
 - installing 20
 - retaining clips 20
- DIMM connector
 - locations 20
- diskette drive 2
 - installing 15
- documentation CD 1
- drive
 - bay filler panel 16
- drives
 - installing 15

E

- electrical input 2
- electronic emission Class A notice 45
- environment
 - air temperature 2
 - humidity 2
- expansion bays 2
- expansion slots 2

F

- FCC Class A notice 45
- features 2
- filler panel 16

H

- hard disk drive
 - installing 15
- heat output 2

I

- installing
 - adapters 12
 - internal drives 15
 - memory modules 19
 - options 7
- internal cable connectors
 - locations 5
- internal drives
 - installing 15

L

- lights
 - activity 26

M

- major components 4
- memory
 - configuration changes 19
 - specifications 2
- memory module
 - installing 19
 - order of installation 19
 - specifications 2
 - supported 19

N

NOS See operating system 29

notes, important 45

notices

 electronic emission 45

 FCC, Class A 45

Notices used 3

O

operating system

 installing 29

options

 installing 7

P

PCI

 adapters 11

 bus 0 11

 expansion slots 11

POST beep code

 descriptions 31

POST beep codes 31

power supply specifications 2

R

removable media drives

 installing 15

removing

 side cover 9

 support bracket 10

retaining clips

 DIMM 20

S

Safety v

SCSI

 adapter boot option 11

 device 17

SCSISelect Utility program 27

SCSISelect utility program

 starting 28

server

 configuring 27

 model number 1

 serial number 1

 turning off 25

 turning on 25

server keys

 request replacement 1

ServerGuide

 startup problems 32

ServerGuide CDs 29

side cover

 removing 9

size 2

specifications 2

static electricity 3

static sensitive devices, handling 3

support bracket

 removing 10

support page

 customized 31

T

tape drive

 installing 15

trademarks 44

troubleshooting 31

troubleshooting chart 33

U

United States electronic emission Class A notice 45

United States FCC Class A notice 45

utility

 Configuration/Setup 28

V

video controller

 specifications 2

W

Web site

 compatible options 19

X

xSeries

 Web address 1



Part Number: 25P1594

Printed in the United States of America

25P1594

