IBM®

@server

xSeries 300

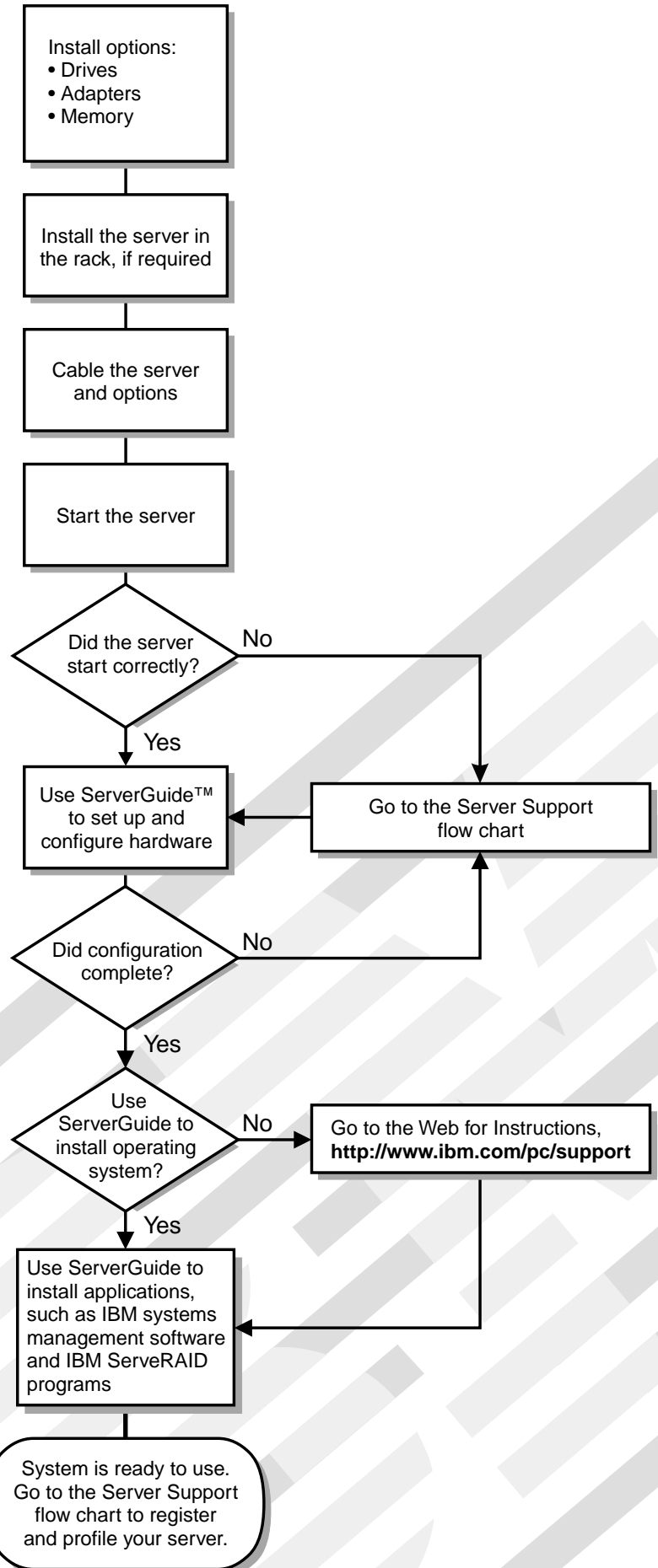# Installation Guide

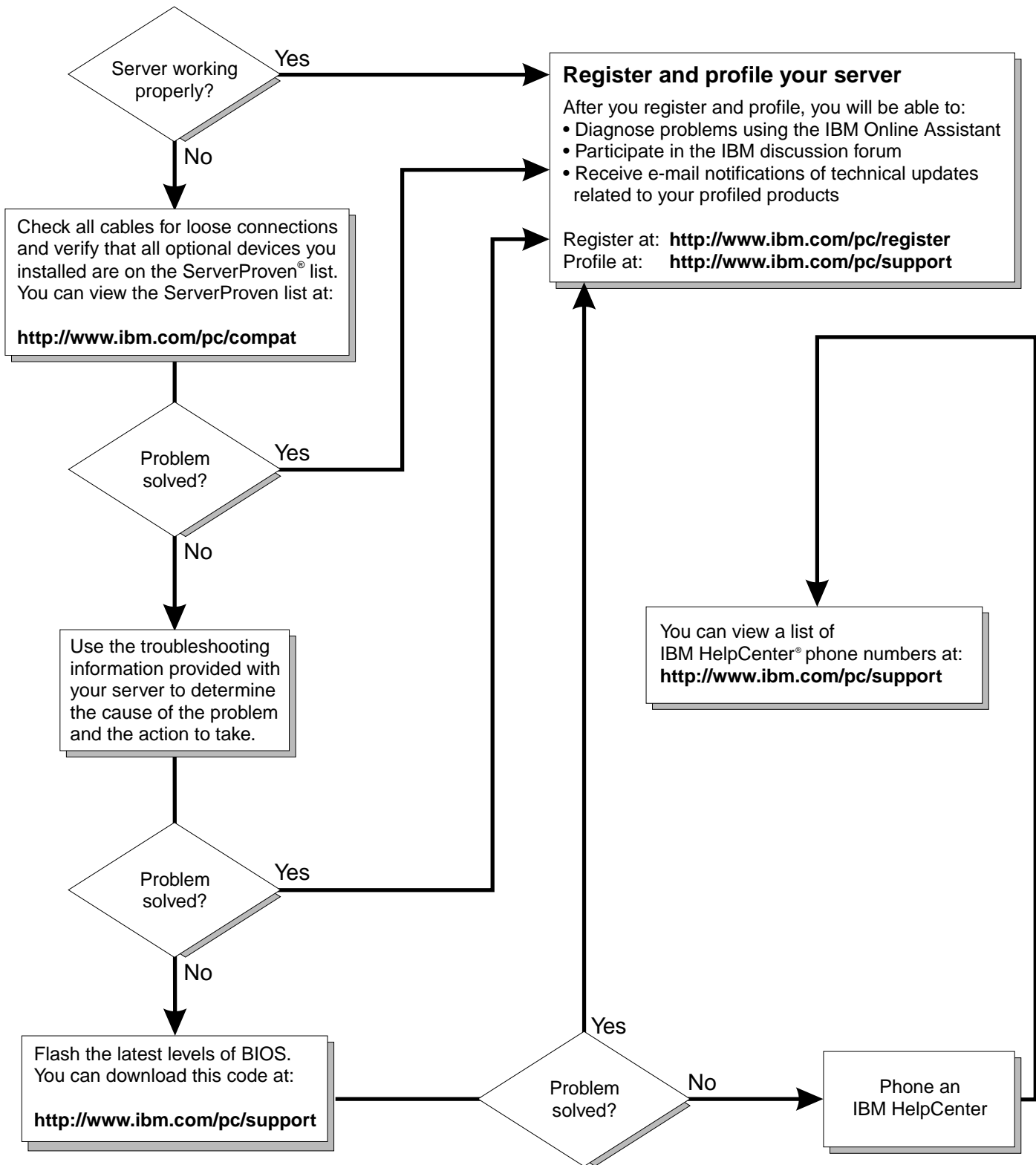## Welcome. . .

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

Install options:
• Drives
• Adapters
• Memory

Install the server in
the rack, if required

Cable the server
and options

Start the server

Did the server
start correctly? — No

Yes

Use ServerGuide™
to set up and
configure hardware

Go to the Server Support
flow chart

Did configuration
complete? — No

Yes

Use
ServerGuide to
install operating
system? — No

Go to the Web for Instructions,
http://www.ibm.com/pc/support

Yes

Use ServerGuide to
install applications,
such as IBM systems
management software
and IBM ServeRAID
programs

System is ready to use.
Go to the Server Support
flow chart to register
and profile your server.

Server Support

Server working properly? — Yes →

Register and profile your server

After you register and profile, you will be able to:
- Diagnose problems using the IBM Online Assistant
- Participate in the IBM discussion forum
- Receive e-mail notifications of technical updates related to your profiled products

Register at: **http://www.ibm.com/pc/register**
Profile at: **http://www.ibm.com/pc/support**

No ↓

Check all cables for loose connections and verify that all optional devices you installed are on the ServerProven® list. You can view the ServerProven list at:

http://www.ibm.com/pc/compat

Problem solved? — Yes →

No ↓

Use the troubleshooting information provided with your server to determine the cause of the problem and the action to take.

Problem solved? — Yes →

No ↓

You can view a list of
IBM HelpCenter® phone numbers at:
http://www.ibm.com/pc/support

Flash the latest levels of BIOS. You can download this code at:

http://www.ibm.com/pc/support

Problem solved? — Yes ↑ — No →

Phone an
IBM HelpCenter

xSeries 300

IBM

Installation Guide

Note:

Before using this information and the product it supports, be sure to read the general information in Appendix A, "Product warranties and notices," on page 29.

Contents

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.

v

Pred inštaláciou tohto zariadenia si pečítaje 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.**
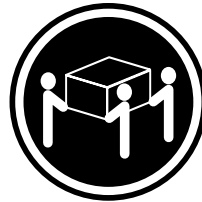
DANGER

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
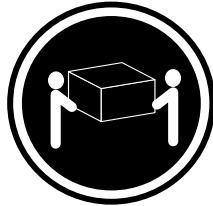
≥18 kg (39.7 lbs)   ≥32 kg (70.5 lbs)   ≥55 kg (121.2 lbs)
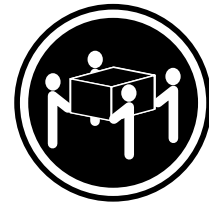
CAUTION:

Use safe practices when lifting.

Statement 5

CAUTION:

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

Statement 8

CAUTION:

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

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

Chapter 1. Introduction

Thank you for purchasing an IBM® @server xSeries 300 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 xSeries 300 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 300 model and other IBM server products at http://www.ibm.com/eserver/xseries.

Record your product information in this table.
Product name _____   **Type** _____   M**odel number** _____   **Serial number** _____

The machine type and serial number are located on the ID label located on the top of the server just behind the bezel on the right.

ID label
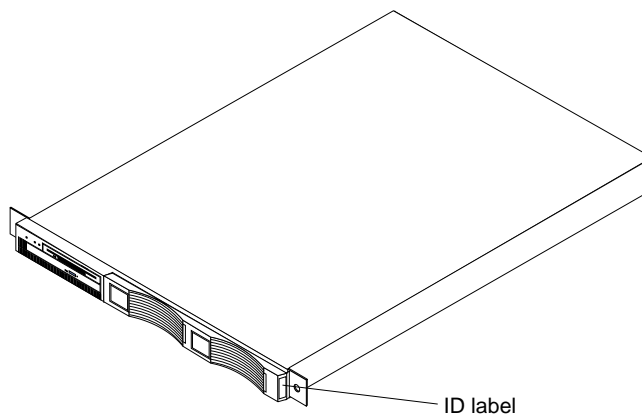
Features and specifications

The following table provides a summary of the features and specifications for your xSeries 300.

Microprocessor:
 	
Supports either of the two listed microprocessors (depending on your model)
• One Intel® Pentium® III with 256 KB* Level-2 cache and MMX™ (MMX2) technology
  or
• One Intel Celeron™ with 128 KB Level-2 cache and MMX (MMX2) technology
 	
Memory:
• Minimum: 128 MB*
• Maximum: 1.5 GB*
• Type: PC133 MHz, ECC SDRAM, unregistered DIMMs only
• Slots: Three dual inline
• Supports 128, 256, and 512 MB DIMMs
 	
Drives:
• Diskette: 1.44 MB
• CD-ROM: 24X IDE
• Supports up to two hard disk drives
 	
Expansion bays:
 	
Two 3.5-in. slim-high bays for hard disk drives
 	
PCI expansion slots:
 	
Two 33 MHz/32-bit on the system board
 	
Power supply:
 	
200 watt (110 or 220 V ac auto-sensing) with Wake on LAN support
	Video:
	• S3 Savage 4 Pro video on system board
	• Compatible with SVGA and VGA
	• 8 MB SDRAM video memory
	
	Size:
	• Height: 4.37 cm (1.75 inches, 1U)
	• Depth: 63.5 cm (25 inches)
	• Width: 44 cm (17.32 inches)
	• Maximum weight: 19.05 kg (42 lb) depending on your configuration
	
	Integrated functions:
	• Dual 10BASE-T/100BASE-TX Ethernet controllers on the system board with Alert on LAN™ 2 support
	• Serial port
	• Two USB ports
	• Keyboard port
	• Mouse port
	• Dual-channel bus mastering IDE controller
	
	Hard disk controller:
	• All models-Dual-channel bus mastering IDE controller
	• Some models-SCSI adapter (Adaptec Ultra160) is installed in one of the expansion-slots
	
	Acoustical noise emissions:
	• Sound power, idling: 6.6 bel maximum
	• Sound power, operating: 6.8 bel maximum
		Environment:
		• Air temperature:
		  — 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: -40° to 60° C (-104° to 140° F). Maximum altitude: 2133 m (6998.0 ft)
		• Humidity:
		  — Server on: 8% to 80%
		  — Server off: 5% to 100%
		
		Heat output:
		
		Approximate heat output in British thermal unit (Btu) per hour
		• Minimum configuration: 171 Btu (50 watts)
		• Maximum configuration: 410 Btu (120 watts)
		
		Electrical input:
		• Sine-wave input (47-63 Hz) required
		• Input voltage low range:
		  — Minimum: 90 V ac
		  — Maximum: 137 V ac
		• Input voltage high range:
		  — Minimum: 180 V ac
		  — Maximum: 265 V ac
		• Input kilovolt-amperes (kVA) approximately:
		  — Minimum: 0.095 kVA
		  — Maximum: 0.213 kVA

*KB equals approximately 1000 bytes. MB equals approximately 1000000 bytes. GB equals approximately 1000000000 bytes.

Notices and statements used in this book

The Caution statements and the Danger statements also appear in the multilingual safety information 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 or advice that might help you avoid inconvenient or problem situations.
- **Attention:** These notices indicate possible damage to programs, devices, or data. An attention notice is placed just before the instruction or situation in which damage could occur.
- **Caution:** These statements indicate situations that can be potentially hazardous to you. A caution statement is placed just before the description of a potentially hazardous procedure step or situation.
- **Danger:** These statements indicate situations that can be potentially lethal or extremely hazardous to you. A danger statement is placed just before the description of a potentially lethal or extremely hazardous procedure step or situation.

Before you begin

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

- Become familiar with the information provided in "Safety" beginning on page v, and "Handling static-sensitive devices" on page 4. These guidelines will help you work safely while working with your server or options.
- Make sure that you have an adequate number of properly grounded electrical outlets for your server, monitor, and any other options that you intend to install.
- Back up all important data before you make changes to disk drives.
- For a list of supported options for the xSeries 300, refer to http://www.ibm.com/pc/us/compat on the World Wide Web.

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 package 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 anti-static 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 as heating reduces indoor humidity and increases static electricity.
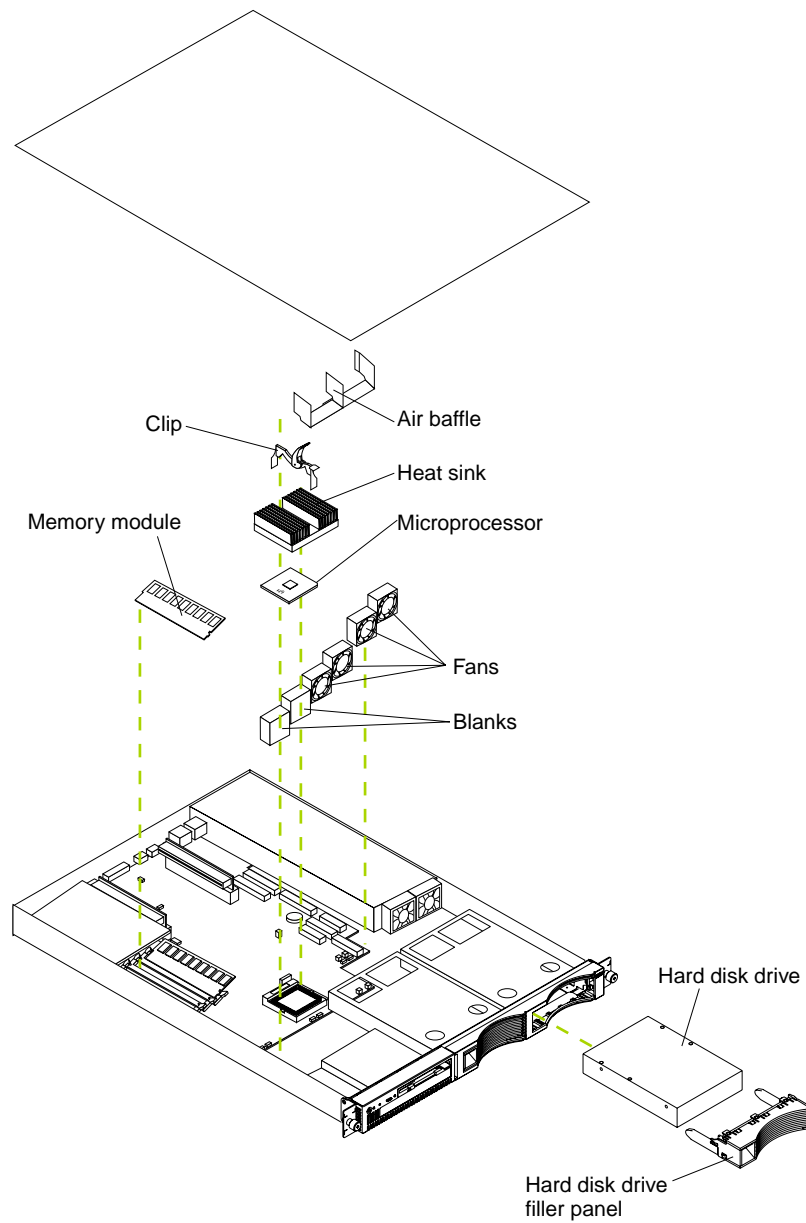
Major components of the xSeries 300 server

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

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

Clip

Air baffle

Heat sink

Memory module

Microprocessor

Fans

Blanks

Hard disk drive

Hard disk drive
filler panel

Chapter 2. Installing Options

This chapter provides basic information that is needed to install hardware options in your server. For more detailed installation information, refer to the *User's Reference* on the *IBM xSeries Documentation* CD.

Removing the cover

Complete the following steps to remove the server cover:

1. Review the information in "Before you begin" on page 3.

2. Turn off the server and all attached devices and disconnect all external cables and power cords.
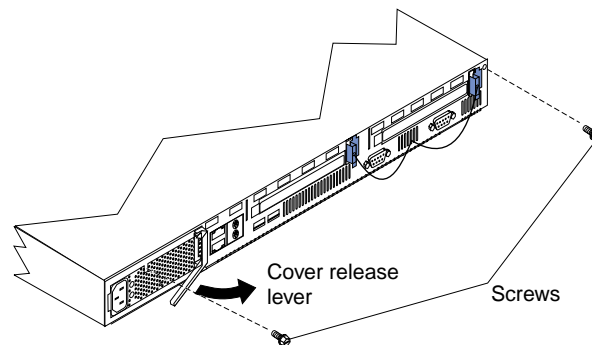
3. Remove the two screws from the rear of the server.

4. Pull out on the cover-release lever at the back of the server to release the cover.

5. Slide the cover back, then up and off the server.

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

Working with adapters

Your server comes with two peripheral component interconnect (PCI) adapter slots on the system board with riser cards installed in them.

Note: Some models come with a SCSI adapter card installed in PCI slot 2.

Attention: Your server comes with an integrated video controller on the system board. When you install a video adapter in a PCI slot, the server BIOS automatically disables the integrated video controller. This enables the video adapter in the PCI slot to control the video functions for your monitor.

The following illustration shows the location of the 33 MHz PCI expansion slots on the system board.

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

PCI slot 1
(PCI 1)

PCI slot 2
(PCI 2)
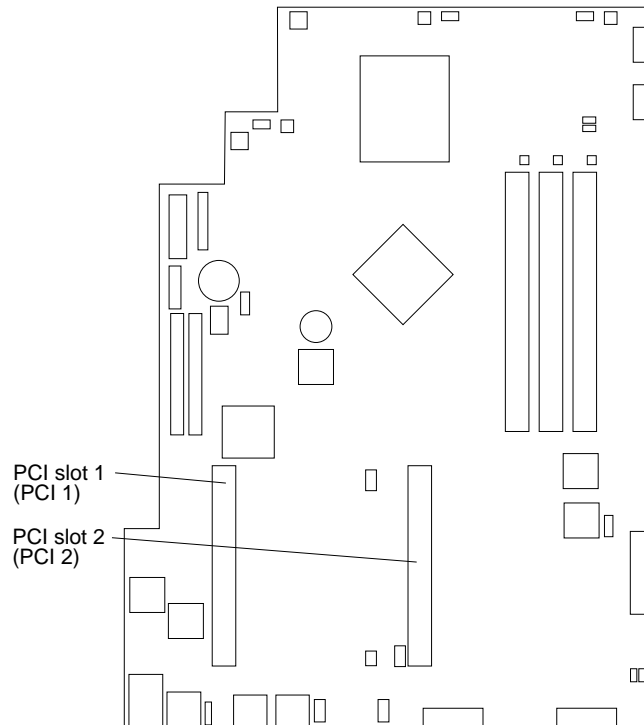
Adapter considerations

Before you install adapters, review the following:

- Locate the documentation that comes with the adapter and follow those instructions in addition to the instructions in this chapter.

- If you need to change the switch settings or jumper settings on your adapter, follow the instructions that come with the adapter.

- You can install 32-bit full-length or half-length adapters in the expansion slots. Full-length adapters are installed in slot 1 only; half-length adapters are installed in either slot 1 or 2.

- Your server supports 5.0 V and universal PCI adapters; it does not support 3.3 V only adapters.

- Your server uses a rotational interrupt technique to configure PCI adapters. You can use this technique to install PCI adapters that currently do not support sharing of PCI interrupts.

- The system scans PCI slots to assign system resources. By default the system starts (boots) the CD-ROM and diskette drives first. Then it starts PCI slot 2, PCI slot 1, and the integrated Ethernet.

Note: You can use the Configuration/Setup Utility program to change the boot precedence for your server. Select **Start Options** from the Configuration/Setup Utility program main menu.

Installing an adapter

Complete the following steps to install an adapter:

Attention: When you handle static-sensitive devices, take precautions to avoid damage from static electricity. For details on handling these devices, see "Handling static-sensitive devices" on page 4.

1. Review the information in "Safety" beginning on page v, and "Before you begin" on page 3.
2. Turn off the server and peripheral devices.
3. Remove all external cables from the server.
4. Remove the server cover.
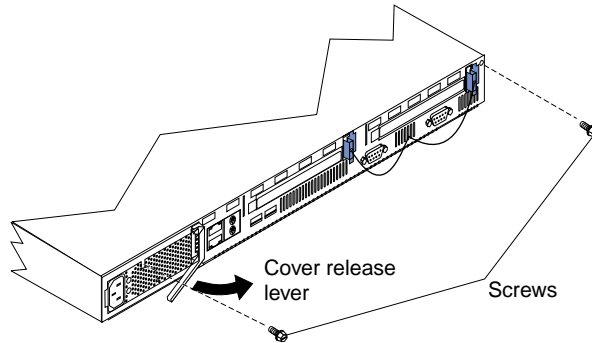
5. Remove the expansion-slot clip that holds the expansion-slot cover in place by sliding it upward and off the frame of the server.

    Note: The illustrations in this document might differ slightly from your hardware.
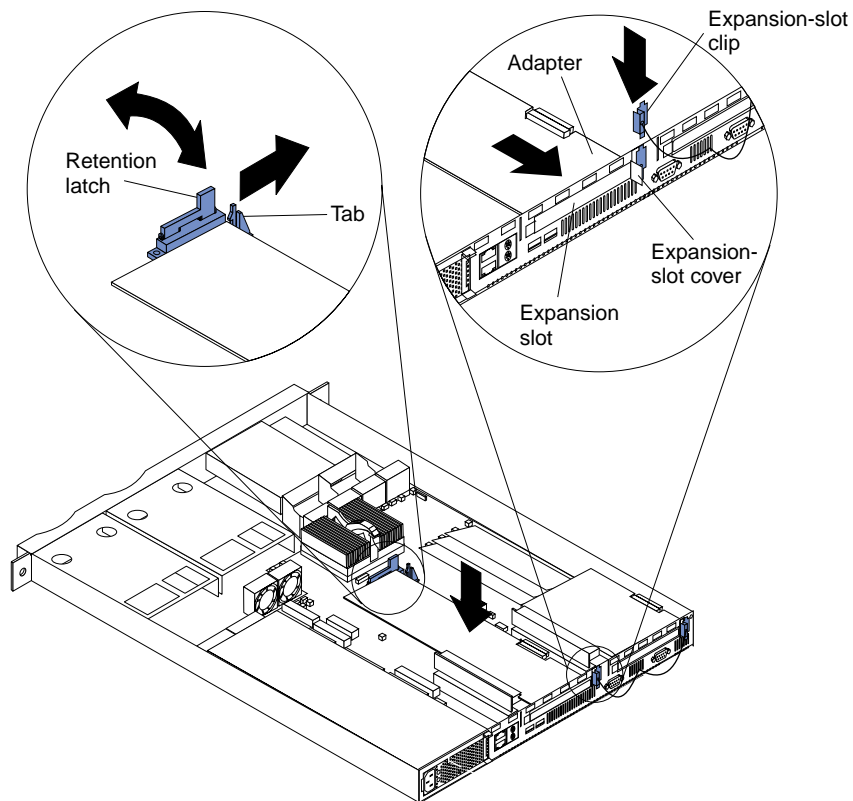
6. Remove the expansion-slot cover.
7. Refer to the documentation that comes with your adapter for any cabling instructions.

Attention: You should route adapter cables before you install the adapter.

8. Set any jumpers or switches as described by the adapter manufacturer.

9. Install the adapter:

   Note: When installing an adapter into slot 2, skip steps a and d.

   a. Open the adapter-retention latch by pushing the blue tab to release it. Then, push the latch up to the full open position.

   b. Carefully grasp the adapter by its top edge or upper corners, and align it with the connector on the PCI riser-card.

   c. Press the adapter *firmly* into the riser card connector.

      Attention: When you install an adapter, be sure the adapter is correctly seated in the riser-card connector before you turn on the server. Improperly seated adapters might cause damage to the system board, the riser card, or the adapter.

   d. Push down on the blue adapter retention latch until it clicks into place, securing the adapter.

   e. Replace the expansion-slot clip by sliding it down until it latches into place and holds the adapter securely.

10. Connect the internal cables to the adapter.

    Attention: Route cables so that they do not block the flow of air from the fans.

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

12. Replace the cover on the server; then, install the server in the rack and connect all external cables. For more information, see "Installing the cover" on page 13, and the "Rack installation" flyer for instructions.

Hard disk drives

Depending on the model, your server supports two SCSI or two IDE hard disk drives.

Installing or replacing a hard disk drive

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

Attention: When you handle static-sensitive devices, take precautions to avoid damage from static electricity. For details on handling these devices, see "Handling static-sensitive devices" on page 4.

1. Inspect the drive for any signs of damage.

2. Review the information in "Safety" beginning on page v, and "Before you begin" on page 3.

3. Check the instructions that come with the drive for more information about installing your drive.

   Notes:

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

   b. If you are installing a SCSI hard disk drive, refer to the documentation that comes with your drive before installing it.

4. Turn off the server and peripheral devices and disconnect all external cables and power cords.

5. Remove the server cover.

Note: If you are replacing a failing hard disk drive, remove the fans behind the drive bay in which you are working; then, disconnect the power and signal cables from the hard disk drive. For information on how to remove the fan, see "Fan assembly replacement", on the *IBM xSeries Documentation* CD.

6. Remove the filler panel from one of the hard disk drive bays.

7. Install the new hard disk drive in the drive bay:

   a. Slide the drive into the bay and align the screw holes in the drive with the screw holes in the server chassis.

   b. Use a screwdriver to secure the hard disk drive to the server chassis.

Hard disk drive

Filler panel
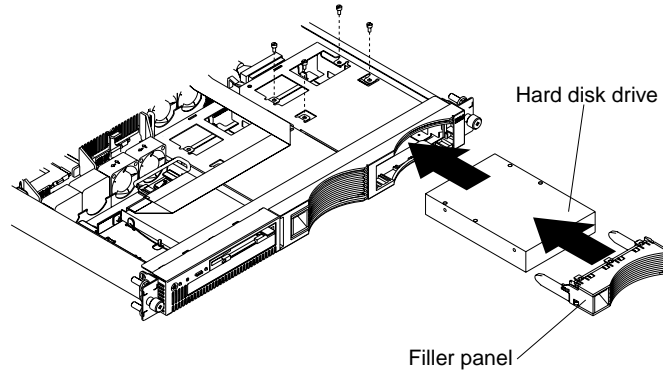
   c. Connect the signal cable and power cable to the rear of the drive. Ensure that the cables do not obstruct the fan behind the drive bay.

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

9. Replace the server cover. See "Installing the cover" on page 13.

Working with DIMMs

Your xSeries 300 server supports 128 MB, 256 MB, and 512 MB DIMMs. See the ServerProven list at http://www.ibm.com/pc/compat for a list of DIMMs for use with your server.

Install additional DIMMs in DIMM connector 2 first, then in DIMM connector 3. (See the following illustration for memory connector locations.)

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

Installing DIMMs

Complete the following steps to install a DIMM:

1. Review the safety precautions beginning on page v.

2. Turn off the server and peripheral devices.

3. Remove all external cables from the server; then, remove the cover. For more information, see "Removing the cover" on page 7.

   Attention: When you handle static-sensitive devices, take precautions to avoid damage from static electricity. For details on handling these devices, refer to "Handling static-sensitive devices" on page 4.

4. If necessary, remove the PCI adapter in slot 2 for easier access to the DIMM connectors.

5. Touch the static-protective package containing the DIMM to any unpainted metal surface on the server. Then, remove the DIMM from the package.

Connector 1
Connector 2
Connector 3
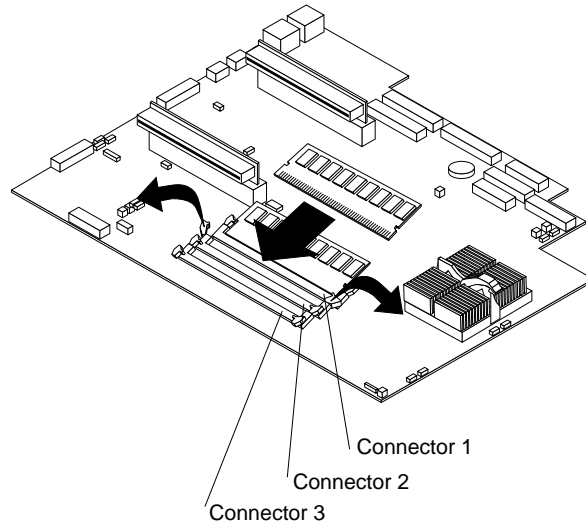
Attention: To avoid breaking the retaining clips or damaging the DIMM connectors, handle the clips gently.

6. Install the DIMM in the connector.

Attention: To prevent damage to the DIMM connectors, do not force the DIMM into the connector.

a. Turn the DIMM so that the index slots align correctly with the connector.

Note: The DIMM has two index slots, one in the center and the other on the left half of the DIMM connector edge.

b. Insert the DIMM into the connector by pressing on both corners of the DIMM at the same time. Be sure to press it straight into the connector.

c. When installing a DIMM, be sure that no gap exists between the DIMM and the retaining clips. If a gap does exist between the DIMM and the retaining clips, remove the DIMM; then, reinsert it properly.

7. If you removed the PCI adapter as described in step 4, install it now.

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

9. Replace the server cover. For more information on replacing the cover, see "Installing the cover" on page 13.

Installing the cover

Complete the following steps to install the server cover:

1. Install the cover by placing it into position and sliding it forward. Make sure that the cover engages the tabs at the front and rear of the server.

   Attention: Before sliding the cover forward, make sure that all of the tabs on the cover will engage the ledge at the front of the server properly. If all the tabs do not engage the ledge properly, it will be extremely difficult to remove the cover later.
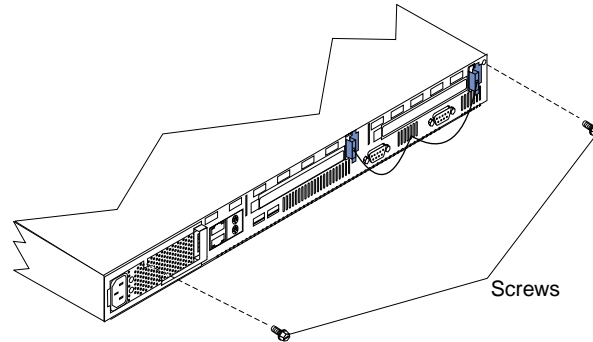
Screws

2. Install the screws to secure the cover as shown.

3. Install the server in the rack. See the "Rack installation instuctions" included with your server documentation for instructions.

4. Connect the power cord and all external cables to the server, and then plug the power cords into properly grounded electrical outlets. See "Working with cables" on page 14 for connector locations.

Working with cables

There are many different cables that connect to the rear of the server. These include Ethernet, USB, video, pointing device, serial, and power cables. This section describes how to manage these cables.

Notes:

1. Refer to the following illustration to locate the connectors on the back of your server.

2. The illustrations in this document might differ slightly from your hardware.
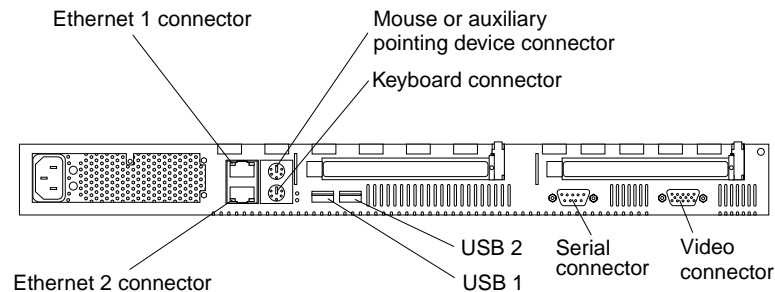
To effectively manage the cables on this server, keep groups of cables secured together, and do not run cables across the back of the server.

Notes:

1. Use cable ties to bundle like cables together.

2. Use hook-and-loop straps to secure the cable bundles to the vertical rails of the rack.

3. When possible, separate data and power cables. For more information on cable routing, see the cabling instructions for your xSeries 300 server on the World Wide Web at http://www.pc.ibm.com/support.

4. Do not secure cables too tightly. Overtightening can cause internal damage to cables.

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

Turning on the server refers to the act of plugging the power cord of your server into the power source and starting the operating system.

Complete the following steps to turn on the server:

1. Plug the power cord of your server into the power source.

   Note: Plugging the power cord into a power source may cause the server to start automatically. This is an acceptable action.

2. Wait 30 seconds, and then press the power control button on the front of the server.

Turning off the server

Turning off the server refers to the act of disconnecting the server from the power source.

Complete the following steps to turn off the server:

1. Refer to your operating system documentation for the proper procedure to shut down the operating system.

   Statement 5

   CAUTION:

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

2. Press the power control button on the front of the server. This will put the server in standby mode.

3. Disconnect the server from the power source.

   Note: After you turn off the server, wait at least 5 seconds before you turn on the server again.

Standby mode

Standby mode puts the server into a wait state. When in a wait state, the server is not running the operating system, and all core logic is shut down.
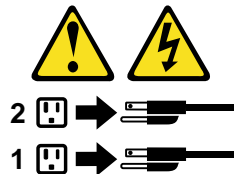
Complete the following steps to put the server into the standby mode:

1. Refer to your operating system documentation for the proper procedure to shutdown the operating system.

2. Press the power control button on the front of the server.

Server controls and indicators

The following section identifies the controls and indicators on the front and rear of your server.

Front view

Power control
button

Power-on
light (green)

Reset
button

System error
light (amber)

Diskette drive
activity light
(green)

Diskette eject
button

IBM

CD activity
light (green)

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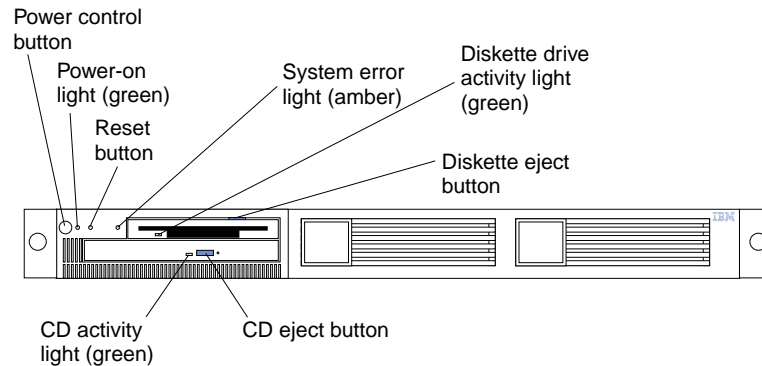
Power-control button: Press this button to manually turn the server on or off.

Power-on light: This green LED lights and stays on when you turn on your server, and it blinks when the server is in standby mode.

Reset button: Press this button to reset the server and run the power-on self-test (POST). You might need to use a pen or the end of a straightened paper clip to press the button.

System-error light: This amber LED lights when a system error occurs.

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

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

CD eject button: Push this button to release a CD from the drive.

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

Rear view

System power connector: The system power cord connects here to provide power to the system.

Ethernet 1 link indicator: This amber LED lights when there is an active link connection on the 10BASE-T or 100BASE-TX interface for Ethernet port 1.

Ethernet 1 speed indicator: This green LED lights when the speed of the Ethernet LAN that is connected to Ethernet port 1 is 100 Mbps.

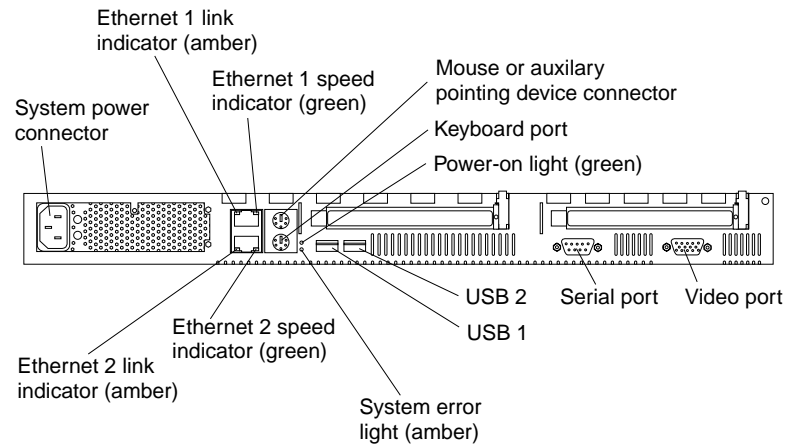**Auxiliary pointing device:** Signal cables for a mouse, trackball, or other pointing device connect to the Auxiliary pointing device connector.

Keyboard port: Signal cables for a keyboard connect to the keyboard port.

Power-on light: This green LED lights and stays on when you turn on your server and will blink when the server is in standby mode. This light duplicates the power on light on the front of the server.

Video port: The signal cable for a monitor connects to the video port.

Serial port: Signal cables for modems or other serial devices connect to the serial port.

USB 2: This is an automatically configured port that you can use to connect one or more USB devices to the server, using Plug and Play technology.

USB 1: This is an automatically configured port that you can use to connect one or more USB devices to the server, using Plug and Play technology.

System-error light: This amber LED lights when a system error occurs. This light duplicates the system error light on the front of the server.

Ethernet 2 speed indicator: This green LED lights when the speed of the Ethernet LAN connected to Ethernet port 2 is 100 Mbps.

Ethernet 2 link indicator: This amber LED lights when there is an active link connection on the 10BASE-T or 100BASE-TX interface for Ethernet port 2.

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 the serial connector assignment, change the drive startup sequence, set the date and time, and set passwords. For information on how to start this utility see, "Starting the Configuration/Setup Utility program" on page 20.

- **SCSISelect Utility**

  With the SCSISelect Utility program, you can configure the devices that are attached to the SCSI adapter (provided in some models). 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 20.

- **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 change network startup (boot) protocols and startup order, to select operating-system wake-up support, and to set menu wait times. For information on how to start this utility, see "Starting the PXE boot agent utility program" on page 21.

- **ServerGuide™ CDs**

  The *ServerGuide* CDs include software setup and installation tools that are specifically designed for IBM xSeries 300 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 22 for more information.

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
- 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 F1.
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:

- Change network startup (boot) protocols
- Change startup (boot) order
- Select whether or not to display setup prompt
- Set menu wait time
- Select OS wake up support

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 two 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 (NOS).

Note: If the *ServerGuide* CD does not start, see "ServerGuide startup problems" on page 24.

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 while setting up 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 for more information.

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 beep codes indicate the detection of a problem.

  — One beep indicates successful completion of POST.
  — More than one beep indicates that POST detected a problem. Error messages also appear during startup if POST detects a hardware-configuration problem.

  See "POST beep code descriptions" and the *User's Reference* on the *IBM xSeries Documentation* CD for more information.

- **Troubleshooting charts**

  These charts list problem symptoms and steps to correct the problems. See the "Troubleshooting charts" on page 25 for more information.

- **Diagnostic programs and error messages**

  The system 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 information.

POST beep code descriptions

One beep

Indicates successful completion of POST.

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. If you are using an optional video adapter, ensure that the video adapter is correctly installed.

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	Suggested action
Setup and Installation CD will not start.	• Ensure that the system is a supported server with a startable (bootable) CD-ROM drive. • If the startup (boot) sequence settings have been altered, be sure the CD-ROM is first in the boot sequence.
ServeRAID™ program cannot view all installed drives - or - cannot install NOS.	If you installed an optional ServeRAID adapter: • 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.	Free up more space on the hard disk drive.
ServerGuide will not start *your* NOS CD.	Ensure that the NOS CD you have is supported by ServerGuide. See the *Setup and Installation* CD label for a list of NOS versions supported.
Cannot install NOS - option is grayed out.	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

Table 1. ServerGuide startup problems.

System updates and applications CD	Suggested action
Get "time out" or "Unknown host" errors	Ensure that you have access to the Internet through FTP directly.

Table 2. System updates and applications CD.

Troubleshooting charts

You can use the troubleshooting charts in this section to find solutions to problems that have definite symptoms.

Attention: If diagnostic error messages appear that are not listed in the following tables, make sure that your system has the latest level of BIOS code installed.

Refer to the "Solving problems" section in the *User's Reference* on the *IBM xSeries Documentation* CD for more detailed information about testing the system. If you have run the diagnostic test programs or if running the tests does not reveal the problem, call for service.

Look for the symptom in the left column of the chart. Instructions and probable solutions to the problem are in the right column. If you have just added new software or a new option and your system is not working, do the following before using the troubleshooting charts:

• Remove the software or device that you just added.

• Run the diagnostic tests to determine if your system is running correctly.

• Reinstall the new software or new device.

Table 3. Troubleshooting charts.

Device	Suggested action
CD-ROM drive CD-ROM drive is not recognized.	Verify that: 1. The primary IDE channel is enabled in the Configuration/Setup Utility program. 2. All cables and jumpers are installed correctly. 3. The correct device driver is installed for the CD-ROM drive.
Diskette drive Diskette drive in-use light stays on, or the system bypasses the diskette drive.	If there is a diskette in the drive, verify that: 1. The diskette drive is enabled in the Configuration/Setup Utility program. 2. The diskette is good and not damaged. (Try another diskette if you have one.) 3. The diskette contains the necessary files to start the system. 4. Your software program is working properly. If the diskette drive in-use light stays on, or the system continues to bypass the diskette drive, call for service.
Other devices Problems such as broken cover locks or indicator lights not working.	Call for service.
Intermittent problems A problem occurs only occasionally and is difficult to detect.	Verify that: 1. All cables and cords are connected securely to the rear of the system and attached options. 2. When the system is turned on, air is flowing from the rear of the system at the fan grille. If there is no air flow, the fan is not working. This causes the system to overheat and shut down. 3. Ensure that the SCSI bus and devices are configured correctly and that the last external device in each SCSI chain is terminated correctly. If the items above are correct, call for service.

Table 3. Troubleshooting charts.

Device	Suggested action
Keyboard, mouse, or pointing-device All or some keys on the keyboard do not work.	1. Make sure that the keyboard cable is properly connected to the system. 2. Make sure that the system and the monitor are turned on. 3. Try using another keyboard. If the problem remains, call for service.
The mouse or pointing device does not work.	1. Verify that the mouse or pointing-device cable is securely connected and the device drivers are installed correctly. 2. Try using another mouse or pointing device. If the problem remains, call for service.
USB Keyboard, mouse, or pointing-device All or some keys on the keyboard do not work.	1. Make sure that the keyboard USB cable is properly connected to the system. 2. Make sure that the system and the monitor are turned on. 3. Ensure that the USB mouse and keyboard support are enabled in BIOS. 4. Try using another keyboard. If the problem remains, call for service.
The mouse or pointing device does not work.	1. Make sure that the mouse or pointing-device USB cable is properly connected to the system. 2. Make sure that the system and the monitor are turned on. 3. Ensure that the USB mouse and keyboard support are enabled in BIOS. 4. Try using another mouse or pointing-device. If the problem remains, call for service.
Memory The amount of memory displayed is less than the amount of memory installed.	Verify that: 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 system might have automatically disabled a DIMM bank if it detected a problem, or a DIMM bank could have been manually disabled. If the items above are correct and the screen remains blank, call for service.
Monitor The monitor works when you turn on the system, but goes blank when you start some application programs.	Verify that: 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 you still cannot find the problem, call for service.
The screen is blank.	Verify that: 1. The system 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.

Table 3. Troubleshooting charts.

Device	Suggested action
Wavy, unreadable, rolling, distorted screen, or screen jitter.	If the monitor self-tests show the monitor is working properly, 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:** 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 with the correct language. If the problem remains, call for service.
Option	Verify that:
An IBM option that was just installed does not work.	1. The option is designed for the server. Refer to the "Server Support" flowchart for information about obtaining ServerProven compatibility information from the World Wide Web. 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.
An IBM option that used to work does not work now.	Verify that all of the option hardware and cable connections are secure. If the option comes with its own test instructions, use those instructions to test the option. If the failing option is a SCSI option, verify that: 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. All external SCSI options are turned on. You must turn on external SCSI options before turning on the server. If the problem remains, call for service.
Power	Verify that:
The system does not power on.	1. The power cables are properly connected to the server. 2. The electrical outlet functions properly. 3. The type of memory 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. 5. The LEDs on the power supply are on. If the problem remains, call for service.

Table 3. Troubleshooting charts.

Device	Suggested action
Serial port The number of serial ports identified by the operating system is less than the number of serial ports installed.	Verify that: 1. Each port is assigned a unique address by the Configuration/Setup Utility program and none of the serial ports are disabled. 2. The serial-port adapter, if you installed one, is seated properly. If the problem remains, call for service.
A serial device does not work.	Verify that: 1. The device is compatible with the server. 2. The serial port is enabled and is assigned a unique address. If the problem remains, call for service.
Software Suspected software problem.	To determine if problems are caused by the software, verify that: 1. Your system has the minimum memory requirements needed to use the software. For memory requirements, refer to the information that comes with the software. **Note:** If you have just installed an adapter or memory, you might have a memory address conflict. 2. The software is designed to operate on your system. 3. Other software works on your system. 4. The software that you are trying to use works on another system. If you received any error messages when using the software program, refer to the information that comes with the software for a description of the messages and solutions to the problem. If the items above are correct and the problem remains, contact your place of purchase.
Universal Serial Bus (USB) ports A USB device does not work.	Verify that: 1. You are not trying to use a USB device during POST, if you have a standard (non-USB) keyboard attached to the keyboard port. **Note:** If a standard (non-USB) keyboard is attached to the keyboard port, then the USB is disabled and the USB device might not work during POST. 2. The correct USB device driver is installed. 3. Your operating system supports USB devices. If the problem remains, call for service.

Appendix A. Product warranties and notices

This chapter 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.

Notes:

* 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.

Machine: IBM @server **xSeries 300**

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.

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

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

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

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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

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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

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IBM

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