



# Gateway™ 7450R Server System Manual

March 2001

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# Preface

## Conventions used in this manual

Throughout this manual, you will see the following conventions:

Convention	Description
ENTER	Keyboard key names are printed in small capitals.
CTRL+ALT+DEL	A plus sign means to press the keys at the same time.
<b>Setup</b>	Commands to be entered, options to select, and messages that appear on your monitor are printed in bold.
<i>User's Guide</i>	Names of publications are printed in italic.
Viewpoint	All references to front, rear, left, or right on the server are based on the server being in a normal, upright position, as viewed from the front.

### Important



A note labeled important informs you of special circumstances.

### Caution



A caution warns you of possible damage to equipment or loss of data.

### Warning



A warning indicates the possibility of personal injury.

# Getting additional information

Log on to the Gateway technical support area at [www.gatewayatwork.com](http://www.gatewayatwork.com) to find information about your system or other Gateway products. Some types of information you can access are:

- Hardware driver and program updates
- Technical tips
- Service agreement information
- Technical documents and component information
- Frequently asked questions (FAQs)
- Documentation for peripherals or optional components
- Online technical support



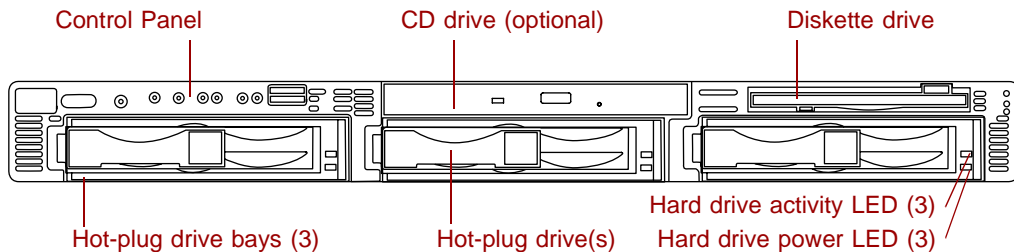
# System Features

# 1

## Standard features

- As many as two Intel® Pentium III processors with 133 MHz Front Side Bus (FSB)
- Four Dual Inline Memory Module (DIMM) sockets, that support up to 4.0 GB of buffered, PC/133 Synchronous Dynamic Random Access Memory (SDRAM)
- ATI Rage XL AGP video chipset
- Two integrated Intel 82559 network controllers providing dual 10/100 LAN support and network connectors
- Integrated Super Video Graphics Array (SVGA) video support with 4 MB of Synchronous Graphics RAM (SGRAM)
- Two full-length, full-height, 64-bit, 66 MHz PCI slots on a riser card
- One 1.44 MB diskette drive, one optional CD drive, and at least one hard drive
- Integrated voltage regulator modules (VRMs) for both processors
- Integrated Adaptec AIC 7892 small computer systems interface (SCSI) controller providing low-voltage differential (LVD) Ultra3 support
- Three-drive hot-plug drive bay supporting Ultra160 single connector attachment (SCA) drives
- Keyboard port Personal System/2® (PS/2), mouse port (PS/2), one serial port, one video port, two RJ-45 LAN ports, and one Universal Serial Bus (USB) port on the front panel

# Front panel



**Control panel** contains the LED indicators and the buttons that control the server.

**CD drive (optional)** plays data or audio CDs.

**Diskette drive** writes to and reads from 3.5-inch, 1.44 MB diskettes.

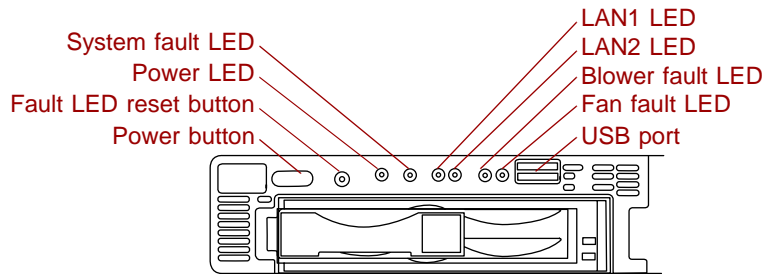
**Hot-plug drive bays (3)** includes three drive carriers and as many as three hot-swappable, hot-plug drives connected to a hot-plug backplane. The drive bays support 1.0-inch Ultra160 SCSI drives.

**Hot plug drive(s)** plug into the hot-plug drive bay(s). The server includes at least one and may include as many as three.

**Hard drive activity LED (3)** flashes green when the adjacent hard drive is accessed.

**Hard drive power LED (3)** glows green when the adjacent hard drive has power, glows amber if the adjacent hard drive has failed, and blinks amber if the adjacent hard drive is rebuilding.

# Control Panel



**System fault LED** glows amber when a hardware or system failure occurs. Pressing the fault LED reset button turns this LED off, but does not correct the fault.

**Power LED** glows green when the server has power and flashes green when the server is in power saving mode. This LED glows amber when AC power to the server is on, but the internal (DC) power is off which means there is power to the server but the server is powered down.

**Fault LED reset button** resets any of the fault LEDs to its original state in the default mode. This button does not correct or clear the fault. If the fault condition persists, the appropriate LED will turn on again until the fault is corrected. This button can be reprogrammed through a BIOS option to generate a Non-Maskable Interrupt (NMI) when pressed. The NMI function can produce varied results depending on the software support for NMI handling.

**Power button** turns the server on and off.

**LAN1 LED** blinks green when there is traffic on the LAN1 connector. Glows amber when the LAN1 connector experiences an interruption in connectivity.

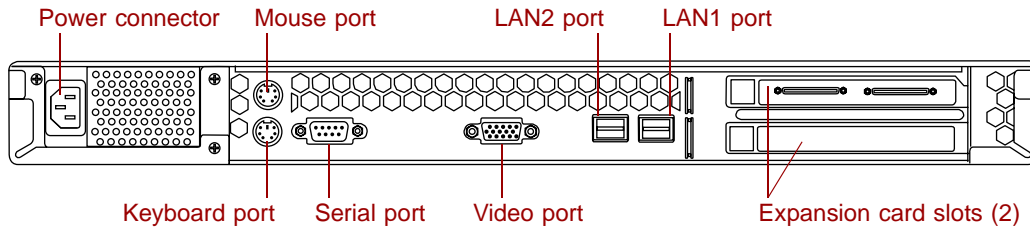
**LAN2 LED** blinks green when there is traffic on the LAN2 connector. Glows amber when the LAN2 connector experiences an interruption in connectivity.

**Blower fault LED** glows amber when one of the blowers has failed or entered an out-of-tolerance state.

**Fan fault LED** glows amber when one of the fans has failed or entered an out-of-tolerance state.

**USB port** provides front panel access for USB peripherals.

# Back panel



**Power connector** connects the server power cord. The other end of the power cord plugs into an AC outlet, uninterruptible power supply (UPS), or power strip.

**Mouse port** connects a PS/2-compatible mouse.

**LAN2 port** lets you connect to a network. The adjacent indicator LEDs show LAN activity (green) and 100 Mbit speed (amber).

**LAN1 port** lets you connect to a network. The adjacent indicator LEDs show LAN activity (green) and 100 Mbit speed (amber).

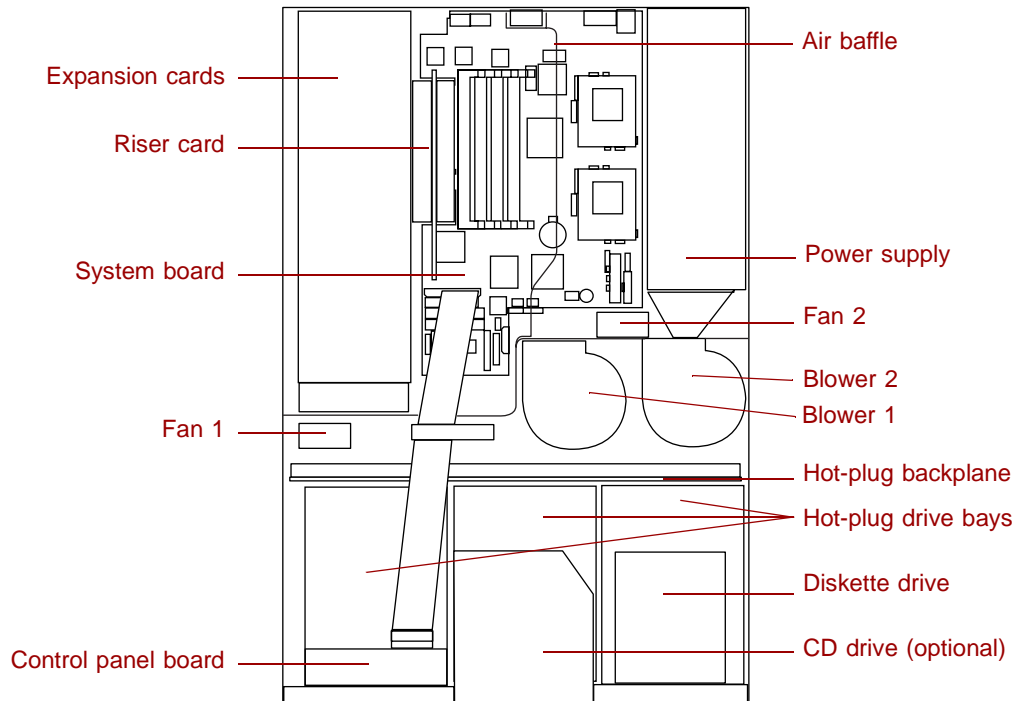
**Keyboard port** connects a PS/2-compatible keyboard.

**Serial port** connects to a serial device.

**Video port** connects the monitor interface cable. The video controller is integrated on the system board.

**Expansion card slots (2)** let you install as many as two full-length, full-height, 64-bit, 66 MHz PCI expansion cards.

# Interior of system



**Expansion cards** you can install as many as two full-length PCI expansion cards.

**Riser card** supports as many as two full-length PCI expansion cards.

**System board** see “System board” on page 6.

**Fans** provide cooling for the system.

**Control panel board** contains the indicator LEDs and the buttons to control the server. See “Control panel board” on page 9.

**Air baffle** controls the internal airflow to make sure the thermally sensitive internal components receive adequate cooling.

**Power supply** provides power to the system components.

**Blowers** provide cooling for the system.

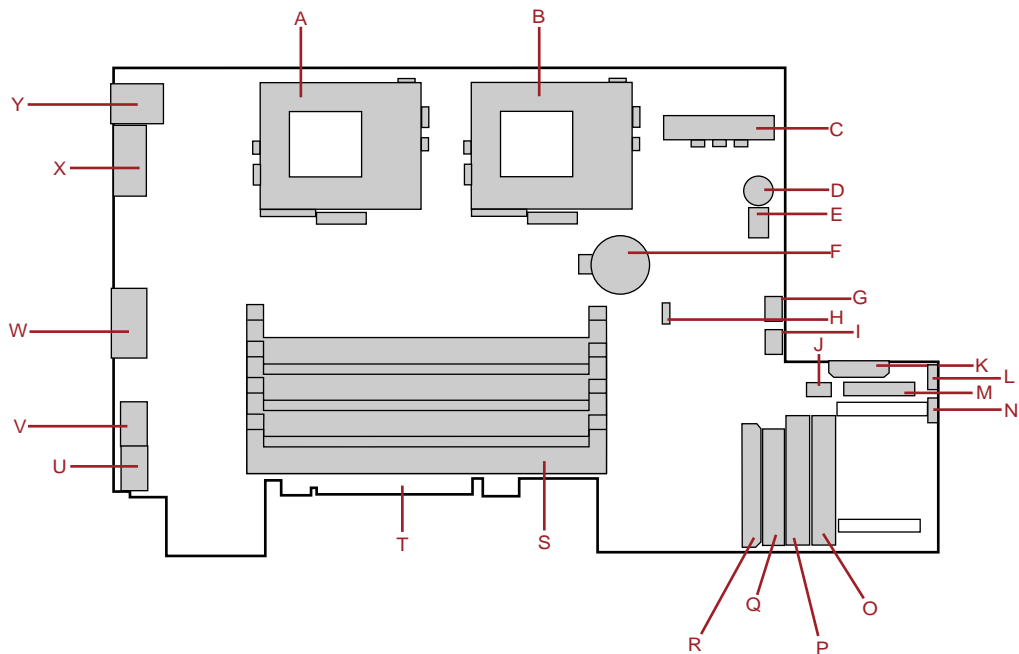
**Hot-plug backplane** provides the control for the hot-plug drives.

**Hot-plug bays** support up to three 1-inch high, 3.5-inch Ultra160 SCA SCSI hard drives. Empty drive bays contain empty carriers to control airflow and EMC characteristics.

**Diskette drive** reads and writes 1.44-MB diskettes.

**CD drive (optional)** plays data or audio CDs.

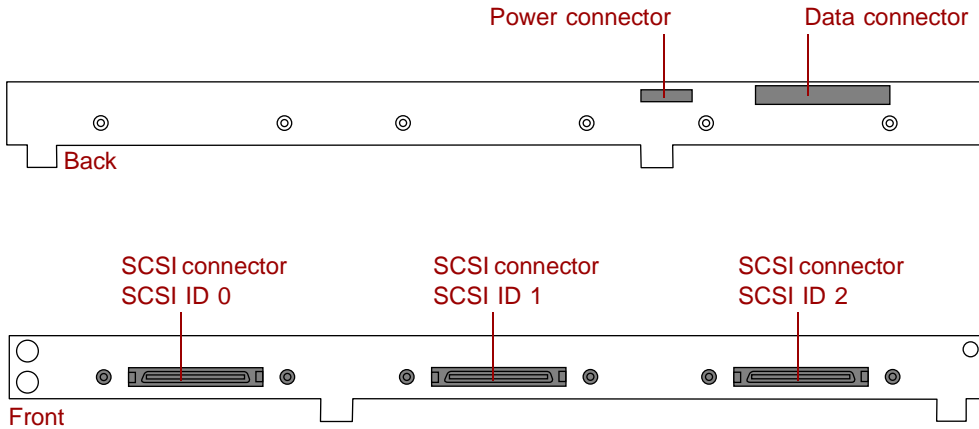
## System board



- A** Secondary processor socket
- B** Primary processor socket
- C** Power connector
- D** Speaker
- E** Switch bank SW1
- F** Battery

- G** Blower 2 connector
- H** Jumper J1
- I** Blower 1 connector
- J** Front panel USB connector
- K** Power connector
- L** Fan 2 connector
- M** Front panel connector
- N** Fan 1 connector
- O** Secondary IDE connector
- P** Primary IDE connector
- Q** Diskette drive connector
- R** Ultra160 SCSI connector
- S** DIMM slots (4)
- T** Riser card edge connector
- U** RJ-45 Ethernet LAN1 connector and LEDs
- V** RJ-45 Ethernet LAN2 connector and LEDs
- W** Video connector
- X** Serial port
- Y** Stacked keyboard and mouse ports

# Hot-plug backplane



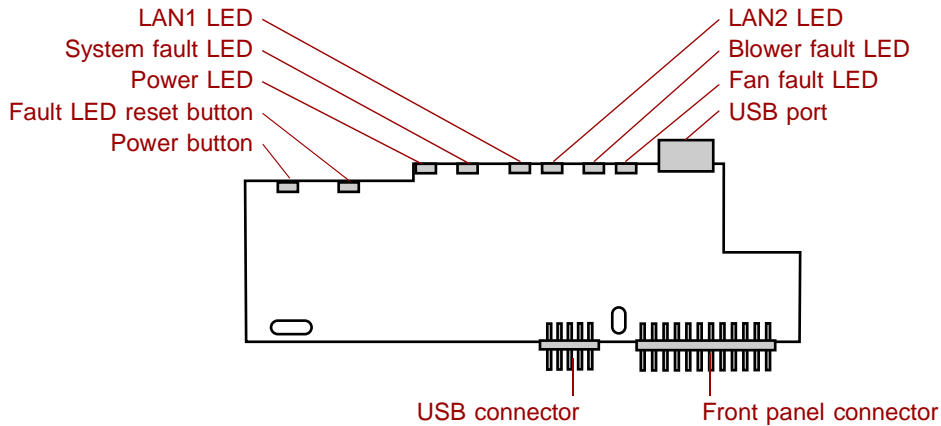
**Power connector** connects the power cable from the power supply.

**Data connector** connects the SCSI cable from the RAID controller.

**SCSI drive connectors (3)** connect the three SCA SCSI drives. Install drives in increasing order of SCSI ID.



# Control panel board



**System fault LED** glows amber when a hardware or system failure occurs. Pressing the fault LED reset button turns this LED off, but does not correct the fault.

**Power LED** glows green when the server has power and flashes green when the server is in power saving mode. This LED glows amber when AC power to the server is on, but the internal (DC) power is off which means there is power to the server but the server is powered down.

**Fault LED reset button** resets any of the fault LEDs to its original state. This button does not correct or clear the fault. If the fault condition persists, the appropriate LED will turn on again until the fault is corrected.

**Power button** turns the server on and off.

**LAN1 LED** blinks green when there is traffic on the LAN1 connector. Glows amber when the LAN1 connector experiences an interruption in connectivity.

**LAN2 LED** blinks green when there is traffic on the LAN2 connector. Glows amber when the LAN2 connector experiences an interruption in connectivity.

**Blower fault LED** glows amber when one of the blowers has failed or entered an out-of-tolerance state.

**Fan fault LED** glows amber when one of the fans has failed or entered an out-of-tolerance state.

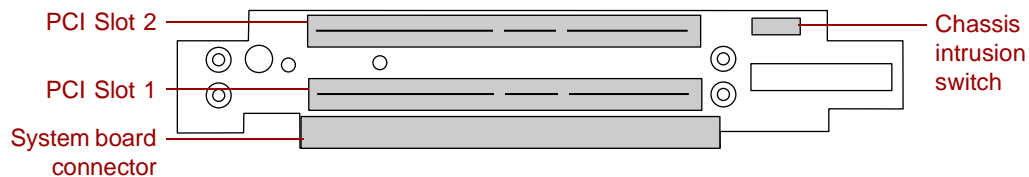
**USB port** provides front panel access for USB peripherals.

**USB connector** connects the control panel to the system board.

**Front panel connector** connects the controls on the front panel with the system board.

## Riser card

The riser card includes a PCI bridge to support the two PCI expansion slots through the edge connector on the system board.



**PCI expansion slots** provide support for as many as two 64-bit, 66 MHz PCI expansion cards. Slot 1 is the lower slot and slot 2 is the upper slot.

**System board connector** connects to the system board.

**Chassis intrusion switch** sends a signal to the system management software when the chassis cover is removed.

# System Setup

# 2

## Setting up the server

Use the instructions in the *Gateway 7450R Rackmount Installation Guide* that came with the server to assemble the server.

You should prepare a safe working environment before assembling the server by following these guidelines:

### Important



Keep the boxes and packing material. If you need to send the server to Gateway for repairs, you must use the original packaging or your warranty may be voided.

- Obtain an adequately rated uninterruptible power supply (UPS). A UPS protects against AC line spikes, power interruptions, and other power fluctuations that may damage the server.
- Protect the server from extreme temperature and humidity. Do not expose it to direct sunlight, heater ducts, or other heat-generating objects.
- Route external cables carefully to make sure they do not block air vents or impede airflow.
- Make sure that the inlet air temperature within the rack cabinet remains below the specified limit of 40° C (104° F).
- Keep the server away from equipment that generates magnetic fields, such as unshielded stereo speakers. Even a telephone placed too close to the server may cause interference.

- Plug the server into a wall outlet, power strip, or uninterruptible power supply (UPS).

**Warning**



For the power supply of this equipment, an approved power cord has to be used. For a rated current up to 6 A and an equipment weight up to 6 kg, a power cord not lighter than H05VV-F, 3 G, 0.75 mm<sup>2</sup>, has to be used.

**Warning**



Zum Netzanschluß dieses Gerätes ist eine geprüfte Leitung zu verwenden. Für einen Nennstrom bis 6 A und einem Gerätewicht größer 6 kg ist eine Leitung nicht leichter als H05VV-F, 3 G, 0.75 mm<sup>2</sup> einzusetzen.

## Starting the server

Before you start the server for the first time, make sure:

- The power supply is autosensing and it automatically determines the voltage of the incoming power source.
- All cables are firmly connected to the proper ports on the back panel of the server.

**Caution**



Electricity can flow from connected peripherals into the system causing a shock. Make sure the server and peripherals are turned off and unplugged from the power outlet when you connect peripherals to the server.

- The server and monitor are plugged into an AC outlet, power strip, or UPS and that the power strip or UPS is turned on.

### To start the system:

- 1 If you have connected the system components to a power strip or UPS, make sure all the system components are turned off, then turn on the power strip or UPS.
- 2 Turn on the monitor.
- 3 Turn on any other components connected to the server, such as speakers, a printer, or a scanner.

- 4 Turn on the server. The power LED on the control panel is green when the power is on. This same LED is amber when there is AC power connected to the server, but the server is off.

If nothing happens when you turn on the system:

- Make sure that the power cables are securely plugged in and that the power strip or UPS (if you are using one) is plugged in and turned on.
- Make sure the monitor is connected to the server, plugged into the power strip, AC outlet, or UPS, and turned on. You may also need to adjust the brightness and contrast controls on the monitor.

## Understanding the Power-On Self-Test

When you turn on your server, a screen appears telling you to press F2 to enter Setup or Esc to continue POST. The power-on self-test (POST) routine checks the system memory and components. Press ESC to start POST. POST will begin in a few moments if you do not respond. Press the SPACEBAR to bypass the remaining memory count and shorten the startup process.

The system displays an error message if POST finds any problems. Write down any error messages that you see. If you continue to have problems, these error messages may help you or Gateway technical support diagnose the cause.

## Setting up the operating system

The first time you start the server, the operating system takes a few minutes to set up.

Refer to your operating system documentation for specific questions regarding the operating system.

### To complete the operating system setup in Windows NT:

- 1 After the server starts, the start-up wizard opens. Click **Next**.
- 2 Type the requested information in the appropriate text boxes. When you have finished typing the information, click **Next**.
- 3 Continue following the instructions and selecting options in the start-up wizard dialog boxes, clicking **Next** to move through the dialog boxes, until the wizard tells you to restart your server.

If you need to return to the previous dialog box to change any of your entries, click **Back**.

- 4 Restart the server. The setup is complete.

**Important**



For all operating systems, refer to the appropriate operating system software manual for specific instructions.

## Turning off the server

Every time you turn off the server, shut down the operating system first. You may lose data if you do not follow the proper procedure.

### ➔ To turn off the server in Windows NT:

- 1 Click **Start**, then select **Shut down the computer?**, then **Shut Down**.
- 2 Click **OK**. The operating system shuts down. When you see a message saying **It is now safe to turn off your computer**, turn off the server by pressing the power button.

By default, you must hold the power button in for four seconds to turn the server off. BIOS Setup provides an option to set the power button to turn the power off immediately when pressed.

- 3 Turn off the monitor and peripherals.

**Caution**



When you turn the server off, some electric current still flows through it. Before opening the server case or connecting or removing any peripherals, turn off the server, then unplug the power cord.

**Important**



For other operating systems, such as Windows 2000 or Novell Netware, refer to the appropriate operating system software manual for specific instructions. Some operating systems will bypass the power button and turn the server off under software control.

# Resetting the server

If your server does not respond to keyboard or mouse input, you may have to close programs that are not responding. If closing unresponsive programs does not restore your server to normal operation, you may have to perform a forced shut down and restart the server.

## ➔ To close unresponsive programs and shut down the server in Windows NT:

- 1 Press CTRL+ALT+DEL. A window opens that lets you close a program that is not responding.
- 2 Click **Task Manager**, then select the program that is not responding.
- 3 Close the program by clicking **End Task**.
- 4 If the server does not respond, press and hold the power button for four seconds to force the server to shut down.
- 5 Turn the server back on.

As a part of the regular startup process, a program to check the disk status runs automatically. When the checks are finished, Windows starts.

### Important



For other operating systems, such as Windows 2000 or Novell Netware, refer to the appropriate operating system software manual for specific instructions.





# Case Access

# 3

## Preventing static electricity discharge

Before opening the server case, follow these precautions to prevent damage from static electricity. When opening your server case, always perform the following procedure.

### Caution



Static electricity can permanently damage electronic components in your server. Prevent electrostatic damage to your server by following static electricity precautions every time you open your server case.

### ➔ To prevent static electricity discharge:

- 1 Turn off the server power.
- 2 Touch a bare metal surface on the back of the server.
- 3 Unplug all power cords from AC outlets and disconnect the modem cable (if installed).

Also follow these static electricity precautions:

- Avoid static-causing surfaces such as plastic and packing foam in your work area.
- Remove the parts from their antistatic bags or containers only when you are ready to use them. Do not lay parts on the outside of an antistatic bag or container because only the inside provides antistatic protection.

- Always hold cards by their edges and their metal mounting brackets. Avoid touching components on the cards and the edge connectors that connect to expansion slots. Never slide cards or other parts over any surface.

## Opening the case

### Important



All references to front, back, left, or right on the server are based on the server being in a normal position, as viewed from the front.

To remove or replace any of the removable media drives or the internal components you must open the case. Because the components inside the server are extremely sensitive to static electricity, make sure you follow the precautions at the beginning of this chapter to avoid static electricity damage.

Only qualified personnel should open the server for maintenance. If you are qualified to maintain the server yourself, make sure you are properly grounded before opening the case.

### Caution



Avoid exposure to dangerous electrical voltages and moving parts by turning off the server and unplugging the power cord and modem cable (if installed) before removing the cover.

## Removing the top panel

The top panel provides access to all of the internal components of the server.

### Caution

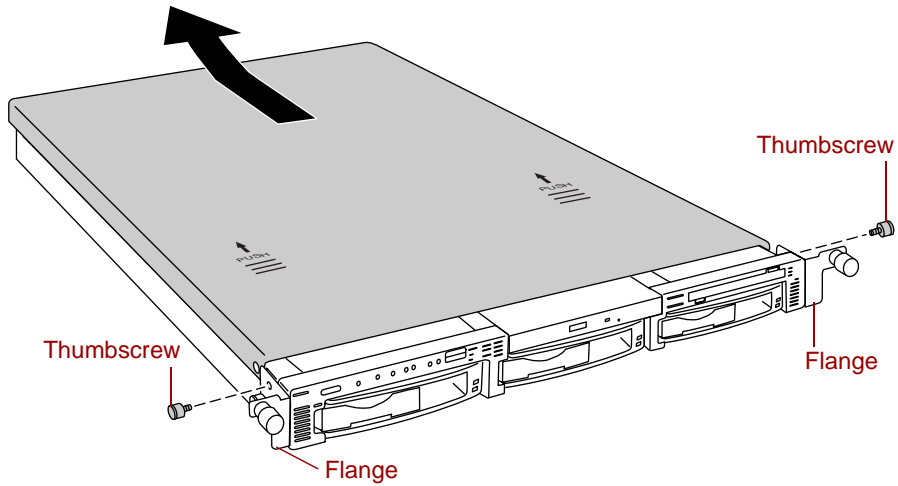


Operating the server with the top panel removed adversely affects the thermal characteristics of the server interior and can result in overheating of and possible damage to the hard drives or the processors.

### ➔ To remove the top panel:

- 1 Turn off the server and disconnect all power cords.
- 2 Observe all safety and static electricity precautions. See “Preventing static electricity discharge” on page 17.

- 3 Remove the two thumbscrews from the top of the flanges at the sides of the front panel.



- 4 Slide the top panel slightly to the back.
- 5 Lift the panel up and away from the chassis.

# Closing the case

Close the case as soon as you finish installing or removing components so that dust and dirt do not collect inside the server and to maintain the thermal characteristics of the server interior.

## Caution



Operating the server with the top panel removed adversely affects the thermal characteristics of the server interior and can result in overheating of and possible damage to the hard drives or the processors.

## Replacing the top panel

You must replace the top panel before you can operate the server. If you do not, a system intrusion event is logged by the system management hardware. Be careful not to pinch any cables between the internal components and the top panel as you replace it.

### To replace the top panel:

- 1 Place the top panel on the top of the chassis approximately 3/4-inch back from the front of the server.
- 2 Slide the panel toward the front of the chassis 3/4-inch, securing it in place.
- 3 Replace the two thumbscrews you removed earlier.

# Replacing and Adding Internal Devices

# 4

## Drives

There are several types of drives and similar devices that can be installed in the server.

### Preparing to replace or add a drive

One diskette drive and at least one 1-inch high, 3.5-inch hot-plug hard drive are included with the server. You can add an optional slimline CD drive and as many as two additional hot-plug drives for a total of three hot-plug drives.

As you prepare to install drives, keep the following in mind:

- If you remove a drive, place it in an antistatic bag or container.
- Before you install a drive, see the drive documentation for information on configuring the drive, setting any jumpers on the drive, and attaching cables to the drive.
- If you are installing a drive that uses an add-in controller card, install the card before you install the drive.
- You may need to configure the drives you install using the BIOS Setup utility or the SCSISelect utility. Press F2 at start up to open the BIOS Setup utility or press CTRL+A to enter the SCSISelect utility.

## Drive cabling information

The system includes two different types of drive cables. Each drive cable is clearly labeled, indicating the cable type and showing which end to connect to the appropriate connector on the system board and which end to connect to the drive.

- Use the diskette drive cable to connect the diskette drive.
- Use the SCSI LVD cable to connect the hot-plug backplane to the integrated SCSI controller on the system board.

If you order the optional CD drive, a third cable is provided. Use the standard IDE cable to connect the CD drive.

## Replacing the diskette drive

The diskette drive is on the right side of the server. See “Interior of system” on page 5 for the location of the diskette drive.

### Important

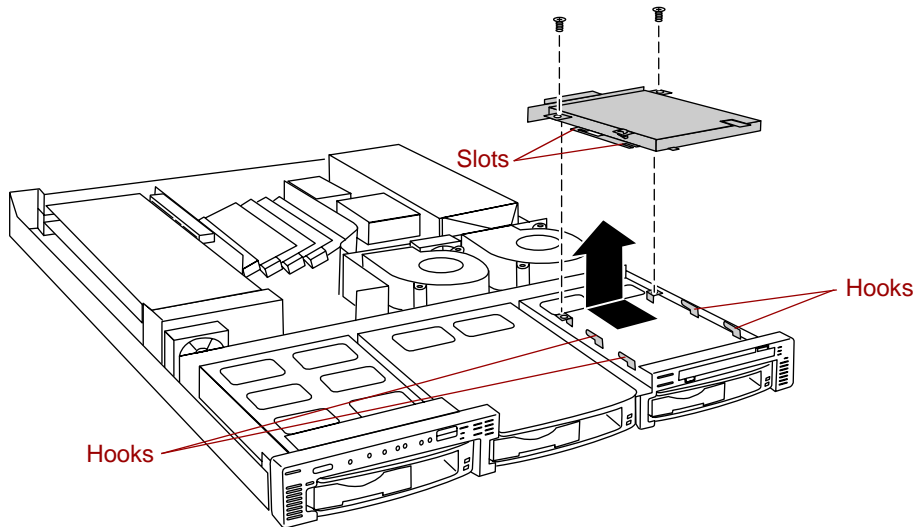


The replacement drive should include the bracket and small circuit board. If it does not, transfer those components to the new drive.

### ➔ To replace the diskette drive assembly:

- 1 Turn off the system and disconnect the power cord and all other external peripheral devices.
- 2 Open the case. See “Opening the case” on page 18 and “Preventing static electricity discharge” on page 17.
- 3 Remove the power and data cables from the small printed circuit board at the back of the drive. Note their locations and orientations.

- 4 Remove the diskette drive assembly by removing the two screws near the back of the drive.



- 5 Slide the drive assembly back slightly to disengage the hooks on the drive bay from the slots on the diskette drive bracket, then pull the drive assembly out of the chassis.
- 6 If necessary, set any jumpers on the replacement drive assembly. (See your drive documentation for proper drive jumper settings and cable orientation.)
- 7 Replace the diskette drive assembly in the chassis. Make sure the hooks extend through the slots on the new bracket, then slide the diskette drive assembly forward.
- 8 Secure the diskette drive assembly using the screws you removed in Step 4.
- 9 Connect the power and data cables, making sure the cables are in their original positions.
- 10 Close the case. See “Closing the case” on page 20.
- 11 Reconnect the power cord and all other external peripheral devices, then turn on the computer.

# Installing a CD drive

The CD drive bay is in the center of the front panel. If the server did not include a CD drive, a blank or “dummy” unit occupies the bay and must be removed.

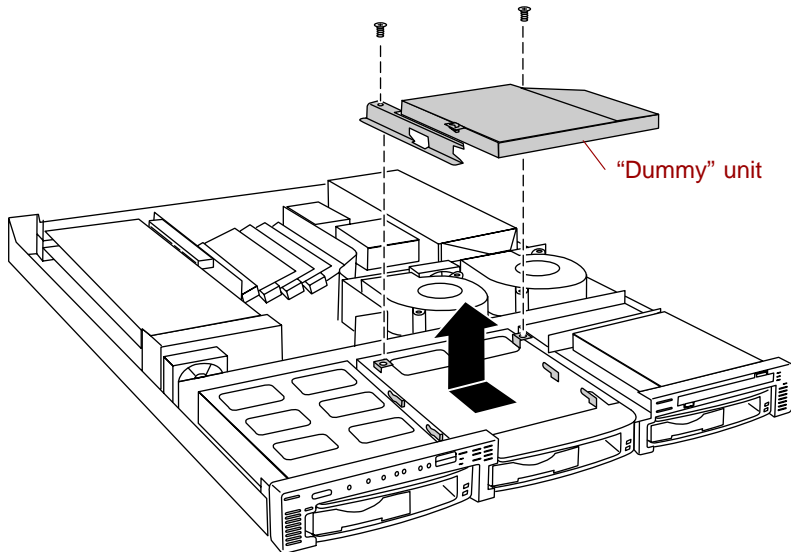
## Important



The CD drive assembly should include the bracket and small circuit board. If it does not, contact Client Care.

## ➔ To install your CD drive assembly:

- 1 Turn off the system and disconnect the power cord and all other external peripheral devices.
- 2 Open the case. See “Opening the case” on page 18 and “Preventing static electricity discharge” on page 17.
- 3 Remove the two screws that secure the “dummy” unit to the drive bay.



- 4 Slide the “dummy” unit back slightly to disengage the hooks on the drive bay from the slots on the bracket, then pull the “dummy” unit out of the chassis.



- 5 If necessary, set any jumpers on the CD drive assembly. (See your drive documentation for proper drive jumper settings and cable orientation.)
- 6 Place the CD drive assembly in the chassis. Make sure the hooks extend through the slots on the bracket, then slide the CD drive assembly forward.
- 7 Secure the CD drive assembly with the two screws you removed in Step 4.
- 8 Connect the power and data cables, making sure the cables are in the correct position and orientation.  
  
The IDE cable ships with the CD drive kit. Make sure you route the cable directly from the CD drive, through the cable clamp, and to the primary IDE connector on the system board. Other routing may interfere with internal airflow and the thermal characteristics of the server.
- 9 Close the case. See “Closing the case” on page 20.
- 10 Reconnect the power cord and all other external peripheral devices, then turn on the system.

## Replacing the CD drive assembly

The CD drive assembly is located beside the diskette drive assembly in the center of the front panel.

### Important

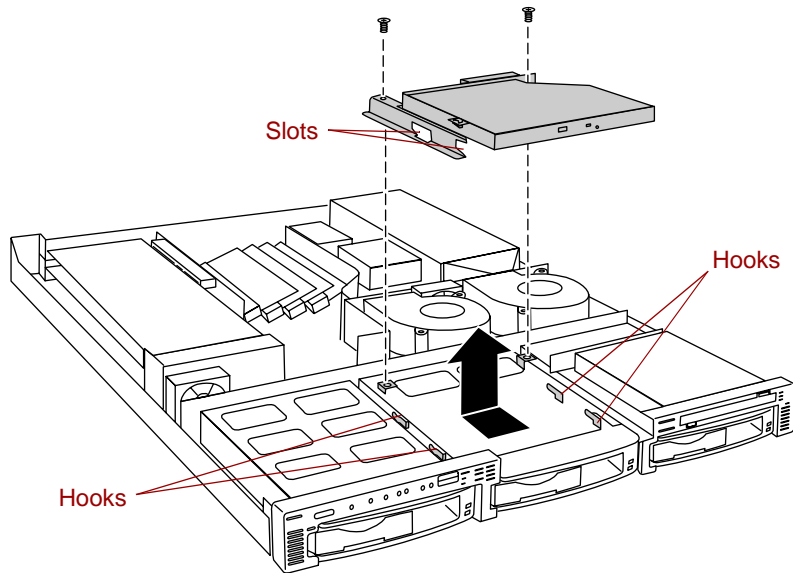


The replacement drive should include the bracket and small circuit board. If it does not, transfer those components to the new drive.

### ➔ To replace the CD drive assembly:

- 1 Turn off the system and disconnect the power cord and all other external peripheral devices.
- 2 Open the case. See “Opening the case” on page 18 and “Preventing static electricity discharge” on page 17.
- 3 Remove the power and data cables from the small printed circuit board at the back of the drive. Note their locations and orientations.

- 4 Remove the two screws that secure the CD drive assembly to the chassis.



- 5 Slide the drive assembly back slightly to disengage the hooks on the drive bay from the slots on the CD drive bracket, then pull the drive assembly out of the chassis.
- 6 If necessary, set any jumpers on the replacement drive. (See your drive documentation for proper drive jumper settings and cable orientation.)
- 7 Place the new CD drive and bracket in the chassis. Make sure the hooks extend through the slots on the new bracket, then slide the CD drive forward.
- 8 Secure the CD drive with the two screws you removed in Step 4.
- 9 Connect the power and data cables, making sure the cables are in their original positions.
- 10 Close the case. See "Closing the case" on page 20.
- 11 Reconnect the power cord and all other external peripheral devices, then turn on the system.

# Replacing a hot-plug drive

The hot-plug drives are located along the bottom edge of the front panel as you face the system. The hot-plug bay supports as many as three 1-inch high, 3.5-inch SCSI hard drives.

The hot-plug drives are assigned SCSI ID numbers by the hot-plug backplane with the drive on the left end of the hot-plug bay assigned SCSI ID 0. The backplane assigns SCSI IDs to the other drives in order up to SCSI ID 2 at the right end of the hot-plug bay. See “Hot-plug backplane” on page 8 for the locations of the drives by SCSI ID number.

## Important



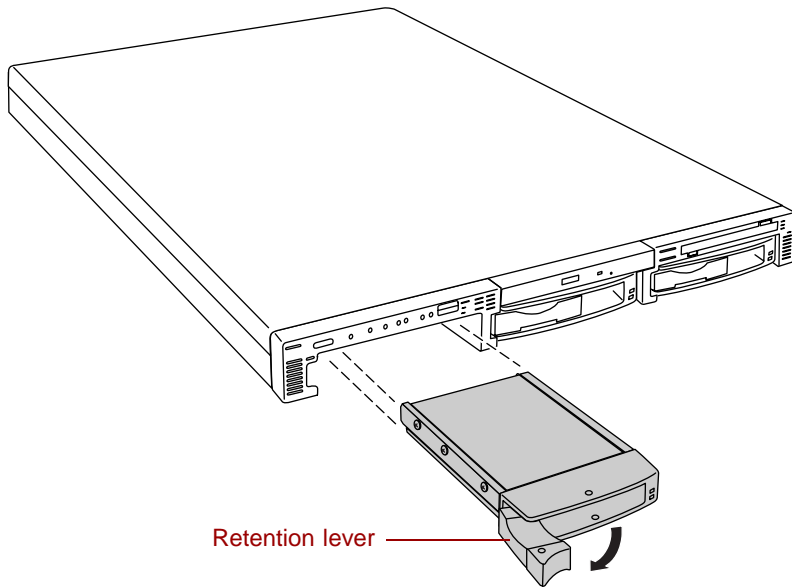
Gateway tests and verifies the operation and compatibility of the drives we sell. Additional or replacement drives must conform to Gateway standards, especially in a RAID or mission-critical environment.

Install the first drive in the left bay, then install drives in increasing order by SCSI ID number thereafter.

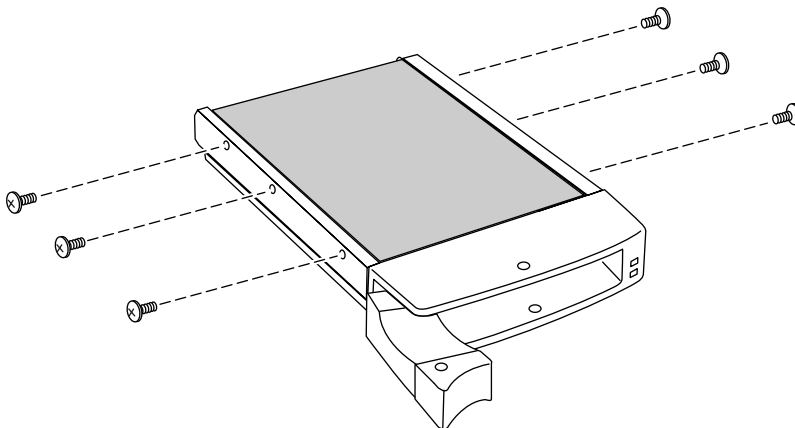
## ➔ To replace a failed drive:

- 1 Before you remove the failed drive, use the appropriate software and utilities installed on the system to stop all activity on the SCSI bus. Instructions for using the software are provided by the software manufacturer.
- 2 Use the utilities or look at the drive indicator LEDs on the front panel to determine which drive needs to be replaced.

- 3 Remove the drive from the drive bay by unclipping the retention lever and rotating the lever out away from the front of the system.

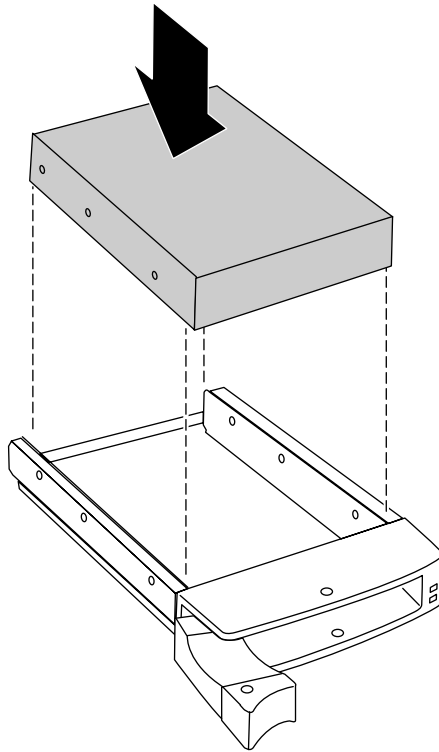


- 4 Continue pulling outward until the drive is entirely out of the system.
- 5 Remove the six screws that secure the drive to the carrier.



- 6 Remove the drive from the carrier.

- 7 Install the new drive in the carrier using the six screws you removed in Step 5. Make sure the drive is oriented correctly.



- 8 Align the drive carrier with the slots at the sides of the drive bay. Leave the retention lever in the open position.
- 9 Push the drive all of the way into the drive bay until the connector at the back joins with the corresponding connector on the SCSI backplane, then firmly close the lever.
- 10 Run any necessary utilities to setup the new drive. See the utility software documentation for details.

## Adding a hot-plug drive

The hot-plug drives are located along the bottom edge of the front panel as you face the system. The hot-plug bay supports as many as three 1-inch high 3.5-inch SCSI hard drives.

The hot-plug drives are assigned SCSI ID numbers by the hot-plug backplane with the drive on the left end of the hot-plug bay assigned SCSI ID 0. The backplane assigns SCSI IDs to the other drives in order up to SCSI ID 2 on the right end of the hot-plug bay. See “Hot-plug backplane” on page 8 for the locations of the drives by SCSI ID number.

**Important**

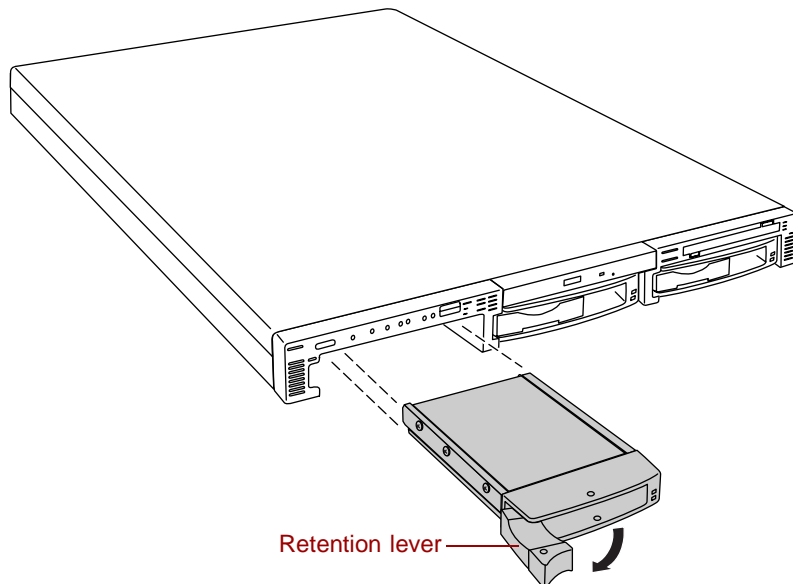


Gateway tests and verifies the operation and compatibility of the drives we sell. Additional or replacement drives must conform to Gateway standards, especially in a RAID or mission-critical environment.

Install the first drive in the left bay, then install drives in increasing order by SCSI ID number thereafter (left to right).

**➔ To install an additional hot-plug drive:**

- 1 Remove the drive carrier from the drive bay by unclipping the retention lever and rotating the lever out away from the front of the system.



- 2 Continue pulling outward until the drive carrier is entirely out of the system.
- 3 Using six screws from the accessory kit, install the new drive in the carrier. Make sure the drive is oriented correctly.

- 4 Align the drive carrier with the slots at the sides of the drive bay. Leave the retention lever in the open position.
- 5 Push the drive all of the way into the drive bay until the connector at the back joins with the corresponding connector on the SCSI backplane, then firmly close the lever.
- 6 Run any necessary utilities to setup the new drive. See the utility software documentation for details.

## Memory

Four DIMM sockets on the system board support up to 4.0 Gigabytes (GB) of PC/133 SDRAM.

The DRAM DIMMs supported by the system board conform to the following standards:

- 128 MB, 256 MB, 512 MB, and 1024 MB ECC DIMMs
- PC/133-compliant, registered, ECC SDRAM
- 128 MB minimum system memory
- 4.0 GB maximum system memory

When you select and install DIMMs, keep the following in mind:

- Do not use unbuffered DIMMs.
- Memory should be added in order, from DIMM 1 to DIMM 4.
- There can be no empty slots between installed DIMMs.
- No jumper settings are required for the memory size or type because the BIOS automatically detects this information.

### Important

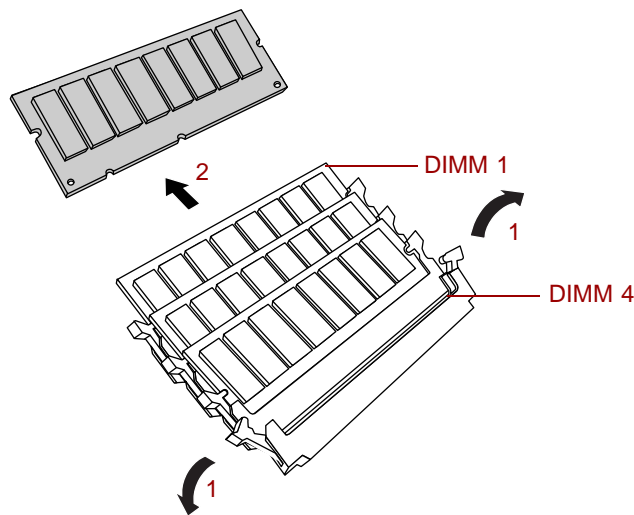


Gateway recommends that you purchase memory upgrades through Gateway sales. An incorrect memory match may adversely affect the performance of the server.

# Replacing memory

## ➔ To replace DIMMs:

- 1 Turn off the system and disconnect the power cord and all other external peripheral devices.
- 2 Open the case. See “Opening the case” on page 18 and “Preventing static electricity discharge” on page 17.
- 3 Pull open the socket clamps on each side of the DIMM socket, then lift the DIMM out of the socket. Store the DIMM in an anti-static container.



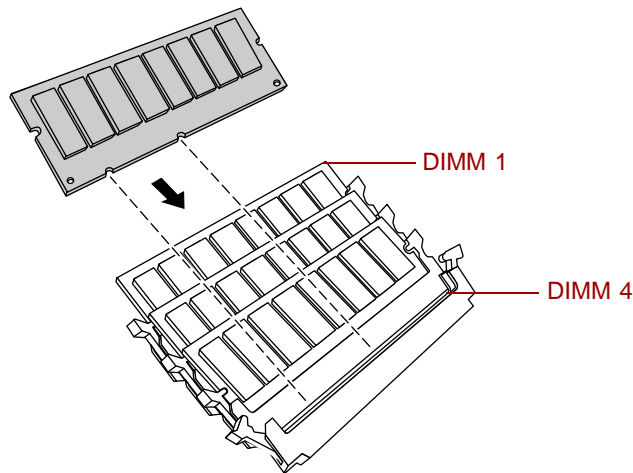
- 4 Insert the new DIMM into the socket, aligning the two notches in the DIMM with the two notches in the DIMM socket.
- 5 Gently press the DIMM into the socket until it is firmly seated. Inserting the DIMM automatically locks the socket clamps on each end of the DIMM.
- 6 Close the case. See “Closing the case” on page 20.
- 7 Reconnect the peripherals and the power cord, then turn on the system.



# Adding memory

## ➔ To add DIMMs:

- 1 Turn off the system and disconnect the power cord and all other external peripheral devices.
- 2 Open the case. See “Opening the case” on page 18 and “Preventing static electricity discharge” on page 17.
- 3 Pull open the socket clamps on each side of the DIMM socket.
- 4 Insert the new DIMM into the socket, aligning the two notches in the DIMM with the two notches in the DIMM socket.



- 5 Gently press the DIMM into the socket until it is firmly seated. Inserting the DIMM automatically locks the socket clamps on each end of the DIMM.
- 6 Close the case. See “Closing the case” on page 20.
- 7 Reconnect the peripherals and the power cord, then turn on the system.

# Processors

The system is compatible with the Intel® Pentium® III 866 MHz and faster processors with 133 MHz front-side bus (FSB). As many as two processors may be installed in the system. You do not need to install additional voltage regulator modules (VRMs), because the VRMs for both processors are built into the system board.

The server uses different heat sinks for the primary and secondary processors. When ordering a replacement or upgrade processor, make sure that you order the correct processor kit for the processor you are installing. The primary processor, located closer to the front of the server, uses a smaller heatsink. The secondary processor, located closer to the back of the server, uses a larger heatsink.

## Replacing the primary processor

When replacing a processor, order a processor upgrade from The Accessory Store on the Gateway Web site.

### Caution

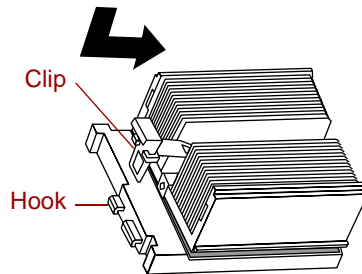


A heatsink must be installed on each processor. Installing a processor without a heatsink could result in damage to, or failure of, the processor.

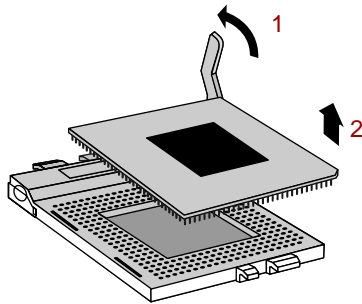
### ➔ To replace the primary processor:

- 1 Turn off the system and disconnect the power cord and all other external peripheral devices.
- 2 Open the case. See “Opening the case” on page 18 and “Preventing static electricity discharge” on page 17.
- 3 Locate the primary processor, see “System board” on page 6 for the location of the system board components.

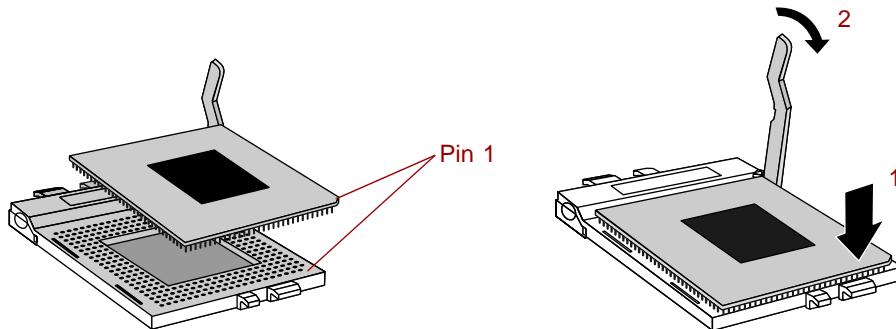
- 4 Unclip the heatsink by pressing down on the top of the clip, then pushing the top of the clip toward the heatsink.



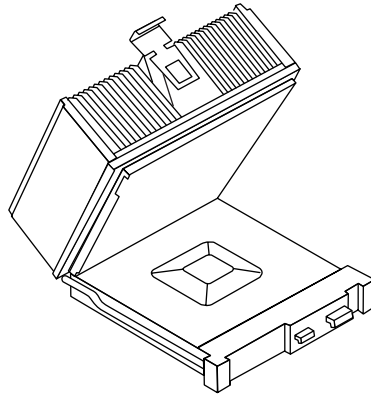
- 5 Lift the heatsink off of the processor.
- 6 Remove the processor by pulling the lever arm slightly away from the processor socket, then lifting it to a ninety-degree angle.



- 7 Lift the old processor out of the socket.
- 8 Insert the new processor by aligning pin one on the processor and the socket, then place the processor into the socket.



- 9 Secure the new processor by pushing the lever arm all of the way down until it clicks into place.
- 10 Replace the heatsink.



- 11 Place the fixed end of the heatsink clip over the hook on the processor socket first, then press the hinged end of the clip over the hook on the other side of the processor socket.
- 12 Close the case. See “Closing the case” on page 20.
- 13 Reconnect the power cord and all other cords you removed, then turn on the system.

## Replacing the secondary processor

When replacing a processor, order a processor upgrade from The Accessory Store on the Gateway Web site.

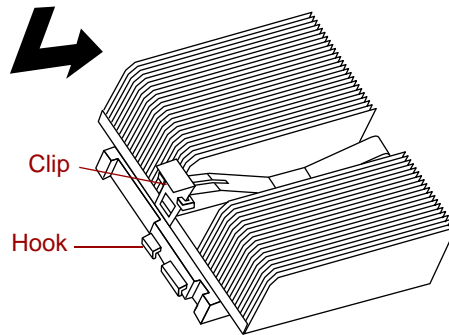
### Caution



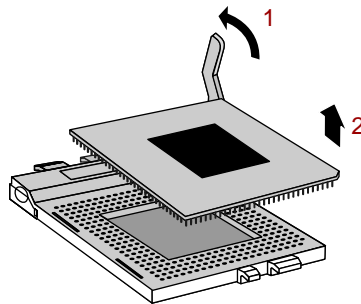
The correct heatsink must be installed on each processor. Installing a processor without a heatsink could result in damage to, or failure of, the processor. Make sure you order the correct processor upgrade kit.

➔ **To replace the secondary processor:**

- 1 Turn off the system and disconnect the power cord and all external peripheral devices.
- 2 Open the case. See “Opening the case” on page 18 and “Preventing static electricity discharge” on page 17.
- 3 Unclip the heatsink by pressing down on the top of the clip, then pushing the top of the clip toward the heatsink.

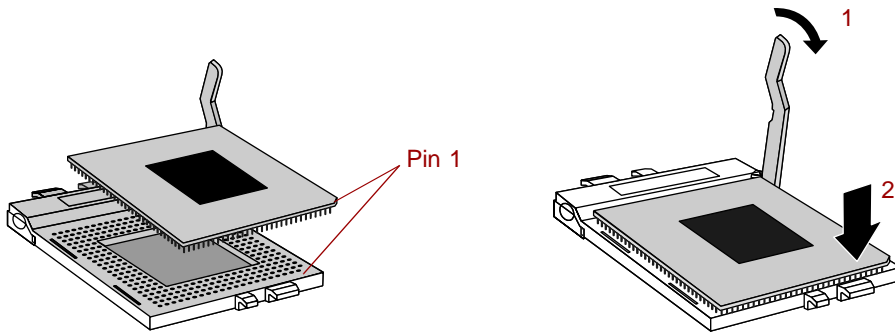


- 4 Remove the processor by pulling the lever arm slightly away from the processor socket, then lifting it to a ninety-degree angle.

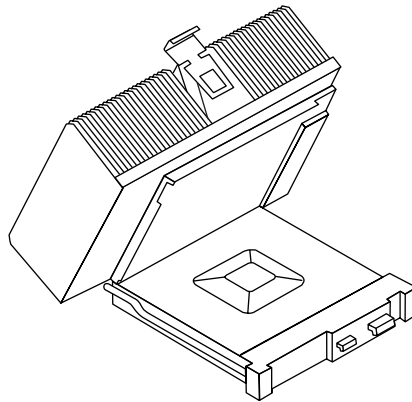


- 5 Lift the old processor out of the socket.

- 6 Insert the new processor by aligning pin one on the processor and the socket, then place the processor into the socket.



- 7 Secure the new processor by pushing the lever arm all of the way down until it clicks into place.
- 8 Replace the heatsink. Make sure that the heatsink is oriented properly over the processor and socket.



- 9 Close the case. See “Closing the case” on page 20.
- 10 Reconnect the power cord and all other cords you removed, then turn on the system.

# Adding a secondary processor

The system is compatible with the Intel® Pentium® III 866 MHz and faster processors with 133 MHz front-side bus (FSB). As many as two processors may be installed in the system. The second processor must match the first processor in speed or the system functions at the speed of the slowest processor.

When adding a second processor order a processor upgrade kit from The Accessory Store on the Gateway Web site.

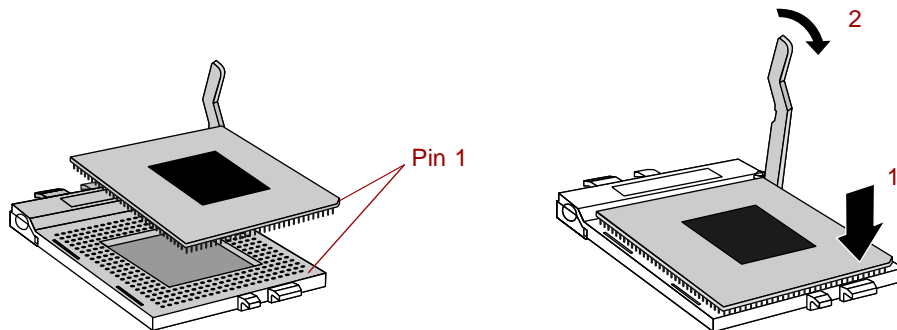
## Caution



The correct heatsink must be installed on each processor. Installing a processor without a heatsink could result in damage to, or failure of, the processor. Make sure you order the correct processor upgrade kit.

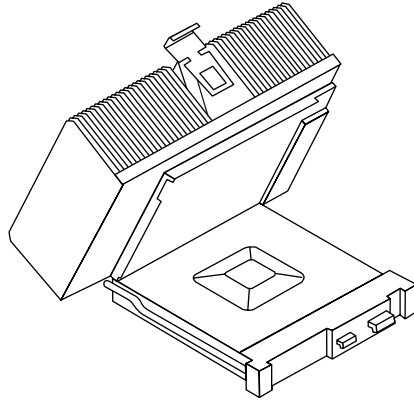
## ➔ To add a second processor:

- 1 Turn off the system and disconnect the power cord and all external peripheral devices.
- 2 Open the case. See “Opening the case” on page 18 and “Preventing static electricity discharge” on page 17.
- 3 Open the lever on the secondary processor socket.
- 4 Align the new processor with the processor slot. Note that the processor slot is keyed so the processor can only be installed one way.



- 5 Place the processor in the socket, then close the lever to secure the processor.

- 6 Place the secondary (large) heatsink over the processor and socket, making sure that it is oriented properly.



- 7 Place the fixed end of the clip over the hook on the back of the socket, then press the hinged end of the clip over the hook on the front of the socket.
- 8 Close the case. (See “Closing the case” on page 20.)
- 9 Reconnect the power cord and all other cords you removed, then turn on the system.

## Replacing the battery

The battery provides power for the system real-time clock and CMOS memory, which holds the system configuration information.

If your battery is failing you may notice the server clock slowing down and giving you the incorrect time.



Open the BIOS Setup utility and write down all the values in the various menus before replacing the battery. Replacing the battery resets the BIOS Setup utility to its default values.

**Warning**



Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by manufacturer.

Dispose of used batteries according to manufacturer's instructions.

**Warnung**



Explosionsgefahr bei falsch eingebauter batterie.

Ersetzen der batterien nur mit batterien des gleichen typs oder mit batterien vom hersteller empfohlenen typs.

Entsorgen gebrauchter batterien entspreched herstellerangaben.

**Attention**



Il y a danger d'explosion s'il y a remplacement incorrect de la batterie.

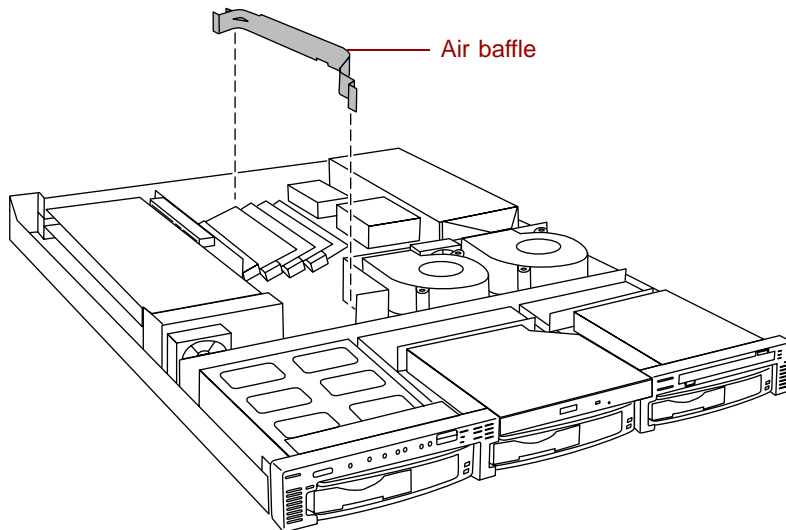
Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur.

Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

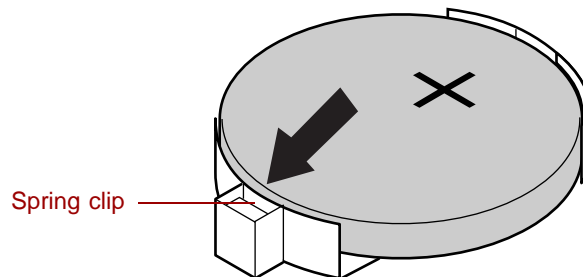
**➔ To replace the battery:**

- 1 Restart the server and start the BIOS Setup utility.
- 2 Write down the CMOS values from each tab in the BIOS Setup utility so you can reenter them after you replace the battery. For more information, see “About the BIOS Setup utility” on page 61.
- 3 Turn off the server, disconnect the power cord and all external peripheral devices.
- 4 Open the case. See “Opening the case” on page 18 and “Preventing static electricity discharge” on page 17.
- 5 Locate the battery on the system board (see “System board” on page 6). The battery is circular and has the positive pole mark (+) on the top.

- 6** Remove the cable over the air baffle and pull the air baffle out of the server.



- 7** Using your finger or a small, flat-bladed screwdriver, carefully press the small spring clip to remove the battery from its socket on the system board.



- 8** Press the new battery in the socket with the positive pole up. Be sure you have pressed the battery down far enough for it to contact the base of the socket (it should snap into place).
- 9** Close the case. See “Closing the case” on page 20.
- 10** Reconnect the peripherals and the power cord, then turn on the system.
- 11** If the CMOS data is not correct, change the information in the BIOS Setup utility using the data you recorded in Step 2.

# Expansion cards

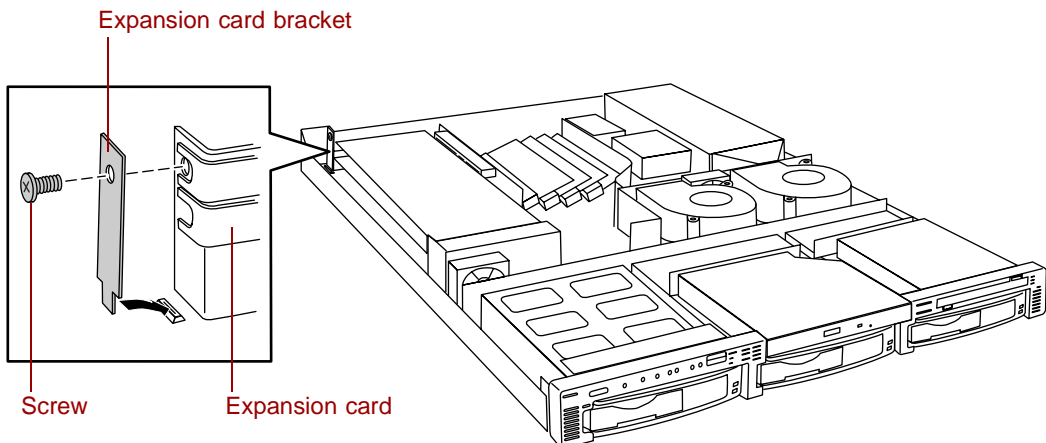
The server has two expansion slots on the riser card that can be used for a variety of expansion cards. These slots support 64-bit, 66 MHz PCI cards. Both slots will hold full-length, full-height cards.

## Replacing an expansion card

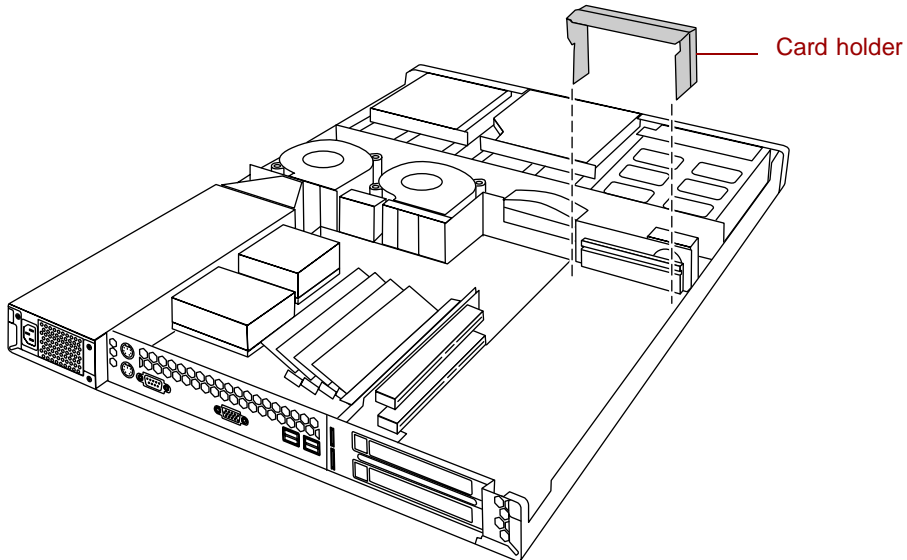
You must install an expansion card in slot 1 before you can install an expansion card in slot 2.

### ➔ To replace an expansion card:

- 1 Set any jumpers and switches on the replacement card, if required in the card instructions.
- 2 Turn off the server, then disconnect the power cord and all external peripheral devices.
- 3 Open the case. See “Opening the case” on page 18 and “Preventing static electricity discharge” on page 17.
- 4 Disconnect any cables attached to the old card.
- 5 Remove the screw that holds the expansion card bracket in place.

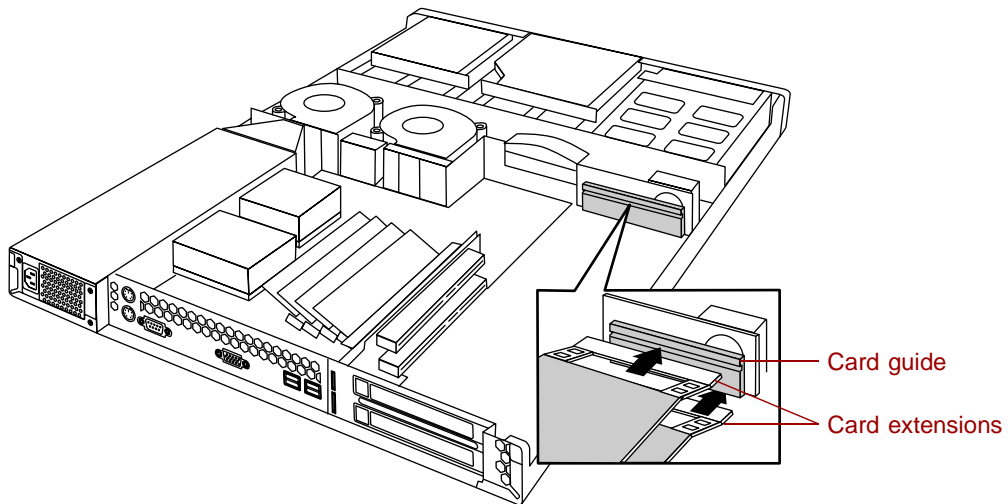


- 6 Remove the card holder from the other end of the expansion card.



- 7 Remove the old expansion card from the slot.
- 8 Set any jumpers or switches on the new expansion card, then install the new expansion card in the empty slot.

- 9** If the card is full-length, insert the card extension into the card guide. The card extension in slot 1 fits below the card guide and the card extension in slot 2 fits into the groove in the card guide.



- 10** Replace the card holder over the card guide and the end of the expansion card. See the illustration following Step 6.
- 11** Replace the screw in the expansion card bracket to secure the card. See the illustration following Step 5.
- 12** Connect any cables to the card. See the card documentation for the proper cable orientation.
- 13** Close the case. See “Closing the case” on page 20.
- 14** Reconnect the peripherals and the power cord, then turn on the system.

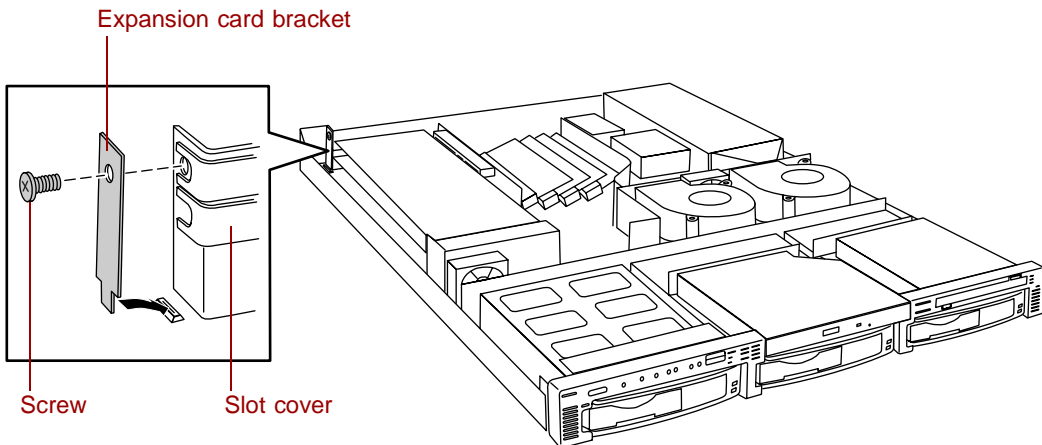
You may need to reconfigure the server after replacing an expansion card. You may also need to install upgrade software that came with the card. Check the card documentation for additional information.

## Adding an expansion card

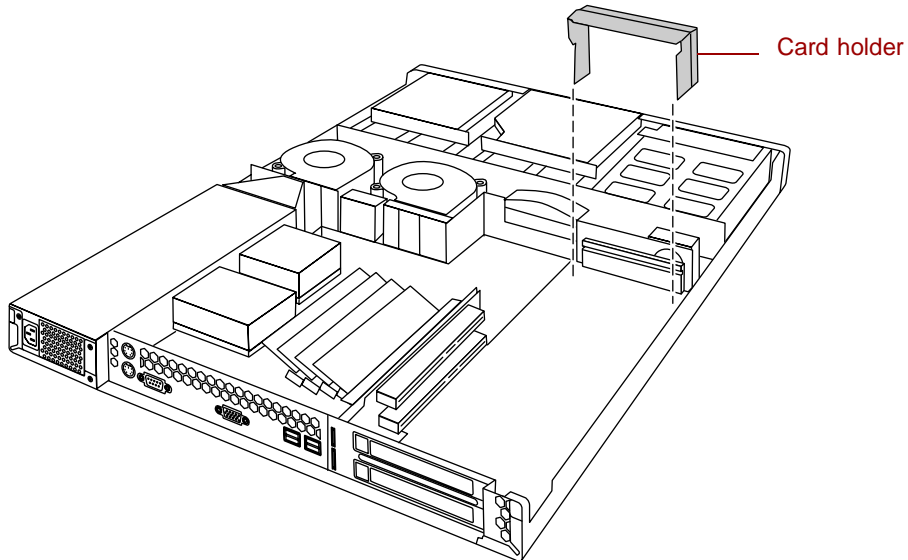
When adding an expansion card, you must install an expansion card in slot 1 before you can install an expansion card in slot 2.

## ➔ To add an expansion card:

- 1 Set any jumpers and switches on the card, if required in the card instructions.
- 2 Turn off the server, disconnect the power cord and all external peripheral devices.
- 3 Open the case. See “Opening the case” on page 18 and “Preventing static electricity discharge” on page 17.
- 4 Locate an available slot and remove the slot cover by removing the screw on the expansion card bracket, then remove the slot cover.

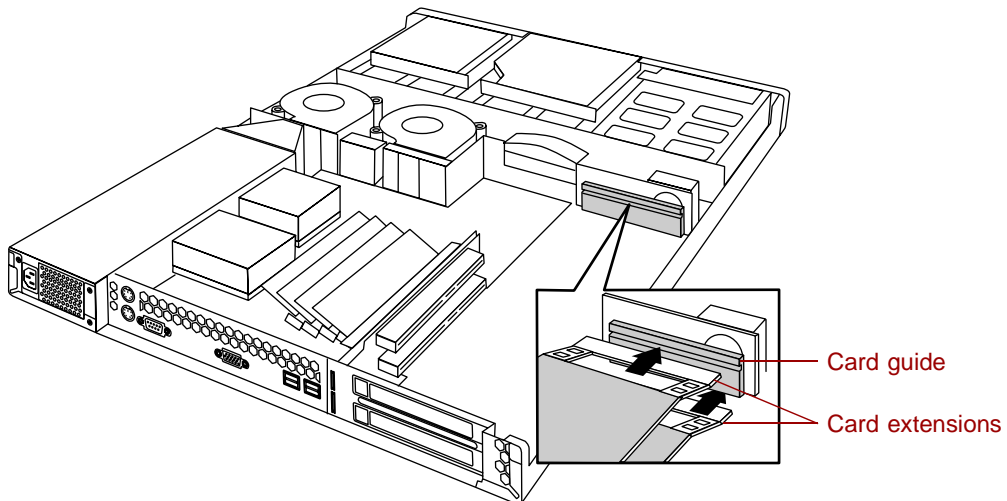


- 5** Remove the card holder from the other end of the expansion card.

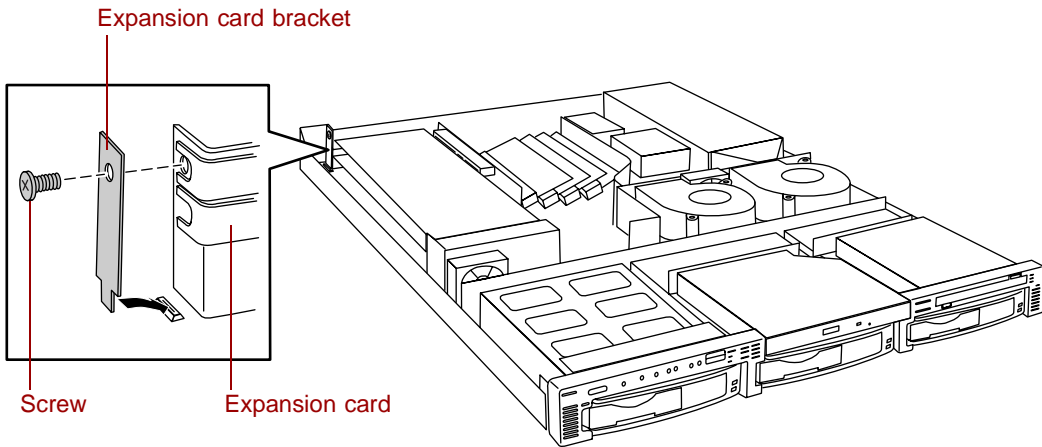


- 6** Set any jumpers or switches on the expansion card, then install the expansion card in the empty slot.

- 7** If the card is full-length, insert the card extension into the card guide. The card extension in slot 1 fits below the card guide and the card extension in slot 2 fits into the groove in the card guide.



- 8 Replace the card holder over the card guide and the end of the expansion card.
- 9 Replace the screw in the expansion card bracket to secure the card.



- 10 Connect any cables to the card. See the card documentation for the proper cable orientation.
- 11 Close the case. See “Closing the case” on page 20.
- 12 Reconnect the peripherals and the power cord, then turn on the system.

You may need to reconfigure the server after installing some expansion cards. You may also need to install software that came with the card. Check the card documentation for additional information.

## Replacing the power supply

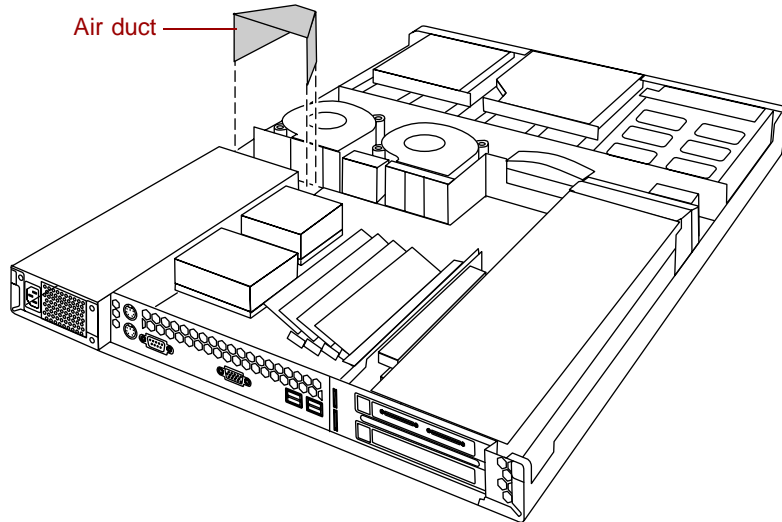
The 200-W power supply provides all system power.

### ➤ To replace the power supply:

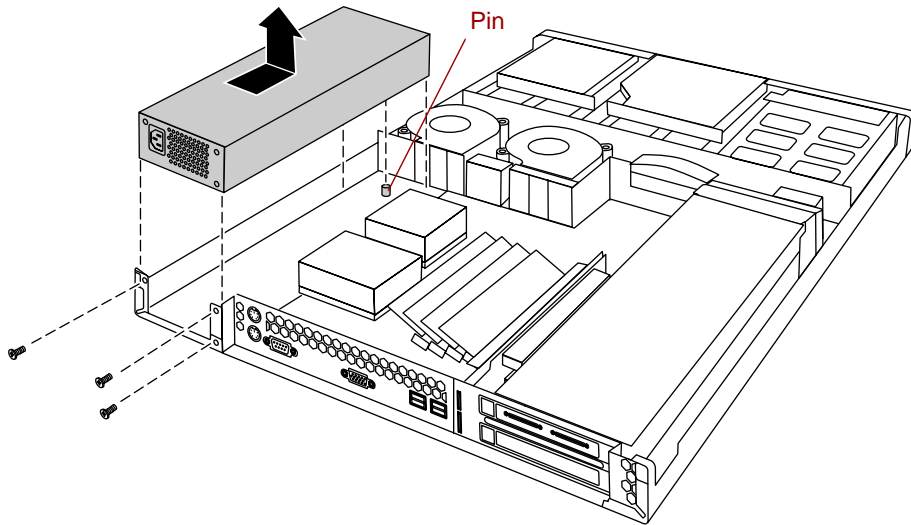
- 1 Turn off the system and disconnect the power cord and all peripherals.
- 2 Open the case. See “Opening the case” on page 18 and “Preventing static electricity discharge” on page 17.



- 3** Disconnect the cables from the power supply to all other internal parts. Note their positions and orientations so you can connect the cables from the new power supply.
- 4** Remove the air duct between the power supply and the number two blower.



- 5 Remove the three screws that secure the power supply to the back panel, then slide the power supply toward the front of the server to free it from the pin on the bottom of the server and lift it out of the chassis.



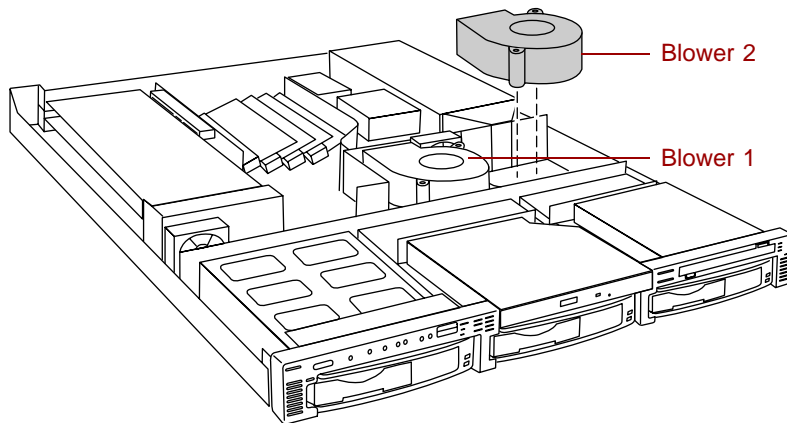
- 6 Place the new power supply in the chassis making sure the pin on the bottom of the chassis passes through the hole on the power supply bracket.
- 7 Replace the screws you removed in Step 5 above.
- 8 Reconnect the cables you removed in Step 3.
- 9 Replace the air duct you removed in Step 4.
- 10 Close the case. See “Closing the case” on page 20.
- 11 Reconnect the power cord and all external peripherals, then turn on the system.

## Replacing a blower

The blowers are located between the hot-plug backplane and the system board.

## ➔ To replace a blower:

- 1 Use the system management software to determine which blower has failed.
- 2 Turn off the system and disconnect the power cord and external peripherals.
- 3 Open the case. See “Opening the case” on page 18 and “Preventing static electricity discharge” on page 17.
- 4 Unplug the correct blower cable from the system board and remove the cable from the cable clamps.
- 5 Lift the blower off of the pins on the bottom of the chassis.



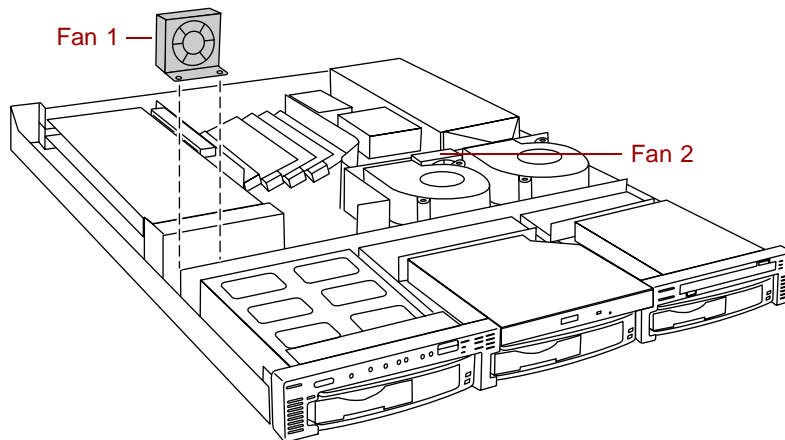
- 6 Insert the new blower onto the pins on the bottom of the chassis.
- 7 Insert the blower cable into the cable clamps. Make sure it does not get pinched in the cover or block airflow.
- 8 Plug the blower cable into the connector on the system board. See “System board” on page 6 for the locations of the blower connectors.
- 9 Close the case. See “Closing the case” on page 20.
- 10 Reconnect the power cord and external peripherals, then turn on the system.

# Replacing a fan

Fan 1 is located between the expansion cards and the drive bays and fan 2 is located between the two blowers. See “Interior of system” on page 5 for the locations of the fans.

## ➔ To replace a fan:

- 1 Use the system management software to determine which fan has failed.
- 2 Turn off the system and disconnect the power cord and external peripherals.
- 3 Open the case. See “Opening the case” on page 18 and “Preventing static electricity discharge” on page 17.
- 4 Unplug the fan cable from the system board and remove the cable from the cable clamps.
- 5 Lift the fan out of the fan bracket. (The fan bracket is not secured to the chassis and may come out when you remove the fan. Replace it on the pins on the bottom of the chassis.)



- 6 Insert the new fan into the fan bracket. Make sure the direction of rotation and airflow match the direction and airflow of the fan you removed.

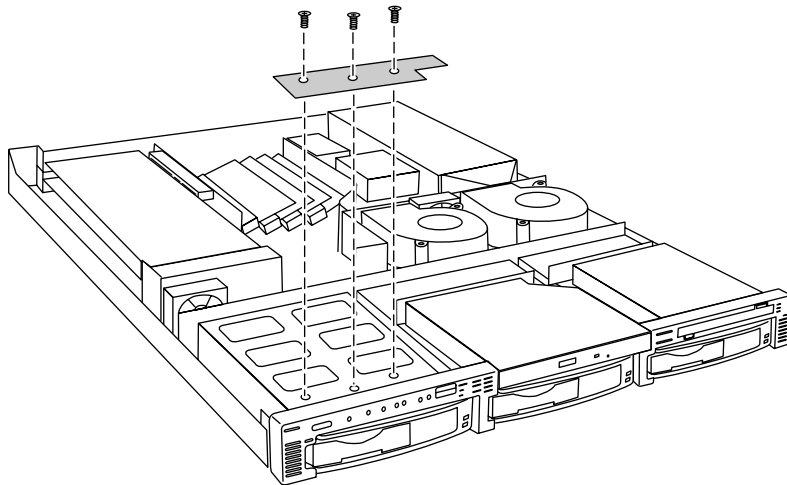
- 7 Plug the fan connector into the connector on the system board and replace the cable in the cable clamps. Make sure the cable does not interfere with airflow and will not be pinched when you close the cover.
- 8 Close the case. See “Closing the case” on page 20.
- 9 Reconnect the power cord and external peripherals, then turn on the system.

## Replacing the control panel board

The control panel board is mounted on the front of the chassis, inside the front panel.

### ➔ To replace the control panel board:

- 1 Turn off the system and disconnect the power cord and all external peripherals.
- 2 Open the case. See “Opening the case” on page 18 and “Preventing static electricity discharge” on page 17.
- 3 Disconnect all cables from the control panel board. Note the location and orientation of each cable as you remove it.
- 4 Remove the three screws that secure the control panel board to the front of the chassis, then remove the board from the server.



- 5 Install the new control panel board by replacing the three screws you removed in Step 4.
- 6 Plug the front panel cables into the appropriate connectors on the control panel board.
- 7 Close the case. See “Closing the case” on page 20.
- 8 Reconnect the power cord and the external peripherals, then turn on the system.

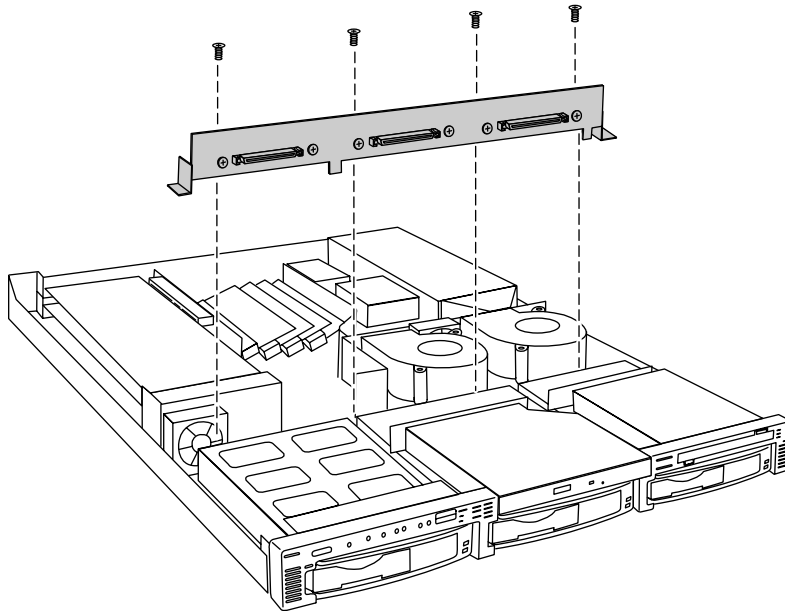
## Replacing the hot-plug backplane

The three drive hot-plug backplane is at the back of the hot-plug drive cage. The backplane supports as many as three hot-swappable Ultra3 SCSI drives.

### To replace the hot-plug backplane assembly:

- 1 Turn off the system and disconnect the power cord and all external peripheral devices.
- 2 Open the case. See “Opening the case” on page 18 and “Preventing static electricity discharge” on page 17.
- 3 Disconnect all cables to the hot-plug backplane. Note their locations and orientations.
- 4 Remove all hot-plug drives. Be careful to note which drive was in which slot.

- 5 Remove the four screws that secure the hot-plug backplane assembly in the chassis, then lift the assembly out of the server.



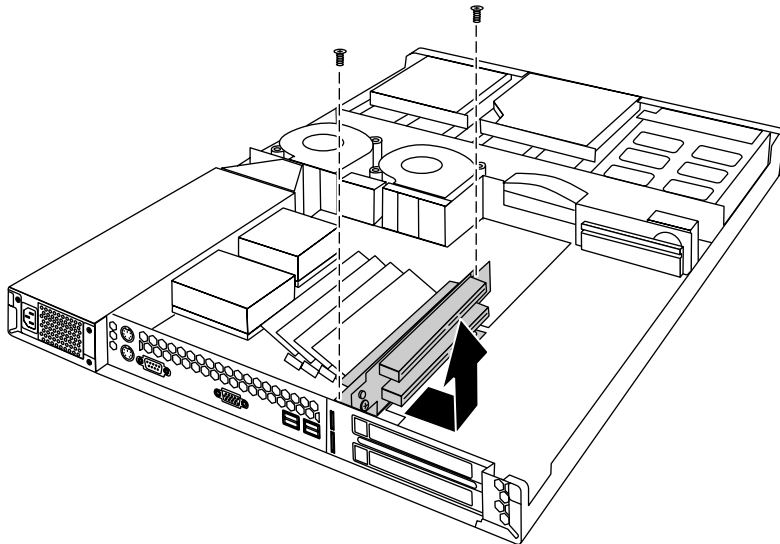
- 6 Place the new backplane assembly in the chassis and secure it using the four screws you removed in Step 5.
- 7 Reconnect all cables on the backplane to the correct connectors.
- 8 Replace all hot-plug drives. Make sure that you replace them in the same slots that they were in before you removed them.
- 9 Close the case. See “Closing the case” on page 20.
- 10 Reconnect all peripherals and the power cord, then turn on the system.

## Replacing the riser card

The riser card connects to the edge connector on the left side of the system board and provides connectors for as many as two full-height, full-length expansion cards.

**➔ To replace the riser card:**

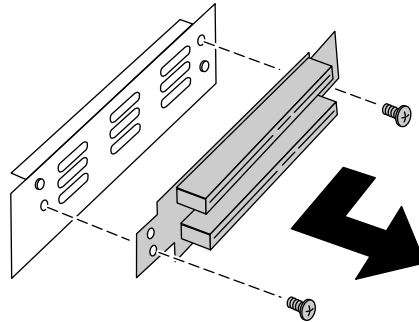
- 1** Turn off the system and disconnect the power cord and all external peripheral devices.
- 2** Open the case. See “Opening the case” on page 18 and “Preventing static electricity discharge” on page 17.
- 3** Remove any expansion cards installed in the system. See “Replacing an expansion card” on page 43.
- 4** Remove the two screws that secure the riser card assembly to the chassis.



- 5** Disconnect the riser card from the edge connector on the system board, then lift the riser card assembly out of the chassis.



- 6 Remove the two screws that secure the riser card to the bracket.



- 7 Slide the riser card to the left on the bracket to free it from the pins on the bracket, then pull the riser card off of the bracket.
- 8 Place the new riser card on the bracket and secure it with the two screws you removed in Step 6.
- 9 Insert the new riser card assembly into the chassis and insert the system board edge connector into the connector on the back of the riser card.
- 10 Secure the riser card with the four screws you removed in Step 4.
- 11 Replace any expansion cards you removed in Step 3.
- 12 Close the case. See “Closing the case” on page 20.
- 13 Reconnect all peripherals and the power cord, then turn on the system.

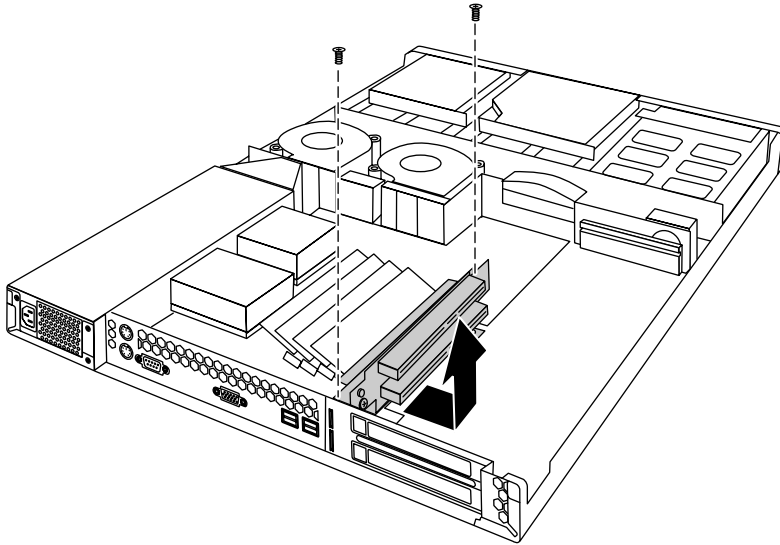
## Replacing the system board

The system board integrates the other elements of the system, such as the processor, memory, storage, networking, and communications.

### ➔ To replace the system board:

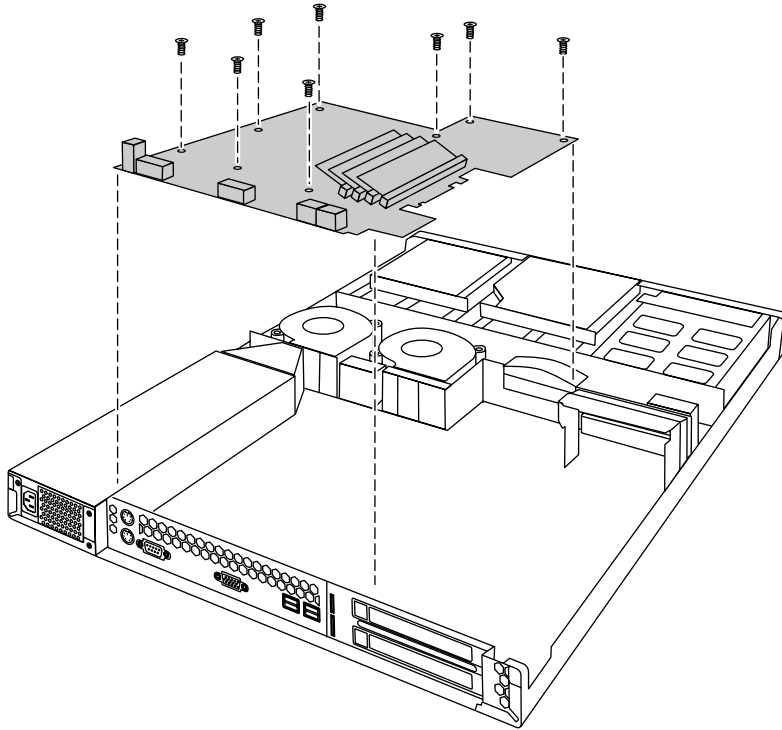
- 1 Turn off the system and disconnect the power cord and all external peripheral devices.
- 2 Open the case. See “Opening the case” on page 18 and “Preventing static electricity discharge” on page 17.

- 3** Remove all expansion cards from the system. See “Replacing an expansion card” on page 43.
- 4** Remove the two screws that secure the riser card assembly to the chassis.



- 5** Disconnect the riser card from the edge connector on the system board, then lift the riser card assembly out of the chassis.
- 6** Disconnect all cables from the system board. Note the locations and orientations of the cables as you remove them.
- 7** Remove any processors and DIMMs that you will install in the new system board. See “Replacing memory” on page 32, “Replacing the primary processor” on page 34, and “Replacing the secondary processor” on page 36.

- 8 Remove the eight screws that secure the system board to the chassis, then lift the system board out of the chassis.



- 9 Remove the new system board from its anti-static bag and set any jumpers that you may need to set for your configuration. See “System board” on page 6 and “Setting the system board jumpers and switches” on page 64.
- 10 Place the new system board in the chassis.
- 11 Replace the eight screws you removed in Step 8.
- 12 Install the DIMM(s) and processor(s) in the new system board. See “Replacing memory” on page 32, “Replacing the primary processor” on page 34, and “Replacing the secondary processor” on page 36.
- 13 Reconnect the system cables to the appropriate connectors on the system board. See “System board” on page 6 for reference.
- 14 Replace the riser card using the two screws you removed in Step 4. Make sure you seat the riser card connector securely onto the edge connector on the system board.

- 15** Replace any expansion cards you removed from the system in Step 3. See “Replacing an expansion card” on page 43.
- 16** Close the case. See “Closing the case” on page 20.
- 17** Reconnect all peripherals and the power cord, then turn on the system.

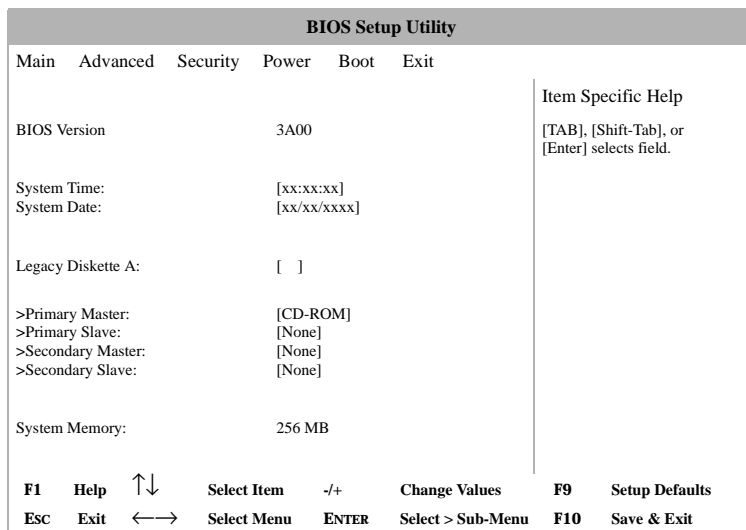
# Using the BIOS Setup Utility

# 5

## About the BIOS Setup utility

The server BIOS has a built-in setup utility that lets you configure several basic system characteristics. The settings are stored in battery-backed RAM and are retained even when the power is off.

Enter the BIOS Setup utility by restarting the server, then pressing F2 when prompted during the startup process. The Main BIOS Setup utility screen opens. It may not look exactly like the screen shown below.



As you select items on the Main menu or in submenus, you see specific information related to the current selection in the Item Specific Help box.

The command bar shows the keystrokes necessary to access help, navigate through the menus, and perform other functions.

- F1 opens the Help screen, providing general help for using the BIOS Setup utility.
- ESC closes the screen you are in and returns you to the previous screen or exits you from the BIOS Setup utility.
- The ↑ (up arrow) and ↓ (down arrow) keys select items in the menu.
- The ← (left arrow) and → (right arrow) keys move you between the menus.
- The + (plus) and - (minus) keys change the values in the fields.
- ENTER moves you to a submenu screen when a selected item is preceded by > or activates a selected field.
- F9 opens a screen that lets you return all values to their default settings.
- F10 opens a screen that lets you save all settings, then exit the BIOS Setup utility.

The main screen has the following menu selections at the top of the screen:

- **Main** gives you access to basic information and settings related to your system hardware and configuration.
- **Advanced** gives you access to information and settings for system resources, hardware, and system configuration.
- **Security** gives you access to settings related to system access passwords.
- **Power** gives you access to information and options for power management features.
- **Boot** gives you access to information and settings for boot features and boot sequences.
- **Exit** gives you access to options for exiting the BIOS Setup utility.

Refer to the Help box on the right side of the BIOS Setup screens for information about menu items.

# Updating the BIOS

If you need a new version of the BIOS, you can download the BIOS update from the technical support area on the Gateway Web site ([www.gatewayatwork.com](http://www.gatewayatwork.com)) and install the new version from a diskette.

To update the BIOS you need to perform the following tasks in sequence:

- Create a bootable diskette
- Note the current BIOS settings
- Create the BIOS update diskette
- Update the BIOS
- Restore the BIOS settings

Follow the detailed instructions for updating the BIOS that are included in the self-extracting file that you can download from the technical support area of Gateway's Web site.

## BIOS Recovery

The BIOS recovery option is designed to recover the BIOS in the event of a failed BIOS upgrade or if the BIOS should become corrupt for some reason.

### To recover the BIOS:

- 1 Create a bootable BIOS recovery diskette by following the instructions provided with the BIOS recovery files on the Web site.
- 2 Open the case. See "Opening the case" on page 18 and "Preventing static electricity discharge" on page 17.
- 3 Set switch SW1-3 to on. See "Setting the switches" on page 65.
- 4 Close the case. See "Closing the case" on page 20.
- 5 Place the BIOS recovery diskette in the diskette drive.
- 6 Turn on the server.

No messages are displayed on screen during the BIOS recovery. The server will emit a long series of beeps. A final extended tone signals the completion of the BIOS update.

- 7 Turn off the server.
- 8 Remove the diskette from the drive.
- 9 Open the case.
- 10 Set switch SW1-3 back to the off position.
- 11 Close the case.
- 12 Turn on the server.
- 13 As the server boots, press F2 to open the BIOS Setup utility. Save and exit from the BIOS Setup utility, even if you made no changes to the settings.

If the server does not boot properly, repeat the BIOS recovery procedure. If the server still does not boot properly, contact Gateway technical support.

## Setting the system board jumpers and switches

The system board has one jumper and one four switch bank. Each of these components has a specific function described in the sections below.

### The CMOS Clear jumper

The CMOS Clear jumper on the system board (jumper J1) lets you clear all BIOS Setup settings. (See the figure on page 6 for the location of the jumper.)

The following table shows the settings required to perform this task. Make sure you turn off the server and unplug the power cord before moving the jumper. After you have cleared CMOS memory, return the jumper to pins 1 and 2 for normal operation.

Mode	Jumper Setting	Action When Set
CMOS protected	Pins 1-2	Normal operation (default)
Clear CMOS	Pins 2-3	Causes server to clear all BIOS settings and return to defaults

#### Caution



Moving the jumper while the power is on can damage the server. Always turn off the server and unplug the power cord before moving the jumper.



# Setting the switches

Switch bank SW1 is a four-switch bank that lets you clear the password, update the BIOS, or recover from a failed BIOS update attempt. The four switches each have a different function as shown in the table below. For the location of switch bank SW1, see “System board” on page 6.

Switch	When on	When off
S1-1	Clear password	<b>Normal operation</b>
S1-2	<b>Update BIOS ROM</b>	Disable BIOS update
S1-3	Recover BIOS ROM *	<b>Normal operation</b>
S1-4	Reserved	<b>Reserved</b>

\* Requires a BIOS recovery diskette



# Managing the Server

# 6

## Avoiding power source problems

Surge suppressors, line conditioners, and uninterruptible power supplies can help protect the server against power source problems.

### Surge suppressors

During a power surge, the voltage level of electricity coming into the server can increase far above normal levels and cause data loss or system damage.

Protect your server and peripherals by connecting them to a surge suppressor, which will absorb voltage surges and prevent them from reaching your server.

When purchasing a surge suppressor:

- Make sure the surge suppressor meets the appropriate product safety certification for your location, such as Underwriters Laboratories (UL) or Conformance European (CE).
- Check the maximum amount of voltage the suppressor allows to pass through the line. The lower the voltage that the suppressor allows to pass through, the better the protection for the server.
- Check the energy absorption (*dissipation*) rating. The higher the energy absorption rating, the better the protection for the server.
- Check line-conditioner capabilities. A line conditioner smooths out some normal line noise (small voltage fluctuations) of an electrical supply.

## Line conditioners

A line conditioner protects the server from the small fluctuations in voltage from an electrical supply. Most systems can handle this variation (*line noise*) without problems. However, some electrical sources include more line noise than normal. Line noise can also be a problem if the server is located near, or shares a circuit with, a device that causes electromagnetic interference, such as a television or a motor.

Some surge suppressors and uninterruptible power supplies include simple line-conditioning capabilities.

## Uninterruptible power supplies

Use a standby uninterruptible power supply (UPS) to protect your server from data loss during a total power failure. A UPS uses a battery to keep your server running temporarily during a power failure and lets you save your work and shut down your server. You cannot run your server for an extended period of time while using only the UPS.

## Maintain and manage your hard drive

Regular maintenance can keep your hard drive operating efficiently and good file management can keep the server free of unwanted files while making important files secure and easier to find.

## Hard drive maintenance utility

If you are using the Windows NT operating system, you can help maintain the performance of your hard drive by regularly using Check Disk.

### Important



For other operating systems, such as Windows 2000 or Novell Netware, refer to the appropriate operating system manual.

## Using Check Disk in Windows NT

Bad sectors are parts of a hard drive or diskette that will not hold data. A lost allocation unit is a group of sectors that has lost its place in the table that the operating system uses to locate files. Check Disk checks the hard drive for bad sectors or lost allocation units and lets you fix them.

Use Check Disk from once a week to once a month, depending on how often you use the server. Also use Check Disk if you have any hard drive problems.

### **To use Check Disk:**

- 1 Double-click the **My Computer** icon. The My Computer window opens.
- 2 Right-click the drive you want to check.
- 3 Select **Properties**. The drive's properties window opens.
- 4 Click the **Tools** tab.
- 5 At **Error-checking**, click **Check Now**. The Check Disk window opens.
- 6 Scan the entire hard drive by selecting **Scan for and attempt recovery of bad sectors**.
- 7 Click **Start**. Check Disk checks the drive for errors.
- 8 Follow any on-screen instructions for completing the scan.

## Hard drive management practices

By deleting unneeded files from your hard drive and managing the space that is automatically allocated for saving certain files, you can help maintain the performance of the hard drive. We suggest that you first check your hard drive for available space, then back up important files prior to deleting unneeded files, in case you delete important files by mistake.

### Checking hard drive space

In Windows, you can see a chart of the available hard drive space.

### **To check hard drive space:**

- 1 Double-click on the **My Computer** icon on the desktop. The My Computer window opens.
- 2 Right-click the drive you want to check.
- 3 Select **Properties**. The drive's properties window opens. The **General** tab shows you the available and used space on the drive.

## Backing up files

Regularly backing up your files protects you from losing data and lets you keep fewer files on your hard drive. Back up old files to the network, a large capacity disk drive, or tape drive and delete the files from the hard drive. This server does not support the installation of an internal large capacity disk drive or tape storage drive.

You can use the software that came with your tape backup drive or your large capacity disk drive to back up the files. You can also back up files by running the Backup utility that came with your operating system. In Windows NT, Backup copies files to a tape drive.

### To run Backup in Windows NT:

- 1 Click **Start**, then select **Programs**, **Administrative Tools**, then **Backup**.
- 2 Follow the on-screen instructions.

## Deleting unneeded files

By deleting unneeded files from the hard drive, you free up space on the hard drive and help improve hard-drive performance. The following sections give you some simple ways to delete unneeded files.

### Deleting Windows temporary files

During normal operation, Windows constantly creates new temporary (.tmp) files. You can safely delete all but the most recent .tmp files.

### To delete .tmp files:

- 1 Open Windows Explorer, then select **Tools**, **Find**, then **Files and Folders**.
- 2 In the **Named** text box, type **\*.tmp**
- 3 In the **Look in** drop down list, select your drive letter.
- 4 Click **Find Now**. The list of .tmp files appears.
- 5 Click **Modified** above the list. To see the **Modified** button, you may need to maximize the Find window. The list is sorted by date.
- 6 Highlight all the files in the list except those with the current date.
- 7 Press **SHIFT + DELETE**. A dialog box opens asking if you want to delete the files.
- 8 Click **Yes**. The files are deleted.

## Deleting temporary Internet files

As you visit Web sites, your browser stores temporary Internet files on your hard drive in a *memory cache* and a *disk cache*. Files in the memory cache are removed when you turn off your server. Files are saved in the disk cache until the space designated for the cache is full. See your browser's Help files for instructions on emptying the disk cache.

You can save space on the hard drive by decreasing the size of the Internet file disk cache. See your browser's Help files for instructions.

## Emptying the Recycle Bin

When you delete a file from your hard drive in Windows, it is not immediately removed from the hard drive. Instead, the file is moved into the Recycle Bin. Because files are stored in the Recycle Bin and not deleted from the hard drive immediately, you can retrieve a file that you accidentally delete from the hard drive.

To delete all the files from the Recycle Bin, right-click the **Recycle Bin** icon on the desktop, then click **Empty Recycle Bin**.

You can save space on the hard drive by decreasing the size of the Recycle Bin.

## To decrease the size of the Recycle Bin:

- 1 Right-click the **Recycle Bin**, then select **Properties**.
- 2 At the **Global** tab, select either **Configure drives independently** or **Use one setting for all drives**.
- 3 If you are configuring drives independently, click the tab for the drive you want to configure.
- 4 Move the slider to set the size of the Recycle Bin. A good initial setting is 5%.
- 5 Click **OK**.

# Protecting the server against viruses

A *virus* is a program that attaches itself to a program or data file on a computer, then spreads from one computer to another. Viruses can damage data, cause computers to malfunction, and can display annoying or offensive messages. Some viruses can go unnoticed for long periods of time because they are activated by a certain date or time. Protect your server from viruses by:

- Using an anti-virus program to check files and programs that are on diskettes, attached to e-mail messages, or downloaded from the Internet. After you run the anti-virus program you can back up your files to diskettes, a separate hard drive, or a high-capacity storage drive.
- Keeping your anti-virus program updated.
- Obtaining all software from reputable sources and checking the software for viruses before installing it.
- Disabling macros on suspicious Microsoft Word and Excel files. These programs will warn you if a document that you are opening contains a macro that might have a virus.

## To remove a virus:

- 1 Find and remove the virus immediately using an anti-virus program.
- 2 Turn off your server and leave it off for at least 30 seconds.
- 3 Turn on the server and rescan for the virus.
- 4 If the virus is still present, contact the manufacturer of your anti-virus program or Gateway Client Care.



# System administration and control

The server has two server-management tools that you can use to administer and control the server. These tools are ManageX Event Manager and the Simple Network Management Protocol (SNMP) agent.

## ManageX Event Manager

ManageX lets the system administrator manage multiple systems on a Windows NT, Windows 2000, or Novell Netware network from a single window, and implement commands and policies across the network with a single action. With this tool, you can automate system management tasks, which can be triggered by specific events or at specified thresholds.

You can find additional information about the ManageX Event Manager under **Documentation** on the Server Companion CD which came with the server.

## SNMP agent

The SNMP agent is software that links the hardware to ManageX Event Manager. Each significant hardware event generates an interrupt that is detected by the SNMP agent and then routed to ManageX. The SNMP agent is provided on the Server Companion CD (SCCD) and must be installed on the server before system administration and control will function properly.

### Installing the SNMP agent in Windows NT

The server must be prepared for the server management software.

- You must download and install **WMICORE.EXE** first to provide a WMI environment in Windows NT. Download **WMICORE.EXE** from [msdn.microsoft.com/downloads/sdks/wmi/download.asp](http://msdn.microsoft.com/downloads/sdks/wmi/download.asp). When you install **WMICORE.EXE**, check the **Install WMI SNMP Provider** checkbox in the Components dialog box.
- SNMP service must be installed. If not, install SNMP service through Windows NT before you install the SNMP agent.

## ➔ To install the SNMP agent in Windows NT:

- 1 Add the IP address or hostname of the server to the SNMP setup. This SNMP service routes SNMP service alerts to ManageX.
- 2 Install ManageX from the Server Companion CD (SCCD).
- 3 Run **SETUP.EXE** from the SCCD. The default directory is **\Program Files\7450R Agent**.
- 4 Restart the server.
- 5 Setup ManageX. See “Setting up ManageX” on page 75.

## Installing the SNMP agent in Windows 2000

The server must be prepared for the server management software.

- SNMP service must be installed. If not, install SNMP service through Windows 2000 before you install the SNMP agent.

## ➔ To install the SNMP agent in Windows 2000:

- 1 Add the IP address or hostname of the server to the SNMP setup. This SNMP service routes SNMP service alerts to ManageX.
- 2 Install ManageX from the Server Companion CD (SCCD).
- 3 Copy **WBEMSNMP.EX\_** from the **\i386** directory on the SCCD to a local drive.
- 4 Open a DOS command prompt window and type **expand D:\WBEMSNMP.EX\_ C:\WBEMSNMP.EXE**, where D is the drive and directory where you copied **WBEMSNMP.EX\_** and C is the drive and directory where you want to place the expanded file, then press ENTER.
- 5 Type **WBEMSNMP** at the command prompt, then press ENTER.

The system will display the welcome screen with the title *Welcome to the WMI SNMP Provider Installation Wizard*. When the welcome screen is displayed, continue with the installation.

- 6 Click **Start**, then select **Settings**, then **Control Panel**.
- 7 Double-click **Add/Remove Hardware**.
- 8 Click **Add/Troubleshoot a device**, **Add a new device**, then **No, I want to select the hardware from a list**.

- 9 Select **Other devices**, then click **Have Disk**.
- 10 Browse the SCCD to find **7450R.inf**.
- 11 Select the 7450R Driver.
- 12 If the server does not reboot automatically, reboot the server.
- 13 Setup ManageX (see “Setting up ManageX” on page 75).

## Setting up ManageX

### To setup ManageX:

- 1 Run ManageX.
- 2 Select **WBEM Browser, Systems Management Server**, then **7450R Components** to see the server information.  

This step displays the WBEM Object detail window. The data displayed in this window is not updated dynamically. To view the latest data, click the refresh button before you open the WBEM Object detail window.
- 3 Select the **Device Selector** window.
- 4 Click **Devices** to choose the server which will run ManageX.
- 5 Click **Apply**.
- 6 In the list of options on the left side of the screen, right-click **Policies**.
- 7 Select **All Tasks**, then **Set Directory**.
- 8 Accept the default installation directory **\Program Files\7450R Agent**.
- 9 Click **Policies**, then **Available**.
- 10 Right-click **7450RSnmpTrap.mxd**.
- 11 Select **All Tasks**, then **Install**.

You can open the Message Reader to view the events. The Message Reader is dynamically updated every few seconds.

You can also modify the error limit values in **\winnt\7450R.ini**. However, you must stop the SNMP service and restart it when you are finished.

# System security

You can also set security measures in the BIOS Setup utility which establishes passwords and automatic system lockouts. The system also includes server management software that monitors the chassis intrusion switch.

## Mechanical access and monitoring

The system includes a chassis intrusion switch. When the top panel is opened, the switch transmits a signal to the system board, where server management software processes the signal.

## Security through the BIOS Setup utility

The BIOS Setup utility provides several security features to prevent unauthorized or accidental access to the system. Once the security measures are enabled, access to the system is allowed only after you enter the correct password. For example, the utility lets you:

- Set and enable the supervisor and user passwords
- Control access to the Setup utility
- Restrict diskette drive access
- Restrict access to the hard drive boot sector

Configure and enable the security features using the BIOS Setup utility.

Disabling the security features does not change the state of system power. That is, if you press and release the power switch while security is on, the system will not power off when security is later disabled. However, if the front panel power switch remains pressed when security is disabled, the system will turn off.

## Summary of software security features

The following table lists the software security features and describes what protection each offers. In general, to enable or set the features listed here, you must run the BIOS Setup utility and go to the Security Menu. The table also refers to other Setup utility menus. For more information, see “About the BIOS Setup utility” on page 61.

Feature	Description
Disable writing to diskette	The system will not boot from or write to a diskette unless a password is entered. To set these features, see “About the BIOS Setup utility” on page 61.
Control access to BIOS Setup	To control access to the system configuration, set a supervisor password and enable it through Setup.  The supervisor password lets you access all of the Setup options and menus. If you also set a user password, it allows limited access to Setup options and menus.  Once set, passwords can be disabled by deleting the password or by setting the Clear Password switch. See “Setting the switches” on page 65.
Control access to the system other than BIOS Setup	To control access to the system, set a password and enable the Password on Boot option using the BIOS Setup utility.  Once set, passwords can be disabled by deleting the password or by setting the Password Clear switch. See “Setting the switches” on page 65.
Boot without keyboard	The system can boot with or without a keyboard. During POST and before the system boots, the BIOS automatically detects and tests the keyboard, if present. Do not plug in a keyboard while the system is on.

## System recovery

Take precautions that allow you to recover damaged files and recover your system in the event that your hard drive is damaged, or if your BIOS or system files get corrupted.

## Creating a startup diskette

If your server hard drive is damaged, you may not be able to start the server from the hard drive. A startup diskette is a bootable diskette that lets you start the server and attempt to fix the problem.

When you set up Windows NT, you are prompted to create a startup diskette. If you did not choose to create a startup diskette at that time, you may create one later by running the Windows NT upgrade/installation program. Perform this process by going to the DOS Command Prompt, changing to the C:\I386 subdirectory and typing **winnt32/ox**. Press ENTER and follow the prompts.

## Using your Server Companion CD

The Server Companion CD included with your server can be used to:

- Install hardware drivers for Windows NT
- Install selected hardware drivers for some other operating systems (see the SCCD for the drivers available)
- Install the System Management SNMP agent for Windows NT or Windows 2000
- Reinstall selected utilities
- Access system documentation

Instructions for each operating system are provided with the Server Companion CD.

# Troubleshooting

# 7

## Introduction

If the server does not operate correctly, re-read the instructions for the procedures you have performed. If an error occurs within an application, refer to the documentation supplied with the software. This section identifies solutions to some possible problems.

## Troubleshooting checklist

Before turning on the system, make sure that:

- The power cord is connected to the power connector and an AC outlet.
- The AC outlet is supplying power.
- If a power strip is used, it is turned on.
- If the power supply has a voltage selection switch, that the voltage selection switch reflects the proper voltage.

## Verifying your configuration

If the server is not operating correctly, the BIOS may contain an invalid configuration parameter. Open the BIOS Setup utility and check your configuration settings. (See “About the BIOS Setup utility” on page 61.)

# Troubleshooting guidelines

As you troubleshoot the server, keep the following guidelines in mind:

- Never remove the chassis cover while the server is turned on.
- Do not attempt to open the monitor. Even if the power is disconnected, stored energy in the components can be dangerous.
- If a peripheral does not work, make sure that all connections are secure.
- If you see an error message on the screen, write it down, word for word. You may be asked about it when calling Gateway Client Care.
- Only qualified personnel should open the system for maintenance.
- If you are qualified to maintain the system yourself, make sure you are properly grounded before opening the system chassis. See Chapter 3, Case Access, for more information on preventing electrostatic damage to the system.

## Troubleshooting the battery installation

If you have problems after installing the new battery, try each of the items listed below, restarting the server after each try.

- Turn off the server and make sure that all exterior cables are attached and secured to the correct connectors.
- Make sure that all power switches are on. If the server is plugged into a power strip or surge protector, make sure it is turned on also.
- Enter the BIOS Setup utility and compare the settings on the screen with your notes or the system hardware manuals. Correct any discrepancies.
- Turn off the server, remove the cover, and make sure that all cables inside the case are attached securely. Also, make sure that the colored cable edges are aligned correctly and that the connectors did not miss any pins. Disconnect and reconnect the cables. Close the case as described in “Closing the case” on page 20, reconnect the peripherals and power cords, then turn on the server.
- Turn off the server, remove the cover and, if you have the proper test equipment, make sure that the new battery has power. (Although unlikely, your new battery may be defective.) Close the case as described in “Closing the case” on page 20, reconnect the power cord, then turn on the server.



# CD problems

## The system does not recognize the CD drive

Probable cause	Solution
The CD is not intended for PC use	Make sure that the disc is PC-compatible.
The CD is loaded incorrectly	Make sure that the label is facing up, then try again.
The CD is scratched or dirty	Try cleaning the CD with a lint-free cloth. Make sure the disk is not scratched.
The CD drive needs to be added as new hardware	In the <b>Control Panel</b> window ( <b>Start   Settings   Control Panel</b> ), double-click <b>Add New Hardware</b> . Follow the on-screen instructions for adding the drive.
The secondary IDE device may be disabled	Restart your server, then press F2 to enter the BIOS Setup utility program. From the <b>Main   IDE Configuration</b> menu, set the <b>IDE Controller</b> to <b>Both</b> and the <b>Secondary IDE Master</b> to <b>Auto</b> .
The CD drive cables are not installed correctly	Open the system, then make sure all cables between the IDE controller and the CD drive are correctly connected.
The CD drive may be defective	Replace the CD drive.

# Hard drive problems

## The system does not recognize a SCSI drive

Probable cause	Solution
SCSI hot-plug drive is not seated correctly	Open the system and reseal the hot-plug drive(s). This problem is most common immediately after shipping.
The SCSI bus is not properly terminated	Open the system and make sure that the last device on the SCSI chain is properly terminated.
The drive is configured with a conflicting SCSI ID	Change the device's SCSI address to one that is not currently being used by the system.
The cables are not connected correctly	Open the system, then make sure the cables are connected properly.

# Memory and processor problems

## The system detected memory errors during start up

Probable cause	Solution
Memory was added or removed, and the new configuration was not saved in the BIOS Setup utility	Open the BIOS Setup utility and save the new memory configuration.
The memory was installed incorrectly	Make sure that the memory is properly seated and oriented.
A memory chip is faulty	Replace the card with the faulty chip. Third-party diagnostic programs can help determine which chip or memory segment is failing.

## The system does not recognize a new or second processor

Probable cause	Solution
The processor was installed incorrectly	Check the installation. Make sure that the processor is fully seated in its socket. The processor should be recognized automatically if it was installed correctly.

# Peripheral/Adapter problems

## The system does not recognize a SCSI device

Probable cause	Solution
The device needs to be added as new hardware	From the <b>Control Panel</b> window ( <b>Start   Settings   Control Panel</b> ), double-click <b>Add New Hardware</b> . Follow the on-screen instructions for adding the device.
The SCSI ID may be invalid	Assign an available SCSI ID to the device.
The SCSI chain is not terminated	Make sure the last device on the SCSI chain is terminated.

Probable cause	Solution
The device cables are not installed correctly	Open the system, then check all cables between the controller and the device.

### The system does not recognize the diskette drive

Probable cause	Solution
The diskette drive may be configured incorrectly	Restart your server, then press F2 to enter the BIOS Setup utility. In the <b>Boot   Removable Devices</b> menu, make sure that the diskette drive parameters are set correctly.
The drive cables are not connected properly	Open the system, then make sure all cables are properly connected to the controller card. The diskette controller is integrated into the system board.

### The diskette drive will not read, write, or format

Probable cause	Solution
The diskette is not IBM-formatted	Make sure that the diskette you are trying to format is IBM-compatible. If it is, try reformatting it. If not, get another diskette.
The disk is write protected	Make sure that the write-protection window on the upper-right corner of the diskette is closed (unprotected).
The diskette is corrupted	Run CheckDisk on the diskette. If errors are detected and corrected, try accessing the diskette again.

### The diskette drive LED illuminates continuously

Probable cause	Solution
The diskette is corrupted	Remove the diskette from the drive. If the light remains on, try restarting the system.
The cable to the drive is not connected properly	Open the system, then make sure the cable between the diskette drive and its controller is properly connected. Make sure that the pins are not bent or misaligned. The diskette controller is integrated into the system board.

## The system does not recognize an expansion card

Probable cause	Solution
The interrupt or I/O address is set incorrectly	Check the address configuration of the adapter card and make sure that it does not conflict with another card in the system.
The card has not been configured through the software	Configure the card with the appropriate software.
The card was not installed correctly	Make sure the card jumpers are set correctly and reset the card.

## Printer problems

This server does not include a parallel port on the I/O panel. To connect a printer directly to the server, you must use a serial or USB printer.

### The printer will not turn on

Probable cause	Solution
The printer is not online (ready)	Make sure the on-line or ready light is on, or the display indicates "Ready."
The printer is not turned on	Make sure that the power switch is set to the On position. If the printer is turned on, the green power LED should be illuminated.
The printer is not plugged in	Make sure that the power cable is plugged into a working power source.
The printer is defective	Try another printer, if one is available.

### The printer is turned on but will not print

Probable cause	Solution
The printer is not connected to the system	Make sure the data cable between the printer and the system is properly connected. Make sure that it is connected to the proper port. Make sure the connector and cable have no bent or broken pins.

Probable cause	Solution
The printer is not designated as the default printer	If the printer that you are trying to print to is not the default printer, make sure that you have selected it through the program printer setup function.
The printer has not been added to the system	In the <b>Printers</b> window ( <b>Start   Settings   Printers</b> ), double-click <b>Add Printer</b> . Follow the on-screen instructions for adding the new printer.

## System problems

### The system will not start up

Probable cause	Solution
The system is not connected to an AC outlet	Make sure that the power cable is connected to an operating AC power source.

### The system is non-responsive

Probable cause	Solution
An error occurs during an application or the server may be out of memory	Press and hold in the power button for 4 seconds to turn the system off. Turn the system back on, then follow the on-screen instructions.

### The keyboard does not work

Probable cause	Solution
A key was pressed while the system was starting up	Clear the sticking key, then turn off the system, wait for a few seconds, then turn the system back on.
The keyboard is not plugged in or connected properly	Make sure the cable is properly connected.
Something spilled into the keyboard	Turn off the system. Turn the keyboard upside down to drain it, then turn it right-side up to let it dry before using the keyboard again.
The keyboard is defective	Try a keyboard that you know is working.

## The mouse does not work

Probable cause	Solution
The mouse is not plugged in or connected properly	Make sure that the cable is plugged in correctly.
The mouse driver did not load when the system started	Load the appropriate mouse driver manually or contact technical support.
The mouse is defective	Try a mouse that you know is working.

# Video problems

## The system is running but the screen is blank

Probable cause	Solution
The monitor is not turned on	Make sure that the monitor is plugged in and turned on. If the monitor is turned on, the green power LED should illuminate.
The monitor data cable is not connected	Make sure that the monitor data cable is connected to the video controller on the back of the system.
The connector or cable is damaged	Check the connector and cable for bent or damaged pins.
The monitor brightness and contrast controls are turned down	Adjust the brightness and contrast knobs to the center position.
The monitor is defective	Connect a working monitor to the server.
The video card is not seated correctly	Open the system and reseal the video card. The server board may have a built-in video adapter, so there may not be a video adapter to remove and replace.
The video card is not compatible with the system	Check the documentation or technical support to make sure that the video card is compatible with the system. If not, obtain a compatible video card. The server board may have a built-in video adapter, so there may not be a video adapter to remove and replace.
The second processor is not seated properly	Open the system and reseal the the second processor.

## The image on the screen is dim or difficult to read

Probable cause	Solution
The monitor brightness and contrast controls are turned down	Adjust the brightness and contrast knobs until the text becomes clear.
Sunlight is glaring off the display	Position the monitor away from the sun or a window.
The monitor may be old	Replace the monitor.

## The color monitor displays everything in black and white

Probable cause	Solution
The system was turned on before the monitor	Make sure that the monitor is turned on, then restart the system.
The display type is set incorrectly	In the Control Panel window ( <b>Start   Settings   Control Panel</b> ), double-click <b>Display</b> , set the display to the appropriate monitor type, then restart the system.

## The displayed characters are garbled

Probable cause	Solution
The video cable is damaged	Make sure the connector and cable have no bent or damaged pins.
The display setup is incorrect	In the Control Panel window ( <b>Start   Settings   Control Panel</b> ), double-click <b>Display</b> and check the settings. The correct video type should be selected, along with a supported resolution. See your monitor documentation for more information.

## The video is distorted

Probable cause	Solution
The monitor controls are not properly adjusted	Adjust the monitor controls until the text becomes clear. See your monitor documentation for more information.
The connector or cable is damaged	Check the connector and cable for bent or damaged pins.

Probable cause	Solution
The surge protector or UPS is damaged	Disconnect the monitor power cable, then connect it directly to the power source.
The monitor is too close to a source of electrical interference	Move the monitor away from sources of electrical interference, such as televisions, unshielded speakers, microwave ovens, fluorescent lights, and metal beams or shelves.
The monitor needs to be degaussed	Turn off the server and monitor and leave them off for at least a half hour, then restart the system.

## Error codes and test points

This section lists test points and beep codes that you may encounter. These codes often indicate procedural errors such as an incorrect keystroke or a write-protected diskette. Some messages, however, may indicate a problem that requires you to consult the troubleshooting section of this manual.

Test Point	Beep Code	POST Routine Description
02h		Verify real mode
03h		Disable non-maskable interrupt (NMI)
04h		Get processor type
06h		Initialize system hardware
07h		Disable shadow and execute code from ROM
08h		Initialize chipset with initial POST values
09h		Set IN POST flag
0Ah		Initialize processor registers
0Bh		Enable processor cache
0Ch		Initialize caches to initial POST values
0Eh		Initialize I/O components
0Fh		Initialize the local bus IDE
10h		Initialize power management
11h		Load alternate registers with initial POST values

\* If the BIOS detects error 2C or 2E, it displays an additional word-bitmap (xxxx) indicating the address line or bits that failed. For example, "2C 0002" means address line 1 (bit one set) has failed. "2E 1020" means data bits 12 and 5 (bits 12 and 5 set) have failed in the lower 16 bits.



Test Point	Beep Code	POST Routine Description
12h		Restore processor control word during warm boot
13h		Initialize PCI bus mastering devices
14h		Initialize keyboard controller
16h	1-2-2-3	BIOS ROM checksum
17h		Initialize cache before memory auto-size
18h		8254 timer initialization
1Ah		8237 DMA controller initialization
1Ch		Reset programmable interrupt controller
20h	1-3-1-1	Test DRAM refresh
22h	1-3-1-3	Test 8742 keyboard controller
24h		Set ES segment register to 4 GB
28h		Auto-size DRAM
29h		Initialize POST Memory Manager
2Ah		Clear 512 kb base RAM
2Ch	1-3-4-1	RAM failure on address line xxxx*
2Eh	1-3-4-3	RAM failure on data bits xxxx* of low byte of memory bus
2Fh		Enable cache before system BIOS shadow
32h		Test processor bus-clock frequency
33h		Initialize Phoenix Dispatch Manager
36h		Warm start shut down
38h		Shadow system BIOS ROM
3Ah		Auto-size cache
3Ch		Advanced configuration of chipset registers
3Dh		Load alternate registers with CMOS values
42h		Initialize interrupt vectors
45h		POST device initialization
46h	2-1-2-3	Check ROM copyright notice
48h		Check video configuration against CMOS
49h		Initialize PCI bus and devices
4Ah		Initialize all video adapters in system
4Bh		QuietBoot start (optional)
4Ch		Shadow video BIOS ROM

\* If the BIOS detects error 2C or 2E, it displays an additional word-bitmap (xxxx) indicating the address line or bits that failed. For example, "2C 0002" means address line 1 (bit one set) has failed. "2E 1020" means data bits 12 and 5 (bits 12 and 5 set) have failed in the lower 16 bits.

Test Point	Beep Code	POST Routine Description
4Eh		Display BIOS copyright notice
4Fh		Initialize MultiBoot
50h		Display processor type and speed
52h		Test keyboard
54h		Set key click if enabled
55h		Enable USB devices
58h	2-2-3-1	Test for unexpected interrupts
59h		Initialize POST display service
5Ah		Display prompt "Press F2 to enter SETUP"
5Bh		Disable processor cache
5Ch		Test RAM between 512 and 640 kb
60h		Test extended memory
62h		Test extended memory address lines
64h		Jump to UserPatch 1
66h		Configure advanced cache registers
67h		Initialize multiprocessor APIC
68h		Enable external and processor caches
69h		Setup System Management Mode (SMM) area
6Ah		Display external L2 cache size
6Bh		Load custom defaults (optional)
6Ch		Display shadow-area message
6Eh		Display possible high address for UMB recovery
70h		Display error messages
72h		Check for configuration errors
76h		Check for keyboard errors
7Ch		Set up hardware interrupt vectors
7Dh		Initialize intelligent system monitoring
7Eh		Initialize coprocessor if present
80h		Disable onboard SuperI/O ports and IRQs
81h		Late POST device initialization
82h		Detect and install external RS232 ports
83h		Configure non-MCD IDE controllers

\* If the BIOS detects error 2C or 2E, it displays an additional word-bitmap (xxxx) indicating the address line or bits that failed. For example, "2C 0002" means address line 1 (bit one set) has failed. "2E 1020" means data bits 12 and 5 (bits 12 and 5 set) have failed in the lower 16 bits.

Test Point	Beep Code	POST Routine Description
84h		Detect and install external parallel ports
85h		Initialize PC-compatible PnP ISA devices
86h		Re-initialize onboard I/O ports
87h		Configure mainboard configurable devices (optional)
88h		Initialize BIOS data area
89h		Enable non-maskable interrupts
8Ah		Initialize extended BIOS data area
8Bh		Test and initialize PS/2 mouse
8Ch		Initialize diskette controller
8Fh		Determine number of ATA drives (optional)
90h		Initialize hard drive controllers
91h		Initialize local-bus hard drive controllers
92h		Jump to UserPatch2
93h		Build MPTABLE for multi-processor boards
95h		Install CD ROM for boot
96h		Clear huge ES segment register
97h		Fix multi-processor table
98h	1-2	Search for option ROMs. Beeps on checksum failure
99h		Check for SMART drive (optional)
9Ah		Shadow option ROMs
9Ch		Set up power management
9Dh		Initialize security engine (optional)
9Eh		Enable hardware interrupts
9Fh		Determine number of ATA and SCSI drives
A0h		Set time of day
A2h		Check key lock
A4h		Initialize typematic rate
A8h		Erase F2 prompt
AAh		Scan for F2 keystroke
ACh		Enter SETUP
A Eh		Clear boot flag
B0h		Check for errors

\* If the BIOS detects error 2C or 2E, it displays an additional word-bitmap (xxxx) indicating the address line or bits that failed. For example, "2C 0002" means address line 1 (bit one set) has failed. "2E 1020" means data bits 12 and 5 (bits 12 and 5 set) have failed in the lower 16 bits.

Test Point	Beep Code	POST Routine Description
B2h		POST done - prepare to boot operating system
B4h	1	One short beep before boot
B5h		Terminate QuietBoot (optional)
B6h		Check password (optional)
B7h		Initialize ACPI BIOS
B9h		Prepare boot
BAh		Initialize SMBIOS
BBh		Initialize PnP option ROMs
BCh		Clear parity checkers
BDh		Display MultiBoot menu
BEh		Clear screen (optional)
BFh		Check virus and backup reminders
C0h		Try to boot with INT 19
C1h		Initialize POST Error Manager (PEM)
C2h		Initialize error logging
C3h		Initialize error display function
C4h		Initialize system error handler
C5h		PnPnd dual CMOS (optional)
C6h		Initialize notebook docking (optional)
C7h		Initialize notebook docking late (optional)
C8h		Force check (optional)
C9h		Extended checksum (optional)
D2h		Unknown interrupt
<b>The following are for the boot block in the Flash ROM</b>		
E0h		Initialize the chipset
E1h		Initialize the bridge
E2h		Initialize the processor
E3h		Initialize the system timer
E4h		Initialize the system I/O
E5h		Check force recovery boot
E6h		Checksum BIOS ROM
E7h		Go to BIOS

\* If the BIOS detects error 2C or 2E, it displays an additional word-bitmap (xxxx) indicating the address line or bits that failed. For example, "2C 0002" means address line 1 (bit one set) has failed. "2E 1020" means data bits 12 and 5 (bits 12 and 5 set) have failed in the lower 16 bits.

<b>Test Point</b>	<b>Beep Code</b>	<b>POST Routine Description</b>
E8h		Set huge segment
E9h		Initialize multi processor
EAh		Initialize OEM special code
EBh		Initialize PIC and DMA
ECh		Initialize memory type
EDh		Initialize memory size
EEh		Shadow Boot Block
EFh		Initialize System Management Mode
F0h		System memory test
F1h		Initialize interrupt vectors
F2h		Initialize Run Time Clock
F3h		Initialize video
F4h		Output one beep
F5h		Initialize boot configuration
F6h		Clear huge segment
F7h		Boot to O.S. (Mini DOS)
F8h		Initialize USB controller

\* If the BIOS detects error 2C or 2E, it displays an additional word-bitmap (xxxx) indicating the address line or bits that failed. For example, "2C 0002" means address line 1 (bit one set) has failed. "2E 1020" means data bits 12 and 5 (bits 12 and 5 set) have failed in the lower 16 bits.



# Safety, Regulatory, and Notices

# A

The Gateway 7450R Server originally shipped with a Class A rating according to FCC rules part 15. Later modifications may have improved the rating to Class B. To check the rating of the system as shipped to you, check the FCC label at the back of the chassis for the rating.

## Important safety information

Your Gateway system is designed and tested to meet the latest standards for safety of information technology equipment. However, to ensure safe use of this product, it is important that the safety instructions marked on the product and in the documentation are followed.

### Warning



Always follow these instructions to help guard against personal injury and damage to your Gateway system.

### Setting up your system

- Read and follow all instructions marked on the product and in the documentation before you operate your system. Retain all safety and operating instructions for future use.
- Do not use this product near water or a heat source such as a radiator.
- Make sure you set up the system on a stable work surface.
- The product should only be operated from the type of power source indicated on the rating label.
- If your computer has a voltage selector switch, make sure that the switch is in the proper position for your area. The voltage selector switch is set at the factory to the correct voltage.
- Openings in the computer case are provided for ventilation. Do not block or cover these openings. Make sure you provide adequate space, at least 6 inches (15 cm), around the system for ventilation when you set up your work area. Never insert objects of any kind into the computer ventilation openings.

- Some products are equipped with a three-wire power cord to make sure that the product is properly grounded when in use. The plug on this cord will only fit into a grounding-type outlet. This is a safety feature. If you are unable to insert the plug into an outlet, contact an electrician to install the appropriate outlet.

**Warning**



For the power supply of this equipment, an approved power cord has to be used. For a rated current up to 6 A and an equipment weight up to 6 kg, a power cord not lighter than H05VV-F, 3 G, 0.75 mm<sup>2</sup>, has to be used.

**Warning**



Zum Netzanschluß dieses Gerätes ist eine geprüfte Leitung zu verwenden. Für einen Nennstrom bis 6 A und einem Gerätewicht größer 6 kg ist eine Leitung nicht leichter als H05VV-F, 3 G, 0.75 mm<sup>2</sup> einzusetzen.

- If you use an extension cord with this system, make sure that the total ampere rating on the products plugged into the extension cord does not exceed the extension cord ampere rating.
- If your system is fitted with a TV Tuner, cable, or satellite receiver card, make sure that the antenna or cable system is electrically grounded to prevent against voltage surges and build up of static charges.

### Care during use

- Do not walk on the power cord or allow anything to rest on it.
- Do not spill anything on the system. The best way to avoid spills is to avoid eating and drinking near your system.
- Some products have a replaceable CMOS battery on the system board. There is a danger of explosion if the CMOS battery is replaced incorrectly. Replace the battery with the same or equivalent type recommended by the manufacturer. Dispose of batteries according to the manufacturer's instructions.
- When the computer is turned off, a small amount of electrical current still flows through the computer. Always unplug all power cables and modem cables from the wall outlets before cleaning the system.
- Unplug the system from the wall outlet and refer servicing to qualified personnel if:
  - The power cord or plug is damaged.
  - Liquid has been spilled into the system.
  - The system does not operate properly when the operating instructions are followed.
  - The system was dropped or the cabinet is damaged.
  - The system performance changes.

### Replacement parts and accessories

Use only replacement parts and accessories recommended by Gateway.





**Important**







Do not use Gateway products in areas classified as hazardous locations. Such areas include patient care areas of medical and dental facilities, oxygen-laden environments, or industrial facilities.



# Warnings

<b>WARNING:</b> <b>English (US)</b>	<b>AVERTISSEMENT:</b> <b>Français</b>	<b>WARNUNG:</b> <b>Deutsch</b>	<b>AVVERTENZA:</b> <b>Italiano</b>	<b>ADVERTENCIAS:</b> <b>Español</b>
 <p>The power supply in this product contains no user-serviceable parts. There may be more than one supply in this product. Refer servicing only to qualified personnel.</p>	<p>Le bloc d'alimentation de ce produit ne contient aucune pièce pouvant être réparée par l'utilisateur. Ce produit peut contenir plus d'un bloc d'alimentation. Veuillez contacter un technicien qualifié en cas de problème.</p>	<p>Benutzer können am Netzgerät dieses Produkts keine Reparaturen vornehmen. Das Produkt enthält möglicherweise mehrere Netzgeräte. Wartungsarbeiten müssen von qualifizierten Technikern ausgeführt werden.</p>	<p>Rivolgersi ad un tecnico specializzato per la riparazione dei componenti dell'alimentazione di questo prodotto. È possibile che il prodotto disponga di più fonti di alimentazione.</p>	<p>El usuario debe abstenerse de manipular los componentes de la fuente de alimentación de este producto, cuya reparación debe dejarse exclusivamente en manos de personal técnico especializado. Puede que este producto disponga de más de una fuente de alimentación.</p>
 <p>Do not attempt to modify or use the supplied AC power cord if it is not the exact type required. A product with more than one power supply will have a separate AC power cord for each supply.</p>	<p>Ne pas essayer d'utiliser ni modifier le câble d'alimentation CA fourni, s'il ne correspond pas exactement au type requis. Le nombre de câbles d'alimentation CA fournis correspond au nombre de blocs d'alimentation du produit.</p>	<p>Versuchen Sie nicht, das migelieferte Netzkabel zu ändern oder zu verwenden, wenn es sich nicht genau um den erforderlichen Typ handelt. Ein Produkt mit mehreren Netzgeräten hat für jedes Netzgerät ein eigenes Netzkabel.</p>	<p>Non modificare o utilizzare il cavo di alimentazione in c.a. fornito dal produttore, se non corrisponde esattamente al tipo richiesto. Ad ogni fonte di alimentazione corrisponde un cavo di alimentazione in c.a. separato.</p>	<p>No intente modificar ni usar el cavo de alimentación de corriente alterna, si no corresponde exactamente con el tipo requerido. El número de cables suministrados se corresponden con el número de fuentes de alimentación de corriente alterna que tenga el producto.</p>
 <p>The power button on the system does not turn off system AC power. To remove AC power from the system, you must unplug each AC power cord from the wall outlet or power supply. The power cord(s) is considered the disconnect device to the main (AC) power. The socket outlet that the system plugs into shall be installed near the equipment and shall be easily accessible.</p>	<p>Notez que le commutateur CC de mise sous tension /hors tension du panneau avant n'éteint pas l'alimentation CA du système. Pour mettre le système hors tension, vous devez débrancher chaque câble d'alimentation de sa prise.</p>	<p>Der Wechselstrom des Systems wird durch den Ein-/Aus-Schalter für Gleichstrom nicht ausgeschaltet. Ziehen Sie jedes Wechselstrom-Netzkabel aus der Steckdose bzw. dem Netzgerät, um den Stromanschluß des Systems zu unterbrechen.</p>	<p>L'interruttore attivato/disattivato nel pannello anteriore non interrompe l'alimentazione in c.a. del sistema. Per interromperla, è necessario scollegare tutti i cavi di alimentazione in c.a. dalle prese a muro o dall'alimentazione di corrente.</p>	<p>Nótese que el interruptor activado/desactivado en el panel frontal no desconecta la corriente alterna del sistema. Para desconectarla, deberá desenchufar todos los cables de corriente alterna de la pared o desconectar la fuente de alimentación.</p>
 <p><b>SAFETY STEPS:</b> Whenever you remove the chassis covers to access the inside of the system, follow these steps:</p> <ol style="list-style-type: none"> <li>1 Turn off all peripheral devices connected to the system.</li> <li>2 Turn off the system by pressing the power button.</li> <li>3 Unplug all AC power cords from the system or from wall outlets.</li> <li>4 Label and disconnect all cables connected to I/O connectors or ports on the back of the system.</li> <li>5 Provide some electrostatic discharge (ESD) protection by wearing an antistatic wrist strap attached to chassis ground of the system—any unpainted metal surface—when handling components.</li> <li>6 Do not operate the system with the chassis covers removed.</li> </ol>	<p><b>CONSIGNES DE SÉCURITÉ-</b> Lorsque vous ouvrez le boîtier pour accéder à l'intérieur du système, suivez les consignes suivantes:</p> <ol style="list-style-type: none"> <li>1 Mettez hors tension tous les périphériques connectés au système.</li> <li>2 Mettez le système hors tension en mettant l'interrupteur général en position OFF (bouton-poussoir).</li> <li>3 Débranchez tous les cordons d'alimentation c.a. du système et des prises murales.</li> <li>4 Identifiez et débranchez tous les câbles reliés aux connecteurs d'E-S ou aux accès derrière le système.</li> <li>5 Pour prévenir les décharges électrostatiques lorsque vous touchez aux composants, portez une bande antistatique pour poignet et reliez-la à la masse du système (toute surface métallique non peinte du boîtier).</li> <li>6 Ne faites pas fonctionner le système tandis que le boîtier est ouvert.</li> </ol>	<p><b>SICHERHEISSMASSNAHMEN:</b> Immer wenn Sie die Gehäuseabdeckung abnehmen um an das Systeminnere zu gelangen, sollten Sie folgende Schritte beachten:</p> <ol style="list-style-type: none"> <li>1 Schalten Sie alle an Ihr System angeschlossenen Peripheriegeräte aus.</li> <li>2 Schalten Sie das System mit dem Hauptschalter aus.</li> <li>3 Ziehen Sie den Stromanschlußstecker Ihres Systems aus der Steckdose.</li> <li>4 Auf der Rückseite des Systems beschriften und ziehen Sie alle Anschlußkabel von den I/O Anschlüssen oder Ports ab.</li> <li>5 Tragen Sie ein geerdetes Antistatik Gelenkband, um elektrostatische Ladungen (ESD) über blanke Metallstellen bei der Handhabung der Komponenten zu vermeiden.</li> <li>6 Schalten Sie das System niemals ohne ordnungsgemäß montiertes Gehäuse ein.</li> </ol>	<p><b>PASSI DI SICUREZZA:</b> Qualora si rimuovano le coperture del telaio per accedere all'interno del sistema, seguire i seguenti passi:</p> <ol style="list-style-type: none"> <li>1 Spegnerne tutti i dispositivi periferici collegati al sistema.</li> <li>2 Spegnerne il sistema, usando il pulsante spento/accesso dell'interruttore del sistema.</li> <li>3 Togliere tutte le spine dei cavi del sistema dalle prese elettriche.</li> <li>4 Identificare e sconnettere tutti i cavi attaccati ai collegamenti I/O od alle prese installate sul retro del sistema.</li> <li>5 Qualora si tocchino i componenti, proteggersi dallo scarico elettrostatico (SES), portando un cinghio anti-statica da polso che è attaccata alla presa a terra del telaio del sistema – qualsiasi superficie non dipinta – .</li> <li>6 Non far operare il sistema quando il telaio è senza le coperture.</li> </ol>	<p><b>INSTRUCCIONES DE SEGURIDAD:</b> Cuando extraiga la tapa del chasis para acceder al interior del sistema, siga las siguientes instrucciones:</p> <ol style="list-style-type: none"> <li>1 Apague todos los dispositivos periféricos conectados al sistema.</li> <li>2 Apague el sistema presionando el interruptor encendido/apagado.</li> <li>3 Desconecte todos los cables de alimentación CA del sistema o de las tomas de corriente alterna.</li> <li>4 Identifique y desconecte todos los cables enchufados a los conectores E/S o a los puertos situados en la parte posterior del sistema.</li> <li>5 Cuando manipule los componentes, es importante protegerse contra la descarga electrostática (ESD). Puede hacerlo si utiliza una muñequera antiestática sujeta a la toma de tierra del chasis — o a cualquier tipo de superficie de metal sin pintar.</li> <li>6 No ponga en marcha el sistema si se han extraído las tapas del chasis.</li> </ol>

	<b>WARNING:</b> English (US)	<b>AVERTISSEMENT:</b> Français	<b>WARNUNG:</b> Deutsch	<b>AVVERTENZA:</b> Italiano	<b>ADVERTENCIAS:</b> Español
	<p>For proper cooling and airflow, always reinstall the chassis covers before turning on the system. Operating the system without the covers in place can damage system parts. To install the covers:</p> <ol style="list-style-type: none"> <li>1 Check first to make sure you have not left loose tools or parts inside the system.</li> <li>2 Check that cables, add-in boards, and other components are properly installed.</li> <li>3 Attach the covers to the chassis with the screws removed earlier, and tighten them firmly.</li> <li>4 Connect all external cables and the AC power cord(s) to the system.</li> </ol>	<p>Afin de permettre le refroidissement et l'aération du système, réinstallez toujours les panneaux du boîtier avant de mettre le système sous tension. Le fonctionnement du système en l'absence des panneaux risque d'endommager ses pièces. Pour installer les panneaux, procédez comme suit :</p> <ol style="list-style-type: none"> <li>1 Assurez-vous de ne pas avoir oublié d'outils ou de pièces démontées dans le système.</li> <li>2 Assurez-vous que les câbles, les cartes d'extension et les autres composants sont bien installés.</li> <li>3 Revissez soielement les panneaux du boîtier avec les vis retirées plus tôt.</li> <li>4 Rebranchez tous les cordons d'alimentation c. a. et câbles externes au système.</li> </ol>	<p>Zur ordnungsgemäßen Kühlung und Lüftung muß die Gehäuseabdeckung immer wieder vor dem Einschalten installiert werden. Ein Betrieb des Systems ohne angebrachte Abdeckung kann Ihrem System oder Teile darin beschädigen. Um die Abdeckung wieder anzubringen:</p> <ol style="list-style-type: none"> <li>1 Vergewissern Sie sich, daß Sie keine Werkzeuge oder Teile im Innern des Systems zurückgelassen haben.</li> <li>2 Überprüfen Sie alle Kabel, Zusatzkarten und andere Komponenten auf ordnungsgemäßen Sitz und Installation.</li> <li>3 Bringen Sie die Abdeckungen wieder am Gehäuse an, indem Sie die zuvor gelösten Schrauben wieder anbringen. Ziehen Sie diese gut an.</li> <li>4 Schließen Sie alle externen Kabel und den AC Stromanschlußstecker Ihres Systems wieder an.</li> </ol>	<p>Per il giusto flusso dell'aria e raffreddamento del sistema, rimettere sempre le coperture del telaio prima di riaccendere il sistema. Operare il sistema senza le coperture al loro proprio posto potrebbe danneggiare i componenti del sistema. Per rimettere le coperture del telaio:</p> <ol style="list-style-type: none"> <li>1 Controllare prima che non si siano lasciati degli attrezzi o dei componenti dentro il sistema.</li> <li>2 Controllare che i cavi, dei supporti aggiuntivi ed altri componenti siano stati installati appropriatamente.</li> <li>3 Attaccare le coperture al telaio con le viti tolte in precedenza e avvitare strettamente.</li> <li>4 Ricollegare tutti i cavi esterni e le prolunghe AC del sistema.</li> </ol>	<p>Para obtener un enfriamiento y un flujo de aire adecuados, reinstale siempre las tapas del chasis antes de poner en marcha el sistema. Si pone en funcionamiento el sistema sin las tapas bien colocadas puede dañar los componentes del sistema. Para instalar las tapas:</p> <ol style="list-style-type: none"> <li>1 Asegúrese primero de no haber dejado herramientas o componentes sueltos dentro del sistema.</li> <li>2 Compruebe que los cables, las placas adicionales y otros componentes se hayan instalado correctamente.</li> <li>3 Incorpore las tapas al chasis mediante los tornillos extraídos anteriormente, tensándolos firmemente.</li> <li>4 Conecte todos los cables externos y los cables de alimentación CA al sistema.</li> </ol>
	<p>A microprocessor and heat sink may be hot if the system has been run-ning. Also, there may be sharp pins and edges on some board and chassis parts. Contact should be made with care. Consider wearing protective gloves.</p>	<p>Le microprocesseur et le dissipateur de chaleur peuvent être chauds si le système a été sous tension. Faites également attention aux broches aigüés des cartes et aux bords tranchants du capot. Nous vous recommandons l'usage de gants de protection.</p>	<p>Der Mikroprozessor und der Kühler sind möglicherweise erhitzt, wenn das System in Betrieb ist. Außerdem können einige Platinen und Gehäuseteile scharfe Spitzen und Kanten aufweisen. Arbeiten an Platinen und Gehäuse sollten vorsichtig ausgeführt werden. Sie sollten Schutzhandschuhe tragen.</p>	<p>Se il sistema è stato a lungo in funzione, il microprocessore e il dissipatore di calore potrebbero essere surriscaldati. Fare attenzione alla presenza di piedini appuntiti e parti taglienti sulle schede e sul telaio. È consigliabile l'uso di guanti di protezione.</p>	<p>Si el sistema ha estado en funcionamiento, el microprocesador y el disipador de calor pueden estar aún calientes. También conviene tener en cuenta que en el chasis o en el tablero puede haber piezas cortantes o punzantes. Por ello, se recomienda precaución y el uso de guantes protectores.</p>
	<p>Danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Dispose of used batteries according to manufacturer's instructions.</p>	<p>Danger d'explosion si la batterie n'est pas remontée correctement. Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le fabricant. Disposez des piles usées selon les instructions du fabricant.</p>	<p>Bei falschem Einsetzen einer neuen Batterie besteht Explosionsgefahr. Die Batterie darf nur durch denselben oder einen entsprechenden, vom Hersteller empfohlenen Batterietyp ersetzt werden. Entsorgen Sie verbrauchte Batterien den Anweisungen des Herstellers entsprechend.</p>	<p>Esiste il pericolo di un'esplosione se la pila non viene sostituita in modo corretto. Utilizzare solo pile uguali o di tipo equivalente a quelle consigliate dal produttore. Per disfarsi delle pile usate, seguire le istruzioni del produttore.</p>	<p>Existe peligro de explosión si la pila no se cambia de forma adecuada. Utilice solamente pilas iguales o del mismo tipo que las recomendadas por el fabricante del equipo. Para deshacerse de las pilas usadas, siga igualmente las instrucciones del fabricante.</p>
	<p>The system is designed to operate in a typical office environment. Choose a site that is:</p> <ul style="list-style-type: none"> <li>■ Clean and free of airborne particles (other than normal room dust).</li> <li>■ Well ventilated and away from sources of heat including direct sunlight.</li> <li>■ Away from sources of vibration or physical shock.</li> <li>■ Isolated from strong electromagnetic fields produced by electrical devices.</li> <li>■ Provided with a properly grounded wall outlet.</li> <li>■ Provided with sufficient space to access the power supply cords, because they serve as the product's main power disconnect.</li> </ul>	<p>Le système a été conçu pour fonctionner dans un cadre de travail normal. L'emplacement choisi doit être :</p> <ul style="list-style-type: none"> <li>■ Propre et dépourvu de poussière en suspension (sauf la poussière normale).</li> <li>■ Bien aéré et loin des sources de chaleur, y compris du soleil direct.</li> <li>■ A l'abri des chocs et des sources de vibrations.</li> <li>■ Isolé de forts champs électromagnétiques générés par des appareils électriques.</li> <li>■ Muni d'une prise murale correctement mise à la terre.</li> <li>■ Suffisamment spacieux pour vous permettre d'accéder aux câbles d'alimentation (ceux-ci étant le seul moyen de mettre le système hors tension).</li> </ul>	<p>Das System wurde für den Betrieb in einer normalen Büroumgebung entwickelt. Der Standort sollte:</p> <ul style="list-style-type: none"> <li>■ sauber und staubfrei sein (Hausstaub ausgenommen); gut gelüftet und keinen Heizquellen ausgesetzt sein (einschließlich direkter Sonneneinstrahlung);</li> <li>■ keinen Erschütterungen ausgesetzt sein;</li> <li>■ keine starken, von elektrischen Geräten erzeugten elektromagnetischen Felder aufweisen;</li> <li>■ mit einer geerdeten Wechselsstromsteckdose ausgerüstet sein;</li> <li>■ über ausreichend Platz verfügen, um Zugang zu den Netzkabeln zu gewährleisten, da der Stromanschluß des Produkts hauptsächlich über die Kabel unterbrochen wird.</li> </ul>	<p>Il sistema è progettato per funzionare in un ambiente di lavoro tipo. Scegliere una postazione che sia:</p> <ul style="list-style-type: none"> <li>■ Pulita e libera da particelle in sospensione (a parte la normale polvere presente nell'ambiente).</li> <li>■ Ben ventilata e lontana da fonti di calore, compresa la luce solare diretta.</li> <li>■ Al riparo da urti e lontana da fonti di vibrazione.</li> <li>■ Isolata dai forti campi magnetici prodotti da dispositivi elettrici.</li> <li>■ Dotata di una presa a muro correttamente installata.</li> <li>■ Dotata di spazio sufficiente ad accedere ai cavi di alimentazione, i quali rappresentano il mezzo principale di scollegramento del sistema.</li> </ul>	<p>El sistema está diseñado para funcionar en un entorno de trabajo normal. Escoja un lugar:</p> <ul style="list-style-type: none"> <li>■ Limpio y libre de partículas en suspensión (salvo el polvo normal).</li> <li>■ Bien ventilado y alejado de fuentes de calor, incluida la luz solar directa.</li> <li>■ Alejado de fuentes de vibración.</li> <li>■ Aislado de campos electromagnéticos fuertes producidos por dispositivos eléctricos.</li> <li>■ Provisto de una toma de tierra correctamente instalada.</li> <li>■ Provisto de espacio suficiente como para acceder a los cables de alimentación, ya que éstos hacen de medio principal de desconexión del sistema.</li> </ul>

# Regulatory compliance statements

## Rack Mounting

If rack mounted units are installed in a closed or multi-unit rack assembly, they may require further evaluation by Certification Agencies. The following items must be considered:

- The ambient within the rack may be greater than room ambient. Installation should be such that the amount of airflow required for safe operation is not compromised. The maximum temperature for the equipment in this environment is 50C, unless otherwise specified in the environmental specifications for the equipment. Consideration should be given to the maximum rated ambient.
- Installation should be such that a hazardous stability condition is not achieved due to uneven loading.

## Input supply:

Check nameplate ratings to assure there is no overloading of supply circuits that could have an effect on overcurrent protection and supply wiring.

## Grounding:

Reliable grounding of this equipment must be maintained. Particular attention should be given to supply connections when connecting to power strips, rather than direct connections to the branch circuit.

## American users

### FCC Part 15

This device 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 in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio or television reception. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio and television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help.
- Use only shielded cables to connect peripherals to the system.

**Accessories:** This equipment has been tested and found to comply with the limits of a Class A digital device. The accessories associated with this equipment are: shielded video cable. These accessories are required to be used in order to ensure compliance with FCC rules.

## Declaration of Conformity

### Responsible Party

Gateway Companies, Inc.  
610 Gateway Drive, North Sioux City, SD 57049  
(605) 232-2000 Fax: (605) 232-2023

Product: Gateway 7450R Server

For unique identification of the product configuration, please submit the 10-digit serial number found on the product to the responsible party.

This device complies with Part 15 of the FCC Rules. Operation of this product 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.

**Caution**



Changes or modifications not expressly approved by Gateway could void the user's authority to operate the equipment.

### **FCC Part 68 (applicable to products fitted with USA modems)**

Your modem complies with Part 68 of the Federal Communications Commission (FCC) rules. On the computer or modem card is a label that contains the FCC registration number and Ringer Equivalence Number (REN) for this device. If requested, this information must be provided to the telephone company.

An FCC compliant telephone line cord with a modular plug is required for use with this device. The modem is designed to be connected to the telephone network or premises wiring using a compatible modular jack which is Part 68 compliant. See installation instructions for details.

The Ringer Equivalence Number (REN) is used to determine the number of devices which may be connected to the telephone line. Excessive REN's on a telephone line may result in the devices not ringing in response to an incoming call. In most areas, the sum of REN's should not exceed five (5.0). To be certain of the number of devices that may be connected to a line, as determined by the total REN's, contact the local telephone company.

If this device causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. The telephone company may request that you disconnect the equipment until the problem is resolved.

The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the operation of this equipment. If this happens the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

This equipment cannot be used on telephone company provided coin service. Connection to party line service is subject to state tariffs. Contact the state public utility commission or public service commission for information.

When programming or making test calls to emergency numbers:

- Remain on the line and briefly explain to the dispatcher the reason for the call.
- Perform such activities in the off-peak hours such as early morning or late evenings.

The United States Telephone Consumer Protection Act of 1991 makes it unlawful for any person to use a computer or other electronic device to send any message via a telephone fax machine unless such message clearly contains in a margin at the top or bottom of each transmitted page or on the first page of the transmission, the date and time it is sent and an identification of the business or other entity, or other individual sending the message and the telephone number of the sending machine or such business, other entity, or individual. Refer to your fax communication software documentation for details on how to comply with the fax-branding requirement.

# Canadian users

## ICES-003

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de Classe A prescrites dans le règlement sur le brouillage radioélectrique édicté par Industrie Canada.

## DOC Notice (for products fitted with an IC-compliant modem)

The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operation, and safety requirements. The Department does not guarantee the equipment will operate to the users' satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the inside wiring associated with a single-line individual service may be extended by means of a certified connector assembly. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

### Warning



To avoid electrical shock or equipment malfunction you should not attempt to make electrical ground connections by yourself, but should contact the appropriate inspection authority or an electrician, as appropriate.

The **Ringer Equivalence Number** (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed 5.

# European users

## European directives

This Information Technology Equipment has been tested and found to comply with the following European directives:

- EMC Directive 89/336/EEC
  - EN 55022:1995 Class A

- EN 55024:1998 according to
  - EN 61000-3-2:1995
  - EN 61000-3-3:1995

## European Telecommunication Information (for products fitted with EU approved modems)

Marking by the symbol **CE \*\*\*\* X** indicates compliance of this equipment to the Telecom Terminal Equipment and Satellite Earth Stations Directive 98/13/EEC. Such marking is indicative that this equipment meets or exceeds the following technical standards:

CTR 21 (1998) - Attachment requirements for pan-European approval for connection to the analogue Public Switched Telephone Networks (PSTNs) of TE (excluding TE supporting voice telephony services) in which network addressing, if provided, is by means of Dual Tone Multi Frequency (DTMF) signaling.

### Caution



Although this equipment can use either loop disconnect (Pulse) or DTMF (Tone) signaling, only the performance of the DTMF signaling is subject to regulatory requirements for correct operation. It is therefore strongly recommended that the equipment is set to use DTMF signaling for access to public or private emergency services. DTMF signaling also provides faster call set up.

This equipment has been approved to Council Decision 98/482/EEC--“CTR 21” for Pan-European single terminal connection to the Public Switched Telephone Network (PSTN). However, due to differences between the individual PSTNs provided in different countries, the approval does not, of itself, give an unconditional assurance of successful operation on every PSTN termination point. In the event of problems, you should contact Gateway customer support.

## Japanese users

### VCCI statement

This equipment is in the Class A category (Information Technology Equipment to be used in a residential area or an adjacent area thereto) and conforms to the standards set by the Voluntary Control Council for Interference by Information Technology Equipment aimed at preventing radio interference in such residential area. When used near a radio or TV receiver, it may become the cause of radio interference. Read instructions for correct handling.

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラス 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。

# Australia and New Zealand users

## EMI statement

This device has been tested and found to comply with the limits for a Class A digital device, pursuant to the Australian/New Zealand standard AS/NZS 3548 set out by the Australian Communications Authority and Radio Spectrum Management Agency.

## New Zealand Telecommunication statement (for products fitted with Telepermit approved modems)

The grant of a Telepermit for any item of terminal equipment indicates only that Telecom has accepted that the item complies with minimum conditions for connection to its network. It indicates no endorsement of the product by Telecom, nor does it provide any sort of warranty. Above all, it provides no assurance that any item will work correctly in all respects with another item of Telepermitted equipment of a different make or model, nor does it imply that any product is compatible with all of Telecom's network services.

This equipment shall not be set up to make automatic calls to the Telecom '111' Emergency Service

### Important



Under power failure conditions, this telephone may not operate. Please ensure that a separate telephone, not dependent on local power, is available for emergency use.

Some parameters required for compliance with Telecom's Telepermit requirements are dependent on the equipment (PC) associated with this device. The associated equipment shall be set to operate within the following limits for compliance with Telecom's Specifications:

- (a) There shall be no more than 10 calls to the same number within any 30 minute period for any single manual call initiation, and
- (b) The equipment shall go on-hook for a period of not less than 30 seconds between the end of one attempt and the beginning of the next attempt.

The equipment shall be set to ensure that automatic calls to different numbers are spaced such that there is no less than 5 seconds between the end of one call attempt and the beginning of another.

The equipment shall be set to ensure that calls are answered between 3 and 30 seconds of receipt of ringing.

# Laser safety statement

All Gateway systems equipped with CD and DVD drives comply with the appropriate safety standards, including IEC 825. The laser devices in these components are classified as “Class 1 Laser Products” under a US Department of Health and Human Services (DHHS) Radiation Performance Standard. Should the unit ever need servicing contact an authorized service location.

## Warning



Use of controls or adjustments or performance of procedures other than those specified in this manual may result in hazardous radiation exposure. To prevent exposure to laser beams, do not try to open the enclosure of a CD or DVD drive.

## Television antenna connectors protection (for systems fitted with TV/cable TV tuner cards)

### External television antenna grounding

If an outside antenna or cable system is to be connected to your Gateway PC, make sure that the antenna or cable system is electrically grounded to provide some protection against voltage surges and built up static charges.

Article 810 of the National Electrical Code, ANSI/NFPA 70, provides information with regard to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.

### Lightning protection

For added protection of any Gateway product during a lightning storm or when it is left unattended or unused for long periods of time, unplug the product from the wall outlet and disconnect the antenna or cable system.

### Power lines

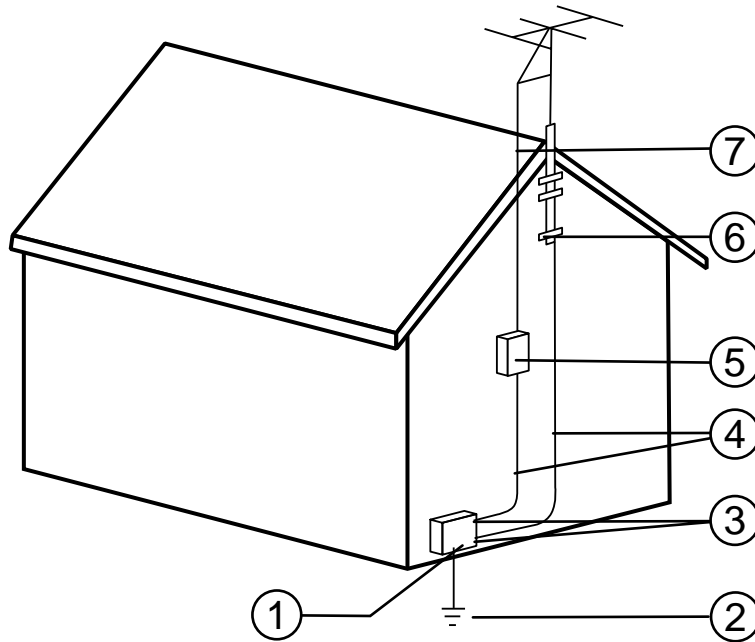
Do not locate the antenna near overhead light or power circuits, or where it could fall into such power lines or circuits. When installing or re-aligning an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits. Contact with them could be fatal.

## Warning



When installing or realigning an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits. Contact with them could be fatal.





**Antenna and satellite grounding**

Reference	Grounding component
1	Electric service equipment
2	Power service grounding electrode system (NEC Art 250, Part H)
3	Ground clamps
4	Grounding conductors (NEC Section 810-21)
5	Antenna discharge unit (NEC Section 810-20)
6	Ground clamp
7	Antenna lead-in wire



# System Specifications



## System Specifications

The following specifications are for the standard configuration. The server may contain optional equipment. All specifications are subject to change.

Processors	As many as two Intel® Pentium III™ processors operating at 866 MHz and faster
Cache	256K on processor
RAM	Four DIMM sockets support up to 4.0 GB of PC/133 SDRAM
BIOS	Flash BIOS for easy updates from diskette
IDE interfaces	Two PCI IDE controllers support as many as two ATAPI/IDE devices each (hard drives or CDs) for a total of as many as four IDE devices. (The chassis supports only the CD drive.)
Diskette drive interface	The diskette drive controller is integrated on the system board
I/O ports	One serial port, one USB port, one PS/2 keyboard port, one PS/2 mouse port, two RJ-45 network ports, one video port
Power supply	200 W power supply
SCSI interfaces	Integrated Adaptec AIC 7892 SCSI controller
Video chipset	ATI Rage XL AGP providing integrated SVGA video support with 4 MB of SGRAM
Network interface	Two Intel 82559 PCI ethernet controllers

Server management	Monitoring, alerting, and logging of critical system information obtained from embedded sensors on the system board, including thermal levels, voltage levels, fan speeds, and chassis intrusion monitoring.
Expansion slots	Two 64-bit, 66 MHz PCI slots on the riser card
Drive Bays	One CD drive bay (drive optional), one diskette drive bay, and three hot-plug bays (at least one is occupied by a 1-inch high hot-plug drive).

## Mechanical specifications

The computer conforms to the following mechanical specifications:

1U chassis case size	16.73 in. (424.9 mm) x 24.5 in. (622.3 mm) x 1.67 in. (42.42 mm) (WxDxH)
Weight	26.6 lbs (12.1 kg)

## Environmental specifications

The following specifications identify maximum environmental conditions. At no time should the computer run under conditions which violate these specifications.

Temperature	Maximum rate of change = 10° C per hour
Nonoperating	-20.0° to 60.0° C (-4° to 140° F)
Operating	0° to 40° C (32° to 104° F); derated 0.5° C for every 1000 ft. (305 m) *
Humidity	
Nonoperating	95% relative (noncondensing) at 30° C (86° F)
Operating wet bulb	5%–85% Not to exceed 33° C (91.4° F) (with diskette drive or hard disk drive)
Shock	
Operating	10.0 g, 11 msec, 1/2 sine
Packaged	Operational after 30-inch free fall (cosmetic damage may occur)

\* Maximum temperature refers to the inlet air temperature, which is the ambient air temperature within the rack cabinet, not the air temperature within the room.

Vibration	
Operating	0.0032 g2/Hz 5–200 Hz, -6dB/octave 200–500 Hz
Nonoperating	0.015 g2/Hz 5–200 Hz, -6dB/octave 200–500 Hz
Altitude	
Operating	10,000 ft. max
Nonoperating	50,000 ft. max
Heat dissipation	
	422 BTU (loaded)
	988 BTU (maximum)
Acoustic noise	<55dB

\* Maximum temperature refers to the inlet air temperature, which is the ambient air temperature within the rack cabinet, not the air temperature within the room.

## Electrical specifications

The computer power supply and the typical configuration conform to the following values:

AC Input Power	
115 V~	90-135 V~, 3.2 A
230 V~	180-265 V~, 1.6 A
AC Input Frequency	
115 V~	47-63 Hz
230 V~	47-63 Hz
Total Power	86.562 W (loaded)



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