E-9232T Server

USERGUIDE

Gateway.

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# Checking Out Your Gateway Server

- Front
- Back
- Interior
- System board
- Getting Help

# Front

DVD/CD drive

Additional 5.25-inch drive bay

Diskette drive

Additional 3.5-inch drive bay

Power button/
Power indicator LED

E-9232T

USB ports

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# Back

Power connector

Cover release lever

Power supply voltage switch

Kensington lock slot

Rear chassis fan

Card retention bar

Power supply module

NIC (RJ-45) ports (2)

USB ports (4)

Serial port

Video port

System management port (RJ-45)

Keyboard port

Mouse port

PCI slots (shown with EMI shields in place)

# Interior

Power supply module    Cover release latch

5.25-inch drive bays

3.5-inch drive bays

Front fan

Processor air duct

Internal 3.5-inch drive bays

Memory slots

Battery

Back fan

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# System board

Power connector

Memory slots

Diskette drive connector

IDE connector

Headsink and processor

Configuration jumpers

Main power connector   IPMB connector

USB and NIC ports

USB and NIC ports

CMOS Battery

Serial port

SATA connectors

VGA port

System management port (RJ045)

Keyboard and mouse ports)

PCIe slot 1 - PCI Express x16

PCIe slot 2 - PCI Express x4

PCI slot 3 - PCI Express x8

PCI slot 4 - Runs at 32-bits

PCI slot 5 - Runs at 32-bits

# Getting Help

In addition to your operating system's documentation, you can use the following information resources to help you use your server.

## Gateway Web site

Gateway provides a variety of information on its Web site to help you use your server.

Visit the Gateway Web site at support.gateway.com for:

- Technical documentation and product guides
- Technical tips and support
- Updated hardware drivers
- Order status
- Frequently asked questions (FAQs)

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# CHAPTER**2**
## Setting Up Your Server

- Setting up the hardware
- Protecting from power source problems
- Starting your server
- Turning off your server
- Setting up the operating system
- Initial hardware settings

# Setting up the hardware

To make sure that your working environment is safe:

- Use a clean, dry, flat, stable surface for your server. Allow at least 6 inches at the back of the server for cabling and air circulation.
- Use the instructions on your server's setup poster to set up your hardware.

> ⚠ **Warning**
> Your server comes with a 3-wire AC power cords fitted with the correct plug style for your region. If these plugs do not match the connector on your UPS or wall outlet, do not attempt to modify the plugs in any way. Use a UPS or wall outlet that is appropriate for the supplied AC power cords.

- Use an uninterruptible power supply (UPS) with surge protection for protection from power outages and power spikes.
- Avoid subjecting your server to extreme temperature changes. Do not expose your server to direct sunlight, heating ducts, or other heat-generating objects. Damage caused by extreme temperatures is not covered by your warranty. As a general rule, your server is safest at temperatures that are comfortable for you.
- Keep your server and magnetic media away from equipment that generates magnetic fields, such as unshielded stereo speakers. Strong magnetic fields can erase data on both diskettes and hard drives. Even a telephone placed too close to the server may cause interference.

# Protecting from power source problems

Line conditioners, and uninterruptible power supplies can help protect your server against power source problems.

**Line conditioners**

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

Some uninterruptible power supplies include simple line-conditioning capabilities.

**Uninterruptible power supplies**

Use an 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. Be sure to use a UPS with surge protection. To buy a UPS, contact Gateway Customer Care, Gateway Sales, or visit accessories.gateway.com. For more information on contacting Customer Care, see "Telephone support" on page 52.

# Starting your server

> ⚠ **Caution**
> When you connect peripheral devices to the server, make sure that your server and devices are turned off and the power cords are unplugged.

Before you start your server for the first time:

- Make sure that the server and monitor are plugged into a power outlet or UPS and that the UPS (if you are using one) is turned on.
- Make sure that all cables are connected securely to the correct ports and jacks on the back of the server.

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▶ **To start the server:**

**1** Press the power button.



Power button/power indicator LED
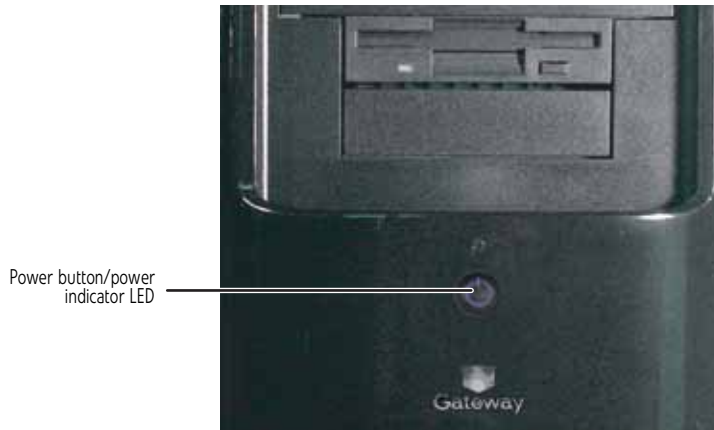
| When the power indicator LED is... | It means... |
|---|---|
| Blue | The server is turned on. |
| Off | The server is turned off. |
| Slowly blinking | Low power state (S1 — S3) |

If nothing happens when you press the power button:

- Make sure that the UPS, if you are using one, is connected securely to an electrical outlet, turned on, and working correctly.
- Make sure that the monitor is connected to the server, plugged into the power outlet or UPS, and turned on. You may also need to adjust the monitor's brightness and contrast controls.

**2** The first time you turn on the server, any pre-installed operating system may begin asking you for configuration settings. See your operating system's documentation for instructions on configuring advanced settings for your specific network.
■

## Selecting the boot device

▶ **To select which device your server boots from:**

**1** During server startup, press **F10**. The *Boot* menu opens.

**2** Select the device you want to boot from. Common choices include:

- Removable Dev. (Removable device)
- ATAPI CDROM (CD or DVD drive)
- Hard Drive
- NVIDIA Boot Agent
■

## Understanding the power-on self-test

When you turn on your server, the power-on self-test (POST) routine checks the server memory and components. If POST finds any problems, the server displays error messages. Write down any error messages that you see, then see "Error messages" on page 53 and "Beep codes" on page 58 for troubleshooting information.

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# Turning off your server

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

> **⚠ Warning**
> The power button on the server does not turn off server AC power. To remove AC power from the server, you must unplug **both** AC power cords from the wall outlet or power source. The power cords are considered the disconnect device to the main (AC) power.

▶ **To turn off the server:**

**1** See the operating system's documentation or online help for instructions on shutting down the operating system. Whenever possible, you should use the operating system's shut down procedure instead of pressing the power button.

**2** If your server did not turn off automatically, press the power button. If nothing happens when you press the power button, press and hold it for five seconds and the server will turn off.

> **⚠ Caution**
> If you routinely turn off your server (daily or weekly), do not unplug the server or use the On/Off switch on the UPS. Regularly cutting off all power to your server may cause the CMOS battery to fail prematurely.

■

# Setting up the operating system

If you ordered your server with the operating system already installed by Gateway, in most cases it is completely installed and the basic settings are already configured. The Windows Small Business Server operating system may require additional installation, depending on the version you ordered. See your operating system's documentation for instructions on completing the installation or configuring advanced settings for your specific network.

If you are installing an operating system because it was not already installed by Gateway, see the appropriate installation guide for instructions.

# Initial hardware settings

Your server comes from the manufacturer with the correct initial hardware settings to operate your server as configured. However, at some point you might want to change settings to reflect a tasking change, a change in security requirements, or the addition of new resources to your server.

General hardware settings, as well as the onboard RAID solution, can be changed by using the BIOS Setup utility. Add-in RAID solutions must be configured using the specific RAID console which accompanied that solution.

For information on the BIOS Setup utility, see "Using the BIOS Setup Utility" on page 47. For information on BIOS settings, see "BIOS Settings" on page 69. For information on setting up your onboard RAID and the RAID BIOS Console utility, see "Configuring your onboard RAID solution" on page 28. For information on a specific RAID console for an add-in RAID solution, see the documentation on that hardware which accompanied your RAID solution.

# CHAPTER**3**
## Maintaining Your Server

- Caring for your server
- Preparing for system recovery
- System administration
- Updating the baseboard management controller firmware
- Using your Server Companion DVD

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# Caring for your server

To extend the life of your server:

- Be careful not to bump or drop your server.
- When transporting your server, we recommend that you put it in the original packaging materials.
- Keep your server and magnetic media away from equipment that generates magnetic fields.
- Avoid subjecting your server to extreme temperatures. Do not expose your server to heating ducts or other heat-generating objects. Damage caused by extreme temperatures is not covered by your warranty. As a general rule, your server is safest at temperatures that are comfortable for you.
- Keep all liquids away from your server. When spilled onto server components, almost any liquid can result in expensive repairs that are not covered under your warranty.
- Avoid dusty or dirty work environments. Dust and dirt can clog the internal mechanisms and can cause the server to overheat.

## Cleaning your server

Keeping your server clean and the vents free from dust helps keep your server performing at its best. Your server cleaning kit could include:

- A soft, lint-free cloth
- Glass cleaner
- An aerosol can of air with a narrow, straw-like extension
- Isopropyl alcohol
- Cotton swabs
- A tape drive cleaning cartridge (if a tape drive is installed)
- A CD or DVD drive cleaning kit

### Cleaning tips

> **Warning**
> When you shut down your server, the power turns off, but some electrical current still flows through your server. To avoid possible injury from electrical shock, unplug the power cords and all other cables connected to the server.

- Always turn off your server and other peripheral devices before cleaning any components.
- Use a damp, lint-free cloth to clean your server and other parts of your server system. Do not use abrasive or solvent cleaners because they can damage the finish on components.
- Keep the cooling vents free of dust. With your server turned off and unplugged, brush the dust away from the vents with a damp cloth, but be careful not to drip any water into the vents.

### Cleaning the keyboard

You should clean the keyboard occasionally by using an aerosol can of air with a narrow, straw-like extension to remove dust and lint trapped under the keys.

If you spill liquid on the keyboard, turn off your server and turn the keyboard upside down to let the liquid drain. Let the keyboard dry completely before trying to use it again. If the keyboard does not work after it dries, you may need to replace it. Keyboard damage resulting from spilled liquids is not covered by your warranty.

### Cleaning the screen

> **Caution**
> The flat panel display screens are made of specially coated glass and can be scratched or damaged by abrasive or ammonia-based glass cleaners.

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If your computer screen is a flat panel display, use only a damp, soft cloth to clean it. Never spray water directly onto the screen.

- OR -

If your computer screen is not a flat panel display, use a soft cloth dampened with glass cleaner to clean the screen. Never spray cleaner directly onto the screen.

### Cleaning the tape drive

If you use a tape drive to back up your files, regular maintenance will lengthen the life of the drive. To maintain the drive's reliability:

- Clean the drive monthly with the cleaning cartridge included with the drive.
- Remove the tape from the drive whenever the drive is not in use.

# Preparing for system recovery

If your system files are corrupted, you may not be able to start the server from the hard drive. *Startup diskettes* or *bootable media such as CDs or DVDs* let you start the server and attempt to fix the problem. See your operating system's documentation or online help for instructions on creating startup media.

Some operating systems also let you create an emergency repair diskette to back up critical operating system files. See your operating system's documentation or online help for instructions on using an emergency repair diskette.

## Recording the BIOS configuration

To help keep track of your custom changes to BIOS settings and to prepare for system recovery, you should record your BIOS configuration after you have your server set up and working.

▶ **To record your BIOS configuration:**

1   Print the appendix for BIOS Settings in this guide.

2   Restart your server, then press **F2** when the Gateway logo screen appears during startup. The BIOS Setup utility opens.

3   Record the BIOS settings on your printout.
    ■

# System administration

## Gateway Systems Manager

Gateway Systems Manager (GSM) lets you manage multiple computers on a Windows network from a single window, then implement commands and policies across the network with a single action. With Gateway Systems Manager, you can run system management tasks which are triggered by certain events or conditions.

For more information, refer to the *Gateway Baseboard Management Controller (BMC) User Guide* at support.gateway.com (by selecting this server from the list). You can also find additional information in the program's online help.

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## Server security

### Using BIOS security passwords

To prevent unauthorized use of the server, you can set server startup passwords. Set an administrator password to prevent unauthorized access to the BIOS Setup utility.

▶ **To set the BIOS security passwords:**

1   Restart your server, then press **F2** when the Gateway logo screen appears during startup. The BIOS Setup utility opens.

2   Select the **Security** menu.

3   Select **Set Supervisor Password**.

4   Type the password and press **ENTER**, then type it again and press **ENTER**.

5   Save your changes and close the BIOS Setup utility.
    ■

▶ **To remove a BIOS security password:**

1   Restart your server, then press **F2** when the Gateway logo screen appears during startup. The BIOS Setup utility opens.

2   Select the **Security** menu, then select the password to remove.

3   Enter the current password, then press **ENTER**.

4   For the new password, leave the password field blank, then press **ENTER**. The password is removed.

> 📝 **Tip**
> Passwords can also be cleared using jumpers on the system board. For instructions, see "Resetting BIOS passwords" on page 50.

■

# Updating the baseboard management controller firmware

The baseboard management controller (BMC) performs several system management functions such as:

- Monitoring server components (FRU) and sensor data records (SDR) (the information provided depends on the option selected)
- Managing non-volatile storage for the system event log and sensor data records
- Interfacing with the emergency management port to send alerts and interact with remote management systems
- Fault resilient booting (the extent depends on the option selected)

You should update the BMC firmware when Gateway Customer Care has instructed you to update it.

▶ **To update the BMC firmware:**

1   Download the BMC firmware zip file from support.gateway.com.

2   Read the release notes for the firmware update.

3   Follow the instructions on the Web site or in the readme.txt file in the downloaded zip file to update the firmware.

4   When the BMC update is complete, reboot your server.
    ■

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# Using your Server Companion DVD

You can use your *Server Companion DVD* to:
- Install hardware drivers
- Install programs
- View server documentation

## Server Companion DVD contents

The *Server Companion DVD* is a tool you can use to help maintain your server. The DVD contains:
- Computer and component documentation
- Drivers and utilities for servers running Windows 2003 Server

## Viewing documents

The DVD contains documents for your server and for some optional components. You can view the documents with the Acrobat® Reader® version 4.0 and above.

▶ **To view documents:**
1. Insert the *Server Companion DVD* into the DVD drive on a computer running the Windows operating system. The Gateway Application and Driver Recovery window opens.

   – OR –

   If the window does not open, run the file **Runmenu.exe** on the DVD.
2. Click **Documentation**. The server document list opens.
3. Click the title of the document you want to view. The document opens.
4. To access files manually, open the **Docs\Manuals** folder on the *Server Companion DVD*.
   ■

▶ **To install Acrobat Reader 7:**
- Click the link for Acrobat on the Documentation page.

   – OR –

   Run **Docs\Reader\app21279\Setup.exe** from the *Server Companion DVD*.
   ■

## Installing drivers and programs

You can install drivers and programs directly onto the server by using the *Server Companion DVD*. You can also extract drivers onto diskette from the DVD at any Windows workstation.

> ✔ **Important**
> The Server Companion DVD's Gateway Application and Driver Recovery utility works only in Windows operating systems.

▶ **To install drivers and programs at the server:**
1. Insert the *Server Companion DVD* into your server's DVD drive. The *Gateway Application and Driver Recovery* window opens.

   – OR –

   If the window does not open automatically, run the file **Runmenu.exe** on the DVD.

   A list of programs and drivers that you can install appears in the Drivers and Application Recovery list.
2. Click the program or driver you want to install, then click **Install**. Follow any on-screen instructions.
   ■

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▶ **To access the files manually:**
- Open the **Drivers** folder on the *Server Companion DVD*, then open the appropriate subfolder.

  ▪

▶ **To extract drivers and programs to diskettes:**

**1** Insert the *Server Companion DVD* into your server's DVD drive. The *Gateway Application and Driver Recovery* window opens.

   – OR –

   If the window does not open automatically, run the file **Runmenu.exe** on the DVD.

**2** Click **Extract Drivers.**

**3** Click your server model and server operation system at the right of the window, then click **Search**. A list of programs and drivers that you can create diskettes for appears in the Drivers and Application Recovery list.

**4** Click the program or driver you want to extract, then click **Extract**. Follow any on-screen instructions.

   ▪

▶ **To access the files manually:**
- Open the **Drivers** folder on the *Server Companion DVD*, then open the appropriate subfolder.

  ▪

## Booting the Server Companion DVD

By booting the *Server Companion DVD* you can re-install the operating system, repair applications and drivers, or exit to the command prompt.

> ✓ **Important**
> Although the Server Companion DVD is bootable, it does not include network operating system files and is not intended to restore your operating system.

▶ **To boot to this DVD:**

**1** With your server turned on, insert the *Server Companion DVD* into the DVD drive.

**2** Restart your server. A message appears asking you to select an option.

**3** Press any key to boot from the DVD. The *Gateway Options Main Menu* appears.

**4** Follow any on-screen instructions.

   You can use the options in this menu to reformat your hard drive, create mass-storage driver disks, or reload selected applications.

   ▪

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# CHAPTER**4**
## Installing Components

- Preparing to install components
- Preventing static electricity discharge
- Accessing the internal components
- Installing drives
- Configuring your onboard RAID solution
- Installing memory
- Installing PCI expansion cards
- Replacing the processor
- Replacing a power supply module
- Replacing a fan
- Replacing the CMOS battery
- Replacing the system board

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> **✓ Important**
> You must open your server case to install components. If you are not comfortable with these procedures, get help from a more experienced computer user or computer service technician, or contact Gateway Customer Care.

# Preparing to install components

## Selecting a place to work

Work on your server in an area that:
- Is clean (avoid dusty areas)
- Is a low-static environment (avoid carpeted areas)
- Has a stable surface on which to set your server
- Has enough room to place all of your server parts
- Is near a grounded outlet so you can test your server after installation
- Is near a telephone (in case you need help from Gateway Customer Care). The telephone must be directly connected to a telephone jack and cannot be connected to your server.

## Gathering the tools you need

Some tools and supplies that you may need to work on your server are:
- A notebook to take notes
- A Phillips screwdriver
- A small flat-blade screwdriver
- Small containers to store various types of screws
- A grounding wrist strap (available at most electronic stores)

# Preventing static electricity discharge

> **⚠ Warning**
> To avoid exposure to dangerous electrical voltages and moving parts, turn off your server and unplug the power cords and modem cable before opening the server case.

The components inside your server are extremely sensitive to static electricity, also known as *electrostatic discharge* (ESD).

> **⚠ Caution**
> ESD can permanently damage electrostatic discharge-sensitive components in the server. Prevent ESD damage by following ESD guidelines every time you open the server case.

Before working with server components, follow these guidelines:
- Turn off the server, then unplug the power cords and all other cables.
- Press the power button to drain any residual power from the server.

> **⚠ Warning**
> To prevent risk of electric shock, do not insert any object into the vent holes of the power supply module.

- Wear a grounding wrist strap (available at most electronics stores) and attach it to a bare metal part of the server. You can also touch a bare metal surface on the back of the server with your finger.
- Avoid static-causing surfaces such as carpeted floors, plastic, and packing foam.
- Avoid working on the server when your work area is extremely humid.

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- Remove components from their antistatic bags only when you are ready to use them. Do not lay components on the outside of antistatic bags because only the inside of the bags provide electrostatic protection.
- Always hold expansion cards by their edges or their metal mounting brackets. Avoid touching the edge connectors and components on the cards. Never slide expansion cards or components over any surface.

# Accessing the internal components

## Opening the server case

> ⚠ **Caution**
> For correct cooling and air flow, always reinstall the side panel and the air duct (if included) before you turn on the server. Operating the server without the cover in place can damage server components.

Because the components inside your server are extremely sensitive to static electricity, make sure that you follow the instructions at the beginning of this chapter to avoid static electricity damage.

▶ **To open the server case:**

1 Follow the instructions in "Preventing static electricity discharge" on page 18.

2 Turn off the server, then unplug the power cords and all other cables connected to the server.

> 🛈 **Warning**
> This server may have two power cords. To disconnect internal AC power, you must unplug both power cords.

3 Remove the case cover thumbscrew.

4 Lift the cover release lever.



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**5** Swing the side panel away from the computer.

**6** Lift the panel away from the server and place it out of the way.
■

## Removing the bezel assembly

▶ **To remove the bezel assembly:**

**1** Follow the instructions in "Opening the server case" on page 19.

**2** After removing the side panel, press the three black plastic tabs (positions indicated by the arrows) to release the right side of the bezel.

**3** Swing the right side of the bezel out until the left side of the bezel can be disengaged from the left side of the computer, then remove the bezel.
■

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# Removing the processor air duct

▶ **To remove the processor air duct:**

1   Follow the instructions in "Preventing static electricity discharge" on page 18.

2   Follow the instructions in "Opening the server case" on page 19.

3   Remove the cables from the air duct cable clip.



4   Grasp the air duct handle and remove the processor air duct from the chassis.
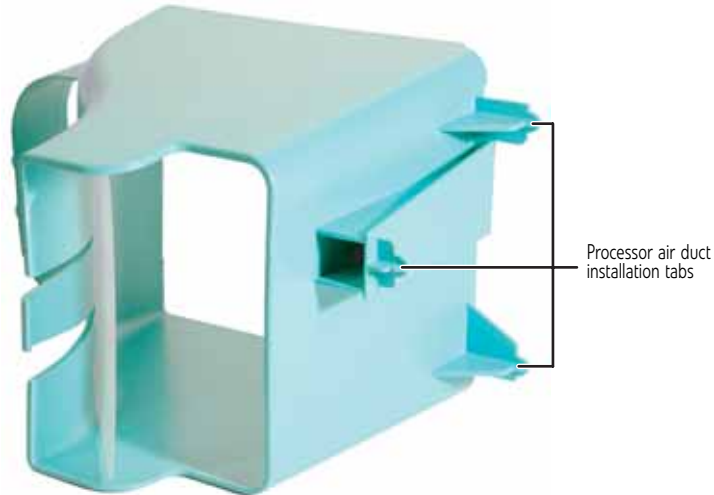


Air duct handle                    Processor air duct
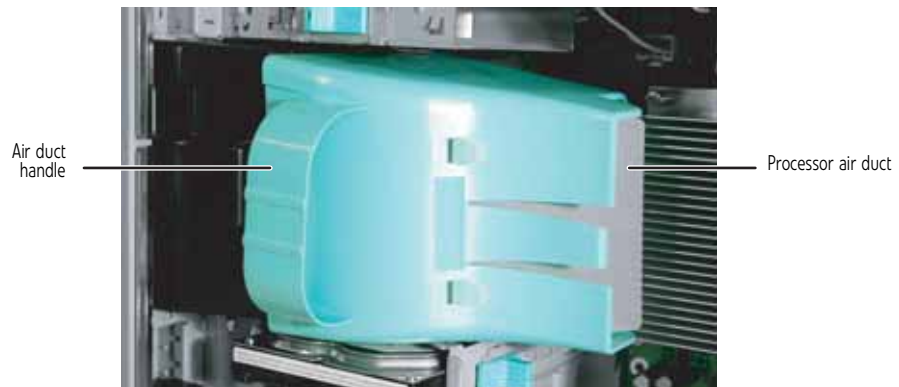
# Installing the processor air duct

> ✓ **Important**
> Be careful not to snag or unplug the fan cable when you install the processor air duct.

▶ **To install the processor air duct:**

**1** Align the left side of the processor air duct with the front fan and insert the installation tabs on the bottom of the air duct into the installation holes in the side of the chassis.



Processor air duct installation tabs



Processor air duct installation holes

**2** Press the processor air duct into place.

**3** Place the diskette cable and hard drive power cable behind the cable clip on the processor air duct.



■

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# Installing the bezel assembly

> ✓ **Important**
> If you have installed any new drives in the external drive bays, make sure to remove the corresponding filler panels in the bezel before installing it.

▶ **To install the bezel assembly:**

**1** Insert the tabs on the left side of the bezel into the slots in the left side of the computer.



**2** Swing the right side of the bezel in to insert the tabs on the right side of the bezel into the slots on the right side of the computer.

**3** Press the right side of the bezel firmly until it snaps into place.
   ▪

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# Closing the server case

▶ **To close the server case:**

**1** Make sure that all of the internal cables are arranged inside the case so they will not be pinched when you close the case.

**2** Align the panel tabs into the bottom case notches, then swing the side panel toward the top of the computer to secure it into place.



**3** Replace the case cover thumbscrew.

**4** Reconnect the power cords and all other cables.
  ∎

# Installing drives

Your server's basic configuration includes one CD or DVD drive and one 3.5-inch diskette drive. Your server also has an additional 5.25-inch drive bay and 3.5-inch drive bay.

Your server can have as many as four SATA (standard) or SCSI (optional) drives in three internal drive bays and one external fixed drive bay (the bottom 3.5-inch bay).



CD or DVD drive

5.25-inch drive bay

3.5-inch floppy drive

3.5-inch external drive bay
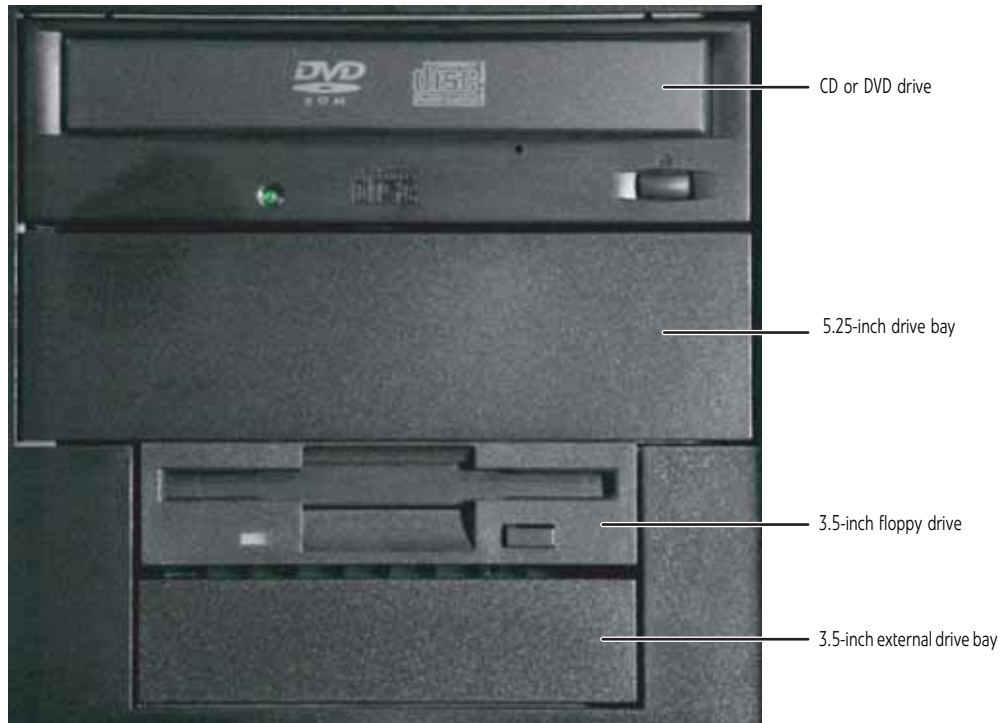
As you prepare to install drives, remember:

- Do not use the top 5.25-inch drive bay for drives which have electronic components exposed on the top. Drive mounting rails at the top of the bay may damage any exposed electronic components.
- Before you install a drive, see the drive's documentation for information on configuring the drive, setting drive jumpers, and attaching cables.
- IDE drives can be configured as master, slave, or cable-select.
  - If cable-select is available (drive assignments will be marked on the cable), the IDE cable assigns the master/slave positions to the drives it connects. You can override these assignments using the jumpers on the drives.
  - If cable-select is not available and only one drive is attached to an IDE controller cable, configure the drive as master if it is a CD or DVD drive. If two drives of any type are attached to the cable, configure one as master and one as slave.
- You may need to configure the drives you install using the BIOS Setup utility. Press **F2** at startup to open the BIOS Setup utility.

## Installing or replacing a fixed or removable-media drive

Use these instructions to install or replace a diskette, CD, DVD, hard drive, or tape drive.

▶ **To install a drive in an external drive bay:**

1 Follow the instructions in "Preventing static electricity discharge" on page 18.

2 Follow the instructions in "Opening the server case" on page 19.

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**3** If you are replacing a CD, DVD, or diskette drive, go to Step 6, otherwise follow the instructions in "Removing the bezel assembly" on page 20.

**4** If you are adding a new drive to an available drive bay, remove the EMI shield from the bay by pulling the shield out of the bay.

EMI shield

**5** Slide the green drive retainer lever toward the back of the drive bay, then go to Step 8.

**6** Disconnect the old drive's cables from the back of the drive.

**7** Slide the green drive retainer lever toward the back of the drive bay, then pull the drive out of the bay.

Drive retainer lever

**8** Set any jumpers on the new drive. See the drive's documentation for further instructions.

> ☑ **Important**
> If you are installing a hard drive in the bottom, external 3.5-inch drive bay, the green drive retainer lever will not slide forward to lock the drive into place. Instead, you must use a screw to secure the drive in the bay.

**9** Slide the new drive into the drive bay allowing it to protrude enough to line up with the bezel when it is replaced, then push the green drive retainer lever toward the front of the drive bay to lock the drive into place.

> 🖎 **Tip**
> When installing a CD, DVD, tape drive, or diskette drive, if the green drive retainer lever will not slide forward all the way to lock the drive into place, move the drive slightly, until the lever can be moved forward enough to lock the drive into place.

**10** Connect the power and data cables.

**11** Follow the instructions on "Installing the bezel assembly" on page 23.

**12** Follow the instructions in "Closing the server case" on page 24.
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# Installing or replacing a hard drive

> **Important**
> To install a hard drive in the bottom external 3.5-inch drive bay, follow the instructions in "To install a drive in an external drive bay:" on page 25.

Use these instructions to install or replace a hard drive.

▶ **To install a hard drive in an internal drive bay:**

**1** Follow the instructions in "Preventing static electricity discharge" on page 18.

**2** Follow the instructions in "Opening the server case" on page 19.

**3** If you are replacing a drive, go to Step 4.

- OR -

If you are adding a new drive to an available drive bay, slide the green drive retainer lever toward the front of the drive bay, then go to Step 6.

**4** Disconnect the old drive's cables from the front of the drive.

**5** Slide the green drive retainer lever toward the front of the drive bay, then pull the drive out of the bay.



Drive retainer lever

**6** Set any jumpers on the new drive. See the drive's documentation for further instructions.

**7** Slide the new drive into the drive bay as far as it will go, then slide the green drive retainer lever toward the back of the drive bay to lock the drive into the bay.

> **Tip**
> If the green drive retainer lever will not slide back all the way to lock the drive into place, move the drive slightly, until the lever can be moved back enough to lock the drive into place.

**8** Connect the power and data cables.

**9** Follow the instructions in "Closing the server case" on page 24.

**10** Format and partition the drive as necessary.

**27**

# Configuring your onboard RAID solution

Your server comes equipped with an onboard chipset for a SATA RAID solution, which supports RAID levels 0 (striping), 1 (mirroring), 5 (distributed data and parity), and 10 (RAID 0 + 1). You enable the onboard RAID solution in the BIOS (See "RAID Setup" on page 76) and configure RAID by launching the appropriate RAID BIOS console during the boot process.

## Configuring the onboard SATA RAID solution

| Level | Description and use | Pros | Cons | Number of drives | Fault Tolerant |
|---|---|---|---|---|---|
| 0 | Data divided into blocks and distributed sequentially (pure striping). Use for non-critical data that requires high performance. | High data throughput for large files. | No fault tolerance. Data is lost if a drive fails. | One or two (on this server) | No |
| 1 | Data duplicated on another disk (mirroring). Use for read-intensive, fault-tolerant systems. | 100 percent data redundancy, providing fault tolerance. | More disk space required. Reduces usable disk space to the size of the smallest drive. Reduced performance during rebuilds. | Two | Yes |
| 5 | Stripes data at a block level across several drives and distributes parity among the drives. No single disk is devoted to parity. | Fast and redundant | More disk space required. Reduces usable disk space to 75% of total storage in the disk array. | Three | Yes |
| 10 | A combination of RAID 1 and RAID 0. Raid 0 is used for performance, and RAID 1 is used for fault tolerance. | Fast and redundant | An additional drive required. | Four | Yes |

**28**

▶ **To launch the SATA RAID BIOS console:**

**1**   Restart your server.

**2**   Press F2 when the Gateway logo screen appears during startup. The BIOS Setup utility opens.

**3**   From the *Main BIOS* menu, select the **Advanced** menu.
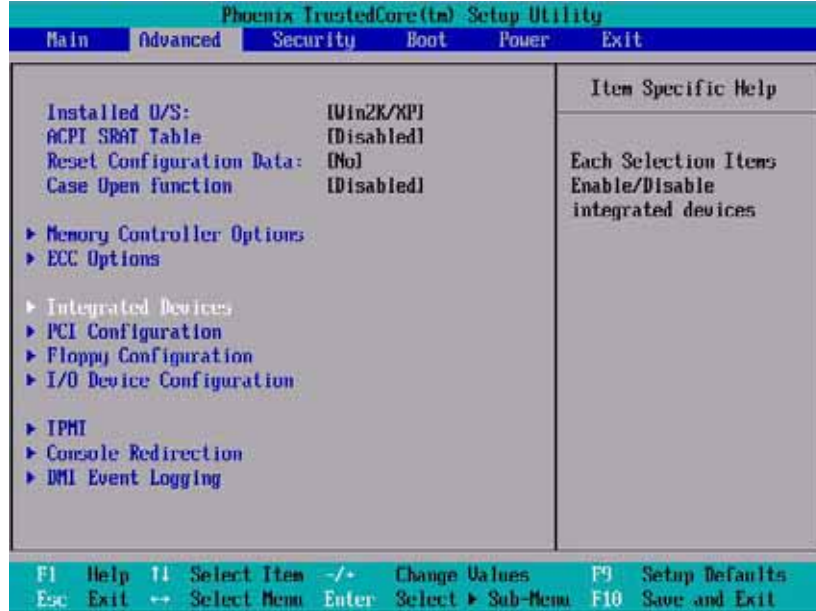


**4**   Select the **Integrated Devices** sub-menu. The *Integrated Devices* sub-menu opens.



**29**
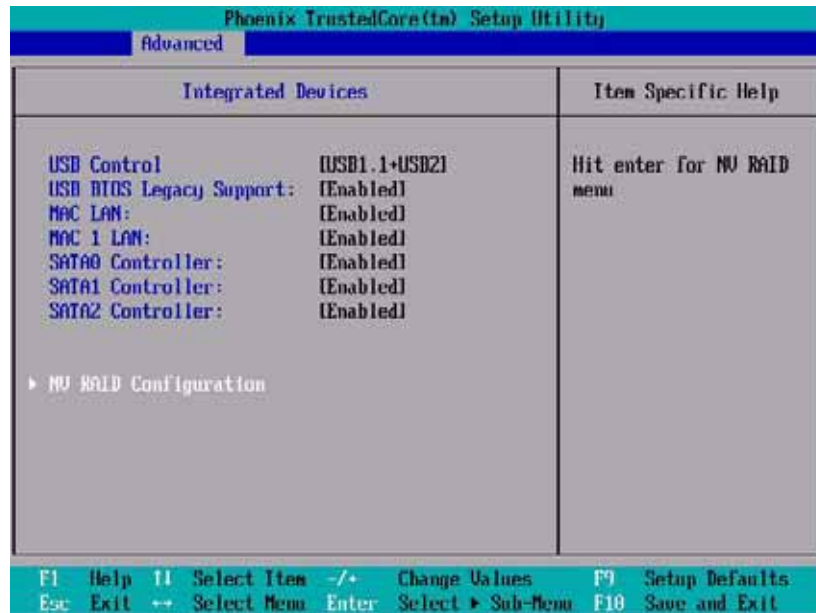
**5** Select the **NV RAID Configuration** sub-menu. The *NV RAID Configuration* sub-menu opens.
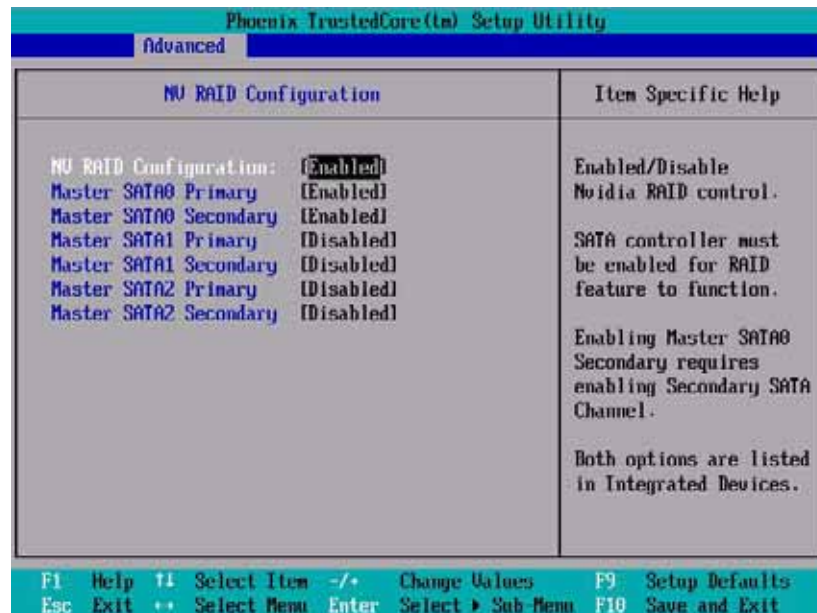


**6** For the **NV RAID Configuration** option, click **Enabled**.

**7** Select the SATA channels your hard drives are connected to and set them to Enabled.

**8** Exit the BIOS Setup utility.

**9** Restart your server. During the boot process you will see the following message:
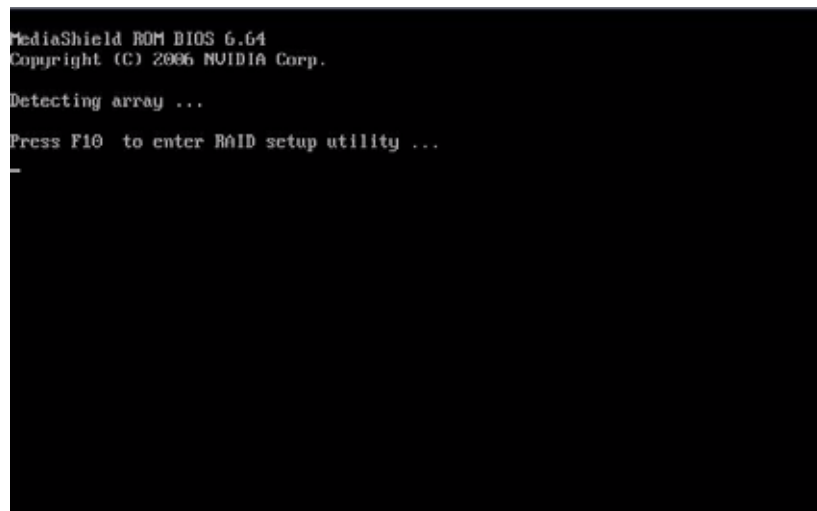


**10** Press **F10**. The *RAID BIOS console* opens.

**11** Configure the RAID options, then exit the RAID BIOS console.

**12** Reboot the server.
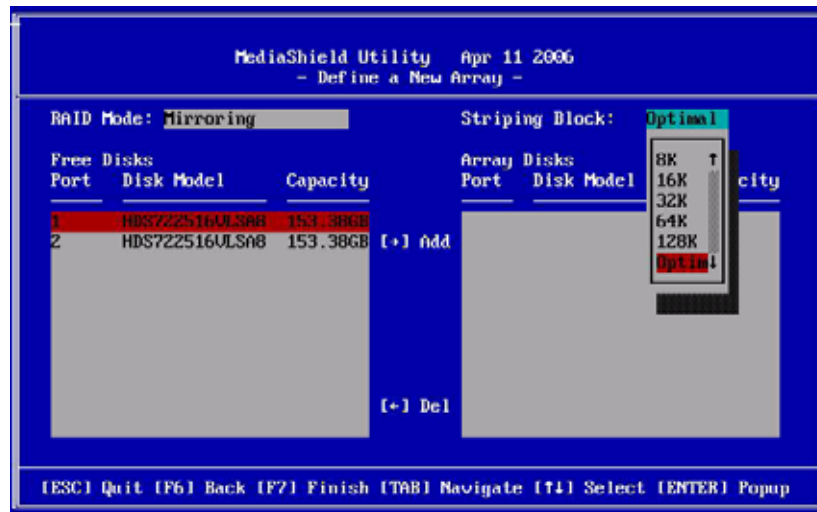   ■

**30**

▶ **To configure the SATA RAID solution:**

1. Open the RAID BIOS console as described in the previous procedure. The *Define a New Array* screen opens.
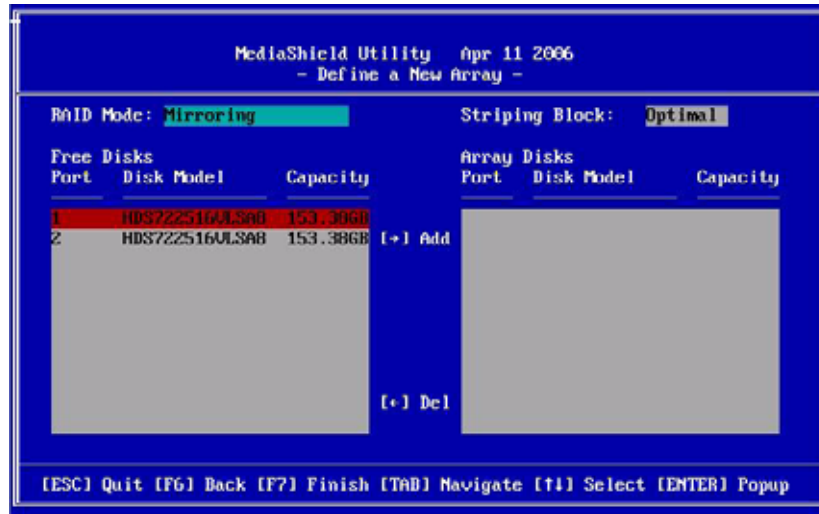

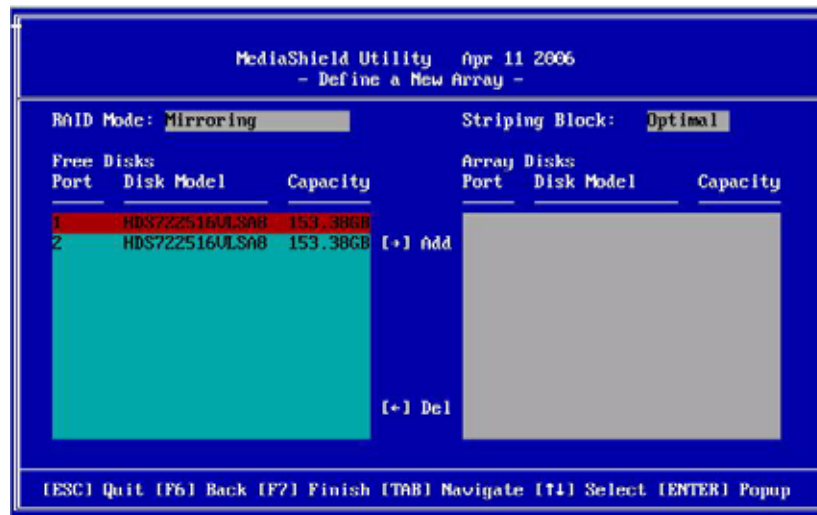
2. Select a RAID Mode from the list at the top left of the screen.
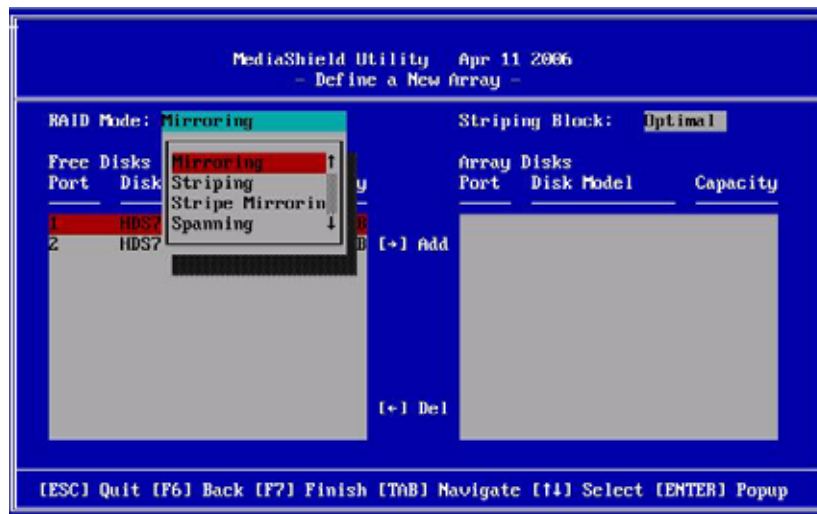
**3** Select a Stripping Block size from the list at the top right of the screen.



**4** Highlight the free disk you want to use from the list on the left side of the screen.

**5** Press the right arrow key to move the disk to the Array Disks list on the right side of the screen. Do this for all disks you want to use in the array.
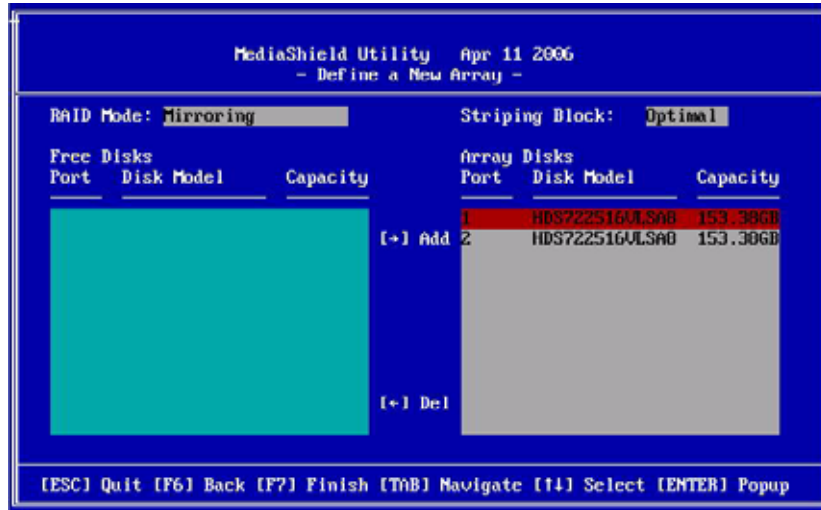


**6** Press **F7** to finish creating the array. When the confirmation box opens, press **Y** to clear the data on the disks.



**33**

The *Array List* opens showing the disks in the array.

```
            MediaShield Utility   Apr 11 2006
                    - Array List -


       Boot  Status   Vendor   Array Model Name

       No    Healthy  NVIDIA   MIRROR   153.38G









  [Ctrl-X] Exit  [↑↓] Select  [B] Set Boot  [N] New Array  [ENTER] Detail
```
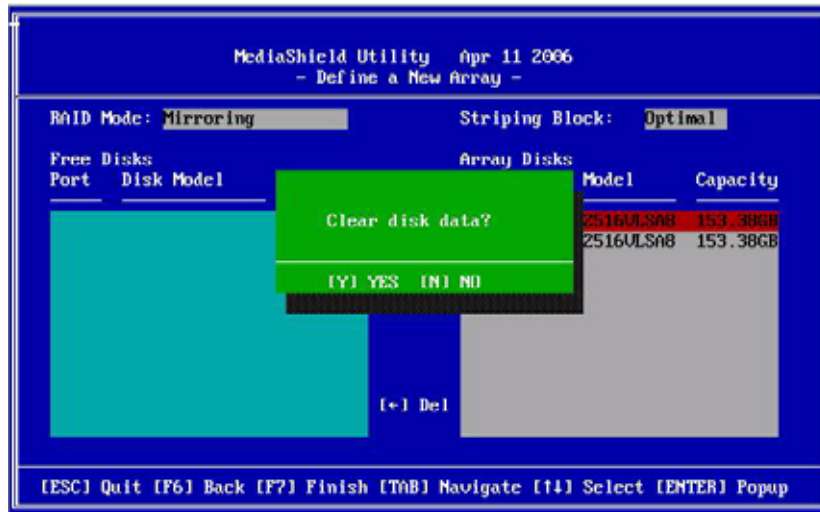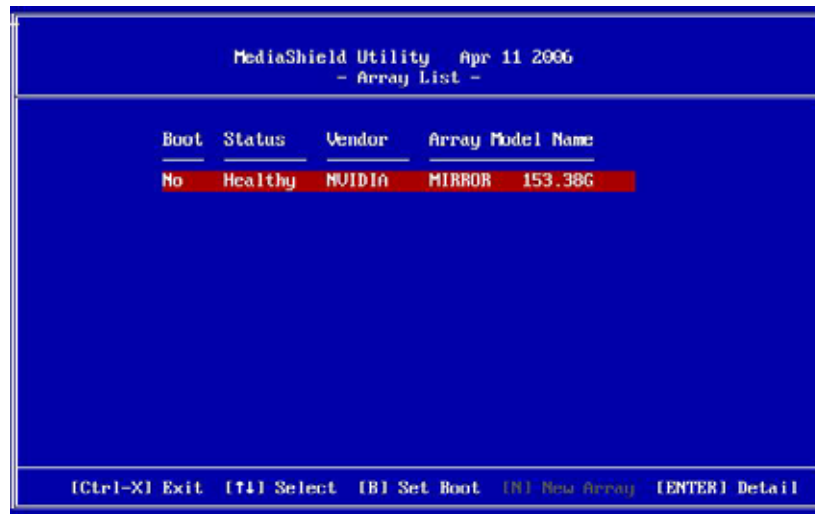
**7**   To make the array bootable, press **B** (Set Boot) to change Boot **No** to Boot **Yes**.

**8**   Exit the RAID Configuration utility and reboot the server.
∎

# Installing memory

---
⚠ **Caution**
Use only 667 Mhz compliant, 240-pin, SDRAM unbuffered ECC DIMM memory modules.

---

The system board supports 4 DDR2 667 MHz vertical DIMMs to provide up to 8 GB of memory with ECC support. The 667 MHz differential memory clocks are driven by the AMD processor with length matching and impedance controlled through all the DIMM slots. Supported DIMM sizes include 256 MB, 512 MB, 1 GB, and 2 GB.

The BIOS configures the memory controller to run in either single channel or dual channel mode, depending on the following:

- If one or more fully populated DIMM banks are detected, the memory controller will run in dual channel mode.
- If only a single DIMM is present, the memory controller will run in single channel mode.

DIMM banks must be populated using the following guidelines:

- DIMM banks must be populated in order, starting with Bank 0.
- Dual rank DIMMs must be populated before single rank DIMMs.

Channel B DIMM 2
Channel A DIMM 2

Channel B DIMM 1
Channel A DIMM 1

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▶ **To install or replace memory:**

1. Follow the instructions in "Preventing static electricity discharge" on page 18.

2. Follow the instructions in "Opening the server case" on page 19.

3. Pull the plastic tabs (1) away from the sides of the memory module slot. If you are replacing a memory module, lift the old memory module (2) out of the slot.
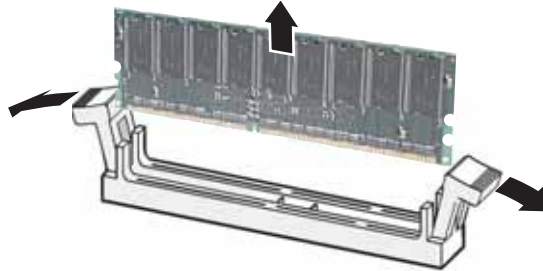
4. Align the notch on the new module with the notch in the memory module slot and press the module firmly into the slot. The tabs on the sides of the memory slot should secure the memory module automatically.

5. Follow the instructions in "Closing the server case" on page 24.

6. Restart your server and open the BIOS Setup utility. Verify the **System Memory** listed in the Main menu. When you exit the BIOS Setup utility, make sure that the operating system loads completely.

## Memory online sparing

The chipset on the system board in the server supports memory online sparing, which can provide a way to prevent data loss in case of DIMM failure. If a DIMM failure does occur, a DIMM fault LED adjacent to the DIMM slot will light orange to indicate the failed memory module.

Using memory online sparing, one DIMM per channel (selectable in the BIOS setup utility) is used as a memory spare (the spare DIMM must be equal to, or larger than, the largest DIMM in that channel). If a DIMM begins to fail, the contents of the failing DIMM is copied to the spare DIMM in that channel. When all of the data is copied, the primary DIMM is automatically removed from service. Since one DIMM per channel is always maintained as a spare, a maximum of only 75% of the installed memory is usable. Memory online sparing is configured in the BIOS.

# Installing PCI expansion cards

⚠ **Caution**
This server does not have PCI hot-plug capability. Do not attempt to install or remove a PCI card without turning off your server and disconnecting it from the AC power source.

Use the following chart to determine the PCI slot into which you should install your expansion card.

| PCI slot | Description |
|---|---|
| 1 | PCI Express - x16 |
| 2 | PCI Express - x4 |
| 3 | PCI Express - x8 |
| 4 | PCI – Runs at 32-bits |
| 5 | PCI – Runs at 32-bits |

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PCI slot 1

PCI slot 2

PCI slot 3

PCI slot 4

PCI slot 5
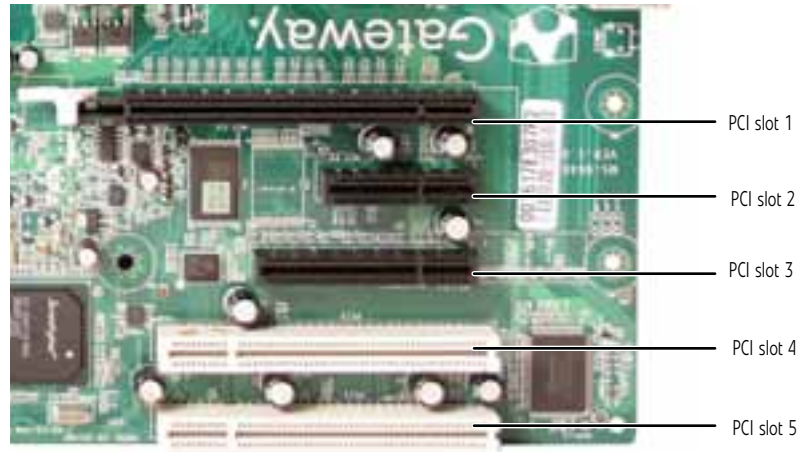
▶ **To replace, add, or reseat a PCI expansion card:**

**1** Follow the instructions in "Preventing static electricity discharge" on page 18.

**2** Follow the instructions in "Opening the server case" on page 19.

**3** If you are replacing a card, disconnect any cables that are attached to the old card.

**4** Loosen the captive thumbscrew on the card retention bar and swing the bar out from the back of the chassis.



Card retention bar

Captive thumbscrew
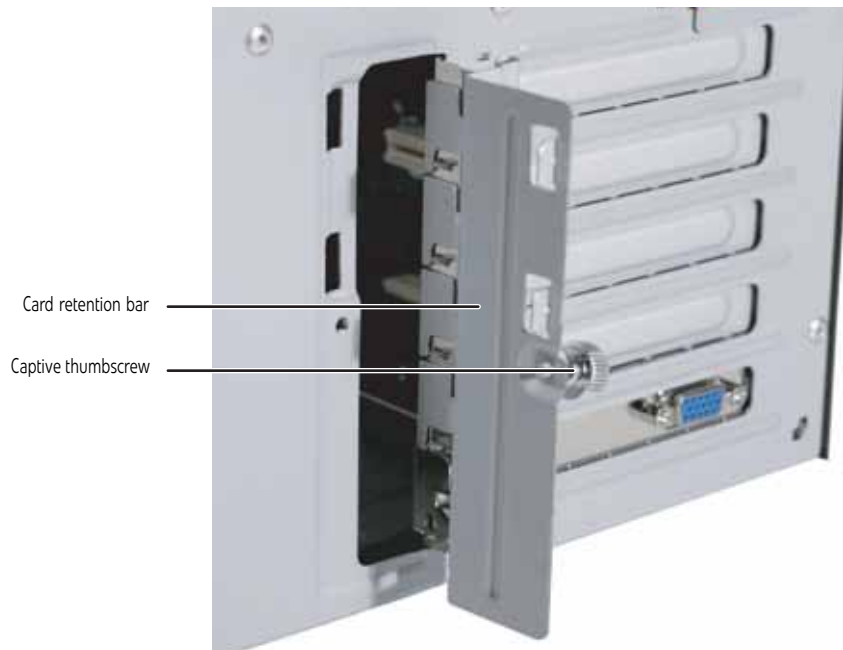
**5** If you are replacing a card, remove the old expansion card. To loosen the card you can slightly rock the card end-to-end, but do not bend the card sideways.

⚠ **Caution**
Do not touch the contacts on the bottom part of the expansion card. Touching the contacts can cause electrostatic damage to the card.

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**6** Press the new card into the expansion slot. To help insert the card you can slightly rock the card end-to-end, but do not bend the card sideways.

**7** Swing the card retention bar back into place and tighten the captive thumbscrew.

Card retention bar.

Captive thumbscrew
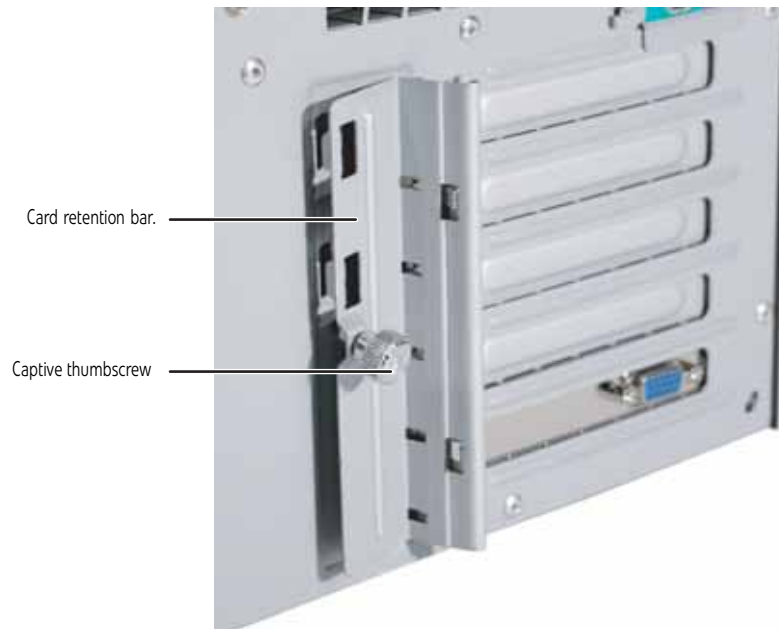
**8** Connect any cables to the card. For more information, see the instructions in the card's documentation.

**9** Follow the instructions in "Closing the server case" on page 24.

**10** See the card's documentation for software installation instructions.
■

# Replacing the processor

**⊘ Warning**
The processors and heatsink may be hot if the computer has been running. Also, there may be sharp edges on the heatsink. Consider wearing protective gloves.

The system board has a single AM2 CPU socket which supports one AMD® Opteron™ or Athlon™ processor with 3.0 GHz Hyper Transport Bus. The system connects with the nVIDIA MCP 55 through the Hyper Transport Bus. The server automatically detects the processor each time you turn it on. Whenever you install a new processor, you should first install the most current version of the BIOS. For instructions, see "Updating the BIOS" on page 48.

**⚠ Caution**
A heatsink must be installed on the processor. Installing a processor without a heatsink could damage the processor.

▶ **To replace a processor:**

**1** Install the most current BIOS version. For instructions, see "Updating the BIOS" on page 48.

**2** Follow the instructions in "Preventing static electricity discharge" on page 18. Make sure that you turn off the server, then unplug the power cord(s) and all other cables connected to the server.

**3** Follow the instructions in "Accessing the internal components" on page 19.

**4** Loosen the four screws holding the heatsink to the processor, then lift the heatsink off the processor.
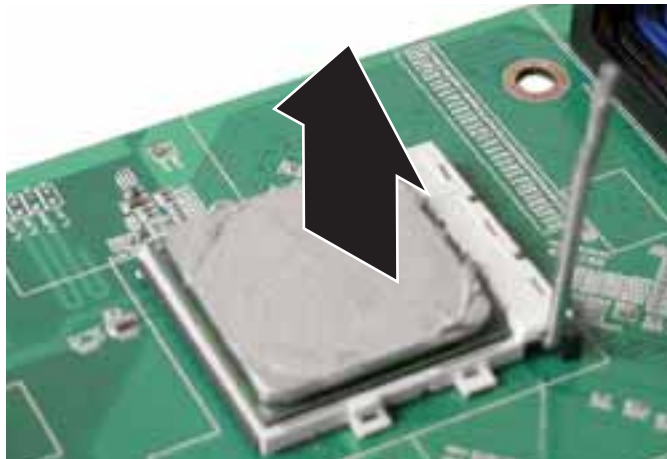


**⚠ Caution**
The heatsink has Thermal Interface Material (TIM) on the bottom. Be careful not to damage this material when you remove the heat sink from the processor. If removing the heatsink also pulls the processor out of the processor socket, the processor could be damaged.

**5** Unlock the retention lever and lift it up to release the processor.
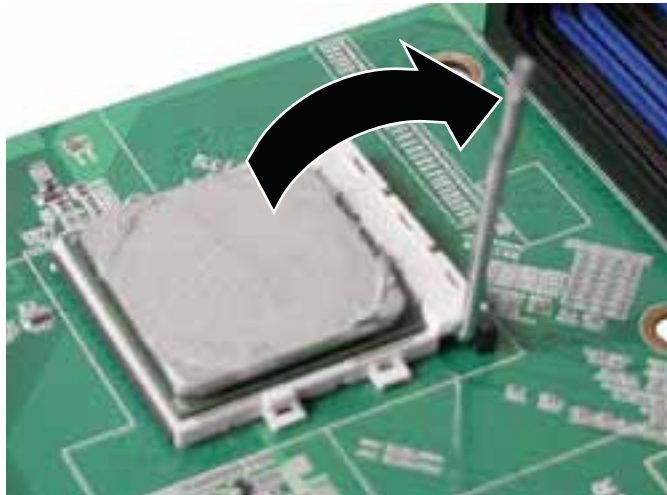
**6** Lift the processor out of the socket and place it in a static-free bag or case for storage.

**7** Insert the new processor into the socket, making sure that the gold triangle on the corner is situated as shown in the following illustration.

⚠ **Caution**
The processor only fits the socket when oriented as indicated. Do not force the processor into the socket to avoid bending the pins or damaging the processor. If the processor does not fit completely, check its orientation and check for bent pins.

Gold triangle

**39**
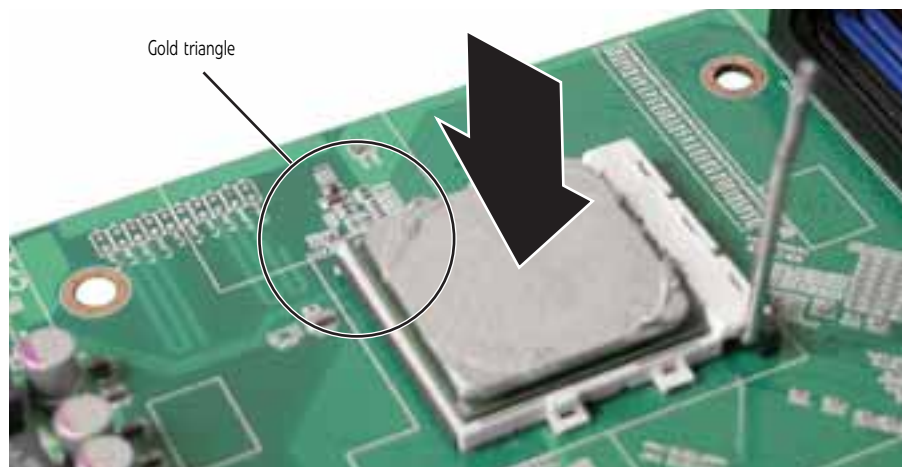
**8** When the processor is oriented correctly and in place, press it firmly into the socket, rotate the retention lever into place until it clicks.

---

⚠️ **Caution**
The heatsink has Thermal Interface Material (TIM) located on the bottom of it. Use caution when you unpack the heat sink so you do not damage the TIM. If you are reusing the original heatsink, make sure that the TIM on the bottom of the heatsink is not damaged. If the TIM is damaged, you should remove the old TIM, then apply new TIM to the bottom of the heatsink.

---

**9** Place the heatsink down onto the processor, then gently tighten the heatsink retaining screws to secure it into place.

**10** Follow the instructions in "To close the server case:" on page 24.
■

# Replacing a power supply module

⚠️ **Warning**
The power supply modules in this server contain no user-serviceable parts. Only a qualified computer technician should service the power supply modules.
Your server comes with 3-wire AC power cords fitted with the correct plug style for your region. If this plug does not match the connector on your surge protector, UPS, or wall outlet, do not attempt to modify the plug in any way. Use a UPS or wall outlet that is appropriate for the supplied AC power cords.

If your server uses the optional hot-swappable, redundant power supplies and one of the two power supplies fails, the other power supply module supports the server while you replace the failed module. You do not need to turn off the server or disconnect peripheral devices to replace a failed power supply module.

▶ **To replace a power supply module:**

**1** If you only have one power supply module, turn off your server.

**2** If you have two power supply modules, examine the LED indicators on the back of each power supply module to identify the failed module. The power supply module has failed if the orange (right) LED indicator is on.



Power supply handle
Power supply fault LED
Power connector
Power supply latch
Power on LED
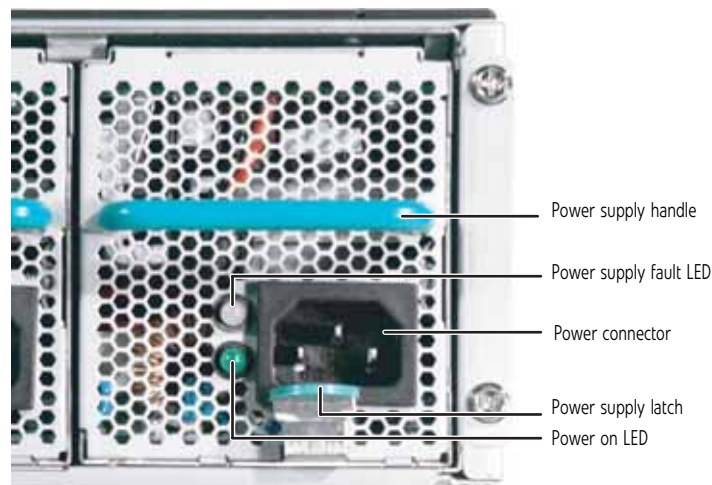
**3** Unplug the power cord from the failed power supply module.

**40**

**4** While pressing the green latch on the power supply module, grasp the handle and pull
the module straight out from the server.



**5** Slide the new power supply module into the empty power supply bay until the green latch
snaps into place.

**6** Plug the power cord into the new power supply module.

# Replacing a fan

> ✓ **Important**
> Make sure that you replace a fan with an identical replacement fan.

▶ **To replace a front fan:**

**1** Follow the instructions in "Preventing static electricity discharge" on page 18.

**2** Follow the instructions in "Opening the server case" on page 19.

**3** Remove the processor air duct by following the instructions in "Removing the processor air duct" on page 21.

**4** Unplug the fan cable from the fan connector on the system board.

Fan retention tab

Fan release tab

Fan handle

Fan retention tab

Fan cable
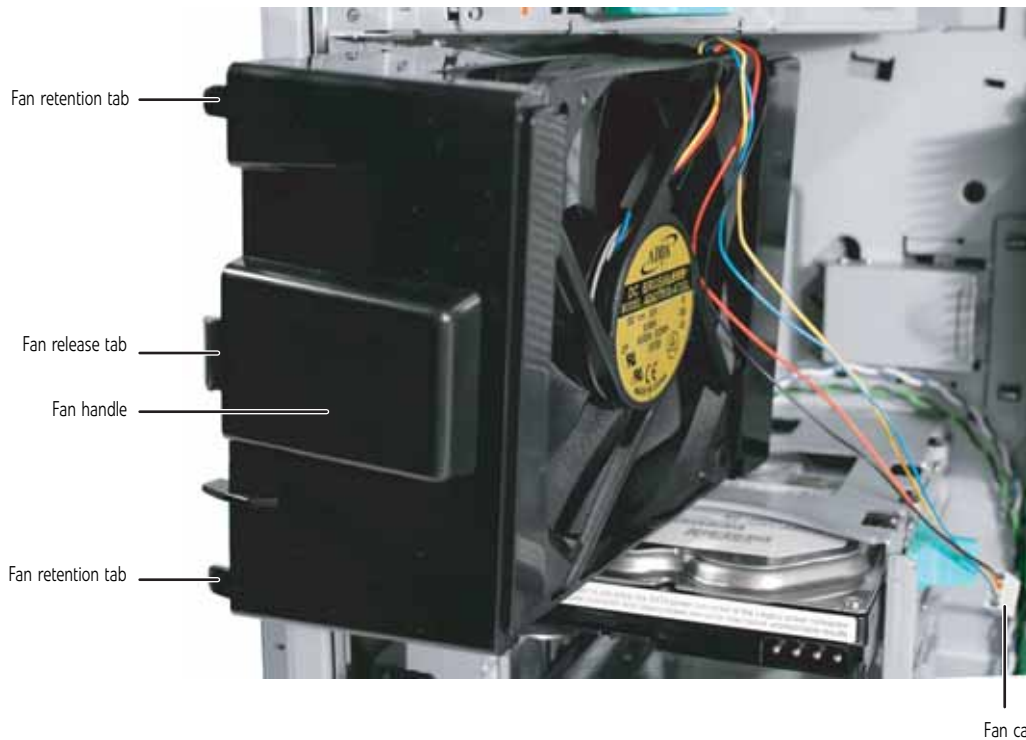
**5** Grasp the fan handle and press the fan release tab, then disengage the fan and move it away from the chassis.

**6** Pull the fan from the chassis.

**7** Insert the new fan into the opening left by the old fan, then insert the fan retention tabs and fan release tab into the chassis until it snaps into place.

**8** Plug the fan cable into the fan connector on the system board.

**9** Replace the processor air duct by following the instructions in "Installing the processor air duct" on page 22.

**10** Follow the instructions in "Closing the server case" on page 24.

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▶ **To replace a back fan:**

**1** Follow the instructions in "Preventing static electricity discharge" on page 18.

**2** Follow the instructions in "Opening the server case" on page 19.

**3** Unplug the fan cable from the fan connector on the system board.



Fan cable

Fan retention screw

Fan retention screw
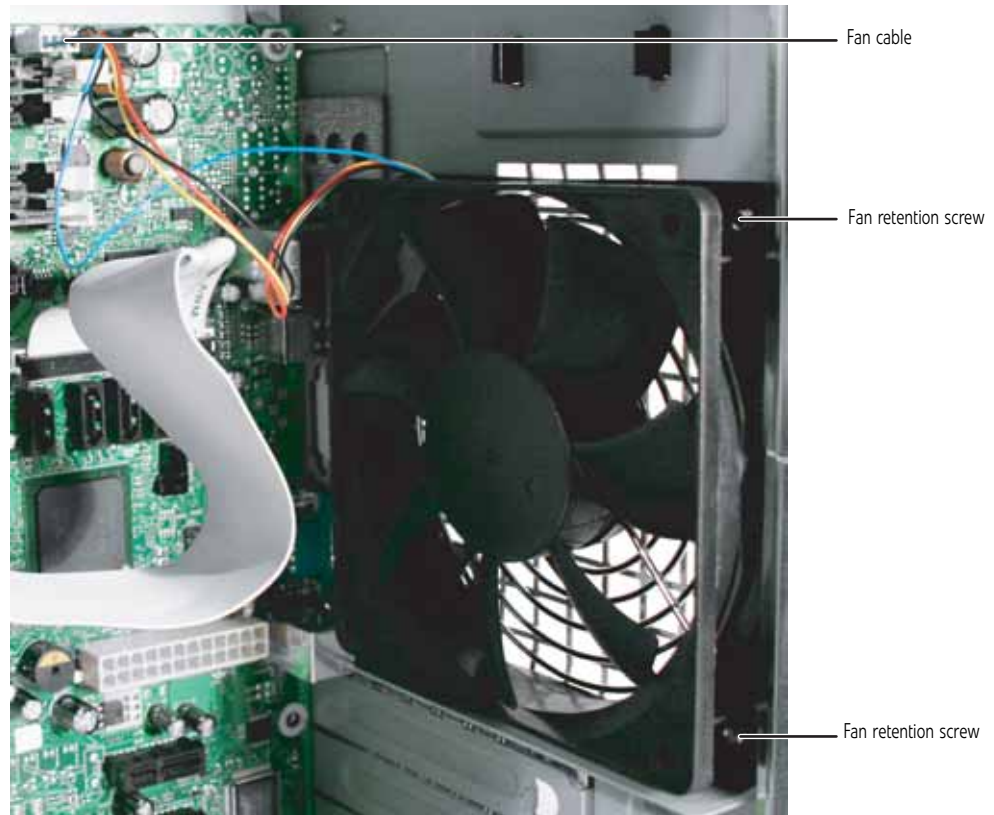
**4** Unscrew the four fan retention screws holding the fan to the back of the chassis.

**5** Pull the fan from the chassis, noting the orientation.

> ✓ **Important**
> Make sure that the new fan is oriented the same way (air flow) as the old fan.

**6** Insert the new fan into the chassis, then replace the fan retention screws.

**7** Plug the fan cable into the fan connector on the system board.

**8** Follow the instructions in "Closing the server case" on page 24.

# Replacing the CMOS battery

> ⚠ **Warning**
> There is a danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type of battery recommended by the manufacturer. Dispose of used batteries following the manufacturer's instructions.

If the server clock does not keep time or the settings in the BIOS Setup utility are not saved when you turn off the server, replace the CMOS battery with an equivalent battery.

▶ **To replace the battery:**

**1** Print the appendix for BIOS Settings in this guide.

**2** Follow the instructions in "Opening the BIOS Setup utility" on page 48.

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**3** Record the BIOS settings on your printout, then close the utility.

**4** Turn off your server, then follow the instructions in "Preventing static electricity discharge" on page 18.

**5** Follow the instructions in "Opening the server case" on page 19.

**6** Locate the old battery on the system board and note its orientation (see "System board" on page 5 for the general location of the battery). You will need to install the new battery the same way.



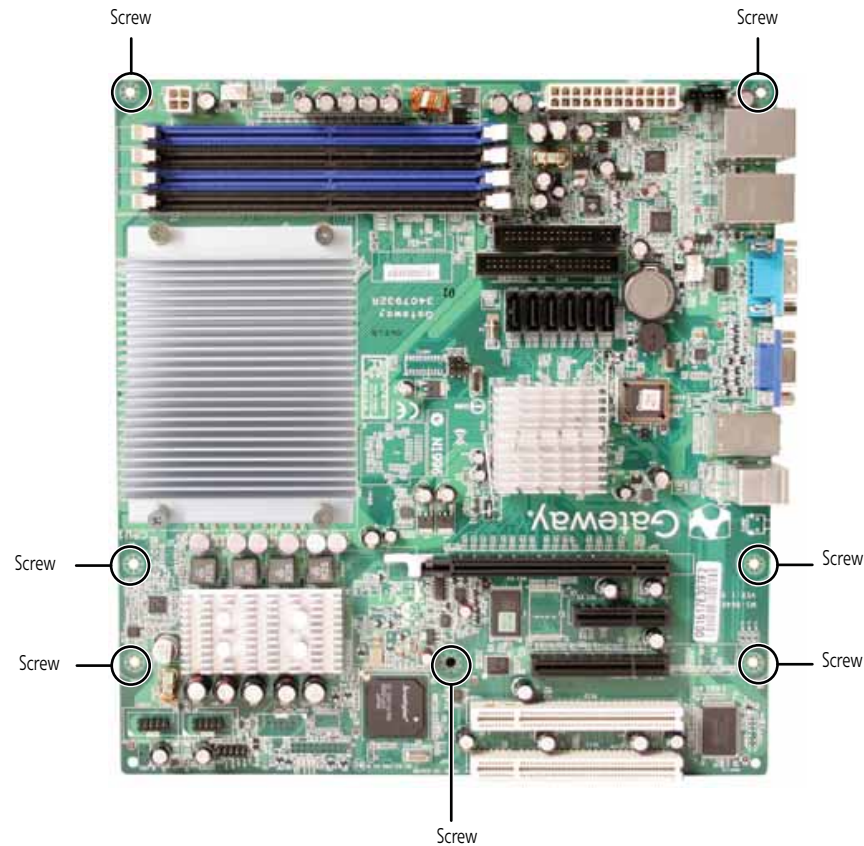Battery retention clip
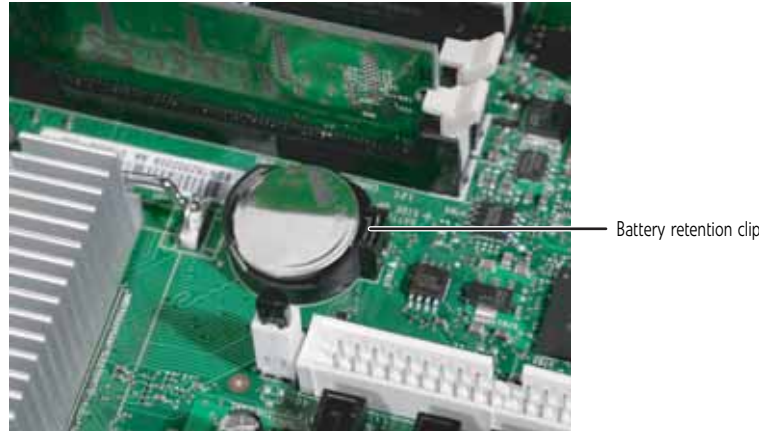
**7** Push the battery retention clip away from the battery until the battery pops up.

**8** Remove the old battery.

**9** Make sure that the positive (+) side of the new battery is facing correctly, then press the new battery into the socket until it snaps into place.

**10** Follow the instructions in "Closing the server case" on page 24.

**11** Turn on the server.

**12** Press **F2** when the Gateway logo screen appears during startup. The BIOS Setup utility opens.

**13** Restore any BIOS settings that you wrote down in Step 3.

**14** Save all your settings and close the BIOS Setup utility.
■

# Replacing the system board

▶ **To replace the system board:**

**1** Follow the instructions in "Preventing static electricity discharge" on page 18.

**2** Follow the instructions in "Opening the server case" on page 19.

**3** Remove the processor air duct by following the instructions in "Removing the processor air duct" on page 21.

**4** Remove the memory modules by following the instructions in "Installing memory" on page 34.

**5** Remove all of the expansion cards by following the instructions in "Installing PCI expansion cards" on page 35.

**6** Remove the heat sink and processor by following the instructions in "Replacing the processor" on page 38.

**7** Disconnect the power and data cables from the system board, noting their locations and orientation. (You will reconnect the cables after you install the new board.)

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**8** Remove the seven screws securing the system board to the case.

Screw                                              Screw

Screw                                              Screw

Screw                                              Screw

Screw

**9** Pull the system board away from the case and carefully remove it, then place it in a static-free bag on a stable work surface.

**10** Insert the new system board into the case, aligning the holes in the board with the threaded standoffs on the side of the case.

**11** Secure the system board to the case with the seven (7) screws you removed previously.

**12** Reinstall the memory by following the instructions in "Installing memory" on page 34.

**13** Reinstall the processor and heatsink by following the instructions in "Replacing the processor" on page 38.

**14** Connect the power and data cables.

**15** Reinstall the expansion cards by following the instructions in "Installing PCI expansion cards" on page 35.

**16** Follow the instructions in "Closing the server case" on page 24.

**17** Turn on your server.

**18** Press **F2** when the Gateway logo screen appears during startup. The BIOS Setup utility opens.

**19** Check BIOS settings to make sure that they detect the server's new hardware, then save your changes (if any) and close the BIOS Setup utility.

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# CHAPTER**5**
## Using the BIOS Setup Utility

- Opening the BIOS Setup utility
- Updating the BIOS
- Recovering the BIOS
- Resetting BIOS passwords
- Updating or recovering the BMC

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# Opening the BIOS Setup utility

The BIOS Setup utility stores basic settings for your server. These settings include basic hardware configuration, resource settings, and password security. These settings are stored and saved even when the power is off.

> ⚠️ **Caution**
> The options in the BIOS Setup utility have been set at the factory for optimal performance. Changes to these settings will affect the performance of your server. Before changing any settings, write them down in case you need to restore them later. You can record the settings on a printout of this guide's appendix for "BIOS Settings" on page 69.

▶ **To open the BIOS Setup utility:**

1 Restart your server, then press **F2** when the Gateway logo screen appears during startup. The BIOS Setup utility opens.

   When you select menu items, the Item Specific Help box on the right side of the screen displays specific information about the selection. The command bar across the bottom of the screen shows the keys you press to access help, navigate through the menus, and perform other tasks.

2 Select one of these menus:

   • **Main** gives you access to basic information and settings related to your server's hardware and configuration.
   • **Advanced** gives you access to information and settings for PCI, peripheral devices, memory, and the chipset.
   • **Boot** gives you access to information and settings for startup features and startup sequences.
   • **Security** gives you access to settings related to system access passwords. For more information, see "Server security" on page 14.
   • **Server** gives you access to settings for system management, console redirection, event log configuration, and fault-resilient boot settings.
   • **Exit** gives you access to options for closing the BIOS Setup utility.

   ■

# Updating the BIOS

▶ **To update the BIOS:**

1 Print the appendix for "BIOS Settings" on page 69.

2 Restart your server, then press F2 when the Gateway logo screen appears during startup.

3 Record any custom BIOS settings on your printout.

4 Download the BIOS update files from support.gateway.com.

5 Follow the instructions on the Web site or the readme.txt file in the downloaded zip file to update the BIOS.

6 After you have updated the BIOS, restart your server and load the default BIOS values.

7 Enter any custom BIOS settings you recorded in Step 3, then save your changes and close the BIOS Setup utility.

   ■

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# Recovering the BIOS

If you encounter a problem while you are updating the BIOS, such as a power outage, the BIOS update may not be successful. If the system continues to try to boot from the new, corrupted BIOS, you can manually recover the old BIOS so you can try another update.

> ☑ **Important**
> This method does not work if the keyboard is connected through the KVM switch.

▶ **To create a recovery disk:**

**1** Download **646MS100.WPH** (the system BIOS for your server) from the Gateway Support Web page, then rename the file to **BIOS.WPH**.

**2** Download **CRISDISK.ZIP** (a Crash Recovery Diskette utility) from the Gateway Support Web page, then uncompress it to a folder.

**3** Copy **BIOS.WPH** (the file you renamed) to the same folder.

**4** Insert a blank, formatted floppy disk into your diskette drive.

**5** Run **CRISDISK.BAT** to create the recovery disk.

▶ **To recover the BIOS:**

**1** Follow the instructions in . Make sure that you turn off the server, then unplug the power cord(s) and all other cables connected to the server.

**2** Follow the instructions in .

> ⚠ **Caution**
> Moving the jumper while the power is on can damage your server. Always turn off the server and unplug the power cords and all other cables before changing the jumper.

**3** Remove the jumper across pins 1-2 of header J5 and place the jumper across pins 2-3 (as shown in the illustration).
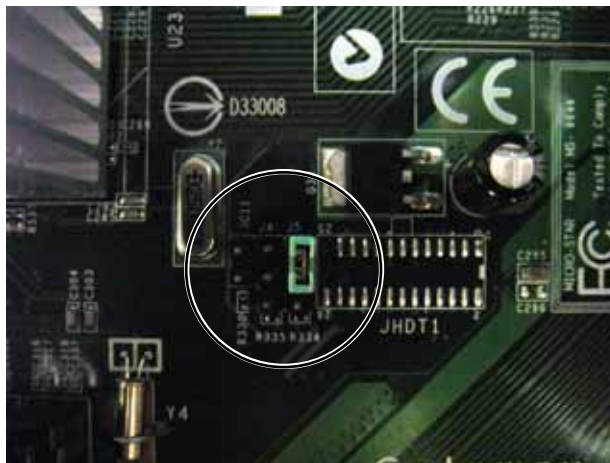


**4** Follow the instructions in .

**5** Insert the recovery disk into the diskette drive.

**6** Turn on your server and wait until you hear "beep-beep-beep," then turn off your server again.

**7** Follow the instructions in .

**8** Place the jumper back onto pins 1-2.

**9** Follow the instructions in .

**10** Reboot the server and verify that the recovery was successful.

# Resetting BIOS passwords

To reset BIOS passwords, you must either reset and clear all BIOS settings, or use the Clear Password jumper. To reset all BIOS settings, follow the instructions in "Resetting BIOS passwords" on page 50.
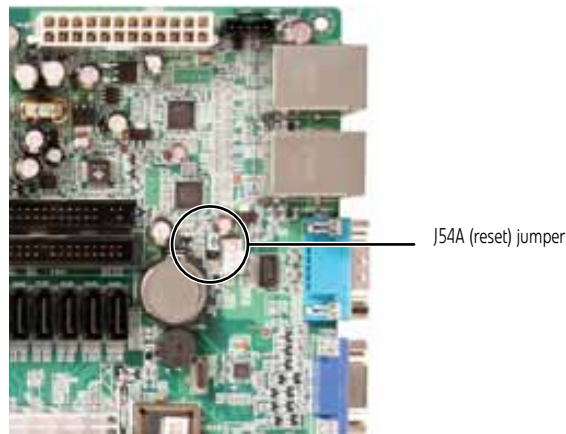
▶ **To clear the BIOS password(s):**

**1** Follow the instructions in "Preventing static electricity discharge" on page 18. Make sure that you turn off the server, then unplug the power cord(s) and all other cables connected to the server.

> ⚠ **Caution**
> Moving the jumper while the power is on can damage your server. Always turn off the server and unplug the power cords and all other cables before changing the jumper.

**2** Follow the instructions in "Opening the server case" on page 19.

**3** Remove the jumper across pins 1-2 of header J54-A, then place the jumper across pins 2-3.



J54A (reset) jumper

**4** Follow the instructions in "Closing the server case" on page 24.

**5** Reconnect the power cords and turn on the server. The BIOS password(s) is cleared.

**6** Turn off the server, then disconnect the power cords and all other cables connected to the server.

**7** Follow the instructions in "Opening the server case" on page 19.

**8** Place the jumper back onto pins 1-2.

**9** Follow the instructions in "Closing the server case" on page 24.

■

# Updating or recovering the BMC

## Updating or recovering the BMC firmware

▶ **To update or recover the BMC firmware:**

**1** Download the BMC firmware zip file from support.gateway.com.

**2** Read the release notes for the firmware update.

**3** Follow the instructions on the Web site or in the readme.txt file in the downloaded zip file to update the firmware.

**4** When the BMC update is complete, reboot your server.

■

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# CHAPTER**6**
## Troubleshooting

- Telephone support
- Tutoring and training
- Safety guidelines
- Error messages
- Troubleshooting

# Telephone support

## Before calling Gateway Customer Care

If you have a technical problem with your server, follow these recommendations before contacting Gateway Customer Care:

- Make sure that your server is connected correctly to a grounded AC outlet that is supplying power.
- If a peripheral device, such as a keyboard or mouse, does not appear to work, make sure that all cables are plugged in securely and plugged into the correct port or jack.
- If you have recently installed hardware or software, make sure that you have installed it following the instructions provided with it. If you did not purchase the hardware or software from Gateway, see the manufacturer's documentation and technical support resources.
- If you have "how to" questions about using a program, see:
  - The program's online Help
  - The program's documentation
  - Your operating system's documentation
  - The software or hardware manufacturer's Web site
- See "Troubleshooting" on page 57.
- Have your client ID, serial number (usually located on the back of your server case), and order number available, along with a detailed description of your issue, including the exact text of any error messages, and the steps you have taken.
- Make sure that your server is nearby at the time of your call. The technician may have you follow appropriate troubleshooting steps.
- Consider using Gateway's online technical support. Gateway's Web site has FAQs, tips, and other technical help. You can also use the Web site to e-mail Customer Care. For more information, visit Gateway's Customer Care Web site at support.gateway.com.

## Telephone support

Gateway offers a wide range of customer service, technical support, and information services.

### Telephone numbers

You can access the following services through your telephone to get answers to your questions:

| Resource | Service description | How to reach |
| --- | --- | --- |
| Gateway's fee-based software tutorial service | Get tutorial assistance for software issues. | 800-229-1103 (charged to your credit card) |
| Gateway Customer Care | Talk to a Gateway Customer Care representative about a non-tutorial technical support question. | 877-485-1464 (US) (say the word "Server") 800-846-3609 (Canada and Puerto Rico) 605-232-2191 (all other countries) |
| Sales, accounting, and warranty | Get information about available systems, pricing, orders, billing statements, warranty service, or other non-technical issues. | 800-846-2000 (US) 888-888-2037 (Canada) |

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# Tutoring and training

Gateway's Customer Care professionals cannot provide hardware and software training. Instead, Gateway recommends the following training resources.

| Resource | Service description | For more information |
|---|---|---|
| Gateway Learning Libraries | A variety of courses and tutorials are available on CD. Select from several easy-to-use learning libraries. | www.gateway.com/training |

# Safety guidelines

While troubleshooting your server, follow these safety guidelines:

- Never remove the top panel while your server is turned on and while the modem cable and the power cords are connected.
- Do not attempt to open the monitor. To do so is extremely dangerous. Even if the power is disconnected, energy stored in the monitor components can be dangerous. Also, opening the monitor voids its warranty.
- Make sure that you are grounded correctly before opening the server. For more information about preventing damage from static electricity, see "Preventing static electricity discharge" on page 18.
- After you complete any maintenance task where you have to open the server case, make sure that you close the case and reconnect all cables before you restart your server.

> **Warning**
> To avoid bodily injury, do not attempt to troubleshoot your server problem if:
> - The power cords or plugs are damaged
> - Liquid has been spilled into your server
> - Your server was dropped
> - The case was damaged
> Instead, unplug your server and contact a qualified computer technician.

# Error messages

These messages often indicate procedural errors such as typing an incorrect keystroke or trying to save a file to a write-protected diskette. Some messages, however, may indicate a problem that requires further troubleshooting.

## Memory messages

### Gate20 Error

The BIOS is unable to correctly control the system board's Gate A20 function, which controls access of memory over 1 MB. This may indicate a problem with the system board.

## Boot messages

### Boot Failure ...

This is a generic message indicating the BIOS could not boot from a particular device. This message is usually followed by other information concerning the device.

### Invalid Boot Diskette

A diskette was found in the drive, but it is not configured as a bootable diskette.

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**Drive Not Ready**

The BIOS was unable to access the drive because it indicated it was not ready for data transfer. This is often reported by drives when no media is present.

**A: Drive Error**

The BIOS attempted to configure the A: drive during POST, but was unable to correctly configure the device. This may be due to a bad cable or faulty diskette drive.

**Insert BOOT diskette in A:**

The BIOS attempted to boot from the A: drive, but could not find a correct boot diskette.

**Reboot and Select proper Boot device or Insert Boot Media in selected Boot device**

BIOS could not find a bootable device in the system and/or removable media drive does not contain media.

**NO ROM BASIC**

This message occurs on some systems when no bootable device can be detected.

## Storage Device messages

**Primary Master Hard Disk Error**

The IDE/ATAPI device configured as Primary Master could not be correctly initialized by the BIOS. This message is typically displayed when the BIOS is trying to detect and configure IDE/ATAPI devices in POST.

**Primary Slave Hard Disk Error**

The IDE/ATAPI device configured as Primary Slave could not be correctly initialized by the BIOS. This message is typically displayed when the BIOS is trying to detect and configure IDE/ATAPI devices in POST.

**Secondary Master Hard Disk Error**

The IDE/ATAPI device configured as Secondary Master could not be correctly initialized by the BIOS. This message is typically displayed when the BIOS is trying to detect and configure IDE/ATAPI devices in POST.

**Secondary Slave Hard Disk Error**

The IDE/ATAPI device configured as Secondary Slave could not be correctly initialized by the BIOS. This message is typically displayed when the BIOS is trying to detect and configure IDE/ATAPI devices in POST.

**Primary Master Drive – ATAPI Incompatible**

The IDE/ATAPI device configured as Primary Master failed an ATAPI compatibility test. This message is typically displayed when the BIOS is trying to detect and configure IDE/ATAPI devices in POST.

**Primary Slave Drive – ATAPI Incompatible**

The IDE/ATAPI device configured as Primary Slave failed an ATAPI compatibility test. This message is typically displayed when the BIOS is trying to detect and configure IDE/ATAPI devices in POST.

**Secondary Master Drive – ATAPI Incompatible**

The IDE/ATAPI device configured as Secondary Master failed an ATAPI compatibility test. This message is typically displayed when the BIOS is trying to detect and configure IDE/ATAPI devices in POST.

**Secondary Slave Drive – ATAPI Incompatible**

The IDE/ATAPI device configured as Secondary Slave failed an ATAPI compatibility test. This message is typically displayed when the BIOS is trying to detect and configure IDE/ATAPI devices in POST.

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### S.M.A.R.T. Capable but Command Failed

The BIOS tried to send a S.M.A.R.T. message to a hard disk, but the command transaction failed.

This message can be reported by an ATAPI device using the S.M.A.R.T. error reporting standard. S.M.A.R.T. failure messages may indicate the need to replace the hard disk.

### S.M.A.R.T. Command Failed

The BIOS tried to send a S.M.A.R.T. message to a hard disk, but the command transaction failed.

This message can be reported by an ATAPI device using the S.M.A.R.T. error reporting standard. S.M.A.R.T. failure messages may indicate the need to replace the hard disk.

### S.M.A.R.T. Status BAD, Backup and Replace

A S.M.A.R.T. capable hard disk sends this message when it detects an imminent failure.

This message can be reported by an ATAPI device using the S.M.A.R.T. error reporting standard. S.M.A.R.T. failure messages may indicate the need to replace the hard disk.

### S.M.A.R.T. Capable and Status BAD

A S.M.A.R.T. capable hard disk sends this message when it detects an imminent failure.

This message can be reported by an ATAPI device using the S.M.A.R.T. error reporting standard. S.M.A.R.T. failure messages may indicate the need to replace the hard disk.

## System configuration messages

### DMA-2 Error

Error initializing secondary DMA controller. This is a fatal error, often indication a problem with system hardware.

### DMA Controller Error

POST error while trying to initialize the DMA controller. This is a fatal error, often indication a problem with system hardware.

### Checking NVRAM..Update Failed

BIOS could not write to the NVRAM block. This message appears when the FLASH part is write-protected or if there is no FLASH part (System uses a PROM or EPROM).

### Microcode Error

BIOS could not find or load the CPU Microcode Update to the CPU. This message only applies to INTEL CPUs. The message is most likely to appear when a brand new CPU is installed in a system board with an outdated BIOS. In this case, the BIOS must be updated to include the Microcode Update for the new CPU.

### NVRAM Checksum Bad, NVRAM Cleared

There was an error in while validating the NVRAM data. This causes POST to clear the NVRAM data.

### Resource Conflict

More than one system device is trying to use the same non-shareable resources (Memory or I/O).

### NVRAM Ignored

The NVRAM data used to store Plug'n'Play (PnP) data was not used for system configuration in POST.

### NVRAM Bad

The NVRAM data used to store Plug'n'Play (PnP) data was not used for system configuration in POST due to a data error.

### Static Resource Conflict

Two or more Static Devices are trying to use the same resource space (usually Memory or I/O).

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**PCI I/O conflict**

A PCI adapter generated an I/O resource conflict when configured by BIOS POST.

**PCI ROM conflict**

A PCI adapter generated an I/O resource conflict when configured by BIOS POST.

**PCI IRQ conflict**

A PCI adapter generated an I/O resource conflict when configured by BIOS POST.

**PCI IRQ routing table error**

BIOS POST (DIM code) found a PCI device in the system but was unable to figure out how to route an IRQ to the device. Usually this error is causing by an incomplete description of the PCI Interrupt Routing of the system.

**Timer Error**

Indicates an error while programming the count register of channel 2 of the 8254 timer. This may indicate a problem with system hardware.

**Interrupt Controller-1 error**

BIOS POST could not initialize the Master Interrupt Controller. This may indicate a problem with system hardware.

**Interrupt Controller-2 error**

BIOS POST could not initialize the Slave Interrupt Controller. This may indicate a problem with system hardware.

## CMOS messages

**CMOS Date/Time Not Set**

The CMOS Date and/or Time are invalid. This error can be resolved by readjusting the system time in AMIBIOS Setup.

**CMOS Battery Low**

CMOS Battery is low. This message usually indicates that the CMOS battery needs to be replaced. It could also appear when the user intentionally discharges the CMOS battery.

**CMOS Settings Wrong**

CMOS settings are invalid. This error can be resolved by using AMIBIOS Setup.

**CMOS Checksum Bad**

CMOS contents failed the Checksum check. Indicates that the CMOS data has been changed by a program other than the BIOS or that the CMOS is not retaining its data due to malfunction. This error can typically be resolved by using AMIBIOS Setup.

## Miscellaneous messages

**Keyboard Error**

Keyboard is not present or the hardware is not responding when the keyboard controller is initialized.

**Keyboard/Interface Error**

Keyboard Controller failure. This may indicate a problem with system hardware.

**System Halted**

The system has been halted. A reset or power cycle is required to reboot the machine. This message appears after a fatal error has been detected.

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# Troubleshooting

## First steps

> **Warning**
> To avoid bodily injury, do not attempt to troubleshoot your server problem if:
> - The power cords or plugs are damaged
> - Liquid has been spilled into your server
> - Your server was dropped
> - The case was damaged
> Instead, unplug your server and contact a qualified computer technician.

Try these steps first before going to the following sections:

- Make sure that the power cords are connected to your server and an AC outlet and that the AC outlet is supplying power.
- If you use a surge protector or a UPS, make sure that it is turned on and is rated to handle the power required by your server.
- If you added or removed server components before the problem started, review the installation procedures you performed and make sure that you followed each instruction. You may need to remove the device, uninstall the device's software, then reinstall the device.
- If an error message appears on the screen, write down the exact message before calling Gateway Customer Care. For instructions, see "Telephone support" on page 52.
- Restart your server, then open the BIOS Setup utility by pressing and holding **F2** while your server restarts. Check your configuration settings.
- When diagnosing problems, press the non-maskable interrupt (NMI) button to put the server into a halt state. For the location of the button, see "Front" on page 2.
- If an error occurs in a program, see its documentation or online help.

## Battery replacement

> **Warning**
> To avoid bodily injury, do not attempt to troubleshoot your server problem if:
> - The power cords or plugs are damaged
> - Liquid has been spilled into your server
> - Your server was dropped
> - The case was damaged
> Instead, unplug your server and contact a qualified computer technician.

If you have problems after installing a new CMOS battery, try each of the following items, closing the case and restarting the server after each try:

- Restart your server, then open the BIOS Setup utility by pressing and holding **F2** while your server restarts. Correct any discrepancies.
- Remove the top panel by following the instructions in "Opening the server case" on page 19, then 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 do not miss any pins.
- If you have the correct test equipment, make sure that the new battery has power. Although unlikely, your new battery may be defective.

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# Beep codes

Whenever a recoverable error occurs during the power-on self-test (POST), the BIOS displays an error message that describes the problem. The BIOS also sounds a beep code (one long tone followed by two short tones) during POST if the video configuration fails (a faulty video controller) or if an expansion card is not functioning correctly. One short beep indicates the BIOS will boot the operating system. No error found.

A PCI expansion card (for example, a RAID controller) can also issue audible errors by itself, usually consisting of one long tone followed by a series of short tones. For more information on the beep codes issued, check the documentation for that device.

The following table shows POST error beep codes. Prior to system video initialization, BIOS uses these codes to inform you of error conditions.

| Beeps | Description | Troubleshooting steps |
|-------|-------------|----------------------|
| 1 | Memory refresh timer error | Reseat the memory modules or replace with modules you know are good. |
| 2 | Parity error in the first 64 KB of memory. | Same as for 1 beep. |
| 3 | Base memory read/write test error | Same as for 1 beep. |
| 4 | System board timer not operational. | Possible system board malfunction. To eliminate the possibility of an add in-card problem, remove all expansion cards. If the beep code occurs even when all expansion cards have been removed, the system board is at fault. If the beep code does not occur when the expansion cards have been removed, one of the cards is causing the problem. Install the cards one at a time until the problem happens again. When the beep code returns, the most recent card you installed is at fault. |
| 5 | A processor on the system board generated an error. | Remove one of the processors if two are installed, then try a known good processor in the first socket. Same as for 4 beeps. |
| 6 | The keyboard controller (8042) may be defective. The BIOS cannot switch to Protected mode. | Remove the keyboard to see if the error goes away. If it does, try a known good keyboard. Same as for 4 beeps. |
| 7 | General exception error (processor exception error). | Same as for 5 beeps |
| 8 | Display memory error (system video adapter). | If the system video adapter is an add-in card, replace or reseat the video adapter. If the video adapter is integrated into the system board, the board may be faulty. Try using an add-in card. |
| 9 | The ROM checksum value does not match the value encoded in the BIOS. | Same as for 4 beeps. |
| 10 | The shutdown register for CMOS RAM failed. | Same as for 4 beeps. |
| 11 | The cache memory test failed. | Same as for 4 beeps. |

# LED information

See the following table for a description of this server's LEDs and the information they provide:

| LED Name | Function | Location | Color | Description |
|---|---|---|---|---|
| ID | Aid in server identification | Control panel and back of system board | Yellow (front) Blue (back) | On – Server identification enabled |
| System Fault | Visible fault warning | Control panel | Red | Off – System normal<br>Blinking – Non-critical system fault<br>On – Critical system fault (system needs to be shut down and serviced) |
| Hard drive tray LEDs | Indicate drive status and activity | On each hard drive tray | Blue or red | Blue (On) – Hard drive present<br>Blue (Blinking) – Hard drive activity<br>Red (On) – Hard drive fault<br>Red (Blinking) – Hard drive rebuilding<br>Off – No hard drive access |
| NIC status LEDs | Identify NIC states | Control panel and back I/O panel RJ-45 connectors | Blue (front) | Blue (On) – Link<br>Blue (Blink) – Activity<br>Off – No link |
| | | | Green/ Orange (back) | LED 1 Green (On) – NIC linked<br>LED 1 Green (Blinking) – NIC 1 Gbps activity<br>LED 1 (Off) – No link<br>LED 2 Orange (On) Link speed 1 Gbps<br>LED 2 Green (On) – Link at 100 Mbps<br>LED 2 Green (Off) – Link at 10 Mbps |
| Power LED | Identify the power state of the system | Control panel | Blue | Off – Power is off<br>Blinking – Power saving state (S1, S3, or S4)<br>On – Power is on |
| AC power LED | Identify power supply fault | Power supply module | Green or Orange | Green (On) – Power supply good and receiving power<br>Orange (On) – Power supply critical event causing shutdown<br>Orange (Blinking) – Close to protection threshold or over within 15 seconds<br>Off – Power supply not receiving power |



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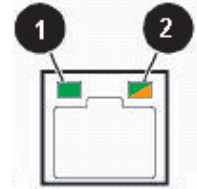
## BIOS

**The settings in the BIOS Setup utility are not retained**
- Replace the CMOS battery. For instructions, see "Replacing the CMOS battery" on page 43.

## Optical drive

**Your server does not recognize an optical drive**
- Restart your server, then open the BIOS Setup utility by pressing and holding **F2** while your server restarts. Make sure that the IDE controllers are enabled. For more information, see "Using the BIOS Setup Utility" on page 47.
- Reinstall the device driver. For instructions, see *Using Your Server Companion DVD*.
- Make sure that the drive is configured correctly by following the instructions in the drive's documentation.
- Turn off your server, then remove the drive and push it in again to make sure the drive is seated correctly. For instructions, see "Installing or replacing a fixed or removable-media drive" on page 25.

**Your optical drive tray does not open**
- Press a straightened paper clip wire into the optical drive's manual eject hole. The drive tray opens.
- If this problem happens frequently while the server is turned on, the drive may be defective.

## Expansion cards

**Your server does not recognize an expansion card**
- Restart your server.
- Make sure that you have installed the necessary software or driver. For instructions, see the card's documentation.
- Reseat the expansion card and riser card. For instructions, see "Installing PCI expansion cards" on page 35.

## Hard drive

**The hard drive cannot be accessed, or you receive a "General failure reading drive C" error message**
- If a diskette is in the diskette drive, eject it and restart your server by pressing the reset button.
- Restart your server by pressing the reset button.
- Turn off your server, then remove all hard drives and push them in again to make sure the drives are seated correctly. For instructions, see "Installing or replacing a hard drive" on page 27.
- If your server has been subjected to static electricity or physical shock, you may need to reinstall the operating system.

**You receive a "Non-system disk" or "disk error" error message**
- Eject the diskette from the diskette drive, then press **ENTER**.
- Make sure that your hard drive has an active partition. For more information, see "The master boot record is corrupted" on page 61.

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**You are having problems with a SATA drive**

- For normal SATA drives (not SATA RAID), check the BIOS setup utility to see if the BIOS has recognized the drive.
- Make sure that the power cable and SATA cables are attached securely to the drive cage.
- If the drive is not detected, try a different SATA port.
- Try swapping SATA cables between drives to determine if the cable is defective.
- Try listening to the drive to determine if the drive is spinning up. If not, the drive may be defective.

**The master boot record is corrupted**

- In a Windows network operating system, repair the master boot record using FDISK.

  ▶ **To repair the master boot record:**

  - At the command prompt, type **fdisk/mbr**, then press **ENTER**.
    ◼

## Internet

**You cannot connect to the Internet**

- Make sure that your account with your Internet Service Provider (ISP) is set up correctly. Contact your ISP technical support for help.
- Make sure that you do not have a problem with your modem.

## Keyboard

**Liquid has been spilled into the keyboard**

- If you spilled liquid in the keyboard, turn off your server and unplug the keyboard. Clean the keyboard and turn it upside down to drain it. Let the keyboard dry before using it again. If the keyboard does not work after it dries, you may need to replace it. This type of damage is not covered by your server's warranty.

## Memory

**Memory errors were detected during server start up**

- Open your server and make sure that the memory modules are installed correctly. For instructions, see "Installing memory" on page 34.
- A memory module may be defective. If possible, try another memory module and see if the error repeats.

## Monitor

**Your server is running but there is no picture**

- Adjust the brightness and contrast controls to the center position.
- Make sure that the monitor is plugged in and turned on. If the monitor is turned on, the power LED should be lit.
- Check the cable for bent or damaged pins.
- Connect your monitor to another computer, or connect a monitor that you know works to your server.

**The color is not uniform**

Make sure that the monitor warms up for at least 30 minutes before making a final judgment about color uniformity.

Make sure that:

- The monitor is not positioned too close to another monitor, electric fan, or fluorescent light.
- You demagnetize the screen using the monitor's degauss feature. For more information on degauss, see the monitor's documentation.

**A horizontal line or wire is visible across the CRT monitor screen**

The monitor may use thin *damper* wires, located approximately 1/3 of the way from the upper and lower screen edges, to stabilize the internal aperture grille. These wires are most obvious when the monitor displays a white background. The aperture grille allows more light to pass through the screen for brighter colors and greater luminescence. The damper wire is a critical part of the overall monitor design and does not negatively affect the monitor's function.

# Power

**You press the power button, but the server does not turn on**

- If the power button LED is green, the server is turned on, but you may not be seeing an image on the monitor. For monitor troubleshooting, see "Monitor" on page 61.
- If your server is plugged into a surge protector or UPS, make sure that the surge protector or UPS is connected securely to an electrical outlet, turned on, and working correctly. One way to check this is to plug the server directly into a wall outlet, bypassing the surge protector or UPS.
- Make sure that the electrical outlet is working by plugging a working device, such as a lamp, into the outlet, then turning it on to test the outlet.
- Open your server and make sure that the power supply module cage cable is connected correctly to the system board.

**When you turn on the server, it makes several short beeps**

- The short beeps indicate the server has encountered some type of error. See "Beep codes" on page 58.

# Processor

**Your server does not recognize a new processor**

- Make sure that the processor is fully seated in its socket. The processor should be recognized automatically if it is installed correctly.

# APPENDIX**A**
## Server Specifications

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

# System specifications

| Case size | Tower (with standard power supply): 8 × 16.5 × 19.8 inches (203.2 × 419.2 × 502.7 cm)<br>Tower (with redundant power supplies) 8 × 16.5 × 22.2 inches (203.2 × 419.2 × 563 cm) |
|---|---|
| Weight | Approximately 32 lbs (14.5 kg) (varies by configuration) |
| Fans | |
| Ports | - PS/2 keyboard/mouse (2)<br>- USB (6)<br>- Serial (1)<br>- VGA (1)<br>- RJ-45 LAN (2) |
| Drives (removable media) | Two 5.25" external drive bays.<br>Two 3.5" external drive bays.<br>Optional drives:<br>- 3.5-inch diskette<br>- CD-ROM, CD-R, or DVD-ROM<br>- Tape drive |
| Hard Drives | Support for as many as four 3.5" SATA, SATA II, or SAS drives |
| | Supports full-height PCI expansion cards up to 10.8 inches (27.5 cm) long |
| Power supply modules | Single 400 W fixed power supply (standard), or<br>Two 520 W, hot-swap, redundant power supply modules (optional). |
| Operating systems | <br>- <br>- <br>- Red Hat Linux Enterprise 4.0 32/64 bit Editions<br>- SuSe Linux Enterprise 10.0 32/64 bit Editions |
| Certifications | - FCC Class B<br>- UL<br>- cUL |

# System board specifications

| | Single AM2 socket<br>Supports one (1) AMD Athlon or one (1) AMD Opteron 1200 Series processor with 3.0 GHz Hyper Transport Bus |
|---|---|
| | NVIDIA nFORCE 3600 (MCP55 Professional) |
| Memory | Four DIMM slots support as many as 8 GB total memory<br>DDR2 667Mhz ECC Unbuffered DIMM modules<br>DIMM organization x72 ECC<br>240-pin DIMMs (256 MB, 512 MB, 1 GB, or 2 GB only) |

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| | |
|---|---|
| **PCI device/slot** | PCI slots:<br>▪ Slot 1 – PCI Express x16<br>▪ Slot 2 – PCI Express x4<br>▪ Slot 3 – PCI Express x8<br>▪ Slot 4 – PCI 32-bit<br>▪ Slot 5 – PCI 32-bit |
| **Video** | Integrated Matrox G200 Graphics Core with 2.25 MB<br>Up to 1280 × 1024, 8 bpp or 1024 × 768, 16 bpp |
| **RAID** | Six Serial ATA 2.0 ports from the MCP55 supporting entry level RAID functionality, including RAID levels 0, 1, 5, and 10. |
| **LAN** | On-board Marvel Ethernet NIC<br>▪ 10Base-T/100Base-TX/1000Base-T<br>▪ PXE support |
| **ACPI** | ACPI compliance<br>Supports S0 and S4 |
| **Hardware Monitor** | Main logic board sensors:<br>▪ Voltage sensors<br>▪ Temperature sensors<br>▪ Adaptive fan speed control and fan speed detection |

# Environmental specifications

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

| Variable | Requirements |
|---|---|
| **Temperature** | Maximum rate of change: 18°F (10°C) per hour<br>Nonoperating: -4° to 140°F (-20° to 60°C)<br>Operating: 41° to 95°F (5° to 35°C); derated 0.9°F (0.5°C) for every 1,000 feet (305 meters) |
| **Altitude** | 12,500 feet (3,810 meters) maximum |
| **Humidity** | Operating: 20% to 80% relative, non-condensing<br>Nonoperating: 20% to 90% relative non-condensing at 86° F (30° C) |
| **Shock** | Operating: 2.0 g, 11 msec, ½ sine<br>Packaged: Operational after 18-inch free fall (cosmetic damage might occur) |
| **AC input power** | 100-127 V, 10.0 A, 50/60 Hz max.<br>200-240 V, 5.0 A, 50/60 Hz max. |

# Electronic specifications

## Memory map

| Address Range (hex) | Amount | Function |
| --- | --- | --- |
| 0 to 07FFFFh | 640 KB | DOS region, base system memory |
| 0A0000h to 0BFFFFh | 128 KB | Video or SMM memory |
| 0C0000h and 0DFFFFh | 128 KB | Expansion card BIOS and buffer area |
| 0E0000h to 0FFFFFh | 128 KB | System BIOS |
| 0E0000h to 0EFFFFh | 2 MB | Extended system BIOS |
| FC000000h to FFFFFFFFh | 64 MB | PCI memory space |

## Interrupts

The following table reflects a typical configuration, but you can change these interrupts. Use this information to determine how to program each interrupt. The actual interrupt map is defined using configuration registers in the ICH5-R (I/O controller). I/O Redirection Registers in the I/O APIC are provided for each interrupt signal. The signals define hardware interrupt signal characteristics for APIC messages sent to local APIC(s).

> ✔ **Important**
> If you disable an IDE controller to free the interrupt for that controller, you must physically unplug the IDE cable from the system board. Simply disabling the drive by configuring the BIOS does not make the interrupt available.

| Interrupt | Description |
| --- | --- |
| IRQ0 | Timer/counter, HPET #0 in legacy replacement Mode. In APIC mode, cascade from 8259 controller 1 |
| IRQ1 | Keyboard controller |
| IRQ2 | Slave controller INTR output. In APIC mode Timer/counter, HPET #0 |
| IRQ3 | Serial port A |
| IRQ4 | Serial port B |
| IRQ5 | Parallel port |
| IRQ6 | Diskette controller |
| IRQ8 | Real-time clock/HPET#1 in legacy replacement mode |
| IRQ9 | Generic, Option for SCI |
| IRQ10 | Generic, Option for SCI |
| IRQ11 | HPET #2, option for SCSI, TCO |
| IRQ12 | Mouse controller |
| IRQ13 | System interrupt/FERR |

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| Interrupt | Description |
|---|---|
| IRQ14 | Primary ATA, legacy mode |
| PIRQA | USB 1.1 controller 1 and 4 |
| PIRQB | Video |
| PIRQC | USB 1.1 controller 3, Native IDE, SATA |
| PIRQD | USB 1.1 controller 2 |
| PIRQE | Option for SCI, TCO, HPET #0,1,2 |
| PIRQF | Option for SCI, TCO, HPET #0,1,2 |
| PIRQG | Option for SCI, TCO, HPET #0,1,2 |
| PIRQH | USB 2.0 EHCI controller 1, Option for SCI, TCO, HPET #0,1,2 |
| Ser IRQ | SIO3 |

# Additional specifications

For more information about your server, such as memory size, hard drive size, and processor type, visit Gateway's *Support* page at support.gateway.com. The *Support* page also has links to additional Gateway documentation and detailed specifications for your own server.

# APPENDIX **B**
## BIOS Settings

If you ever need to restore your BIOS settings, such as after a system board change, a record of the settings will make the process much easier. You can print this appendix, then record your custom BIOS settings on the printout. Only settings which can be changed are listed. For a complete list of viewable BIOS settings, run the BIOS Setup utility.

▶ **To view all BIOS settings:**

  **1** Restart your server

  **2** Press **F2** when the Gateway logo screen appears during startup. The BIOS Setup utility opens.

  **3** Select menus and submenus to display setting information.
    ■

⚠ **Caution**
Setting the wrong values in the Advanced Menu may cause the server to malfunction.

| BIOS menu | BIOS submenu | Setting | Value |
|---|---|---|---|
| **Main** | | | |
| | | System Overview AMIBIOS (Version, Build date, System ID, Version), Processor (Type, Speed, Count) | |
| | | System Memory (Size) | |
| | | System Time | HH:MM:SS |
| | | System Date | DAY MM/DD/YYYY |
| **Advanced** | | | |
| | CPU Configuration | Module Version | |
| | | Physical count | |
| | | Logical count | |
| | | Manufacturer and type | |
| | | Revision | |
| | | Cache L1 | |
| | | Cache L2 | |
| | | Speed | |
| | | Current FSB Multiplier | |
| | | Maximum FSB Multiplier | |
| | | Able to Change Freq. | |
| | | uCode Patch Level | |
| | | GART Error Reporting | Enabled Disabled |
| | | MTRR Mapping | Continuous Discrete |
| | Memory Configuration | | |

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| BIOS menu | BIOS submenu | Setting | Value |
|---|---|---|---|
| | | Memory Performance Mode | Non-Redundant Interleaved Single Channel Mirror Mirrors branch space Between branches |
| | | Total Memory Capacity | |
| | | Memory Redundancy | Non-Redundant Mirror |
| | | DIMM 1 | (Size) (Not Installed) |
| | | DIMM 2 | (Size) (Not Installed) |
| | | DIMM 3 | (Size) (Not Installed) |
| | | DIMM 4 | (Size) (Not Installed) |
| | IDE Configuration | | |
| | | OnBoard IDE Controller | Disabled Enabled |
| | | Serial-ATA Devices | Disabled Device 0 Device 0/1 Device 0/1/2 |
| | | nVidia RAID Setup | Selects RAID Setup sub-menu. |
| | | Primary IDE Master | (auto-detected) Selects IDE Configuration sub-menu. |
| | | Primary IDE Slave | (auto-detected) Selects IDE Configuration sub-menu. |
| | | Serial-ATA 0 Primary Channel | (auto-detected) Selects IDE Configuration sub-menu. |
| | | Serial-ATA 0 Secondary Channel | (auto-detected) Selects IDE Configuration sub-menu. |
| | | Serial-ATA 1 Primary Channel | (auto-detected) Selects IDE Configuration sub-menu. |
| | | Serial-ATA 1 Secondary Channel | (auto-detected) Selects IDE Configuration sub-menu. |

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| BIOS menu | BIOS submenu | Setting | Value |
|-----------|--------------|---------|-------|
| | | Serial-ATA 2 Primary Channel | (auto-detected) Selects IDE Configuration sub-menu. |
| | | Serial-ATA 2 Secondary Channel | (auto-detected) Selects IDE Configuration sub-menu. |
| | | Hard Disk Write Protect | **Disabled** Enabled |
| | | IDE Detect Time Out (Sec) | 0, 5, 10, 15, 20, 25, 30, **35** |
| | | ATA(PI) 80Pin Cable Detection | Host & Device Host Device |
| | Super I/O Configuration | | |
| | | Onboard Floppy Controller | Disabled Enabled |
| | | Floppy A | Disabled 1.44 MB 3½" 2.88 MB 3½" |
| | | Serial Port 1 Address | Disabled 3F8 2F8 3E8 2E8 |
| | | Serial Port 1 IRQ | IRQ3 IRQ4 IRQ10 IRQ11 |
| | | PS/2 Keyboard | Present |
| | | PS/2 Mouse | Present |
| | IPMI 2.0 Configuration | (Nothing shown) | |
| | Remote Access Configuration | (Nothing shown) | |
| | USB Configuration | | |
| | | USB Devices Enabled (List of USB devices detected by BIOS) | |
| | | Legacy USB Support | Disabled Enabled **Auto** |
| | | USB 2.0 Controller Mode | FullSpeed (12 Mbps) **HiSpeed** (480 Mbps) |
| | | BIOS EHCI Hand-Off | Disabled Enabled |

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| BIOS menu | BIOS submenu | Setting | Value |
|---|---|---|---|
| | | USB Mass Storage Device Configuration | Selects USB Mass Storage Device Configuration submenu with USB Device enable |
| | PCI Configuration | | |
| | | NIC 1 PXE Option ROM | Disabled **Enabled** |
| | | NIC 2 PXE Option ROM | Disabled **Enabled** |
| | | NIC 3 PXE Option ROM | Disabled **Enabled** |
| | | NIC 4 PXE Option ROM | Disabled **Enabled** |
| | | NIC 5 PXE Option ROM | Disabled **Enabled** |
| | | NIC 6 PXE Option ROM | Disabled **Enabled** |
| | | PCIe Port1 Option ROM | Disabled **Enabled** |
| | | PCIe Port2 Option ROM | Disabled **Enabled** |
| | | PCIe Port3 Option ROM | Disabled **Enabled** |
| | | PCI-X Port1 ROM | Disabled **Enabled** |
| **Boot** | | | |
| | Boot Settings Configuration | | |
| | | Quick Boot | Disabled **Enabled** |
| | | Quiet Boot | **Disabled** Enabled |
| | | Wait For 'F1 If Error | Disabled **Enabled** |
| | | Hit 'F2' Message Delay | Disabled **Enabled** |
| | Boot Device Priority | | |
| | | 1st Boot Device | Varies (Specifies boot sequence from the available devices.) |
| | | nth Boot Device | Varies (Specifies boot sequence from the available devices.) |
| | Hard Disk Drives | | |

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| BIOS menu | BIOS submenu | Setting | Value |
|---|---|---|---|
| | | 1st Drive | Varies (Specifies boot sequence from the available devices.) |
| | | nth Drive | Varies (Specifies boot sequence from the available devices.) |
| | Removable Drive | | |
| | | 1st Drive | Varies (Specifies boot sequence from the available devices.) |
| | | nth Drive | Varies (Specifies boot sequence from the available devices.) |
| | CD/DVD Drives | | |
| | | 1st Drive | Varies (Specifies boot sequence from the available devices.) |
| | | nth Drive | Varies (Specifies boot sequence from the available devices.) |
| **Security** | | | |
| | | Supervisor Password (Installed/Not installed) | |
| | | User Password (Installed/Not installed) | |
| | | Change Supervisor Password (Set or clear Supervisor password) | |
| | | User Access Level | No Access<br>View Only<br>**Limited**<br>**Full Access** |
| | | Change User Password (Set or clear User password) | |
| | | Password Check | **Disabled**<br>Enabled |
| | | Boot Sector Virus Protection | **Disabled**<br>Enabled |
| | | Power & Reset Switches Inhibit | **Disabled**<br>Enabled |
| | | NMI control switch inhibit | **Disabled**<br>Enabled |
| **Server** | | | |
| | Remote Access Configuration | | |

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| BIOS menu | BIOS submenu | Setting | Value |
|---|---|---|---|
| | | Remote Access | Disabled<br>**Enabled** |
| | | Serial Port Number (Base address and IRQ) | COM1 |
| | | Serial Port Mode | 115200 8,n,1<br>57600 8,n,1<br>19200 8,n,1<br>09600 8,n,1 |
| | | Flow Control | None<br>Hardware<br>Software |
| | | Redirection After BIOS POST | Disabled<br>Boot Loader<br>Always |
| | | Terminal Type | ANSI<br>VT100+<br>VT-UTF8 |
| | | VT-UTF8 Combo Key Support | Disabled<br>**Enabled** |
| | IPMI Configuration | | |
| | | Status of BMC | |
| | | BMC Firmware Revision | |
| | | View BMC Event Log | Provides data on event log |
| | | Clear BMC System Event Log | |
| | | Disable PEF | **No**<br>Yes |
| | Restore on AC Power Loss | | Power Off<br>Power On<br>Last State |
| | Wake on RING function | | **Disabled**<br>Enabled |
| **Exit** | | | |
| | | Save Changes and Exit (**F10**) | |
| | | Discard Changes and Exit | |
| | | Discard Changes | |
| | | Load Optimal Defaults | |
| | | Load Custom Defaults | |
| | | Save Custom Defaults | |

The following second level submenus are accessed from the submenu indicated in the first column.

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| BIOS submenu | BIOS 2nd level submenu | Setting | Value |
|---|---|---|---|
| **IDE Configuration** | | | |
| | RAID Setup | nVidia RAID Function | Enabled<br>Disabled |
| | | SATA 0 Primary Channel | Enabled<br>Disabled |
| | | SATA 0 Secondary Channel | Enabled<br>Disabled |
| | | SATA 1 Primary Channel | Enabled<br>Disabled |
| | | SATA 1 Secondary Channel | Enabled<br>Disabled |
| | | SATA 2 Primary Channel | Enabled<br>Disabled |
| | | SATA 2 Secondary Channel | Enabled<br>Disabled |

| BIOS submenu | BIOS 2nd level submenu | Setting | Value |
|---|---|---|---|
| **IDE Configuration** | | | |
| | Primary IDE Master (All IDE drives) | (Below is shown information and options appropriate to drive type) | |
| | | Device | Device information |
| | | Vendor | Device vendor |
| | | Size | Device size |
| | | LBA Mode | Device LBA mode |
| | | Block Mode | Device block mode |
| | | PIO Mode | Device PIO mode |
| | | Async DMA | Device Async DMA mode |
| | | Ultra DMA | Device Ultra DMA mode |
| | | S.M.A.R.T. | Device S.M.A.R.T. support |
| | | Type | Not Installed<br>**Auto**<br>CD/DVD<br>ARMD |
| | | LBA/Large Mode | Disabled<br>**Auto** |
| | | Block (Multi-Sector Transfer) Mode | Disabled<br>**Auto** |

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| BIOS submenu | BIOS 2nd level submenu | Setting | Value |
|---|---|---|---|
| | | PIO Mode | **Auto**<br>0<br>1<br>2<br>3<br>4 |
| | | DMA Mode | **Auto**<br>SWDMA 0-2<br>MWDMA 0-2<br>UWDMA 0-6 |
| | | S.M.A.R.T. | **Auto**<br>Disabled<br>Enabled |
| | | 32Bit Data Transfer | **Disabled**<br>Enabled |

| BIOS submenu | BIOS 2nd level submenu | Setting | Value |
|---|---|---|---|
| **USB Configuration** | | | |
| | USB Mass Storage Device Configuration | | |
| | | USB Mass Storage Reset Delay | 10 Sec<br>**20 Sec**<br>30 Sec<br>40 Sec |
| | | Device #1 | Only displayed if a device is detected. Includes a DeviceID string returned by the USB device. |
| | | Emulation Type | **Auto**<br>Floppy<br>Forced FDD<br>Hard Disk<br>CDROM |
| | | Device #n | Only displayed if a device is detected. Includes a DeviceID string returned by the USB device. |
| | | Emulation Type | **Auto**<br>Floppy<br>Forced FDD<br>Hard Disk |

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# APPENDIX**C**
## Legal Information

# Important safety information

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

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.

## 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.
- Set up the system on a stable work surface.
- The product should be operated only 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 fit only 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.
- 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 provide some protection against voltage surges and buildup 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.
- 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. To avoid electrical shock, always unplug all power cables and modem cables from the wall outlets before cleaning the system.

> **⚠ Warning**
> This unit has two power supplies. To remove power from all internal circuitry you must disconnect both power cords.

- 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.

> **⚠ Warning**
> To reduce the risk of fire, use only No. 26 AWG or larger telecommunications line cord.

> **✓ 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.

# Regulatory compliance statements

## United States of America

### Federal Communications Commission (FCC)
### Unintentional emitter per FCC Part 15

### FCC Part 15 Class B Statement

This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio 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 to an outlet on a different circuit from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help.

**Compliance Accessories**: The accessories associated with this equipment are: shielded video cable when an external monitor is connected. These accessories are required to be used in order to ensure compliance with FCC rules.

> ⚠ **Caution**
> Changes or modifications not expressly approved by Gateway could void the FCC compliance and negate your authority to operate the product.

### Telecommunications per 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 RENs on a telephone line may result in the devices not ringing in response to an incoming call. In most areas, the sum of RENs 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 RENs, 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, an identification of the business, 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.

### FCC 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 E-9232T 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.

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> ⚠️ **Caution**
> Changes or modifications not expressly approved by Gateway could void the FCC compliance and negate your authority to operate the product.

### UL Warning

Before removing or installing the chassis cover, make sure that the system power is not turned on or connected to AC power.

# Canada

### Industry Canada (IC)
### Unintentional emitter per 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.

### Telecommunications per Industry Canada CS03
### (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 make sure 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.

> ⚠️ **Warning**
> To avoid electrical shock or equipment malfunction do not attempt to make electrical ground connections by yourself. Contact the appropriate inspection authority or an electrician, as appropriate.

Users should make sure, 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.

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.

# 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.

# California Proposition 65 Warning

> ⚠️ **Warning**
> This product contains chemicals, including lead, known to the State of California to cause cancer and/or birth defects or reproductive harm.

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# Environmental information

The product you have purchased contains extracted natural resources that have been used in the manufacturing process. This product may contain substances known to be hazardous to the environment or to human health.

To prevent releases of harmful substances into the environment and to maximize the use of our natural resources, Gateway provides the following information on how you can responsibly recycle or reuse most of the materials in your "end of life" product.

Waste Electrical and Electronic Equipment (commonly known as WEEE) should never be disposed of in the municipal waste stream (residential garbage collection). The "Crossed-Out Waste Bin" label affixed to this product is your reminder to dispose of your "end of life" product properly.

Substances such as glass, plastics, and certain chemical compounds are highly recoverable, recyclable, and reusable. You can do your part for the environment by following these simple steps:

- When your electrical or electronic equipment is no longer useful to you, "take it back" to your local or regional waste collection administration for recycling.
- In some cases, your "end of life" product may be "traded in" for credit towards the purchase of new Gateway equipment. Call Gateway to see if this program is available in your area.
- If you need further assistance in recycling, reusing, or trading in your "end of life" product, you may contact us at the Customer Care number listed in your product's user guide and we will be glad to help you with your effort.

Finally, we suggest that you practice other environmentally friendly actions by understanding and using the energy-saving features of this product (where applicable), recycling the inner and outer packaging (including shipping containers) this product was delivered in, and by disposing of or recycling used batteries properly.

With your help, we can reduce the amount of natural resources needed to produce electrical and electronic equipment, minimize the use of landfills for the disposal of "end of life" products, and generally improve our quality of life by ensuring that potentially hazardous substances are not released into the environment and are disposed of properly.

# Notices

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Irvine, CA 92618-2930 USA

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