HP ProLiant 100 Series Server User Guide

for HP ProLiant ML150 Generation 2 Servers

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Audience Assumptions

This document is for the person who installs, administers, and troubleshoots servers and storage systems. HP assumes you are qualified in the servicing of computer equipment and trained in recognizing hazards in products with hazardous energy levels.

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Server Operations

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Powering Up the Server

To power up the server, press the Power On/Standby button.

Powering Down the Server

WARNING: To reduce the risk of personal injury, electric shock, or damage to the equipment, remove the power cord to remove power from the server. The front panel Power On/Standby button does not completely shut off system power. Portions of the power supply and some internal circuitry remain active until AC power is removed.

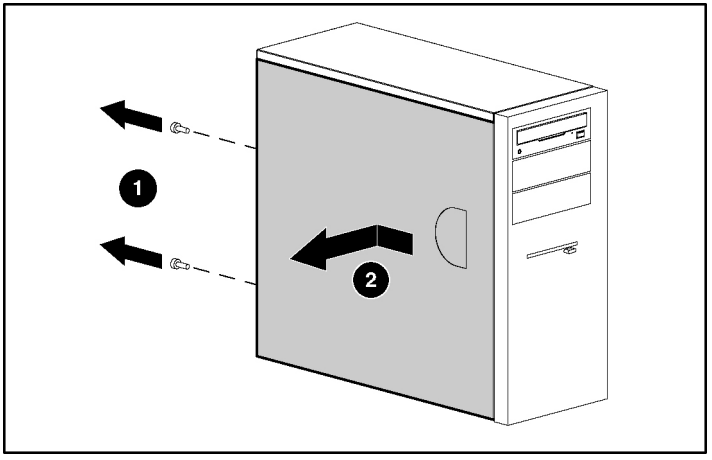
IMPORTANT: If installing a hot-plug device, it is not necessary to power down the server.

1. Shut down the operating system as directed by the operating system documentation.
2. Press the Power On/Standby button to place the server in standby mode. When the server activates standby power mode, the system power LED changes from green to off.
3. Disconnect the power cords.

The system is now without power.

Access Panel

1. Power down the server ("Powering Down the Server" on page 7).
2. Loosen the two thumbscrews located on the server rear panel.
3. Lift and remove the access panel.



To replace the component, reverse the removal procedure.

Server Setup

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Optional Installation Services

Delivered by experienced, certified engineers, HP Care Pack services help you keep your servers up and running with support packages tailored specifically for HP ProLiant systems. HP Care Packs let you integrate both hardware and software support into a single package. A number of service level options are available to meet your needs.

HP Care Pack Services offer upgraded service levels to expand the standard product warranty with easy-to-buy, easy-to-use support packages that help you make the most of your server investments. Some of the Care Pack services are:

- Hardware support
  - 6-hour call-to-repair
  - 4-hour 24x7 same day
  - 4-hour same business day
- Software support
  - Microsoft®
  - Linux
- Integrated hardware and software support

  - Critical Service
  - Proactive 24
  - Support Plus
  - Support Plus 24
- Startup and implementation services for both hardware and software

For more information on Care Packs, refer to the HP website (http://www.hp.com/hps/carepack/servers/cp_proliant.html).

Optimum Environment

When installing the server, select a location that meets the environmental standards described in this section.

Space and Airflow Requirements

Tower Server

In a tower configuration, leave at least a 7.6-cm (3-in) clearance space at the front and back of the server for proper ventilation.

Rack Server

To allow for servicing and adequate airflow, observe the following space and airflow requirements when deciding where to install a rack:

- Leave a minimum clearance of 76.2 cm (30 in) in front of the rack.
- Leave a minimum clearance of 76.2 cm (30 in) behind the rack.
- Leave a minimum clearance of 121.9 cm (48 in) from the back of the rack to the back of another rack or row of racks.

HP servers draw in cool air through the front and expel warm air through the rear. Therefore, the front and rear rack doors must be adequately ventilated to allow ambient room air to enter, and allow the warm air to escape from the cabinet.

CAUTION: To prevent improper cooling and damage to the equipment, do not block the ventilation openings.

The 9000 and 10000 Series racks provide proper server cooling from flow-through perforations in the front and rear doors that provide 64 percent open area for ventilation.

CAUTION: When using a Compaq branded 7000 Series rack, you must install the high airflow rack door insert [P/N 327281-B21 (42U) or P/N 157847-B21 (22U)] to provide proper front-to-back airflow and cooling.

CAUTION: If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment:

- Front and rear doors—If the 42U rack includes closing front and rear doors, you must allow 5,350 sq cm (830 sq in) of holes evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation).
- Side—The clearance between the installed rack component and the side panels of the rack must be a minimum of 7 cm (2.75 in).

When vertical space in the rack is not filled by a server or rack component, the gaps between the components cause changes in airflow through the rack and across the servers. Cover all gaps with blanking panels to maintain proper airflow.

CAUTION: Always use blanking panels to fill empty vertical spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage.

Temperature Requirements

To ensure continued safe and reliable equipment operation, install or position the system in a well-ventilated, climate-controlled environment.

The maximum recommended ambient operating temperature (TMRA) for most server products is 35°C (95°F). The temperature in the room where the rack is located must not exceed 35°C (95°F).

CAUTION: To reduce the risk of damage to the equipment when installing third-party options:

- Do not permit optional equipment to impede airflow around the server or to increase the internal rack temperature beyond the maximum allowable limits.
- Do not exceed the manufacturer's TMRA.

Power Requirements

Installation of this equipment must comply with local and regional electrical regulations governing the installation of information technology equipment by licensed electricians. This equipment is designed to operate in installations covered by NFPA 70, 1999 Edition (National Electric Code) and NFPA-75, 1992 (code for Protection of Electronic Computer/Data Processing Equipment). For electrical power ratings on options, refer to the product rating label or the user documentation supplied with that option.

WARNING: To reduce the risk of personal injury, fire, or damage to the equipment, do not overload the AC supply branch circuit that provides power to the rack. Consult the electrical authority having jurisdiction over wiring and installation requirements of your facility.

CAUTION: Protect the server from power fluctuations and temporary interruptions with a regulating uninterruptible power supply (UPS). This device protects the hardware from damage caused by power surges and voltage spikes and keeps the system in operation during a power failure.

When installing more than one server, you may need to use additional power distribution devices to safely provide power to all devices. Observe the following guidelines:

- Balance the server power load between available AC supply branch circuits.

- Do not allow the overall system AC current load to exceed 80 percent of the branch circuit AC current rating.
- Do not use common power outlet strips for this equipment.
- Provide a separate electrical circuit for the server.

Electrical Grounding Requirements

The server must be grounded properly for proper operation and safety. In the United States, you must install the equipment in accordance with NFPA 70, 1999 Edition (National Electric Code), Article 250, as well as any local and regional building codes. In Canada, you must install the equipment in accordance with Canadian Standards Association, CSA C22.1, Canadian Electrical Code. In all other countries, you must install the equipment in accordance with any regional or national electrical wiring codes, such as the International Electrotechnical Commission (IEC) Code 364, parts 1 through 7. Furthermore, you must be sure that all power distribution devices used in the installation, such as branch wiring and receptacles, are listed or certified grounding-type devices.

Because of the high ground-leakage currents associated with multiple servers connected to the same power source, HP recommends the use of a power distribution unit (PDU) that is either permanently wired to the building's branch circuit or includes a nondetachable cord that is wired to an industrial-style plug. NEMA locking-style plugs or those complying with IEC 60309 are considered suitable for this purpose. Using common power outlet strips for the server is not recommended.

Rack Warnings

WARNING: To reduce the risk of personal injury or damage to the equipment, be sure that:

- **The leveling jacks are extended to the floor.**
- **The full weight of the rack rests on the leveling jacks.**
- **The stabilizing feet are attached to the rack if it is a single-rack installation.**
- **The racks are coupled together in multiple-rack installations.**
- **Only one component is extended at a time. A rack may become unstable if more than one component is extended for any reason.**

WARNING: To reduce the risk of personal injury or equipment damage when unloading a rack:

- **At least two people are needed to safely unload the rack from the pallet. An empty 42U rack can weigh as much as 115 kg (253 lb), can stand more than 2.1 m (7 ft) tall, and may become unstable when being moved on its casters.**
- **Never stand in front of the rack when it is rolling down the ramp from the pallet. Always handle the rack from both sides.**

Installing Hardware Options

Install any hardware options before initializing the server. For options installation information, refer to the option documentation. For server-specific information, refer to "Hardware Options Installation (on page 17)."

Powering Up and Configuring the Server

To power up the server, press the Power On/Standby button.

Refer to the server installation sheet for detailed information on configuring the server.

Installing the Operating System

To operate properly, the server must have a supported operating system. For the latest information on supported operating systems, refer to the HP website (http://www.hp.com/go/supportos).

To install an operating system on the server, insert the operating system CD into the CD-ROM drive and reboot the server. This process may require you to obtain additional drivers from the support CD shipped with the server or the CD that shipped with the option. The drivers may have updates that are available on the HP website (http://www.hp.com/support).

Follow the on-screen instructions to begin the installation process.

Registering the Server

To register the server, refer to the HP Registration website (http://register.hp.com).

Hardware Options Installation

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Introduction

If more than one option is being installed, read the installation instructions for all the hardware options and identify similar steps to streamline the installation process.

WARNING: To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

CAUTION: To prevent damage to electrical components, properly ground the server before beginning any installation procedure. Improper grounding can cause electrostatic discharge.

Installing the Processor

CAUTION: To prevent possible server malfunction and damage to the equipment, do not mix processors of different types.

IMPORTANT: If mixing processor speeds, the server will run at the slowest processor speed.

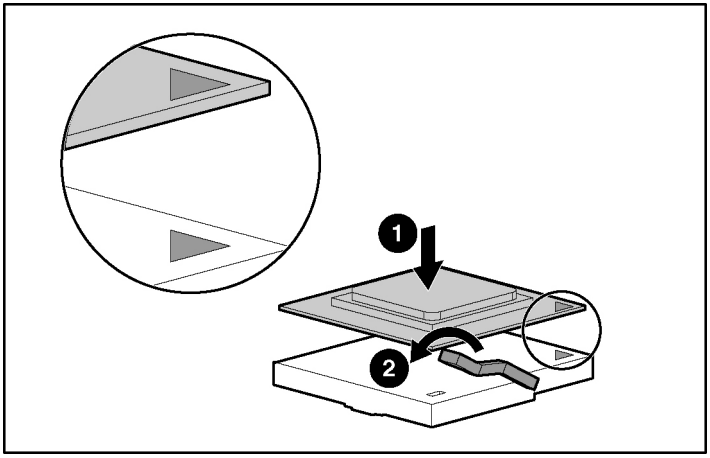
1. Power down the server ("Powering Down the Server" on page 7).
2. Extend the server from the rack, if applicable.

3. Remove the access panel ("Access Panel" on page 8).
4. Open the processor retaining bracket.
5. Release the processor locking lever.

   CAUTION: Failure to completely open the processor locking lever prevents the processor from seating during installation, leading to hardware damage.

6. Install the processor and close the processor retaining bracket. Refer to the installation sheet for server-specific processor installation instructions.

   CAUTION: To prevent possible server malfunction or damage to the equipment, be sure to completely close the processor locking lever.



7. Replace the access panel ("Access Panel" on page 8).

Removable Media Devices

Depending on the model, the ProLiant 100 series server may support the installation of an optional tape drive or other removable media devices.

Installing a Full-Height or Half-Height Media Device

You can install one full-height or up to two half-height removable media devices in the removable media cage.

> **NOTE:** The HP ProLiant ML150 Generation 2 server does not support full-height media devices.

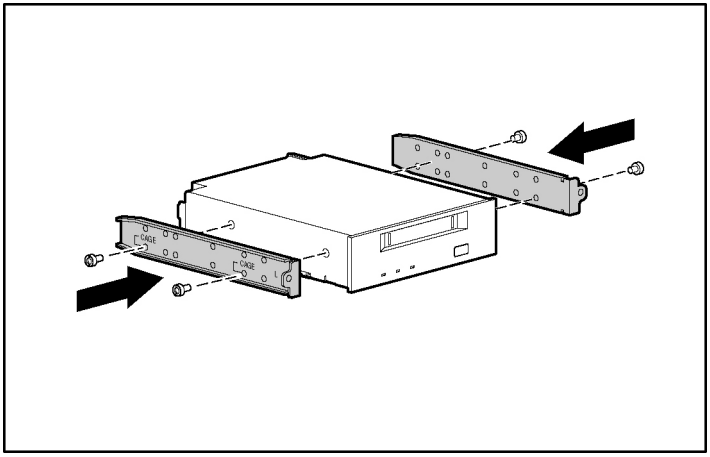
To install a full-height or half-height media device:

> **NOTE:** This process only represents one installation method. For specific instructions for installing the media device into the server, refer to the installation sheet for your specific server.

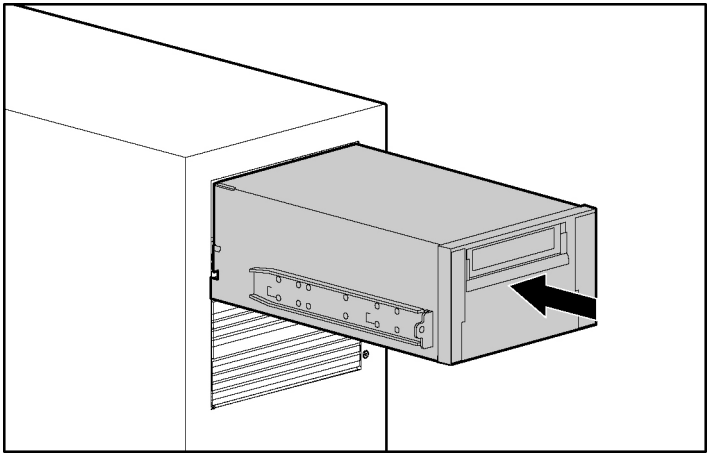
1. Power down the server ("Powering Down the Server" on page 7).
2. Extend the server from the rack, if applicable.
3. Remove the access panel ("Access Panel" on page 8).
4. Access the removable media cage.

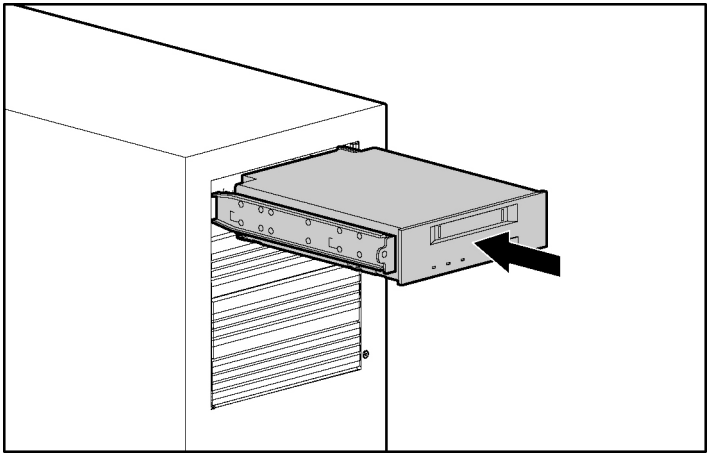
   > **NOTE:** HP recommends that you remove all bezel blanks to facilitate drive installation.

5. Using a screwdriver, remove the screws from the bezel blank and attach them to the tape drive or device.



6. Slide the full-height or half-height media device part of the way into the bay.





7. Connect the four-pin power cable to the full-height or half-height drive.
8. Connect the device cable to the device and the system board or to an expansion board as directed by the option documentation.
9. Slide the media drive fully into the bay until it is seated securely.

Memory Options

For server-specific memory installation guidelines, refer to the installation sheet that ships with the server.

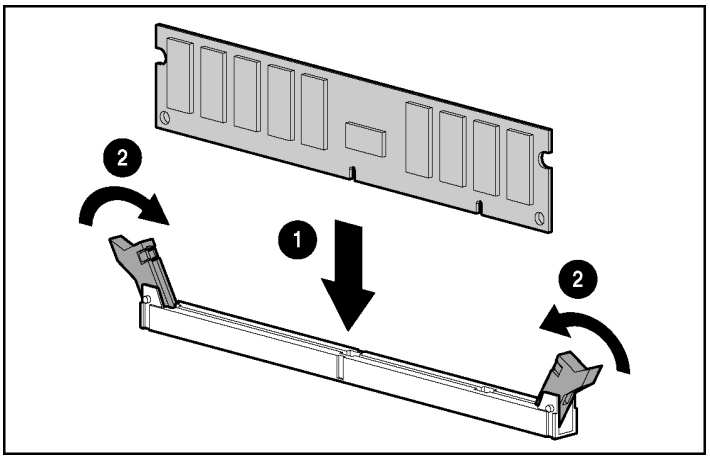
Interleaving and Non-Interleaving Memory Configuration

This server supports both interleaving and non-interleaving memory configurations. Interleaving memory increases bandwidth by allowing simultaneous access to more than one block of data (for example, overlapping Read-Writes). This is accomplished by dividing the system memory between pairs of DIMMs and Writing-Reading blocks of data to/from both simultaneously. In order to take advantage of memory interleaving, identical DIMMs must be installed in pairs. DIMMs can also be installed singularly in slot 1 only if memory interleaving is not desired.

Installing DIMMs

1. Power down the server ("Powering Down the Server" on page 7).
2. Extend the server from the rack, if applicable.
3. Remove the access panel ("Access Panel" on page 8).
4. Open the DIMM slot latches.

5. Install the DIMM. Refer to the installation sheet for server-specific configuration and population guidelines.



6. Replace the access panel ("Access Panel" on page 8).

Expansion Board Options

For server-specific expansion board installation instructions, refer to the installation sheet that ships with the server.

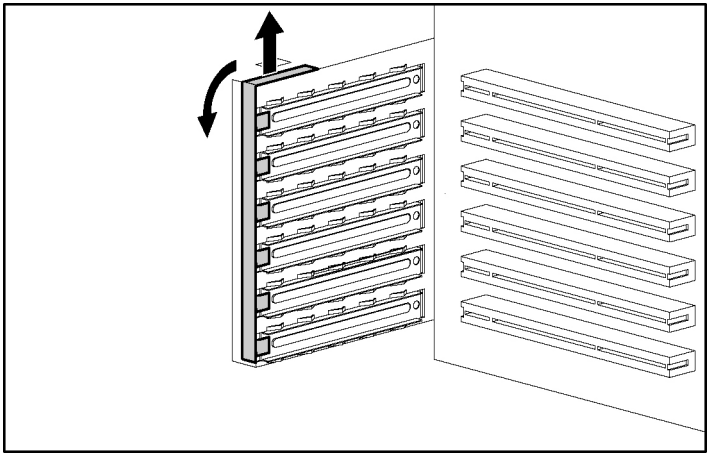
Installing an Expansion Board

CAUTION: To prevent damage to the server or expansion boards, power down the server and remove all AC power cords before removing or installing the expansion boards.

To install an expansion board:

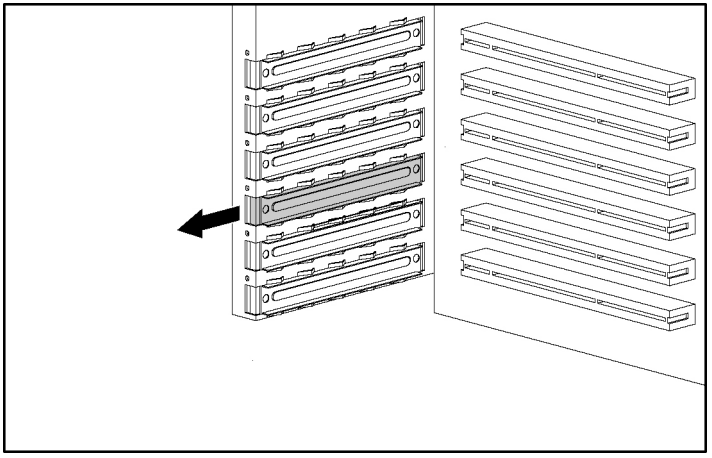
1. Power down the server ("Powering Down the Server" on page 7).
2. Extend the server from the rack, if applicable.
3. Remove the access panel ("Access Panel" on page 8).

4. Remove the slot cover retainer.



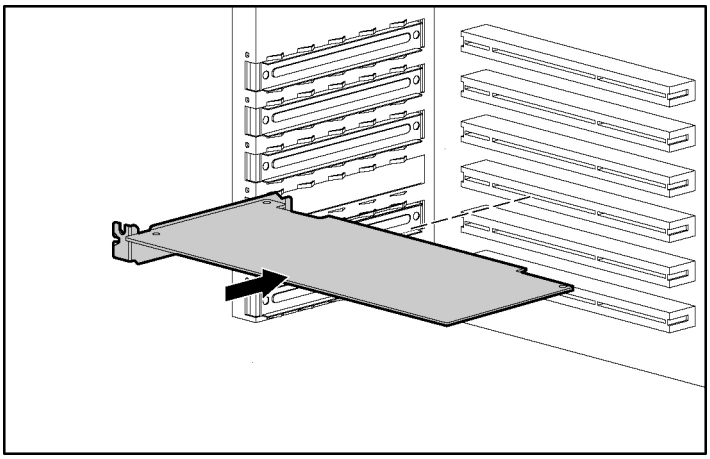
CAUTION: To prevent improper cooling and thermal damage, do not operate the server unless all PCI slots have either an expansion slot cover or an expansion board installed.

5. Remove the expansion slot cover.



IMPORTANT: It may be necessary to remove the slot cover next to the slot in which you are installing a board.

6. Install the expansion board.



7. Close the expansion slot latch to secure the board.
8. Connect any required internal or external cables to the expansion board. Refer to the documentation that ships with the expansion board for more information.
9. Reinstall the slot cover retainer.
10. Replace the access panel ("Access Panel" on page 8).

Troubleshooting

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Additional Resources and Tools

If you are having problems installing the HP ProLiant 100 Series server, a number of tools are available for troubleshooting, including the information provided in this section.

Refer to the HP website (http://www.hp.com) to access the most comprehensive support material:

- Latest support news—Product and support information for HP servers
- Drivers and software downloads for servers
- HP Instant support—Fast, web-based support that is automated and provides quick diagnosis and resolution of most computing problems
- Step-by-step guidelines for system troubleshooting
- Technical information—Data sheets, application notes, configuration guides, installation tips, product papers, reference material, and more
- Compatibility issues—HP Accessories, OS, and HP and third-party parts compatibility information
- Manuals—Easy installation and configuration of the server
- Parts and service—Information on replacement parts, exploded views, and configuration
- Tape backup support—Support for HP SureStore Tape Backup products
- HP server registration
- Training programs—HP STAR worldwide training and certification program
- Warranty and enhanced services—A guide to warranty service for HP systems
- Proactive notification—HP will e-mail custom information when it is available
- Contacts—How to get help or provide feedback

This section contains general procedures to help you locate installation problems. If you need assistance, HP recommends contacting a reseller or going to the HP website (http://www.hp.com) first.

Preventative Maintenance Procedures

WARNING: Before removing the access panel, always disconnect the power cord and unplug telephone cables. Disconnect telephone cables to avoid exposure to shock hazard from telephone-ringing voltages. Disconnect the power cord to avoid exposure to high energy levels that may cause burns when parts are short-circuited by metal objects, such as tools or jewelry.

Refer to the following table for the preventive maintenance procedures used for the HP ProLiant 100 Series server. Be sure to power down the server when cleaning it.

Components	Time Frame	Maintenance Procedure
Keyboard	Regularly	Dust with damp, lint-free cloth.
Monitor screen	Regularly	Use “HP Video Screen Cleaning Solution” found in the 92193M Master Clean Kit.
Mouse	Regularly	Refer to the manual for mouse maintenance procedures.
Tape drive heads	Monthly	Use “Magnetic Head Cleaning Solution” found in the 92193M Master Clean Kit.
Cooling fans and grills	6 months	Check cooling fan operation and clean the air intake openings on the chassis by removing any dust, lint, and other obstructions to airflow.

CAUTION: Do NOT use petroleum-based cleaners (such as lighter fluid) or cleaners containing benzene, trichlorethylene, ammonia, dilute ammonia, or acetone. These chemicals could damage the plastic surfaces of the keyboard.

HP recommends the periodic cleaning of tape heads, capstans, and guides on HP tape drive units and those products using high-density data cartridges and mini-data cartridges. These maintenance procedures prolong tape and head life and helps reduce read/write errors due to dust and oxide.

Initial Troubleshooting Procedures

WARNING: Before removing the access panel, always disconnect the power cord and unplug telephone cables. Disconnect telephone cables to avoid exposure to shock hazard from telephone-ringing voltages. Disconnect the power cord to avoid exposure to high energy levels that may cause burns when parts are short-circuited by metal objects, such as tools or jewelry.

WARNING: For any service activity requiring access to the system board or power distributions board, power down the server and observe all safety precautions.

Troubleshooting Guidelines

For general information on server products, refer to the HP website and search for the specific product. These instructions do not generally cover third-party components or devices. Refer to the documentation that comes with the third-party device for diagnostic and troubleshooting information.

CAUTION: Always wear an antistatic wrist guard when working inside the server.

- Be sure the server is properly configured. Many server problems are the result of incorrect system and SCSI subsystem configuration settings.
- Check the system BIOS Setup Utility by pressing the **F10** key during the boot process.
- Check the SCSI configuration or the disk array configuration by entering the controller setup utility.
- Boot to the Support CD for access to configuration tools to help setup the server.
- If it is a network-related error, determine if the server has enough memory and hard disk drive capacity. Run the diagnostics for the NIC. Consult with the network operating system manual.

- If it is a hardware error, follow the instructions to log users off the LAN and power down the server. Reboot and watch for any POST error messages as the server goes through POST. Look up the POST error message in the server-specific documentation.

Troubleshooting Checklist

- Verify the error. Be sure it is a valid error message. Is the error repeatable? Is the error message affecting the server operation or performance?
- Always change only one component at a time.
- Always check the most recently added items, both hardware and software. Remove any third-party components.
- Be sure the server BIOS is updated to the latest version posted to the HP website. Flashing/updating the system BIOS and clearing CMOS will resolve many issues.
- Be sure the firmware for the hard drives is current. Download and run the Hard Disk Drive Firmware Utility to verify that hard drive firmware is current. This utility is available from the HP website (http://www.hp.com).
- Be sure all firmware/BIOS revisions on the controllers are current.
- Use only HP-provided drivers for any HP devices used in the server. This includes using HP drivers for the initial installation of any OS that is supported on the specific server.
- Check all cable and power connections, including those in the rack. If the server is not powering on, unplug the AC power cords and wait 20 seconds. Then, plug the AC power cords in again and restart the server. Check for normal operation.
- Verify that all cables and boards are securely plugged into their appropriate connectors and slots.

If the problem still persists:

1. Simplify the server configuration and install only the minimum hardware:
   - Monitor
   - Keyboard

- Mouse
- 1 hard drive (may need to disconnect for hardware troubleshooting)
- CD-ROM and diskette drive (may need to disconnect for hardware troubleshooting)

2. Unplug and reconnect the power cords.
3. Power up the server ("Powering Up the Server" on page 7).
4. If operational, power down the server and reinstall one component at a time. Restart the server after the installation of each component to try and determine which component is causing the problem.

If the problem persists, call an HP Customer Support Center for further troubleshooting assistance.

Server Does Not Power On

Follow these steps if the power/activity LED is not green after pressing the power button.

1. Remove the AC power cord, wait 20 seconds, and reconnect the power cord.
2. Verify all cables and power cords are firmly plugged into their respective receptacles.
3. If the server is plugged into a switched multiple-outlet box, be sure the switch on the outlet box is turned on.
4. Plug a different electrical device into the power outlet and turn on the device to verify the outlet has power.
5. Verify that the problem is not caused by an internal device connection:
   a. Disconnect the power cord.
   b. Remove the access panel ("Access Panel" on page 8).
   c. Verify the power supply is firmly connected to the system board connector.
   d. Verify the front panel power switch is connected to the system board.
   e. Remove the power connectors from all internal devices except the system board.

f. Reconnect the power cord.

g. Verify that the front panel LED is green. If it is off, call an HP Customer Support provider.

h. If the front panel LED is green, reconnect the power connectors one by one to the internal devices in order to check which device or connection is defective.

NOTE: Be sure to remove the power cord before reconnecting each internal device.

i. After reconnecting each device, reconnect the power cord.

j. Power up the server ("Powering Up the Server" on page 7).

k. If the LED is still green, repeat this step with another device until you locate the device that prevents the LED from turning green.

Call an HP Customer Support provider with this information and for further instructions.

Server Passes Post, But Does Not Function

If no error message displays, follow the steps in this section to troubleshoot the problem. If the problem persists, contact an HP Customer Support provider or a reseller.

1. Verify the server is configured correctly in the Setup Utility. To start the Setup Utility, boot or reboot the system and press the **F10** key when prompted.
2. If the server is still not operational:
   a. Power down the server ("Powering Down the Server" on page 7).
   b. Remove all external peripherals, except the monitor and keyboard.
   c. Test the server for normal operation.
   d. If the server is still not operational, go to step 3.
3. If the server is still not operational, power down the monitor, the server, and all external devices, and check the internal hardware, as follows:
   a. Unplug the power cord and all telephone cables.

b. Remove the access panel ("Access Panel" on page 8).
c. Verify all expansion boards are firmly seated in the respective slots.
d. Be sure all disk drive power and data cables are connected securely and properly.
e. Verify the mass storage configuration.
f. Verify that all DIMMs are HP DIMMs.
g. Replace the access panel ("Access Panel" on page 8).
h. If necessary, use the lock to secure the cover on the server.
i. Replace the power cord and all the cables.
j. Power on the monitor.
k. Power up the server ("Powering Up the Server" on page 7).
l. Check for POST error messages (on page 55).

4. Reboot the server.
5. Run HP Insight Diagnostics utility and verify the server hardware integrity.

BIOS Reset/Update/Recovery

If the server exhibits any compatibility or stability issues, HP recommends starting the troubleshooting by first updating the system BIOS. If the BIOS has become corrupt, it is possible to perform a BIOS reset, recovery, or update to correct the condition. A BIOS update/recovery diskette, created when the most current BIOS is downloaded from the HP website (http://www.hp.com), is to be used in flashing the BIOS on the server. To perform a reset, an update, or a BIOS recovery, perform one of the following procedures.

BIOS Reset

If the server needs the BIOS settings set to the factory defaults (the HP recommended values) due to possible corruption, perform the following steps. The default values have been selected to optimize the server performance.

NOTE: HP recommends that you note the system setup and configuration settings before resetting the system to the defaults in the BIOS Setup Utility.

1. Reboot the server and press the **F10** key to enter the BIOS Setup Utility.
2. Press the **F9** key to load default values.
3. Press the **F10** key to save changes and exit the BIOS Setup Utility.

BIOS Update/Recovery

Use this procedure to update the server system BIOS with the latest BIOS version. HP regularly posts a new version of the server BIOS on the HP website to improve server performance.

1. Insert a blank-formatted diskette into any computer with a web browser and an Internet connection.
2. Browse to the HP website (http://www.hp.com).
3. Locate and download the latest server BIOS to the hard drive. Double-click on the file and follow the instructions to extract the file to the diskette. This creates the BIOS update diskette.
4. Insert the BIOS update diskette into the diskette drive and reboot the server. The BIOS Utility Update program will start and you will be prompted to update the system BIOS.
5. After the BIOS update completes, remove the BIOS update diskette and reboot the server.
6. Press the **F10** key to enter the BIOS Setup Utility and make the necessary changes needed in the BIOS Setup Utility, press the **F10** key to save the changes and exit the utility.
7. Label, date, and save this diskette for use as a BIOS Recovery diskette.

NOTE: If you do not have convenient access to the Internet, create a BIOS Update/Recovery diskette from the Support CD. Please note that the CD-ROM may not provide the most recent BIOS. To create the BIOS Update/Recovery diskette, run Support CD on any Windows® PC with an HTML browser and follow the menu instructions.

Clearing the BIOS Configuration

NOTE: HP recommends that you note the system setup and configuration settings before resetting the system to the defaults in the BIOS Setup Utility.

You may need to clear the BIOS (CMOS) configuration if the configuration has become corrupt or if incorrect settings made in the Setup Utility have caused error messages to be unreadable.

To clear the configuration, refer to "Clearing the CMOS Configuration (on page 59)."

Password Problems

Supervisor Password (on page 34)

User Password (on page 34)

Supervisor Password

1. Power down the server ("Powering Down the Server" on page 7).
2. Clear the CMOS configuration. Refer to "Clearing the CMOS Configuration (on page 59)."
3. Power up the server ("Powering Up the Server" on page 7).

   The system BIOS Setup Utility will allow access to it now without having to enter the password.
4. A new supervisor password can now be set from the system BIOS Setup Utility.

User Password

To reset the user password when the supervisor password is known:

1. Restart or power up the server.

2. During the boot process, press the **F10** key to start the system BIOS Setup Utility.
3. Enter the supervisor password. Once in the Setup Utility, access the Security menu.
4. Move to the Change User Password menu selection and press the **Enter** key.
5. Enter the new user password and press the **Enter** key.
6. Reconfirm the new user password and press the **Enter** key. This sets a new user password.
7. Save the changes to save the new password.
8. Press the **F10** key to exit the Setup Utility.

General Server Problems

"Operating System Not Found" Message Appears (on page 35)

Server Stops Working (Hangs) (on page 36)

"Operating System Not Found" Message Appears

1. Check for a non-bootable diskette in the diskette drive. If found, remove the diskette from the drive.
2. Check for a tape cartridge in the tape drive. If found, remove the tape cartridge from the drive.
3. Restart or power up the server.
4. If the message still appears, reboot the server. When prompted, enter the system BIOS Setup Utility and check that the device boot order is correct.
5. If a disk array controller is being used and the OS is installed on a hardware array/container, verify that the array/container is in an optimal state by accessing and checking the disk array controller setup utility during startup.
6. Reboot from a DOS disk and check the partitions to be sure the primary partition is active.

If the problem persists, contact an HP Customer Support Center for further troubleshooting assistance.

Server Stops Working (Hangs)

If the server hangs before POST completes, the problem is possibly a hardware problem or failure. If the server hangs after POST completes, the problem is possibly due to an incorrectly configured or corrupt driver, operating system, or application program or a media (disk drive) error.

If the server stops working or hangs while booting:

1. Review the Troubleshooting Checklist (on page 29) before you continue.
2. Try to verify exactly where the server is stopping during POST. For example: is the server stopping at the memory count or at a SCSI controller? Look for any error messages and make note of them for further assistance in troubleshooting the problem.
   - If the failure persists, verify that a hardware problem does not exist by running the HP Insight Diagnostics utility or checking the Hardware Event log on servers that have that option.
   - If the failure persists, try removing any recently added hardware, rebooting the server, and verify that the problem still exists.
   - If the problem has disappeared, install the previously removed hardware components one at a time to the server to verify which hardware component is causing the problem. Reboot the server each time a new hardware component is added to the server.

For further assistance, contact an HP Customer Support Center before replacing any parts.

Power Problems

IMPORTANT: HP ProLiant 100 Series servers support the ACPI standard, which is a key component of a OS-directed power management. The supported features are only available when an ACPI-compliant OS is installed on the server.

Before doing any further troubleshooting, verify that the server is not in sleep mode, which is indicated by a flashing green power LED.

1. Verify the server power cord is plugged into a known working power source.

2. Verify the power LED on the front of the server is a steady green (which indicates it is getting power).
3. Remove the server from any UPS or PDU and connect the server directly to a power source.
4. Verify the AC power source is working:
   a. Verify that the circuit breaker for the AC power outlet is on.
   b. If the breaker is off, verify all devices connected to the server share the same circuit breaker and are the only devices on it.
   c. Reset the circuit breaker after reconfiguring the devices, if needed.
   d. Verify the AC power outlet is not faulty by plugging in a known working device.
   e. Verify the DC power supply cable connected to the system board.
5. If the fans (system, power supply, and processor heatsink) are not audible and the previous steps are verified:
   a. Disconnect the power cords for 5 minutes in order to reset the power supply circuitry.
   b. With the power cords disconnected, remove the access panel ("Access Panel" on page 8).

      CAUTION: Always wear an antistatic wrist guard when working inside the server.

   c. Remove all expansion boards ("Installing an Expansion Board" on page 22), including any hard disk drive controller board or video board.
   d. Disconnect all mass storage power cords and cables.
   e. Plug in the power cords.
   f. Power up the server ("Powering Up the Server" on page 7).

If power is still not getting to the server, the power supply may be faulty.

Contact an HP Customer Support Center for further assistance before replacing any parts.

Video/Monitor Problems

Do not re-populated the server with components until video is produced. For each step taken, be certain to unplug the power for 30 to 60 seconds before powering on the server. For each power on attempt, allow at least 60 seconds for the server to produce video.

> **NOTE:** Take appropriate electrostatic discharge precautions before working inside the server.

> **NOTE:** If using a third-party video controller card and the onboard video controller (if applicable) was disabled, remove this controller card, connect the cable to the onboard video controller, then clear the CMOS ("Clearing the CMOS Configuration" on page 59). This re-enables the onboard video.

1. Test the monitor on another machine to verify the monitor is working.
2. Disconnect the server from any console switch box during troubleshooting. Connect a known working monitor, keyboard, and mouse to the server to troubleshoot.
3. Verify that the AC power source is working. If suspect, try another power source.

> **NOTE:** Verify that fans and hard drives are powering on. If the fans or drives are not powering on, refer to Power Problems (on page 36).

If the problem persists:

1. Power down the server ("Powering Down the Server" on page 7).
2. Unplug the server from the power source.
3. Remove the access panel ("Access Panel" on page 8).
4. Clear the CMOS configuration ("Clearing the CMOS Configuration" on page 59).
5. Plug the server into a power source.
6. Power up the server ("Powering Up the Server" on page 7).

If the problem still persists:

1. Power down the server ("Powering Down the Server" on page 7).
2. Unplug the server from the power source.

3. Remove the access panel ("Access Panel" on page 8).
4. Remove all PCI controller cards.
5. Disconnect power and SCSI connections from hard drives.
6. Disconnect IDE and diskette drive cables.
7. Take the server down to base memory (1 DIMM) and reseat that DIMM.
8. Plug the server into a known working power source.
9. Power up the server ("Powering Up the Server" on page 7).
10. If video returns, reinstall the removed components one at a time into the server. One of the removed components may have been causing the no video problem.
11. After all the components are reinstalled, reset the server BIOS.

If the problem persists, contact an HP Customer Support Center for further troubleshooting assistance before replacing any parts.

Configuration Problems

The Configuration Cannot Be Saved and the Battery Loses Power or the Configuration Information Is Frequently Lost

1. If the server frequently loses the time and date, clear the CMOS and flash the system BIOS to the latest revision. Refer to “Clearing the CMOS Configuration (on page 59)” for the server for clearing the BIOS configuration and updating the system BIOS.
   a. After performing the BIOS flash, reboot and press **F10** during POST to enter the BIOS Setup Utility.
   b. Set the date and time.
   c. Save changes and exit the BIOS Setup Utility.
   d. Verify that this resolves the issue.
2. If this does not resolve the issue, replace the CMOS battery. The battery is attached to the system board.
   a. Power down the server ("Powering Down the Server" on page 7).

b. Unplug the power cords from the power source.

c. Remove the access panel ("Access Panel" on page 8).

d. Locate the CMOS battery on the system board and replace the battery.

e. Power up the server ("Powering Up the Server" on page 7).

f. Press the **F10** key during POST to enter the BIOS Setup Utility and set the date and time.

g. Save changes and press the **F10** key to exit the BIOS Setup Utility.

On reboot, verify that the issue is resolved with the working battery in the server. If this still does not resolve the issue, contact an HP Customer Support Center for further troubleshooting assistance before replacing any parts.

Printer Problems

If the printer does not operate as designed:

- Verify that the AC power cord is plugged into the power source and the printer.
- Be sure the printer power switch is ON and the AC outlet is working.
- If the printer is plugged into a multiple-outlet box, be sure the switch on the outlet box is turned on and the circuit breaker, if applicable, is not tripped.
- Be sure the printer is online and available for printing.
- Verify the correct cables are being used and that the cables are connected properly. Be sure the cable pins are not bent.
- Try a known working cable.
- If the printer parallel date cable is plugged into the server after the server is on, reboot the server.
- Examine the printer for a paper jam.
- Run the printer self-test. Refer to the printer manual for instructions.
- Be sure to set the correct port when configuring the printer.

- Run the system BIOS Setup Utility by pressing the **F10** key on POST, when prompted, to verify the I/O port status. Be sure the I/O port is not disabled.
- Test another peripheral from the server parallel port to be sure the port is functioning.

If the printer still does not work, contact an HP Customer Support Center for further assistance.

Keyboard Problems

> **NOTE:** Use only HP approved keyboards because other keyboards may not be compatible with HP ProLiant 100 Series servers.

If the keyboard does not work or a character is not displayed when a key is pressed:

- Be sure that the keyboard is not locked, if the server has this feature.
- Be sure that the keyboard cable connections at the rear of the server and at the back of the keyboard are secure.

  > **NOTE:** Be sure the keyboard is connected to the keyboard port and not the mouse port on the server rear panel.

- If the KVM switchbox is used with this server, remove the keyboard and plug the keyboard directly into the keyboard port of the server.
- Try replacing the keyboard with a known working keyboard, and then reboot the server.
- If a keyboard extender cable is used, be sure the connection is secure or remove the extender and plug the keyboard directly into the server.

If the problem persists, contact an HP Customer Support Center for more troubleshooting steps before replacing any parts.

Mouse Problems

The server automatically detects a mouse when one is installed. If the mouse or other input device is not working:

- Verify that the mouse cable is properly and securely connected to the server or KVM switch box.
- If a KVM switch box is used with this server, remove the mouse and plug the mouse directly into the mouse port on the server.

  NOTE: Be sure the mouse is connected to the mouse port and not the keyboard port on the server rear panel.
- Be sure that the mouse port does not have a resource conflict with another device. Press the **F10** key to enter the system BIOS Setup Utility and verify that the mouse port has no resource conflicts.
- Be sure that the correct mouse driver has been installed onto the boot drive. Refer to the mouse installation manual or the operating system manual.
- Replace the mouse with a known working mouse.

If the problem persists, the system board may need to be replaced. Contact an HP Customer Support Center for further troubleshooting assistance before replacing any parts.

Diskette Problems

If the server cannot boot from, write to, or format a diskette:

1. Try booting from a known working diskette.
2. Run the system BIOS Setup Utility by pressing the **F10** key on POST, when prompted, and verify that the mass storage configuration is correct.

   NOTE: If for some reason the system BIOS Setup Utility cannot be accessed, clear the CMOS ("Clearing the CMOS Configuration" on page 59).
3. Be sure the diskette drive is set as the first boot device in the BIOS Setup Utility if you are deliberately booting from a diskette.
4. Be sure the diskette is not write-protected.

5. Verify the activity LED on the drive is illuminated.
6. Try another diskette.

Diskette Drive Problems

1. Verify that the internal drive cables are securely attached and functional by inspecting the cables and reseating the connections at both ends.
2. If the cables are securely attached and the drive still does not work, replace the cable with a known working cable.

If the problem persists, contact an HP Customer Support Center for further assistance before replacing any parts.

CD-ROM Problems

The CD-ROM Drawer Will Not Open (on page 43)

The CD-ROM Drive Is Not Working Properly (on page 44)

The Server Will Not Boot from a CD-ROM (on page 44)

The CD-ROM Drawer Will Not Open

If the CD-ROM drawer fails to open when the eject button is pressed or with software commands:

1. Power down the server ("Powering Down the Server" on page 7).
2. To open the drawer, insert a pointed object, such as a paper clip, into the emergency eject hole and push in about 4 cm (1.75 in).
3. Remove the disk and close the drawer.
4. After the disk is removed, power up the server ("Powering Up the Server" on page 7) and try to open the drawer again with the eject button or software command.

If the drawer still will not open, contact an HP Customer Support for further assistance before replacing any parts.

The CD-ROM Drive Is Not Working Properly

The CD-ROM drive provided with all the ProLiant 100 Series server models is an IDE CD-ROM. If the CD-ROM drive does not work:

1. Review the basic IDE installation guidelines to be sure the device is properly configured.
2. Check the following:
   a. Verify that the correct drivers are installed.
   b. Verify that a CD-ROM is in the CD-ROM drive.
   c. Verify that the IDE Controller and devices are displayed during POST.
   d. Verify that all internal drive cables are securely attached and functional.
3. Verify that the Local Bus IDE Adapter item is correctly configured in the setup program:
   a. Power up the server ("Powering Up the Server" on page 7) and press the **F10** key to enter the BIOS Setup Utility when this option displays.
   b. Verify that the **Advanced > IDE Configuration** item is enabled.

If the problem persists, contact an HP Customer Support Center for further troubleshooting steps before replacing any parts.

IMPORTANT: Check for environmental problems that could damage disk media and disk drive heads.

- Radiated Interference: sources include communications and radar installations, radio/TV broadcast transmitters, and hand-held receivers.
- Airborne contaminants: Sources include dust, smoke, and ashes. Steam from duplication equipment may result in intermittent disk errors.

The Server Will Not Boot from a CD-ROM

1. Verify that the CD-ROM is bootable.
2. Use the BIOS Setup Utility to verify that the CD-ROM drive is first in the boot order.

a. Reboot the server and run the BIOS Setup Utility by pressing the **F10** key.

b. Access the Boot menu.

c. If necessary, move the CD-ROM drive up in the boot order list to make sure the CD-ROM will boot before any of the hard disk drives (IDE or SCSI).

d. Save and exit the Setup Utility.

If the problem persists, contact an HP Customer Support Center for further troubleshooting assistance.

SCSI Problems

The SCSI Boot Controller BIOS Has Trouble Loading the Boot Logical Drive (Boot Drive) (on page 45)

A SCSI Controller Does Not Work at Initial Installation (on page 46)

A SCSI Device Stops Working (on page 47)

A SCSI Device Does Not Work after Installation (on page 48)

The SCSI Boot Controller BIOS Has Trouble Loading the Boot Logical Drive (Boot Drive)

1. Verify the SCSI boot controller is bannering (displaying) on POST.
2. Be sure that the SCSI boot controller BIOS is enabled. Verify this with the SCSI Select Utility. To access this utility, press **Ctrl+A** when an Adaptec controller banners on POST.
3. Determine what the boot order is for the server. To verify that the SCSI boot controller board is in the correct position in the boot order, press the **F10** key on POST to access the system BIOS Setup Utility. The boot order can be viewed and changed from this utility. If necessary, change the slot (if applicable) that the SCSI controller is in to change the location in the boot order.
4. If the problem persists:

a. Clear the CMOS configuration ("Clearing the CMOS Configuration" on page 59).

b. Flash the system BIOS.

c. Repeat step 3.

5. If more than one SCSI controller is installed, try disabling the BIOS on all other SCSI controller except for the SCSI boot controller. This lets the SCSI BIOS for the boot controller load and prevents conflicts with other SCSI controllers. If necessary, remove all the other SCSI controller boards except the SCSI boot controller until the issue is resolved.

If the problem persists, contact an HP Customer Support Center for further troubleshooting assistance.

A SCSI Controller Does Not Work at Initial Installation

Many SCSI controller problems are caused by an incorrect configuration rather than by faulty hardware. If the SCSI controller does not work after installation:

1. Verify the SCSI controller BIOS is bannering (displaying) on POST.
2. If more than one SCSI controller is installed, verify that each adapter is set to a separate BIOS address or disable the BIOS on all the other adapters except the boot controller.
3. Be sure resource conflicts exist.
4. For each device on the SCSI controller:
   - Verify that each device has a unique SCSI address.
   - Do not set any device to SCSI ID 7. This is usually the controller SCSI ID.

If the SCSI banner still does not banner on POST:

CAUTION: Always wear an antistatic wrist guard when working inside the server.

If the SCSI controller is an expansion board:

1. Power down the server ("Powering Down the Server" on page 7).

2. Unplug the power cord from the power source.
3. Remove the access panel ("Access Panel" on page 8).
4. Reseat the SCSI controller board in its slot.
5. Replace the access panel ("Access Panel" on page 8).
6. Plug the power cords into a power source.
7. Power up the server ("Powering Up the Server" on page 7).

If the SCSI controller still does not banner on POST:

1. Power down the server ("Powering Down the Server" on page 7).
2. Move the SCSI controller board into another slot.

If this still does not resolve the issue:

- Clear the CMOS configuration ("Clearing the CMOS Configuration" on page 59).
- Update the system BIOS ("BIOS Update/Recovery" on page 33).

If the problem persists, contact an HP Customer Support Center for further troubleshooting assistance before replacing any parts.

A SCSI Device Stops Working

1. Verify that the SCSI device banners on POST or is available in the SCSI Select Utility.
2. If an expansion board was added recently, check for a resource conflict between the new board and an existing expansion boards.
   a. Remove the board and restart the server.
   b. If this corrects the problem, the new board is either defective or it is trying to use a system resource used by another SCSI controller board.
   c. Try the expansion board in another slot.
3. Check for any recent changes or upgrades to the software. For example, has anyone moved, removed, or changed the configuration files or drivers? Refer to the software documentation for more information.

4. If you suspect hardware failure and no system error messages are displayed, check each component associated with the failure. Equipment failure is probably the most unlikely reason for a SCSI device failure.

If the problem persists, contact an HP Customer Support Center for further troubleshooting assistance before replacing any parts.

A SCSI Device Does Not Work after Installation

NOTE: The SCSI controller board supplied with some servers ships with a single channel SCSI controller board and cannot support internal and external SCSI devices on the same controller.

NOTE: For any specific information regarding installation, refer to the documentation provided with the SCSI device.

If a SCSI device does not work after installation:

1. If using a single channel SCSI controller for external devices, be sure no internal devices are connected on the internal channel of the SCSI controller. HP does not support using both internal and external connections on a single-channel controller, and a second SCSI controller board must be purchased for use with the external SCSI device.
2. Verify the SCSI BIOS is being executed properly. The internal and external SCSI device controllers display a banner during startup. The BIOS then checks for valid devices on the SCSI bus, and reports which devices are found. If the SCSI devices are installed and configured correctly, a list confirming the devices will banner on POST after the controller banners.
3. Verify the switch settings on the SCSI devices are correct.
4. Verify each SCSI device is assigned a unique SCSI ID.
5. Be sure no SCSI device is set to SCSI ID 7. This SCSI address is generally used by the SCSI controller.
6. Be sure all installed SCSI controllers are configured correctly.
7. If the SCSI devices installed in an external device connected to the server operate in Ultra SCSI or fast SCSI mode, this may cause a problem. The SCSI controller board and the internal SCSI devices, normally provided with the servers, operate in Ultra 160 SCSI mode. The external SCSI devices may be slowing down or causing the internal SCSI controller board to be ineffective and therefore non-operational.

8. Check the SCSI cables for problems that may be caused by any recent server maintenance, hardware upgrades, or physical damage.
9. Check the system BIOS version to be sure it is the most recently issued version. The most recent version is listed on the HP website (http://www.hp.com).
10. Verify the SCSI bus is terminated at both ends. By default, server SCSI controllers in external enclosures are terminated. When a device is connected to a connector on the SCSI bus, bus termination for that connector is disabled. Verify the last device on the bus is terminated.

If the problem persists, contact an HP Customer Support Center for further troubleshooting assistance before replacing any parts.

Processor Problems

Contact an HP Customer Support Center for further troubleshooting assistance before replacing any parts.

Memory Problems

1. Review the troubleshooting checklist (on page 29) before continuing.
2. If memory problems occur, power down server ("Powering Down the Server" on page 7) and power on the server ("Powering Up the Server" on page 7) gracefully. This performs a "cold" restart rather than a "warm" restart by doing a **Ctrl+Alt+Delete**.
3. Verify that all DIMMs are the correct DIMMs for this server.
4. Verify that all the memory is counted during the POST.
5. Run the HP Server Diagnostics for Windows® memory test.

CAUTION: Always wear an antistatic wrist guard when working inside the server.

If the problem persists:

1. Power down the server ("Powering Down the Server" on page 7).

2. Unplug the power cord from the power source.
3. Remove the access panel ("Access Panel" on page 8).
4. Locate and reseat the DIMMs ("Memory Options" on page 21).
5. Plug the power cord back into the power source.
6. Power up the server ("Powering Up the Server" on page 7).
7. Verify that all the memory is counted during the POST.

If problem still persists:

1. Power down the server ("Powering Down the Server" on page 7).
2. Unplug the power cord for the power source.
3. Remove the access panel ("Access Panel" on page 8).
4. Remove all but one DIMM.
5. Plug the power cord into the power source.
6. Power up the server ("Powering Up the Server" on page 7).
7. If the error is not present, power down and unplug the server then add another DIMM. Perform steps 1 through 7 until all the DIMMs are installed or a failure occurs.
8. Verify the failure by reinstalling the DIMM by itself and attempt to duplicate the error.
9. Try the faulty DIMM in another memory slot to confirm that the slot is not defective.
10. Replace the defective DIMM.

If the problem still persists, contact an HP Customer Support Center for further troubleshooting assistance, if needed.

Network Interface Controller (Embedded or PCI) Problems

Server Cannot Connect to the Network (on page 51)

LEDs Are Not Illumiated on the NIC ("LEDs Are Not Illuminated on the NIC" on page 52)

Server Cannot Connect to the Network

If the server cannot connect to the network and all the LEDs are illuminated on the NIC:

1. Press the **F10** key on POST, when prompted, to access the system BIOS Setup Utility and verify that no resource conflicts exist between the NIC and any other accessory.
2. Reboot the server and log into the OS.
3. Be sure the latest and correct drivers are being used for the NIC.
4. Be sure the port on the switch or hub (or other device) has the same speed and duplex settings as on the NIC.

    **CAUTION:** Setting an incorrect duplex mode can degrade performance, cause data loss, or result in lost connections.
5. Test the NIC as directed in the installation tasks for each OS. Also check the README files on the support driver disk.
6. Use the `PING` command to verify TCP/IP configuration.
   a. Ping the IP address of the default gateway. If the `PING` command fails, verify that the default gateway IP address is correct and that the gateway (router) is operational.
   b. Ping the IP address of a remote host (a host that is on a different subnet). If the `PING` command fails, verify that the remote host IP address is correct, that the remote host is operational, and that all the gateways (routers) between this computer and the remote host are operational.
7. Directly connect two devices (with no hub, switch, or other device) using a "crossover" cable. `PING` the other server IP address.

   NOTE: The PING command uses ICMP Echo Request and Echo Reply messages. Packet filtering policies on routers, firewalls, or other types of security gateways might prevent the forwarding of this traffic.

LEDs Are Not Illuminated on the NIC

If no LEDs are illuminated, this indicates a possibly nonworking network cable, hub connection, or other network error.

Be sure that the cabling is installed correctly:

- Try another known working network cable.
- Try another network connection (another hub, switch, etc.).
- Connect the NIC to a known working network connection.

If the LEDs are still not illuminated:

1. Power down the server ("Powering Down the Server" on page 7).
2. Unplug the power cords from the power source.
3. Remove the access panel ("Access Panel" on page 8).

   NOTE: If the server has an integrated NIC, skip the following steps unless a PCI NIC is installed in the server.

   CAUTION: Always wear an antistatic wrist guard when working inside the server.
4. Locate the NIC and reseat it in its slot.
5. Replace the access panel ("Access Panel" on page 8).
6. Plug in the power cord to a power source.
7. Power up the server ("Powering Up the Server" on page 7).
8. If the problem persists, perform steps 4 through 7 but move the NIC to another slot.
9. Replace the access panel ("Access Panel" on page 8).
10. Plug the power cord into a power source.
11. Power up the server ("Powering Up the Server" on page 7).

If the problem persists, contact an HP Customer Support Center for further troubleshooting assistance before replacing any parts.

Power-On Self Test (POST)

When the server boots, a series of tests are displayed on the screen. The number of tests displayed depends on the configuration of the server.

The POST, which resides in the BIOS ROM, isolates server-related logic failures and indicates the board or component that needs to be replaced, as indicated by the Error Messages. Most server hardware failures will be accurately isolated by the POST.

To see the POST:

- The server must be functionally able to run POST.
- The video subsystem must be functional.
- The keyboard must be functional.

NOTE: The BIOS ROM version number is displayed on the screen during power-up.

Blank Screen

WARNING: To reduce the risk of electric shock or damage to the equipment, disconnect power from the server by unplugging all power cords from the electrical outlets.

General Checks

1. Verify that all external cables and power cables are firmly plugged in.
2. Verify that the power outlet is working.
3. Verify that the server and monitor are powered on. (The power LED should be illuminated.)
4. Verify that the contrast and brightness for the monitor are correct.
5. Verify that all internal cables are properly connected and all boards are firmly seated.
6. Verify that the processor and heatsink fan are firmly seated on the system board.

7. Verify that the memory is installed correctly and firmly seated.
8. Verify that the alignment slots and tabs are aligned in the DIMM slot connectors.

After Installing an Accessory

1. Power down the monitor, the server, and any external devices.
2. Unplug all cables from the power outlet.
3. Remove the access panel ("Access Panel" on page 8).
4. Verify the following:
   a. If an expansion board is installed, verify that the board is firmly seated in its slot and any switches or jumpers on the expansion board are properly set.

      Refer to the documentation provided with the expansion board.

   b. Check all internal cabling and connections.
   c. If any system board switches have changed, verify that each one is set properly.
5. Replace the access panel ("Access Panel" on page 8).
6. Connect all cables.
7. Power on the monitor and the server.
8. If the server still does not operate:
   a. Repeat steps 1, 2, and 3 of this procedure.
   b. Remove all accessories, except the primary boot hard disk drive.
   c. Replace the access panel ("Access Panel" on page 8).
   d. Connect all cables.
   e. Power on the monitor and the server.
9. If the server is now operational, power down the server ("Powering Down the Server" on page 7).
10. Unplug all power cables.
11. Remove the access panel ("Access Panel" on page 8).

12. Replace the expansion boards and accessories one at a time to determine which one is causing the problem.

POST Error Messages

Error messages that display during the POST process describe what prevents the server from completing the boot process.

> **NOTE:** HP recommends that you correct the error before proceeding, even if the server appears to start successfully. If POST still reports an error message after the corrective action, clear the CMOS configuration ("Clearing the CMOS Configuration" on page 59).

POST Error Messages—Memory

Message Displayed	Discription
0235: Multiple-Bit ECC error occurred.	This message will only occur on systems using ECC-enabled memory modules. ECC memory has the ability to correct single-bit errors that may occur from faulty memory modules. A multiple bit corruption of memory has occurred and the ECC memory algorithm cannot correct it. This may indicate a defective memory module.
0230: System RAM Failed at offset: 0231: Shadow RAM Failed at offset: 0232: Extended RAM Failed at address line:	Fatal Memory Parity Error. System halts after displaying this message.

POST Error Messages—Boot

Message Displayed	Description
Operating System not found	The following problems may be present: • The BIOS could not boot from a particular device. This message is usually followed by other information concerning the device. • The BIOS attempted to boot form the A: drive, but could not find a proper boot diskette. • This message occurs when no bootable device can be detected.
Non-System disk or disk error Replace and strike any key when ready	A diskette was found in the drive, but it is not configured as a bootable diskette.
02B0: Diskette drive A error	The BIOS attempted to configure the A: drive during POST, but was unable to properly configure the device. This may be caused by a bad cable or faulty diskette drive.

POST Error Messages—Storage Device

Message Displayed	Description
0200: Failure Fixed Disk	The IDE/ATAPI device configured as Primary Master could not be properly initialized by the BIOS. This message is typically displayed when the BIOS is trying to detect and configure IDE/ATAPI devices in POST.

POST Error Messages—Virus Related

Message Displayed	Description
02F5: DMA Test Failed	The following problems may be present: • Error initializing secondary DMA controller. This is a fatal error, often indicating a problem with system hardware. • POST error while trying to initialize the DMA controller. This is a fatal error, often indicating a problem with system hardware.
System Configuration Data Write Error	BIOS could not write to the NVRAM block. This message displays when the FLASH part is write-protected or if no FLASH part exists (System uses a PROM or EPROM).
Invalid System Configuration Data	An error occurred while validating the NVRAM data. This causes POST to clear the NVRAM data.
Resource Conflict with another device	More than one system device is trying to use the same non-shareable resources (Memory or I/O).
System Configuration Data Read Error	The following problems may be present: • The NVRAM data used to store Plug'n'Play (PnP) data was not used for system configuration in POST. • The NVRAM data used to store 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).
PnP I/O conflict	A PnP adapter generated an I/O resource conflict when configured by BIOS POST.
PnP IRQ conflict	The following problems may be present: • A PnP adapter generated an I/O resource conflict when configured by BIOS POST. • BIOS POST (DIM code) found a PCI device in the system but was unable successfully route an IRQ to the device. Usually this error is caused by an incomplete description of the PCI Interrupt Routing of the system.

Message Displayed	Description
0260: System timer error	This message indicates an error while programming the count register of channel 2 of the 8254 timer. This may indicate a problem with system hardware.

POST Error Messages—CMOS

Message Displayed	Description
0271: Check date and time settings	The CMOS Date and/or Time are invalid. This error can be resolved by readjusting the system time in the Setup Utility.
0250: System battery is dead - Replace and run SETUP	CMOS Battery is low. This message usually indicates that the CMOS battery needs to be replaced. It could also display when the user intentionally discharges the CMOS battery.
0251: System CMOS checksum bad - Default configuration	The following problems may be present: • CMOS settings are invalid. This error can be resolved by using the Setup Utility. • CMOS contents failed the Checksum check. It 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 the Setup Utility.

POST Error Messages—Miscellaneous

Message Displayed	Description
0211: Keyboard error	Keyboard is not present or the hardware is not responding when the keyboard controller is initialized.
0212: Keyboard controller error	Keyboard Controller failure. This may indicate a problem with system hardware.

Message Displayed	Description
Warning ! BIOS detect failed CPU fans or CPU fans not connected. Please check CPU fans. System will be automatically shut down after seven seconds.	The system has been halted. A reset or power cycle is required to reboot the system. This message displays after a fatal error has been detected.

Clearing the CMOS Configuration

Clearing the CMOS configuration may be necessary if the configuration has been corrupted or if incorrect settings made in the Setup Utility caused error messages to be unreadable.

To clear the configuration:

1. Power down the server ("Powering Down the Server" on page 7).
2. Disconnect power cables from the power connector.
3. Remove the access panel ("Access Panel" on page 8).
4. Set jumper J29 to Clear CMOS (labeled "CLR CMOS").
5. Wait for 5 seconds and set jumper J29 to Normal (labeled "OPEN NORMAL").
6. Replace the access panel ("Access Panel" on page 8).
7. Power up the server ("Powering Up the Server" on page 7).
8. Press the **F10** key, when prompted during POST, to run the Setup Utility.
9. Make all configuration changes required.
10. Click **Exit** and save the changes to save the configuration and press the **F10** key to exit the Setup Utility.

Battery Replacement

If the server no longer automatically displays the correct date and time, you may need to replace the battery that provides power to the real-time clock. Under normal use, battery life is 5 to 10 years.

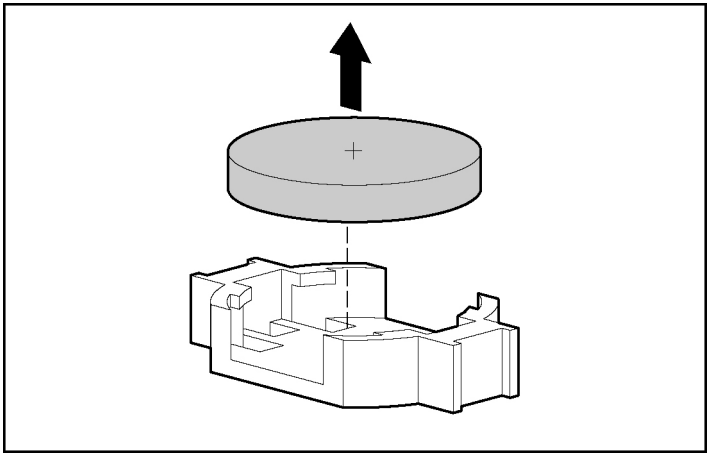
WARNING: The computer contains an internal lithium manganese dioxide, a vanadium pentoxide, or an alkaline battery pack. A risk of fire and burns exists if the battery pack is not properly handled. To reduce the risk of personal injury:

- **Do not attempt to recharge the battery.**
- **Do not expose the battery to temperatures higher than 60°C (140°F).**
- **Do not disassemble, crush, puncture, short external contacts, or dispose of in fire or water.**
- **Replace only with the spare designated for this product.**

To remove the component:

1. Power down the server ("Powering Down the Server" on page 7).
2. Extend or remove the server from the rack.
3. Remove the access panel ("Access Panel" on page 8).
4. Remove any hardware that will interfere with accessing the battery.

5. Remove the battery.



To replace the component, reverse the removal procedure.

For more information about battery replacement or proper disposal, contact an authorized reseller or an authorized service provider.

Regulatory Compliance Notices

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Regulatory Compliance Identification Numbers

For the purpose of regulatory compliance certifications and identification, this product has been assigned a unique regulatory model number. The regulatory model number can be found on the product nameplate label, along with all required approval markings and information. When requesting compliance information for this product, always refer to this regulatory model number. The regulatory model number is not the marketing name or model number of the product.

Federal Communications Commission Notice

Part 15 of the Federal Communications Commission (FCC) Rules and Regulations has established Radio Frequency (RF) emission limits to provide an interference-free radio frequency spectrum. Many electronic devices, including computers, generate RF energy incidental to their intended function and are, therefore, covered by these rules. These rules place computers and related peripheral devices into two classes, A and B, depending upon their intended installation. Class A devices are those that may reasonably be expected to be installed in a business or commercial environment. Class B devices are those that may reasonably be expected to be installed in a residential environment (for example, personal computers). The FCC requires devices in both classes to bear a label indicating the interference potential of the device as well as additional operating instructions for the user.

FCC Rating Label

The FCC rating label on the device shows the classification (A or B) of the equipment. Class B devices have an FCC logo or ID on the label. Class A devices do not have an FCC logo or ID on the label. After you determine the class of the device, refer to the corresponding statement.

Class A Equipment

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

Class B Equipment

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit that is different from that to which the receiver is connected.
- Consult the dealer or an experienced radio or television technician for help.

Declaration of Conformity for Products Marked with the FCC Logo, United States Only

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For questions regarding this product, contact us by mail or telephone:

- Hewlett-Packard Company
  P. O. Box 692000, Mail Stop 530113
  Houston, Texas 77269-2000
- 1-800-652-6672 (For continuous quality improvement, calls may be recorded or monitored.)

For questions regarding this FCC declaration, contact us by mail or telephone:

- Hewlett-Packard Company
  P. O. Box 692000, Mail Stop 510101
  Houston, Texas 77269-2000
- 1-281-514-3333

To identify this product, refer to the part, series, or model number found on the product.

Modifications

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Hewlett-Packard Company may void the user's authority to operate the equipment.

Cables

Connections to this device must be made with shielded cables with metallic RFI/EMI connector hoods in order to maintain compliance with FCC Rules and Regulations.

Mouse Compliance Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Canadian Notice (Avis Canadien)

Class A Equipment

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Class B Equipment

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

European Union Regulatory Notice

CE

This product complies with the following EU Directives:

- Low Voltage Directive 73/23/EEC
- EMC Directive 89/336/EEC

CE Compliance of this product is valid only if powered with the correct HP-provided and CE marked AC adapter.

If this product has telecommunication functionality, it also complies with the essential requirements of:

- R&TTE Directive 1999/5/EC

CE(XXXX*)①

*For a notified body number refer to the product regulatory label.

Compliance with these directives implies conformity to harmonized European standards (European Norms) which are listed on the EU Declaration of Conformity issued by Hewlett-Packard for this product or product family.

The telecommunications functionality of this product may be used in the following EU and EFTA countries:

Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, and United Kingdom.

Notice for Use in France and Italy

Italy:

E'necessaria una concessione ministeriale anche per l'uso del prodotto. Verifici per favore con il proprio distributore o direttamente presso la Direzione Generale Pianificazione e Gestione Frequenze.

License required for use. Verify with your dealer or directly with General Direction for Frequency Planning and Management (Direzione Generale Pianificazione e Gestione Frequenze).

France:

L'utilisation de cet equipement (2.4GHz Wireless LAN) est soumise a certaines restrictions: Cet equipement peut etre utilise a l'interieur d'un batiment en utilisant toutes les frequences de 2400 a 2483.5MHz (Chaine 1-13). Pour une utilisation en environement exterieur, vous devez utiliser les frequences comprises entre 2454-2483.5MHz (Chaine 10-13). Pour les dernieres restrictions, voir http://www.art-telecom.fr.

For 2.4 GHz Wireless LAN operation of this product certain restrictions apply: This product may be used indoor for the entire 2400-2483.5 MHz frequency band (channels 1-13). For outdoor use, only 2454-2483.5 MHz frequency band (channels 10-13) may be used. For the latest requirements, see http://www.art-telecom.fr.

Notice for products incorporating 5GHz Wireless LAN devices

Frequency availability for 802.11a or 802.11h Wireless LAN is not currently harmonized throughout the European Union. For compliance requirements, users should verify with their supplier, local HP office or Telecommunications authority.

Japanese Notice

ご使用になっている装置にVCCIマークが付いていましたら、次の説明文をお読み下さい。

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。

VCCIマークが付いていない場合には、次の点にご注意下さい。

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

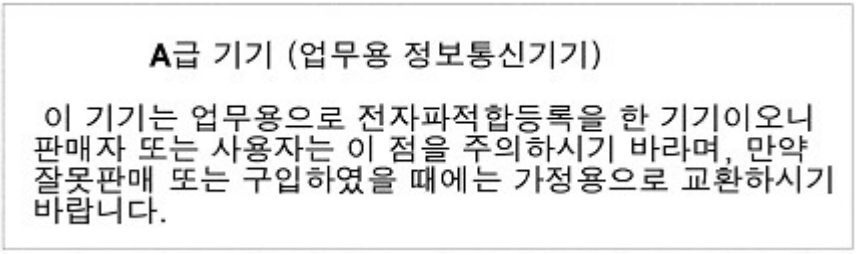
BSMI Notice

警告使用者:

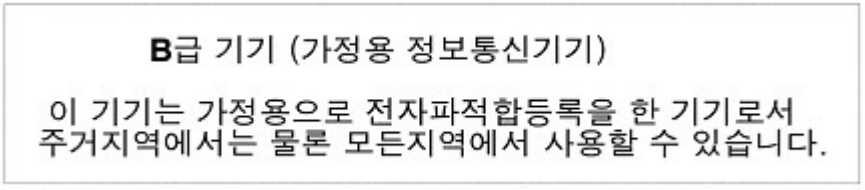
這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Korean Notices

Class A Equipment



Class B Equipment



Laser Compliance

This product may be provided with an optical storage device (that is, CD or DVD drive) and/or fiber optic transceiver. Each of these devices contains a laser that is classified as a Class 1 Laser Product in accordance with US FDA regulations and the IEC 60825-1. The product does not emit hazardous laser radiation.

WARNING: Use of controls or adjustments or performance of procedures other than those specified herein or in the laser product's installation guide may result in hazardous radiation exposure. To reduce the risk of exposure to hazardous radiation:

- **Do not try to open the module enclosure. There are no user-serviceable components inside.**
- **Do not operate controls, make adjustments, or perform procedures to the laser device other than those specified herein.**
- **Allow only HP Authorized Service technicians to repair the unit.**

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration implemented regulations for laser products on August 2, 1976. These regulations apply to laser products manufactured from August 1, 1976. Compliance is mandatory for products marketed in the United States.

Battery Replacement Notice

WARNING: The computer contains an internal lithium manganese dioxide, a vanadium pentoxide, or an alkaline battery pack. A risk of fire and burns exists if the battery pack is not properly handled. To reduce the risk of personal injury:

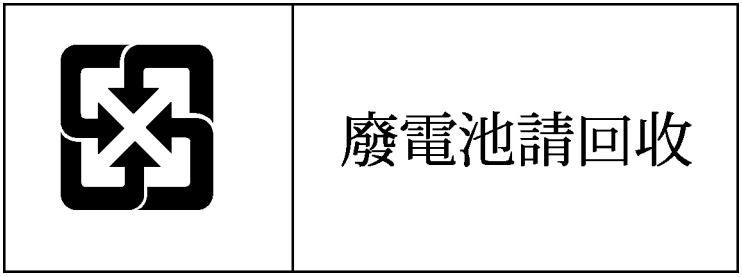
- **Do not attempt to recharge the battery.**
- **Do not expose the battery to temperatures higher than 60°C (140°F).**
- **Do not disassemble, crush, puncture, short external contacts, or dispose of in fire or water.**

Batteries, battery packs, and accumulators should not be disposed of together with the general household waste. To forward them to recycling or proper disposal, please use the public collection system or return them to HP, an authorized HP Partner, or their agents.

For more information about battery replacement or proper disposal, contact an authorized reseller or an authorized service provider.

Taiwan Battery Recycling Notice

The Taiwan EPA requires dry battery manufacturing or importing firms in accordance with Article 15 of the Waste Disposal Act to indicate the recovery marks on the batteries used in sales, giveaway or promotion. Contact a qualified Taiwanese recycler for proper battery disposal.



Electrostatic Discharge

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Preventing Electrostatic Discharge

To prevent damaging the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

To prevent electrostatic damage:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly.

Grounding Methods to Prevent Electrostatic Discharge

Several methods are used for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

- Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm ±10 percent resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.
- Use heel straps, toe straps, or boot straps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
- Use conductive field service tools.
- Use a portable field service kit with a folding static-dissipating work mat.

If you do not have any of the suggested equipment for proper grounding, have an authorized reseller install the part.

For more information on static electricity or assistance with product installation, contact your authorized reseller.

Technical Support

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HP Contact Information

For the name of the nearest HP authorized reseller:

- In the United States, call 1-800-345-1518.
- In Canada, call 1-800-263-5868.
- In other locations, refer to the HP website (http://www.hp.com).

For HP technical support:

- In North America:
  - Call 1-800-HP-INVENT (1-800-474-6836). This service is available 24 hours a day, 7 days a week. For continuous quality improvement, calls may be recorded or monitored.
  - If you have purchased a Care Pack (service upgrade), call 1-800-633-3600. For more information about Care Packs, refer to the HP website. (http://www.hp.com)
- Outside North America, call the nearest HP Technical Support Phone Center. For telephone numbers for worldwide Technical Support Centers, refer to the HP website (http://www.hp.com).

Before You Contact HP

Be sure to have the following information available before you call HP:

- Technical support registration number (if applicable)

- Product serial number
- Product model name and number
- Applicable error messages
- Add-on boards or hardware
- Third-party hardware or software
- Operating system type and revision level

Acronyms and Abbreviations

ACPI

Advanced Configuration and Power Interface

ASR

Automatic Server Recovery

DDR

double data rate

DIMM

dual inline memory module

ECC

error checking and correcting

ICMP

Internet Control Message Protocol

IEC

International Electrotechnical Commission

IML

Integrated Management Log

IPL

initial program load

IRQ

interrupt request

MPS

multi-processor specification

NEMA

National Electrical Manufacturers Association

NFPA

National Fire Protection Association

NIC

network interface controller

NVRAM

non-volatile memory

PCI-X

peripheral component interconnect extended

PDU

power distribution unit

PnP

plug and play

POST

Power-On Self-Test

PSP

ProLiant Support Pack

SDRAM

synchronous dynamic RAM

SIM

Systems Insight Manager

TMRA

recommended ambient operating temperature

USB

universal serial bus

VHDCI

very high density cable interconnect

WOL

Wake-on LAN

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