Installation Guide

HP 9000 rp3410 and HP 9000 rp3440

Manufacturing Part Number: A7137-96007
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Legal Notices

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About This Document

This document describes how to unpack the HP 9000 rp3410/rp3440 server, install additional components, start a server console session, power on the server, and boot the operating system.

The document printing date and part number indicate the document's current edition. The printing date changes when a new edition is printed. Minor changes may be made at reprint without changing the printing date. The document part number changes when extensive changes are made.

Document updates may be issued between editions to correct errors or document product changes. To ensure you receive the updated or new editions, subscribe to the appropriate product support service. See your HP sales representative for details.

The latest version of this document can be found on the Web at:

`http://www.docs.hp.com`.

Intended Audience

This document is intended to provide technical product and support information for authorized service providers, system administrators, and HP support personnel.

This document is not a tutorial.

New and Changed Information in This Edition

This following changes are included in this edition:

- Updated formatting throughout the guide.
- Updated the following information:
  - Unpacking and inspecting the server
  - Installing additional components into the server
  - Connecting the cables
  - Setting up the console
  - Accessing the host console
  - Powering on the server
  - Booting the server

Publishing History

Table 1 lists the publishing history details for this document.

Table 1 Publishing History Details

Document Manufacturing Part Number	Operating Systems Supported	Supported Product Versions	Publication Date
A7137-96007	HP-UX 11i v1 HP-UX 11i v2 HP-UX 11i v3	HP 9000 rp3410 and rp3440	April 2007

Table 1 Publishing History Details (Continued)

Document Manufacturing Part Number	Operating Systems Supported	Supported Product Versions	Publication Date
A7137-96001	HP-UX 11i v1	HP 9000 rp3410 and rp3440	April 2005
N/A	HP-UX 11i v1	HP 9000 rp3410 and rp3440	July 2004

Document Organization

This guide is divided into the following sections.

Section 1 **Introduction:** Provides views and descriptions of the server and safety information.

Section 2 **Unpacking and Inspecting the Server:** Provides procedures to perform before installing the server.

Section 3 **Installing Additional Components:** Describes how to install server components that are not installed before delivery.

Section 4 **Installing the Server into a Rack:** Describes how to install the server into an HP rack, non-HP rack, or pedestal.

Section 5 **Connecting Cables:** Describes the cables to connect to power the server and to provide LAN connectivity.

Section 6 **Console Setup:** Describes how to set up and start a console session on the server.

Section 7 **Accessing a Host Console:** Describes the different ways to access the host console.

Section 8 **Powering On the Server:** Provides instructions on how to power on the server.

Section 9 **Booting the Operating System:** Provides instructions on how to boot the operating system.

Section 10 **Troubleshooting**: Diagnostics and basic troubleshooting information.

Typographic Conventions

This document uses the following conventions.

WARNING **A warning lists requirements that you must meet to avoid personal injury.**

CAUTION A caution provides information required to avoid losing data or avoid losing system functionality.

IMPORTANT Important messages provide essential information to explain a concept or to complete a task.

NOTE A note highlights useful information such as restrictions, recommendations, or important details about HP product features.

TIP	Tips provide you with helpful hints for completing a task. A tip is not used to give essential information, but can be used, for example, to provide an alternate method for completing the task that precedes it.
Book Title	The title of a book. On the Web and on the Instant Information CD, it may be a hot link to the book itself.
KeyCap	The name of a keyboard key or graphical interface item (such as buttons, tabs, and menu items). Note that **Return** and **Enter** both refer to the same key.
Emphasis	Text that is emphasized.
Bold	Text that is strongly emphasized.
Bold	The defined use of an important word or phrase.
`ComputerOut`	Text displayed by the computer.
`UserInput`	Commands and other text that you type.
`Command`	A command name or qualified command phrase.
`Option`	An available option.
`Screen Output`	Example of computer screen output.
`[ ]`	The contents are optional in formats and command descriptions. If the contents are a list separated by |, you must select one of the items.
`{ }`	The contents are required in formats and command descriptions. If the contents are a list separated by |, you must select one of the items.
...	The preceding element may be repeated an arbitrary number of times.
|	Separates items in a list of choices.

HP-UX Release Name and Release Identifier

Each HP-UX 11i release has an associated release name and release identifier. The *uname* (1) command with the -r option returns the release identifier.

Table 2 shows the releases available for HP-UX 11i.

Table 2 HP-UX 11i Releases

Release Identifier	Release Name	Supported Processor Architecture
B.11.20	HP-UX 11i v1.5	Intel® Itanium®
B.11.22	HP-UX 11i v1.6	Intel Itanium
B.11.23	HP-UX 11i v2.0	Intel Itanium
B.11.31	HP-UX 11i v3.0	Intel Itanium

Related Documents

You can find other information on HP server hardware management and diagnostic support tools in the following publications.

Web Site for HP Technical Documentation:

`http://docs.hp.com`

Server Hardware Information:

http://docs.hp.com/hpux/hw/

Diagnostics and Event Monitoring: Hardware Support Tools

Complete information about HP's hardware support tools, including online and offline diagnostics and event monitoring tools, is at the **http://docs.hp.com/hpux/diag/** Web site. This site has manuals, tutorials, FAQs, and other reference material.

Web Site for HP Technical Support:

http://us-support2.external.hp.com/

Books about HP-UX Published by Prentice Hall

The **http://www.hp.com/hpbooks/** Web site lists the HP books that Prentice Hall currently publishes, such as HP-UX books including:

- *HP-UX 11i System Administration Handbook*
  http://www.hp.com/hpbooks/prentice/ptr_0130600814.html
- *HP-UX Virtual Partitions*
  http://www.hp.com/hpbooks/prentice/ptr_0130352128.html

HP Books are available worldwide through bookstores, online booksellers, and office and computer stores.

HP Encourages Your Comments

HP encourages your comments concerning this document. We are truly committed to providing documentation that meets your needs.

Send comments to:

netinfo_feedback@cup.hp.com

Include title, manufacturing part number, and any comments, errors found, or suggestions for improvement you have concerning this document. Also, please include what we did right so we can incorporate it into other documents.

1 Installing the System

This chapter provides information on how to install the system.

This chapter addresses the following topics:

Introduction

The HP 9000 rp3410 server is a 1P/1C, 1P/2C, rack- or pedestal-mount server. Similarly, the HP 9000 rp3440 server is a 1P/1C, 1P/2C, or 2P/2C, rack- or pedestal-mount server. Both of these servers are based on the PA-RISC processor family architecture. The server accommodates up to 12 DIMMs and internal peripherals including disks and DVD. Its high availability features include hot-swappable power supplies and hot-pluggable disk drives. The supported operating system is HP-UX 11i v1 (and newer HP-UX versions that support PA-RISC systems).

Server Views

Figure 1-1, Figure 1-2, Figure 1-3, and Figure 1-4 show the front, rear, and pedestal-mount views of the HP 9000 rp3410 and rp3440 servers.

Figure 1-1 HP 9000 rp3410/rp3440 Server (Front View)

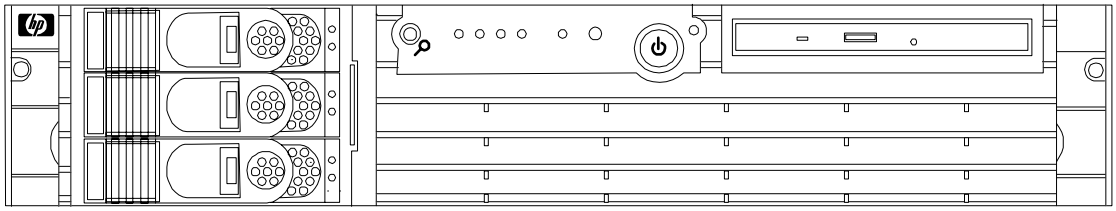


Figure 1-2 HP 9000 rp3410/rp3440 Server (Front View with Bezel Removed)

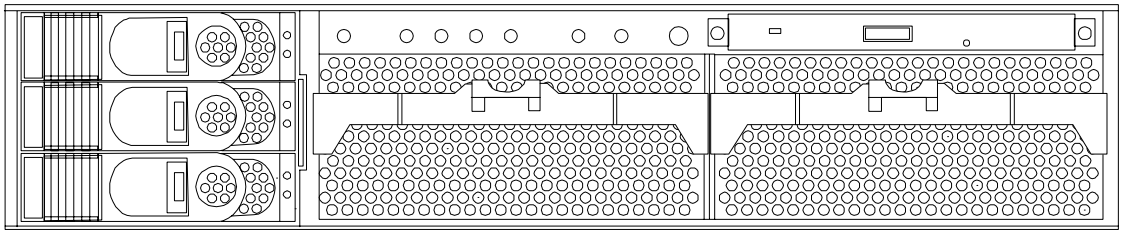


Figure 1-3 HP 9000 rp3410/rp3440 Server (Rear View)

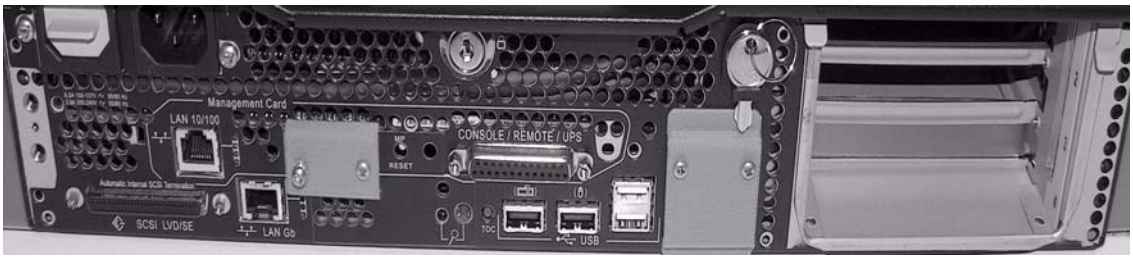
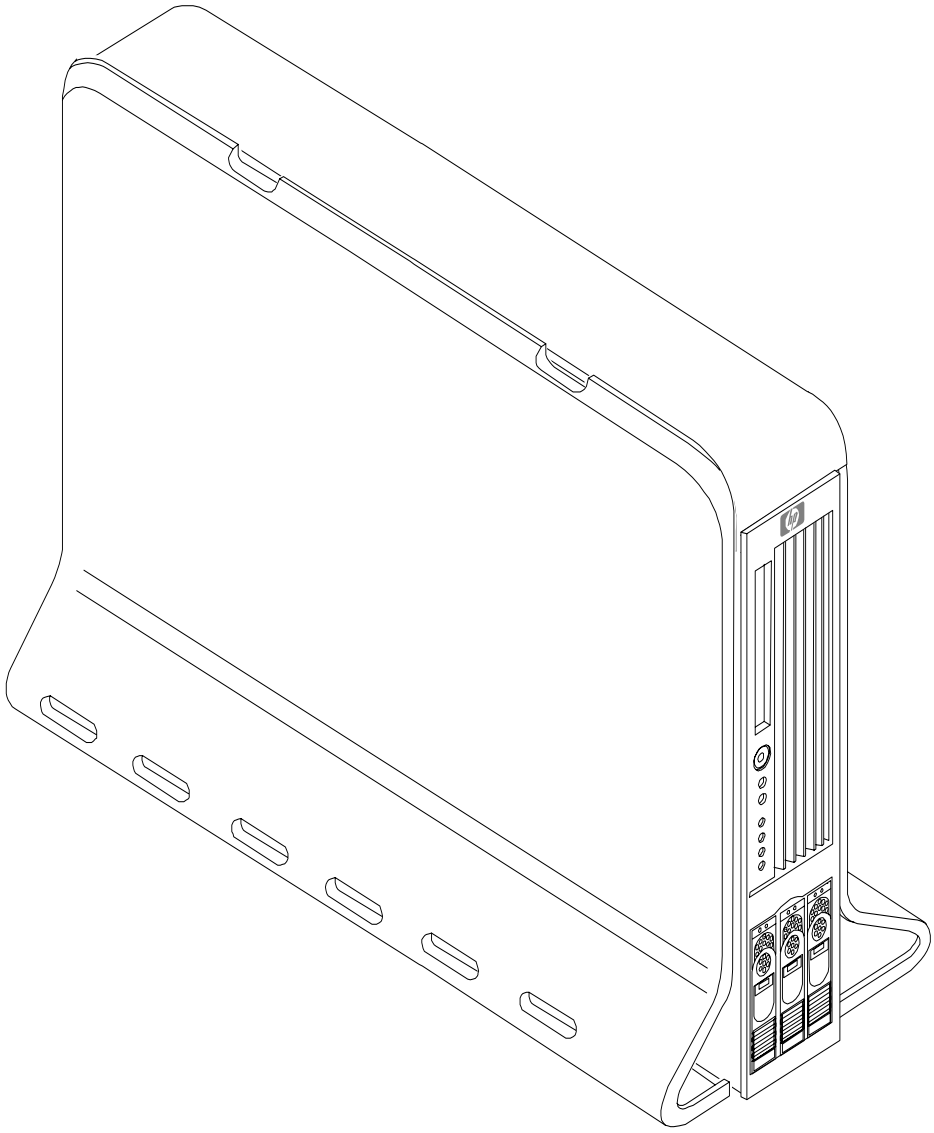


Figure 1-4 HP 9000 rp3410/rp3440 Server (Pedestal Mount)



Detailed Server Description

The following sections list the main subsystems within the HP 9000 rp3410 and rp3440 servers.

Features

Table 1-1 lists the features of the HP 9000 rp3410 and rp3440 servers.

Table 1-1 HP 9000 rp3410 and rp3440 Server Features

Features	rp340	rp3440
PA-8800 Processors	One or two processors at 800 MHz with 1.5 MB L1 cache/32 MB L2 cache	One to four processors at 800 MHz (or 1 GHz) and 1 GHz with 1.5 MB L1 cache/32 MB L2 cache
PA-8900 Processors	One or two processors at 800 MHz with 1.5 MB L1 cache/64 MB L2 cache	One to four processors at 800 MHz (or 1 GHz) and 1 GHz with 1.5 MB L1 cache/64 MB L2 cache
Memory	Supports up to 6 GB	Supports up to 24 GB
HDDs	Three 36 GB, 15K RPM Ultra320 SCSI Hot Plug Disk or 3- 73 GB, 15K RPM Ultra320 SCSI Hot Plug Disk or Three 146 GB, 10K RPM Ultra320 SCSI Hot Plug Disk	Three 36 GB, 15K RPM Ultra320 SCSI Hot Plug Disk or 3- 73 GB, 15K RPM Ultra320 SCSI Hot Plug Disk or Three 146 GB, 10K RPM Ultra320 SCSI Hot Plug Disk
Video	A6150B PCI card (optional)	A6150B PCI card (optional)
SCSI	N/A	Integrated Ultra-3 SCSI dual channel controller; 80 MBs transfer rate with one internal 68 pin connector and one external 68 pin connector.
LAN	PCI Gigabit, fast ethernet controller	PCI Gigabit, fast ethernet controller
PCI Slots	Two 64 bit hot-pluggable PCI-X slots, 133 MHz, 3.3V slots	Four 64 bit hot-pluggable PCI-X slots, 133 MHz, 3.3V slots
Core I/O	Three serial ports, 4 USB 2.0 ports, integrated RJ-45 LAN on iLO MP card.	Three serial ports, 4 USB 2.0 ports, integrated RJ-45 LAN on iLO MP card.
DVD	N/A	IDE interface; 48x speed
External Storage	Two-port U320 PCI-X RAID Smart Array 6402 (A9890A Controller)	Two-port U320 PCI-X RAID Smart Array 6402 (A9890A Controller)
Power Supply	Redundant, (2N+1) 714 Watt	Redundant, (2N+1) 714 Watt
Operating Systems	HP-UX 11i v1, HP-UX 11i v2, and HP-UX 11i v3 (choice of Enterprise, Mission-Critical, Technical Computing, and Foundation operating environments)	HP-UX 11i v1, HP-UX 11i v2, and HP-UX 11i v3 (choice of Enterprise, Mission-Critical, Technical Computing, and Foundation operating environments)

Firmware

Firmware consists of many individually linked binary images that are bound together by a single framework at run time. Internally, the firmware employs a software database called a device tree to represent the structure of the hardware platform and to provide a means of associating software elements with hardware functionality.

The firmware incorporates Boot Console Handler (BCH) which provides an interface between the operating system and the platform firmware.

The firmware supports the HP-UX 11i version 1 (and higher HP-UX versions that support PA-RISC systems) operating system through the HP 9000 processor family standards and extensions, and has no operating system-specific functionality included. The operating system is presented with the same interface to system firmware, and all features are available to the operating system.

Event IDs for Errors and Events

The server firmware generates event IDs similar to chassis codes for errors, events, and forward progress to the Integrity Integrated Light-Out Management Processor (iLO MP) through common shared memory. The Integrity iLO MP interprets and stores event IDs. Reviewing these events helps you diagnose and troubleshoot problems with the server.

Dimensions and Values

Table 1-2 lists the dimensions and their values of the HP 9000 rp3410 and rp3440 servers.

Table 1-2 Server Dimensions and Values

Dimensions	Values
Rack dimensions (depth x width x height)	26.8 in (67.9 cm) max x 19.0 in (48.3 cm) x 3.4 in (8.6 cm)
Pedestal dimensions (depth x width x height)	26.6 in (67.5 cm) x 11.6 in (29.5 cm) x 19.5 in (49.4 cm)
Rack weight	Minimum: 38.6 lb (17.5 kg) Maximum: 49.0 lb (22.2 kg)
Pedestal weight	Minimum: 49.4 lb (22.4 kg) Maximum: 56.3 lb (25.5 kg)
Pedestal footprint	2.1 sq ft (0.2 m2)
Rack units	2U

Safety Information

Use care to prevent injury and equipment damage when performing removal and replacement procedures. Voltages might be present within the server. Many assemblies are sensitive to damage by electrostatic discharge.

Follow the safety conventions listed below to ensure safe handling of components, to prevent injury, and to prevent damage to the server:

- When removing or installing any server component, follow the instructions provided in this guide.
- If installing a hot-swappable or hot-pluggable component when power is applied (fans are running), reinstall the server cover immediately to prevent overheating.

- If installing a hot-pluggable component, complete the required software intervention prior to removing the component.
- If installing an assembly that is neither hot-swappable, nor hot-pluggable, disconnect the power cable from the external server power receptacle.

WARNING **Ensure that the server is powered off and all power sources are disconnected from the server prior to removing or installing server hardware unless you are removing or installing a hot-swappable or hot-pluggable component.**

Voltages are present at various locations within the server whenever a dc power source is connected. This voltage is present even when the main power switch is turned off.

Failure to observe this warning can result in personal injury or damage to equipment.

- Do not wear loose clothing that can snag or catch on the server or on other items.
- Do not wear clothing subject to static charge build up, such as wool or synthetic materials.
- If installing an internal assembly, wear an antistatic wrist strap and use a grounding mat, such as those included in the Electrically Conductive Field Service Grounding Kit (HP 9300-1609).
- Handle accessory boards and components by the edges only. Do not touch any metal-edge connectors or any electrical components on accessory boards.

Control Panel

The control panel of the HP 9000 rp3410 or rp3440 server provides the controls and indicators commonly used for operation.

Figure 1-5 Front View

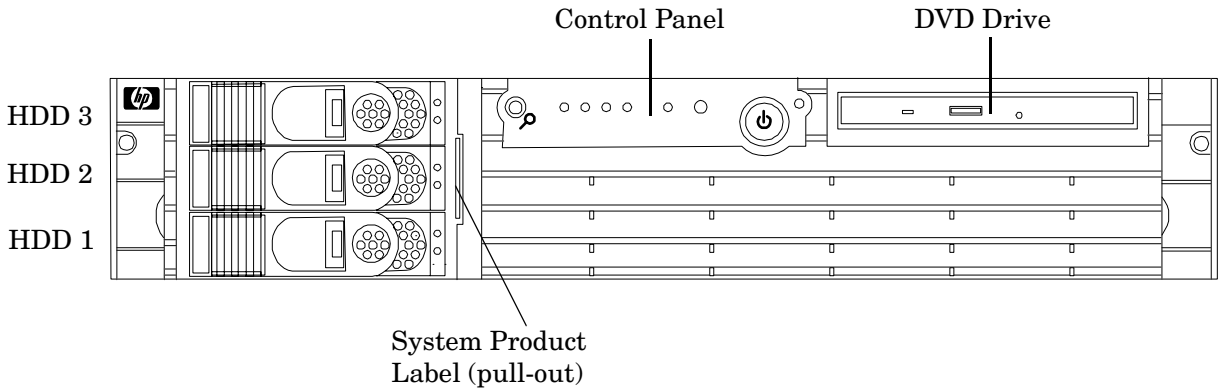
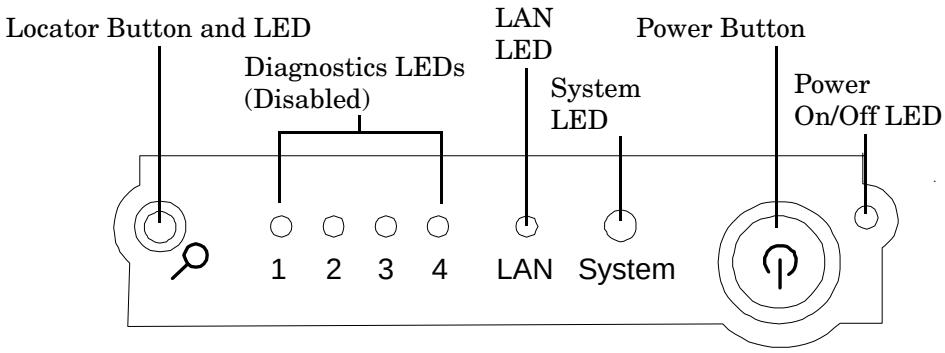


Figure 1-6 Control Panel



Additional Controls and Indicators

The HP 9000 rp3410 or HP 9000 rp3440 server can have up to three low-voltage differential (LVD), 3.5 inch form factor hard disk drives (HDDs) installed. These hard disk drives have LEDs that provide status and activity information.

Hard Disk Drive Indicators

The hard disk drives have two LEDs per drive, as described below.

- Status LED—The drive status LED is not used on the HP 9000 rp3410 or HP 9000 rp3440 server.
- Activity LED—The Drive Activity LED is flashing green and indicates disk drive activity. This LED is directly controlled by the disk drive and turns on when a drive is accessed.

Figure 1-7 Hard Disk Drive LED Indicators

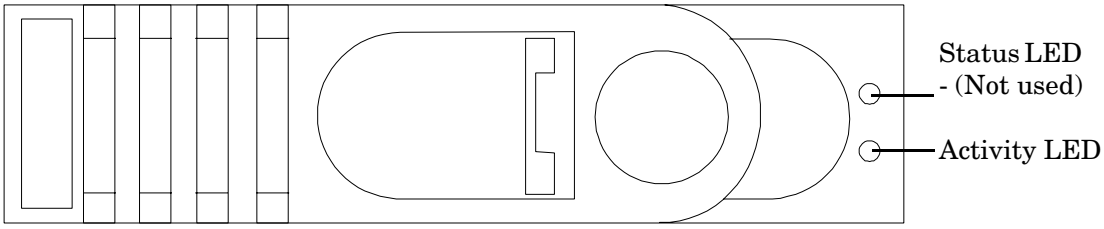


Table 1-3 lists the hard disk drive LED definitions.

Table 1-3 Hard Disk Drive LED Definitions

LED	Activity	Description
Status LED	None	Not used
Activity LED	Flashing green	Ready/scanning hard drive

Optional Removable Media Drive

The HP 9000 rp3410 or rp3440 server is delivered without a removable media drive. Either a DVD or CD-RW/DVD, drive may be added. Each of these optional devices has one activity LED.

Figure 1-8 DVD–ROM or CD-RW/DVD-ROM LED Indicators

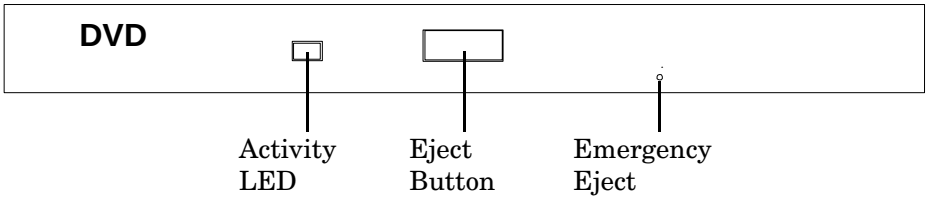


Table 1-4 lists the DVD drive LED definitions.

Table 1-4 DVD Drive LED Definitions

LED	Activity	Description
Activity LED	Flashing green	Drive is active

Rear Panel

The rear panel of the HP 9000 rp3410 and rp3440 servers includes communication ports, I/O ports, ac power connector, and the locator LED/button. Additional LEDs located on the rear panel of the HP 9000 rp3410 and rp3440 servers signal the operational status of:

- 10/100/1000 Base-T Ethernet LAN
- iLO MP card LAN

Figure 1-9 shows the rear panel ports and LEDs.

Figure 1-9 Rear View

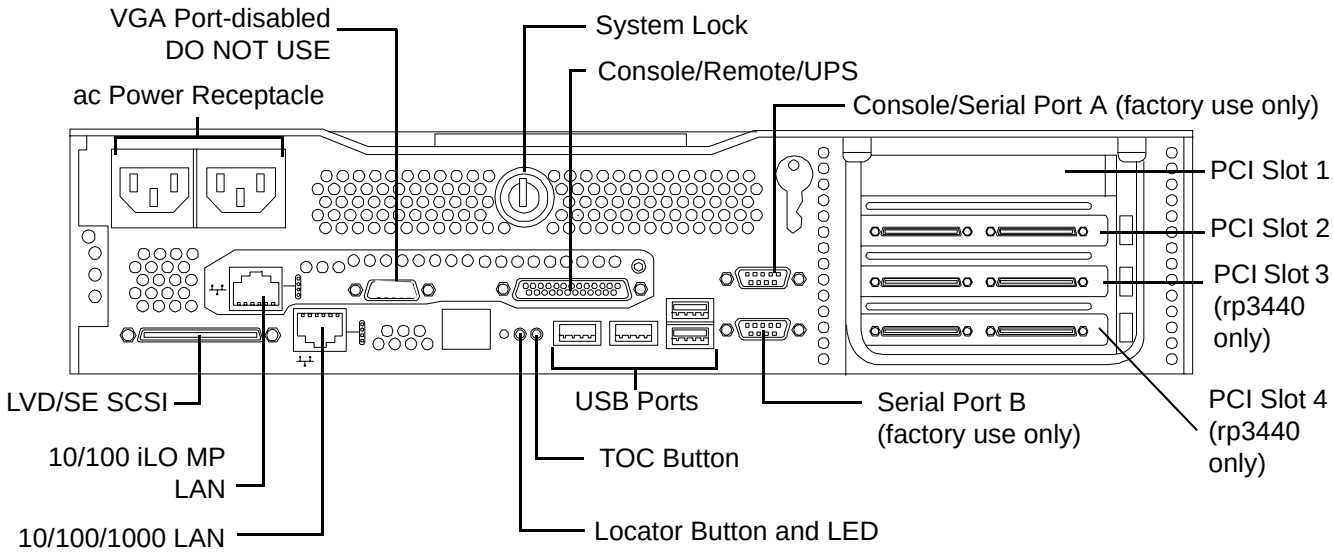


Table 1-5 lists the rear-panel connectors and switches.

Table 1-5 Rear Panel Connectors and Switches

Connector/Switch	Function
ac power	Primary power connection for the server.
LVD/SE SCSI	68-pin, low-voltage differential, single-ended U160 SCSI. This connector provides external SCSI connection on SCSI Channel B.
(1 GB) 10/100/1000 LAN	10/100/1000 base-T ethernet LAN connector.
Serial A (console) and Serial B	9-pin male serial connectors—factory use only.
USB	Four universal serial bus (USB 2.0) connectors.
TOC	Transfer of control button. Halts all system processing and I/O activity and restarts system.
Locator button and LED	The locator button and LED are used to help locate a server within a rack of servers. When the button is engaged, the blue LED illuminates and an additional blue LED on the front panel of the server illuminates. You can remotely activate this function.
Video (not used)	15-pin female video connector. DISABLED—DO NOT USE. To enable video capability you must obtain the supported A6150 video PCI card. See enclosed ReadMe, A6150-90001.
Console/remote/UPS	25-pin female serial data bus connector for the iLO MP card.
10/100 iLO MP LAN	10 Mb/100 Mb LAN connector for the iLO MP.

Installation Sequence and Checklist

Follow the steps in Table 1-6 sequentially to ensure successful installation of the server.

Table 1-6 Installation Sequence Checklist

Step	Description	Completed
1	Unpack and inspect the server shipping container; inventory the contents using the packing slip.	
2	Install additional components shipped with the server.	
3	Install the server into a rack- or pedestal-mount.	
4	Connect cables to the server.	
4a	Connect dc input power cable.	
4b	Connect LAN core I/O cable.	
5	Set up the console.	
6	Power on the server.	
7	Access the console.	
8	Boot the operating system.	
9	Verify the server configuration.	

Unpacking and Inspecting the Server

This section describes procedures you perform before installation. Ensure that you have adequately prepared your environment for the new server, received the components that you ordered, and verified that the server and its containers are in good condition after shipment.

Verifying Site Preparation

Verifying site preparation is an essential factor of a successful server installation and includes the following tasks.

Step 1. Gather LAN information and determine the two separate IP addresses for the iLO MP LAN and the system LAN.

Step 2. Establish a method to connect to the server console.

Step 3. Verify electrical requirements and ensure that grounding specifications and power requirements have been met.

Step 4. Validate server physical space requirements.

Step 5. Confirm environmental requirements.

Inspecting the Shipping Containers for Damage

HP shipping containers protect their contents under normal shipping conditions. After the equipment arrives, carefully inspect each carton for signs of shipping damage. Shipping damage constitutes moderate to severe damage, such as punctures in the corrugated carton, crushed boxes, or large dents. Normal wear or slight damage to the carton is not considered shipping damage. If you find shipping damage to the carton, contact your HP customer service representative immediately.

Unpacking the Server

To unpack a non-racked server, follow these steps.

NOTE HP recommends the use of a lifter, such as a RonI Company model 17000 SP 400 lifting device, when moving a non-racked server.

Step 1. Use the instructions printed on the outside top flap of the carton; remove the banding and the outer carton from the server pallet.

Step 2. Remove all inner accessory cartons and the top foam cushions, leaving only the server.

IMPORTANT Inspect each carton for shipping damage as you unpack the server.

Checking the Inventory

The sales order packing slip lists all of the equipment shipped from HP. Use this packing slip to verify that all of the equipment has arrived.

NOTE To identify each item by part number, see the sales order packing slip.

Returning Damaged Equipment

If the equipment is damaged, contact your HP customer service representative immediately. The service representative initiates appropriate action through the transport carrier or the factory and assists you in returning the equipment.

Unloading the Server with a Lifter

WARNING **Use caution when using a lifter. Because of the weight of the server, you must center the server on the lifter forks before lifting it off the pallet to avoid injury.**

To unload the server from the pallet using a lifter, follow these steps:

Step 1. Unpack the server.

Step 2. Unroll the bottom corrugated tray corresponding to the side on which the lifter will be placed, and slide the server as close to that edge of the pallet as possible.

Step 3. Break off any foam packaging which could prevent the lifter from being fully inserted under the server. Do not remove the foam packaging from the corners of the server. This foam is required to elevate the server and enable the forks of the lifter to be placed under the server.

Step 4. Insert the lifter forks under the server.

Step 5. Carefully roll the lifters forward until it is fully against the side of the server.

Step 6. Slowly raise the server off the pallet until it clears the pallet cushions.

Step 7. Carefully roll the lifter and server away from the pallet. Do not raise the server any higher than necessary when moving it over to the rack.

Installing Additional Components

This section describes how to install server components that are not installed before delivery.

Removing and Replacing Server Covers and Bezels

To upgrade, remove, or replace most server components, you must first remove the covers from the server chassis. This section explains how to remove and replace the covers for both rack and pedestal-mounted configurations.

WARNING **Do not remove the server cover without first turning the server off and unplugging the power cord from the outlet or power protection device unless you are only replacing a hot-swappable fan. Always replace the cover before turning the server on.**

Rack-Mounted Server

To access the internal components on a rack-mounted server, pull the server out onto the rail guides and remove the top cover.

Accessing a Rack-Mounted Server

HP 9000 rp3410 and rp3440 servers are designed to be rack mounted. The following procedure explains how to gain access to a server that is mounted in an approved rack. For slide installation instructions, see the *Installation Guide, Mid-Weight Slide Kit (HP part number 5065-7291)*. This document can be accessed on the Web at: **`http://www.hp.com/racksolutions`**.

WARNING **Ensure that all anti-tip features (front and rear anti-tip feet installed; adequate ballast properly placed; and so on) are employed prior to extending the server.**

Extend the Server from the Rack

NOTE Ensure that there is enough area (approximately 1.5 meters {4.5 ft.}) to fully extend the server out the front to work on it.

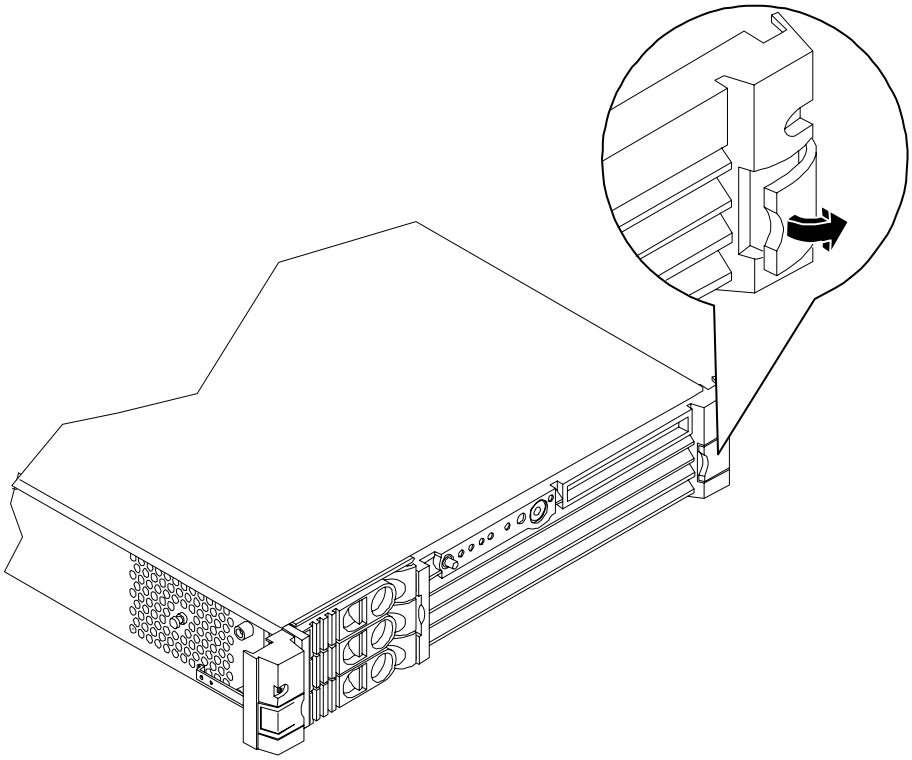
To extend the server from the rack, follow these steps:

NOTE If you are replacing a hot-swappable item, you can leave the server on and external cables (including the power cord) connected.

Step 1. Power off the server and disconnect the power and external cables from the back of the server.

Step 2. Release the rack latches by rotating them outward.

Figure 1-10 Release the Rack Latches



Step 3. Slide the server out of the rack until the guide-rail release clips are visible.

Insert the Server into the Rack

To insert the server into the rack, follow these steps:

Step 1. Press the rail clips on either side of the server inward and push the server into the rack until it stops.

Step 2. Verify that the rack latches are closed.

Removing and Replacing the Top Cover on a Rack-Mounted Server

Removal of this cover is necessary when installing or removing many components.

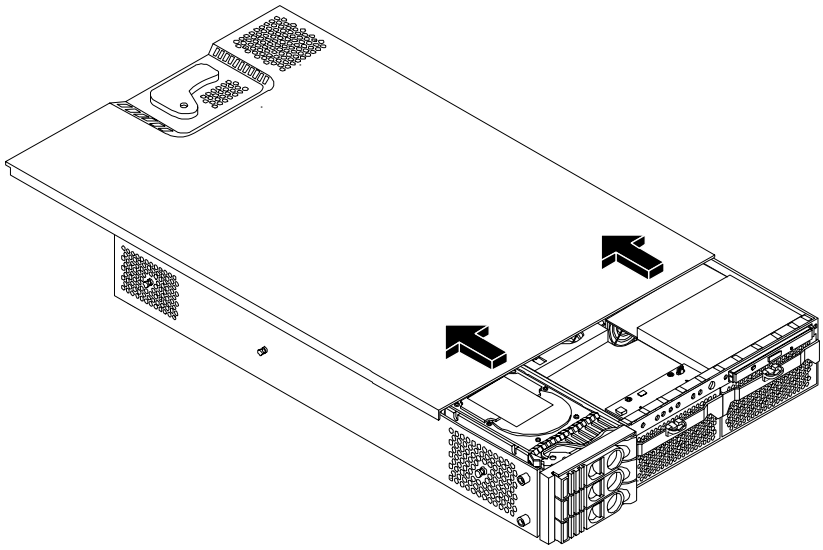
Removing the Top Cover on a Rack-Mounted Server

NOTE If you are replacing a hot-swappable item, you can leave the server on and external cables (including the power cord) connected.

Step 1. Power off the server and disconnect the power and external cables from the back of the server.

Step 2. Ensure the top cover lock keyswitch is in the unlocked position. Rotate the blue release lever toward the back of the server and slide the cover toward the back of the server.

Figure 1-11 Removing and Replacing the Top Cover on a Rack-Mounted Server



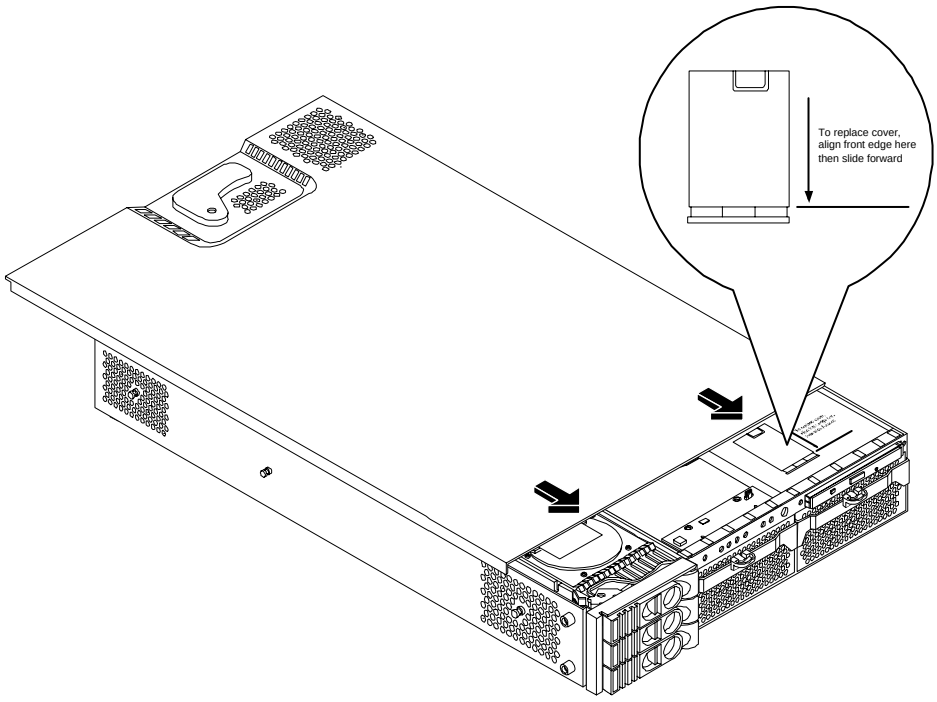
Step 3. Lift the cover off the server chassis.

Replacing the Top Cover on a Rack-Mounted Server

CAUTION Secure any wires or cables in the server so they will not get cut or interfere with the replacement of the cover.

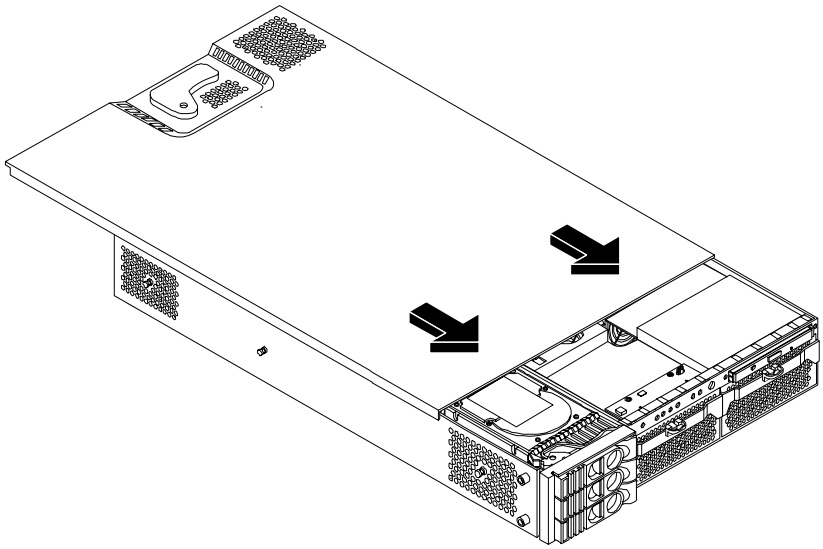
Step 1. Align the front edge of the cover with the alignment mark on the optical drive bay.

Figure 1-12 Aligning the Top Cover



Step 2. Grasp the blue release lever and slide the cover toward the front of the server until the lever snaps into place.

Figure 1-13 Closing the Top Cover



Step 3. Slide the server into the rack enclosure and reconnect the power and external cables.

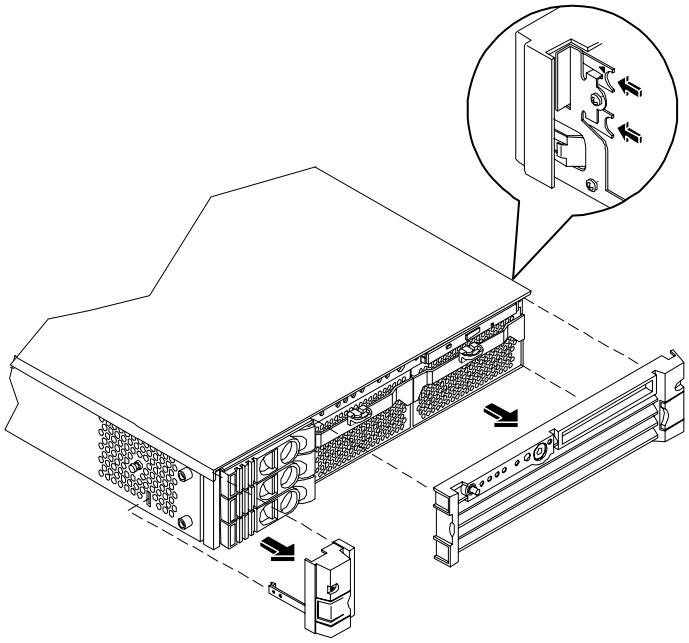
Removing and Replacing the Front Bezel on a Rack-Mounted Server

You must remove the front bezel from the chassis to gain access to the power supplies and optical drive.

Removing the Front Bezel on a Rack-Mounted Server

Step 1. Press in on the retaining clips located on the right-side of the front panel.

Figure 1-14 Front Bezel Retaining Clip



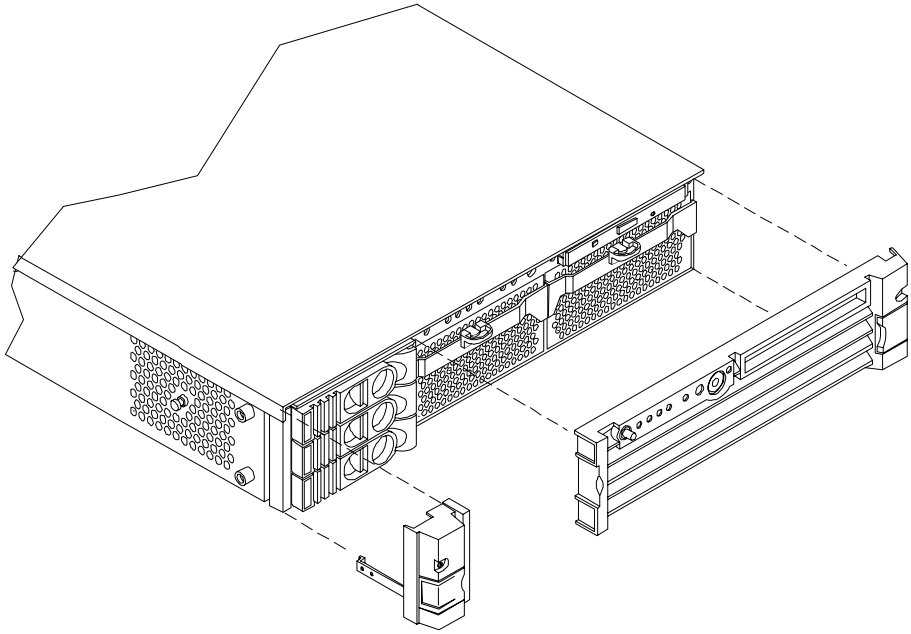
Step 2. Rotate the front panel outward and lift it off the server chassis.

Replacing the Front Bezel on a Rack-Mounted Server

Step 1. Insert the bezel latches into the matching slots on the server chassis.

Step 2. Close the bezel and push toward the front of the server until it locks into place.

Figure 1-15 Replacing the Front Bezel



Accessing a Pedestal-Mounted Server

NOTE If you are replacing a hot-swappable item, you can leave the server on and external cables (including the power cord) connected.

Removing the Side Cover on a Pedestal-Mounted Server

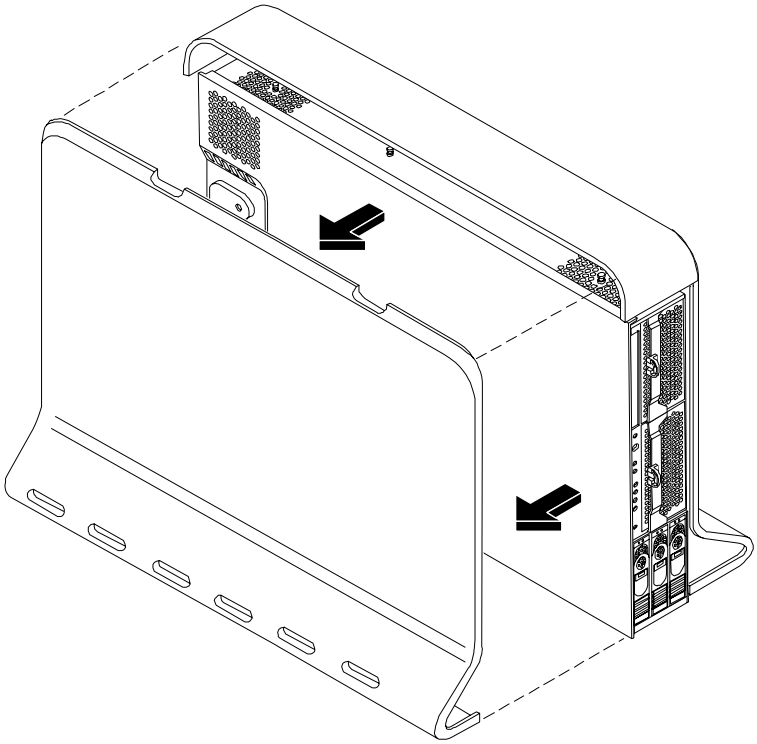
Step 1. Power off the server and disconnect the power and external cables.

Step 2. Remove the side cover.

a. Grasp both indentations at the top of the side panel and pull outward.

b. Lift the side cover off of the server chassis.

Figure 1-16 Removing the Side Cover on a Pedestal-Mounted Server



Removing the Top Cover on Pedestal-Mounted Server

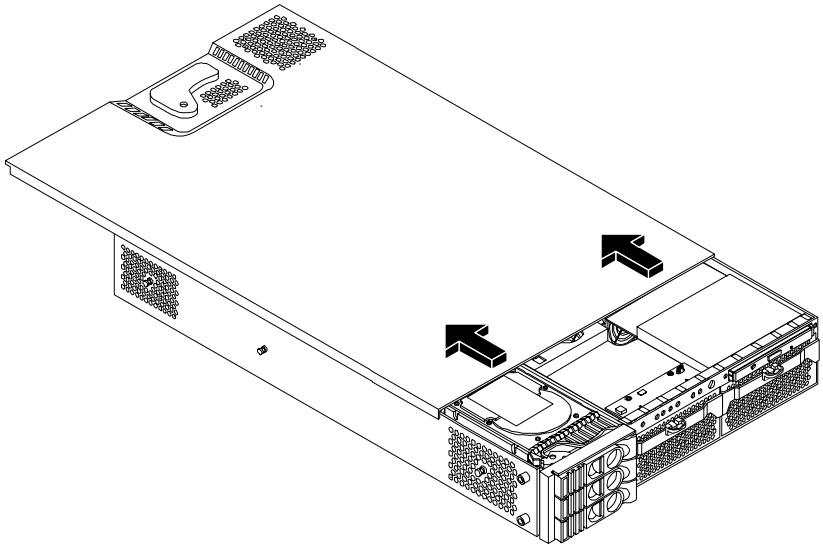
To remove the top cover, follow these steps:

Step 1. Turn the top cover lock keyswitch to the unlocked position.

Step 2. Rotate the blue release handle to release the latch.

Step 3. Slide the cover toward the back of the chassis and lift the cover off.

Figure 1-17 Removing the Top Cover on a Pedestal-Mounted Server



Step 4. Remove the top cover.

CAUTION The server depends on the access panels being closed for proper cooling of internal components. Operating the server with the cover removed can cause the server to quickly overheat.

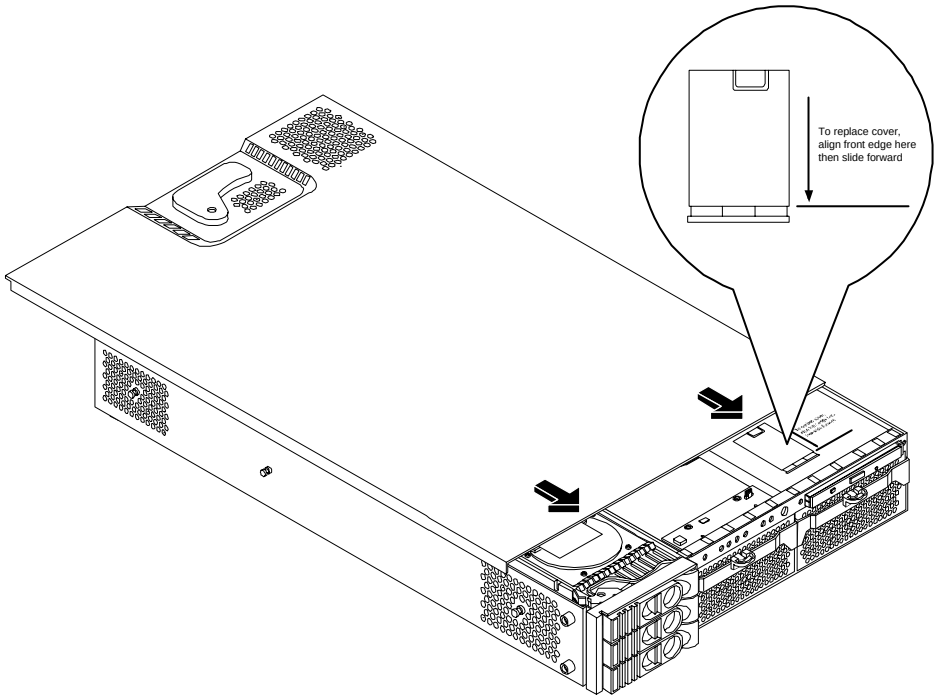
Replacing the Top Cover on a Pedestal-Mounted Server

CAUTION Secure any wires or cables in the server so they do not get cut or interfere with the replacement of the cover.

To replace the top cover, follow these steps:

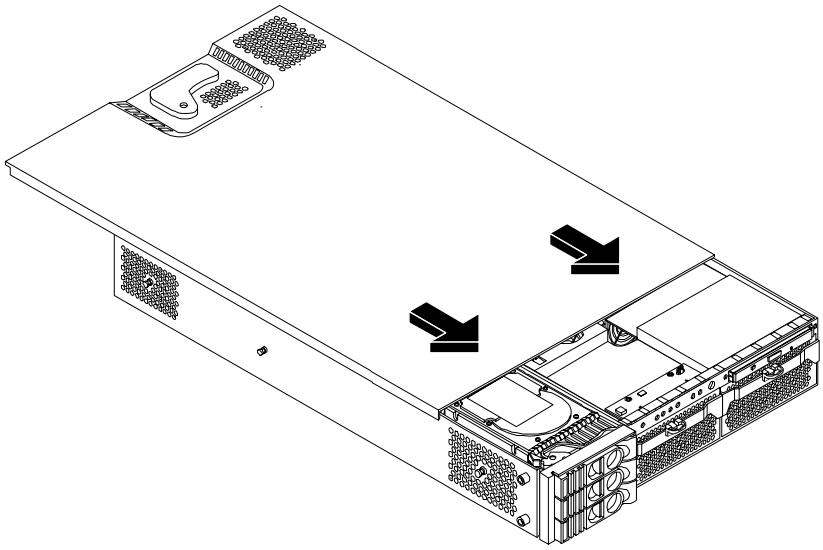
Step 1. Align the front edge of the top cover with the alignment mark on the optical drive bay.

Figure 1-18 Top Cover Alignment Mark



Step 2. Place the top cover on the chassis and slide it toward the front of the server until the blue release lever snaps in place.

Figure 1-19 Replacing the Top Cover on a Pedestal-Mounted Server

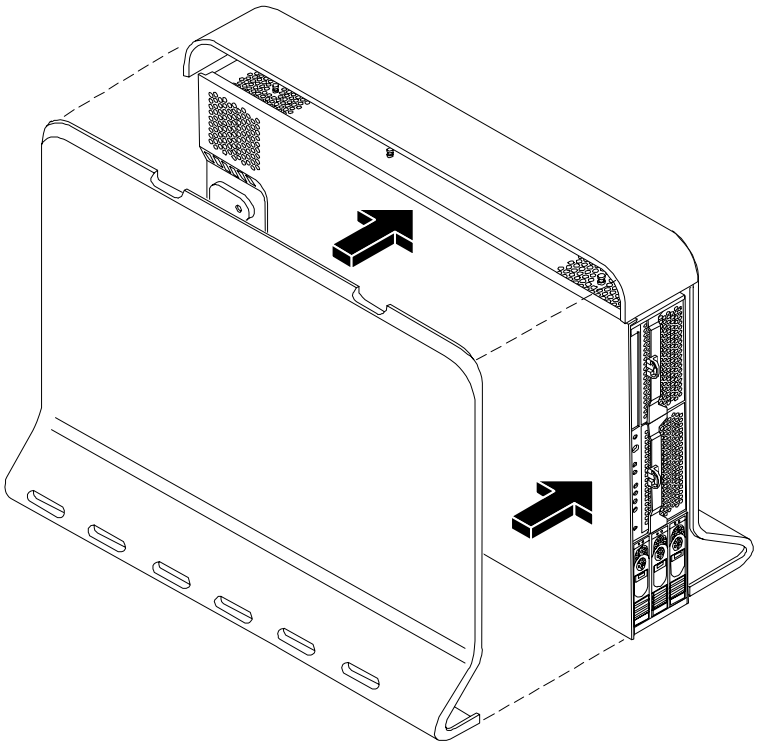


Replacing the Side Cover on a Pedestal-Mounted Server

To replace the side cover, follow these steps:

Step 1. Align the cover's mounting holes with the matching tabs on the server chassis.

Figure 1-20 Replacing the Side Cover on a Pedestal-Mounted Server



Step 2. Close the cover until it snaps onto the server chassis.

Removing and Replacing Front Bezel on a Pedestal-Mounted Server

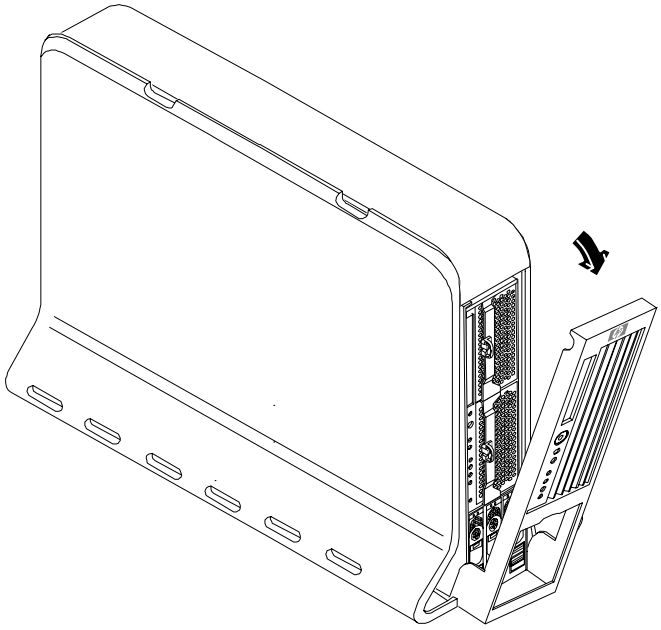
You must remove the front bezel from the chassis to gain access to the power supplies and optical drive.

Removing the Front Bezel on a Pedestal-Mounted Server

To remove the front bezel parts, follow these steps:

Step 1. Use the indentation at the top edge of the bezel to pull the bezel away from the chassis and to a 45 degree angle.

Figure 1-21 Removing the Front Bezel on a Pedestal-Mounted Server



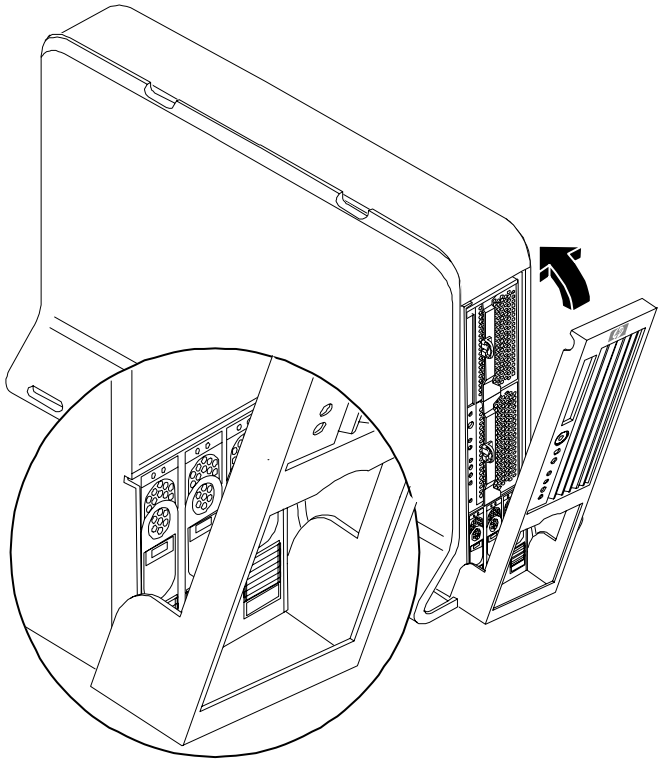
Step 2. Lift the bezel off the mounting tabs and away from the chassis.

Replacing the Front Bezel on a Pedestal-Mounted Server

To replace the front bezel parts, follow these steps:

Step 1. Position the bezel at an approximate 45 degree angle and align the retaining slots at the bottom with the retaining tabs on the chassis. Press the bezel against the chassis to engage the tabs.

Figure 1-22 Aligning the Pedestal Front Bezel



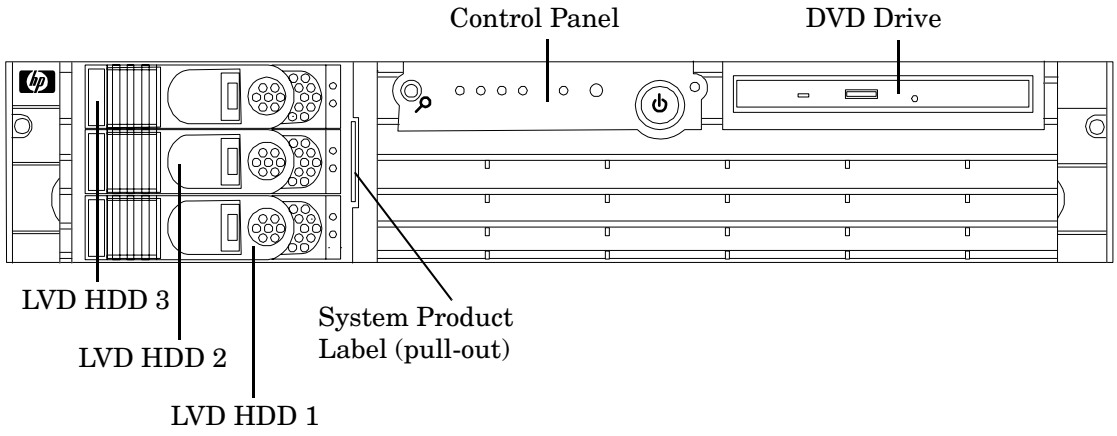
Step 2. Rotate the bezel against the chassis so that it snaps into place.

Installing Internal Hard Disk Drives

This section provides information about installing additional internal hard disk drives.

CAUTION A hot-pluggable device can require interaction with the operating server before the device can be safely installed into the server. Verify that the operating system supports installing disk drives while the operating system is running. If the operating system does not support this feature, shut down the operating system before attempting this procedure. Failure to observe this caution will result in system failure.

Figure 1-23 Front View of the HP 9000 rp3410/rp3440 Server



Two additional hard disk drives can be added to the server in slots 2 and 3. Always use low profile disk drives (1 inch height) in HP 9000 rp3410 and rp3440 servers.

To install a hard disk drive, follow these steps:

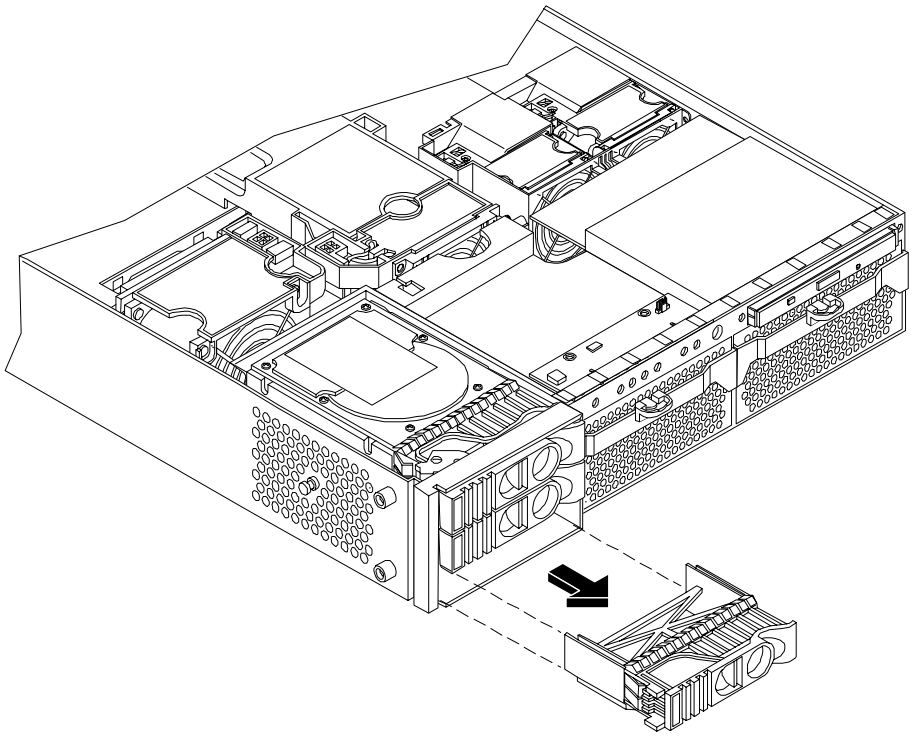
Step 1. If you will be locking the hard drive in place, you must remove the cover to access the hard drive lock. Proceed as follows:

a. If rack-mounted, slide the server out from the rack until it stops. (See “Extend the Server from the Rack” on page 25.)

b. Remove the cover and bezel. (See “Removing and Replacing Server Covers and Bezels” on page 25.)

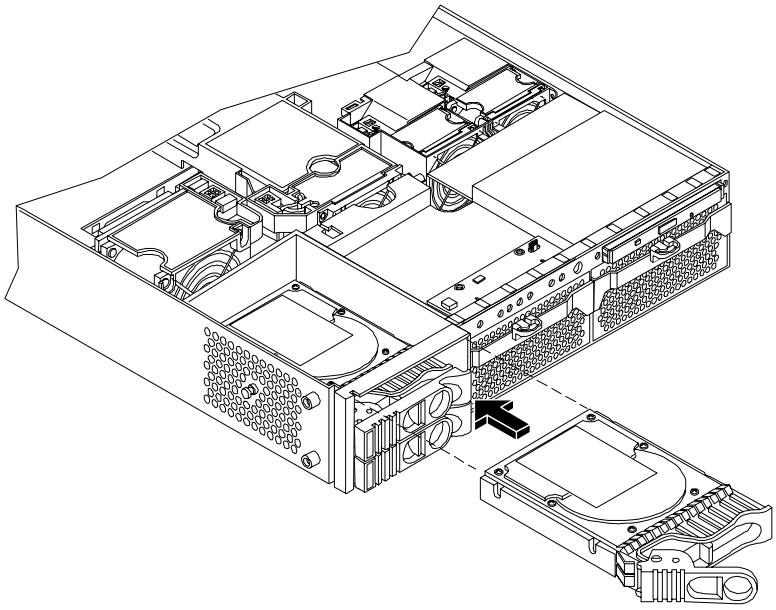
Step 2. Remove the slot filler that is installed in the slot where the additional drive is to be installed.

Figure 1-24 Filler Removal from Slot 1



Step 3. Slide the hard disk drive into the slot until it is seated.

Figure 1-25 Disk Drive Installation in Slot 3



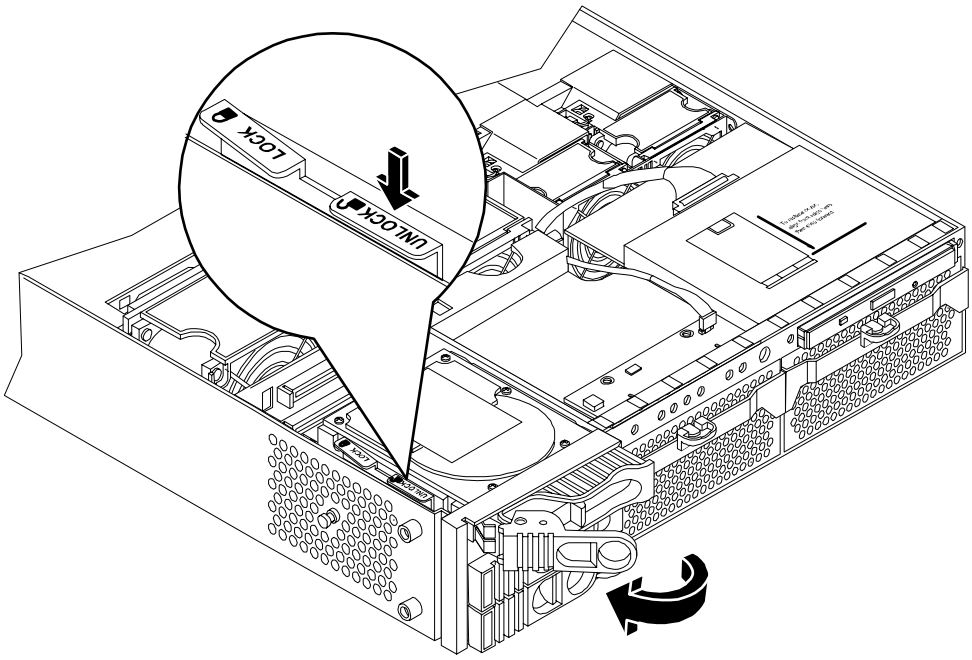
Step 4. Close the drive ejector handle by pushing it down until it clicks.

Step 5. If desired, lock the hard drive in place.

a. Press the hard drive locking lever down into the locked position.

b. Replace the cover and bezel. (See “Removing and Replacing Server Covers and Bezels” on page 25.)

Figure 1-26 Hard Drive Lock



Step 6. Verify the drive installation by using the system utilities.

- Use the iLO MP commands to verify operation.
- Use the BCH commands to verify operation.
- Use diagnostics provided by the offline diagnostic environment to exercise the module added.

Step 7. If rack-mounted, slide the server back into the rack until it stops.

Step 8. Check the installation of the hard disk drive by powering on the server and checking the virtual front panel and system event log for correct status for the hard disk drive.

Installing a DVD Drive

Install a DVD drive behind the front bezel.

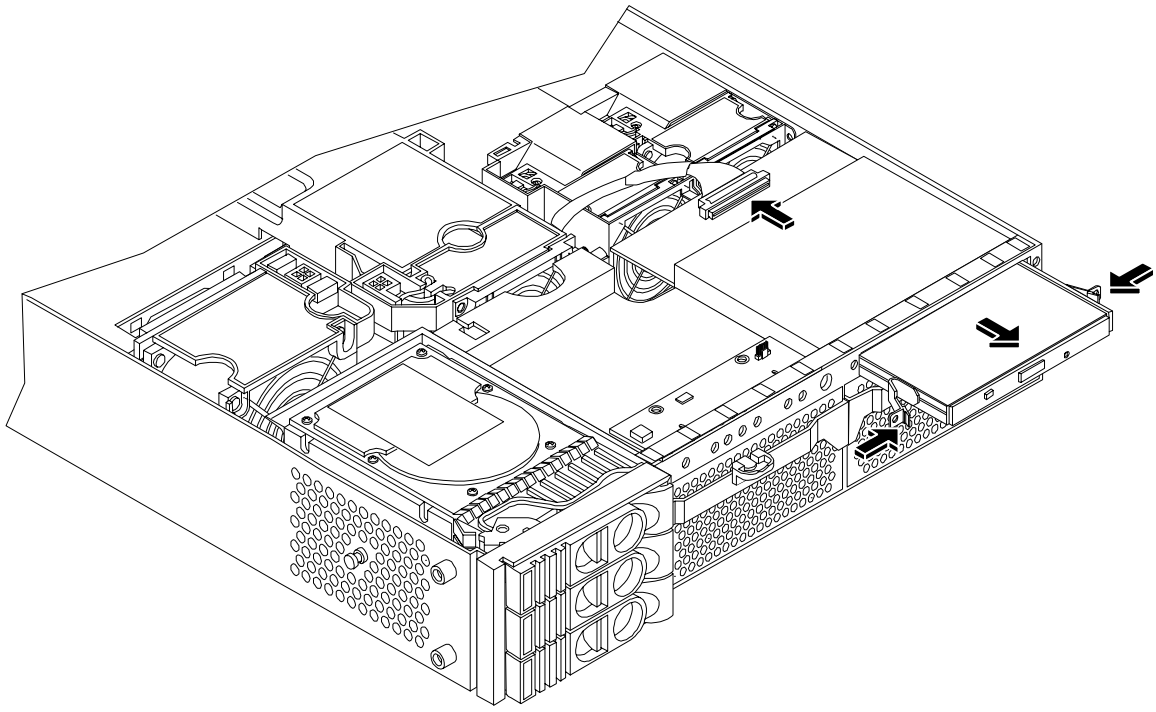
WARNING **Ensure that the server is powered off and all power sources have been disconnected from the server prior to removing or replacing a removable media drive.**

Voltages are present at various locations within the server whenever an ac power source is connected. This voltage is present even when the main power switch is in the off position.

Failure to observe this warning can result in personal injury or damage to equipment.

CAUTION Observe all ESD safety precautions before attempting this procedure. Failure to follow ESD safety precautions can result in damage to the server. Failure to properly complete the steps in this procedure will result in erratic server behavior or system failure. For assistance with this procedure contact your local HP Authorized Service Provider.

Figure 1-27 DVD Drive Installation



Installing the DVD Drive

To install a DVD drive, follow these steps:

Step 1. Power off the server and disconnect power and external cables.

Step 2. Remove the front bezel and cover. (See “Removing and Replacing Server Covers and Bezels” on page 25.)

Step 3. If a removable media drive has not previously been installed in the server, the drive slot will be covered with a DVD drive filler. Remove the DVD drive filler.

Step 4. Slide the drive into the drive bay until it stops sliding and the retaining clips on both sides of the drive snap into place (Figure 1-27).

Step 5. Connect the IDE cable on the back of the drive (Figure 1-27).

Step 6. Replace the cover and bezel. (See “Removing and Replacing Server Covers and Bezels” on page 25.)

Step 7. Reconnect the power and external cables and turn on the server.

Step 8. Verify the drive operation by using the system utilities.

- Use the iLO MP commands to verify operation.
- Use the BCH commands to verify operation.
- Use diagnostics provided by the offline diagnostic environment to exercise the newly installed module.

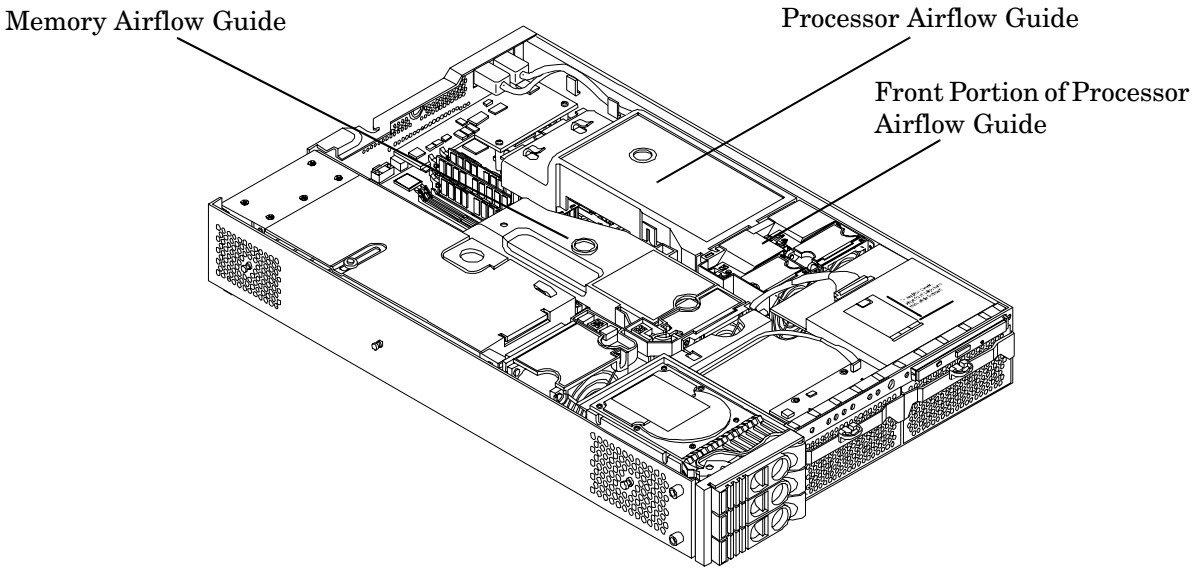
Removing and Replacing Airflow Guides

You must remove airflow guides before installing processors or memory. The server has the following airflow guides:

- The processor airflow guide ensures that the proper volume of air for cooling the dual processor module power pods, processor module(s), and voltage regulator module(s) flows over these components. You must remove the processor airflow guide before removing or installing a dual processor module.
- The memory airflow guide ensures that the proper volume of air flows over the memory DIMMs to cool them. You must remove the memory airflow guide to access memory DIMMs and sockets.

NOTE Air flows through the server from front to back.

Figure 1-28 Airflow Guides Locations



Removing and Replacing the Memory Airflow Guide

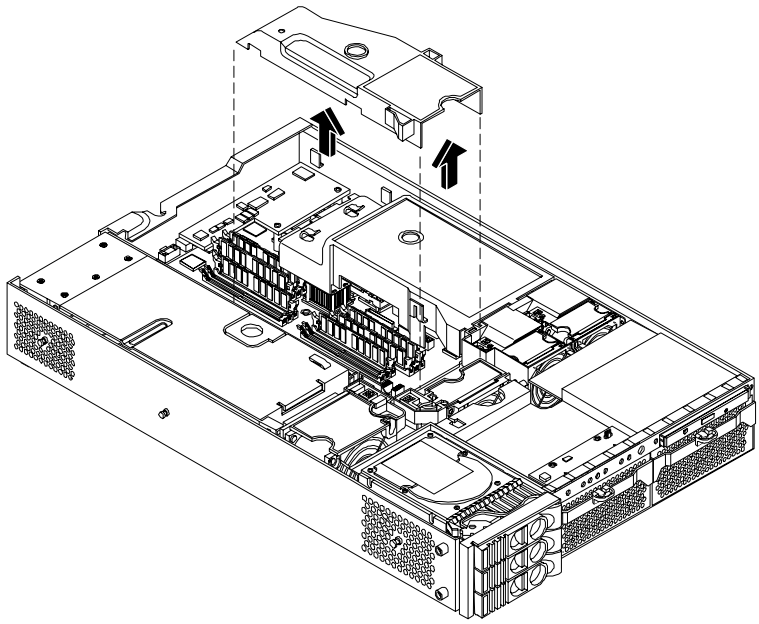
Removing the Memory Airflow Guide

Step 1. Power off the server and disconnect power and external cables.

Step 2. Remove the server chassis cover. (See “Removing and Replacing the Top Cover on a Rack-Mounted Server” on page 26.)

Step 3. Grasp the memory airflow guide and lift it out of the server.

Figure 1-29 Removing the Memory Airflow Guide



Replacing the Memory Airflow Guide

Step 1. Align the guides on both sides of the airflow guide with the slots on the chassis.

Step 2. Insert the memory airflow guide in the slots.

Step 3. Replace the cover. (See “Removing and Replacing the Top Cover on a Rack-Mounted Server” on page 26.)

Removing and Replacing the Processor Airflow Guide

Removing the Processor Airflow Guide

Step 1. Power off the server, disconnect power and external cables.

Step 2. Remove the server cover. (See “Removing and Replacing the Top Cover on a Rack-Mounted Server” on page 26.)

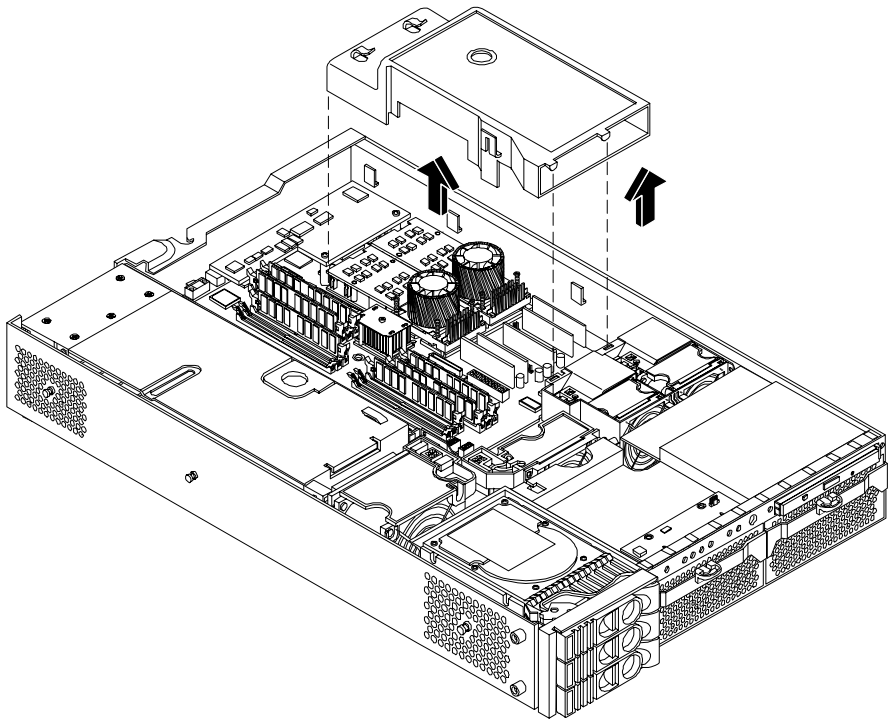
Step 3. Remove the IDE cable and power module cables from the processor airflow guide cable clips.

Step 4. Remove the main portion of the airflow guide:

a. Hold the guide using the opening on top of the guide.

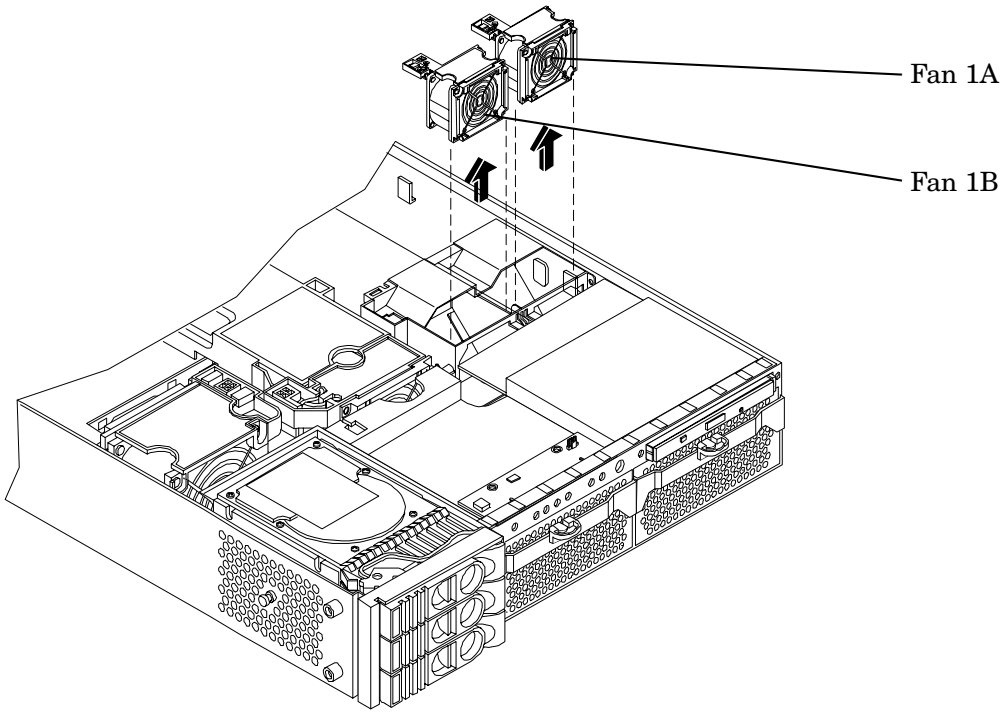
b. At the same time, grasp the back end of the processor airflow guide and lift the guide out of the server.

Figure 1-30 Removing the Processor Airflow Guide



Step 5. Grasp system fan 1A and lift it from its socket.

Figure 1-31 Removing Fans 1A and 1B

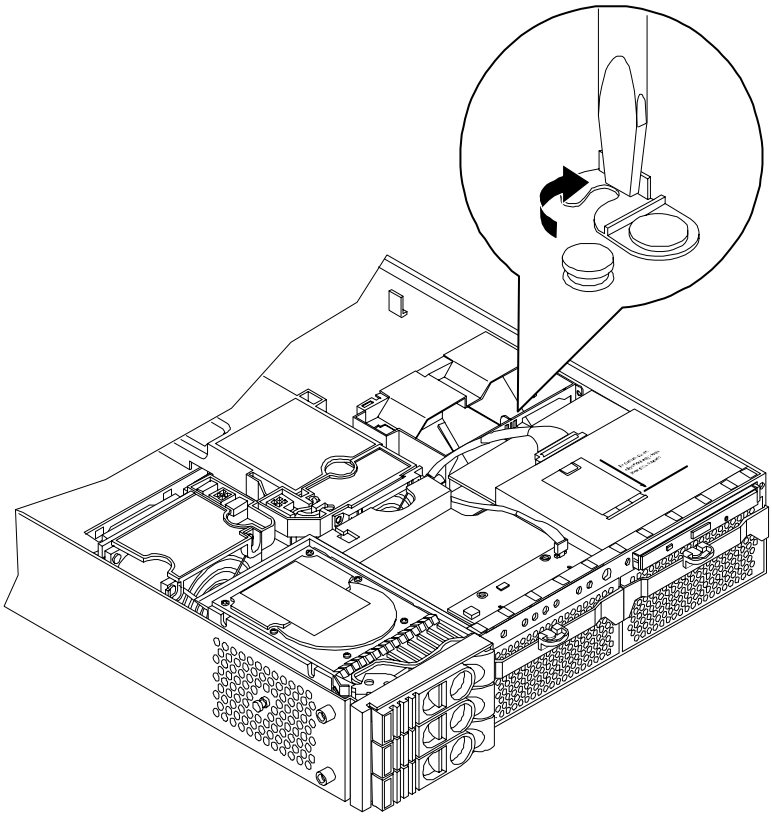


Step 6. Grasp system fan 1B and lift it from its socket (Figure 1-31).

Step 7. Remove the memory airflow guide. “Removing the Memory Airflow Guide” on page 41

Step 8. Rotate the clip clockwise to release the latch.

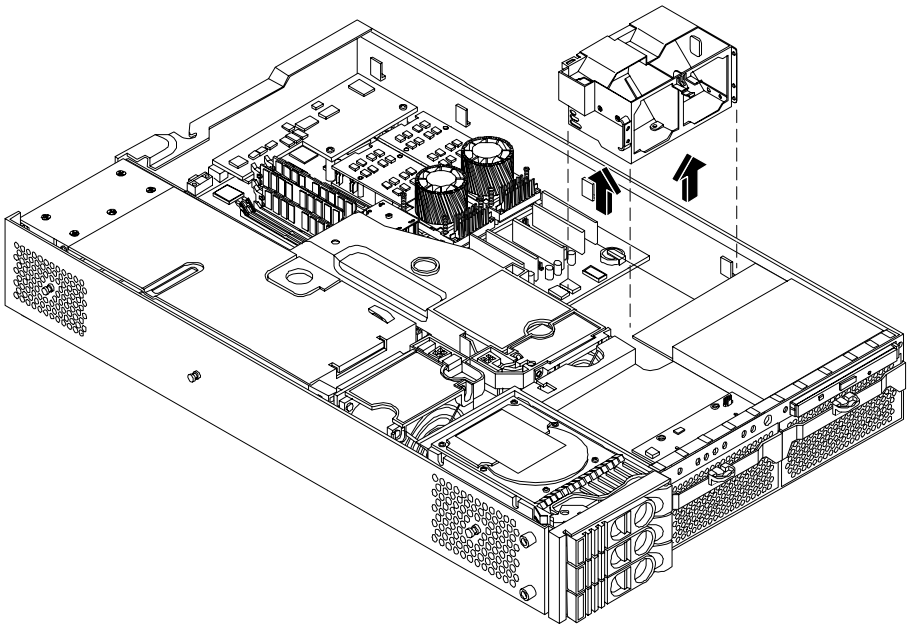
Figure 1-32 Open the Release Clip



Step 9. Disconnect the power cable connected to the guide from the system board by squeezing the clips.

Step 10. Lift the front portion of the processor airflow guide out of the server.

Figure 1-33 Remove the Front Portion of the Processor Airflow Guide



Replacing the Processor Airflow Guide

Step 1. Replace the front portion of the airflow guide:

a. Align the release latch of the front half of the airflow guide over the release latch post and snap it in place.

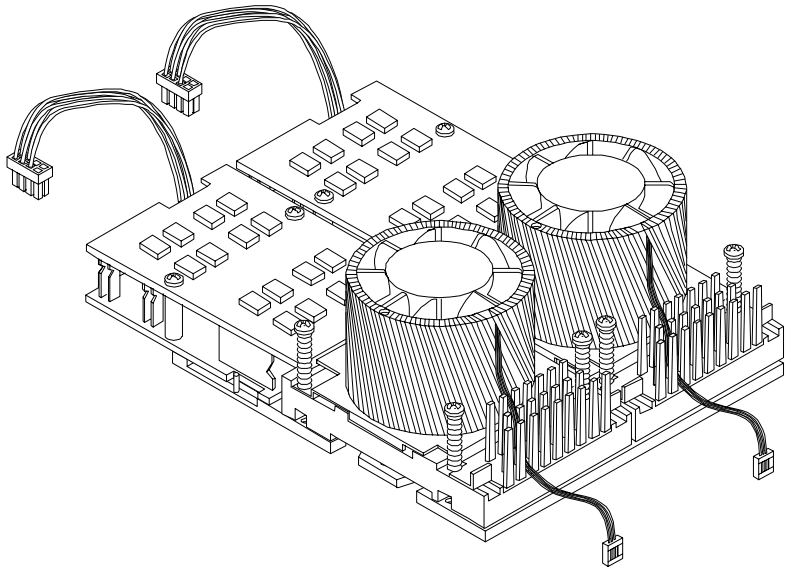
b. Connect the power connector on the front portion of the guide to the connector on the system board.

Step 2. Insert system fans 1A and 1B into their mounting positions.

Step 3. Route the processor turbo fan power cables through the processor heatsink posts so that the cables will not be pinched between the heatsink posts and the processor airflow guide (Figure 1-34).

CAUTION Turbo fan power cables can be damaged if pinched between the heatsink posts and the processor airflow guide. Ensure that the cables are below the top surface of the heatsink posts before installing the processor airflow guide.

Figure 1-34 Routing the Turbofan Power Cables through Heatsink Posts



Step 4. Replace the main portion of the airflow guide:

a. Hold the opening on top of the processor airflow guide.

b. At the same time, grasp the back end of the airflow guide and insert the airflow guide into the server.

c. Connect the power module cable.

d. Place the power and IDE cables in the cable clips.

e. Insert the two airflow guide retaining tabs into the two slots on the front half of the airflow guide.

f. Replace the memory airflow guide. “Replacing the Memory Airflow Guide” on page 42

Step 5. Replace the server cover.

Installing Additional System Memory

The server has 12 memory sockets for installing DDR SDRAM memory modules. System memory DIMMs are located on the system board.

WARNING **Ensure that the server is powered off and all power sources have been disconnected from the server prior to removing or replacing system memory.**

Voltages are present at various locations within the server whenever an ac power source is connected. This voltage is present even when the main power switch is in the off position.

Failure to observe this warning can result in personal injury or damage to equipment.

CAUTION Observe all ESD safety precautions before attempting this procedure. Failure to follow ESD safety precautions can result in damage to the server.

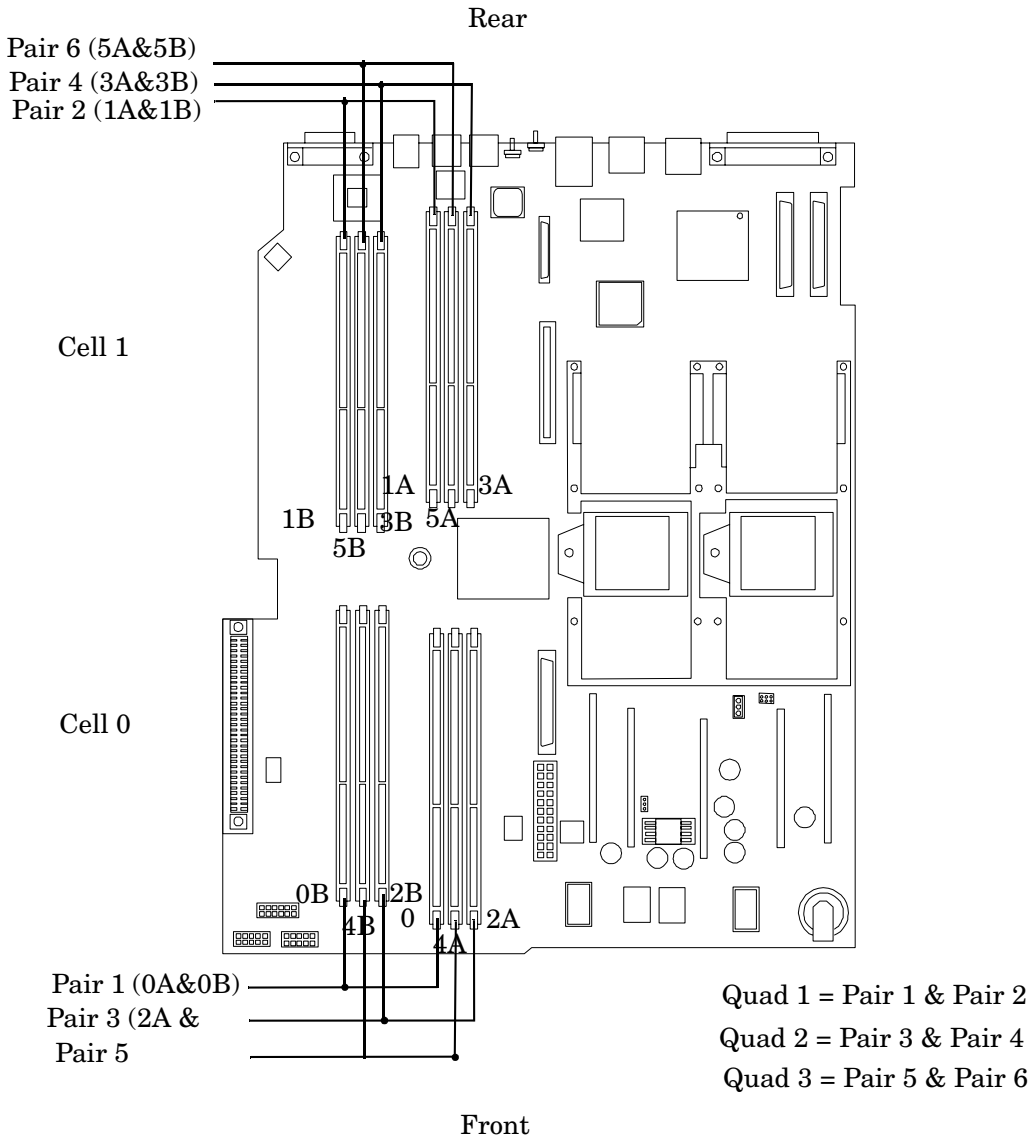
Supported DIMM Sizes

Supported DIMM sizes are as follows:

- 256 MB
- 512 MB
- 1 GB
- 2 GB)
- 4 GB (HP 9000 rp3440 only). If 4 GB DIMMs are used, only one configuration (8 X 4 GB in the first eight sockets) is supported.

Dissimilar DIMM sizes can be used across the entire system board (except when 4 GB DIMMs are used) but both DIMMs in a pair (first group of four, connectors 0A and 0B of HP 9000 rp3410) and all four DIMMs of any quad must be identical.

Figure 1-35 DIMM Slot Identification



Installing System Memory

rp3410 Memory Configuration T

The HP 9000 rp3410 server supports DDR SDRAM DIMMs with ECC and chip spare protection. This server has 12 DIMM slots and supports a maximum of six GB of total system memory. Memory usage in the server varies with the model designation. In the original server (model A7136A), memory can be installed as one or two pairs in the first quad (group of four). This allows memory configurations of two, four, eight, or twelve DIMMs. In the current server (model A7136B), memory must be installed as quads (groups of four). This allows memory configurations of four, eight, or twelve DIMMs. Thus, the HP 9000 rp3410 server must include a minimum of 512 MB (model A7136A) or 1 GB (model A7136B) and can include up to six GB of memory in combinations of 256 MB, 512 MB, and 1 GB DIMMs. Different size DIMMs can be installed in the server, but all four DIMMs in a quad must be identical.

Memory Loading Rules and Performance Guidelines

- DIMMs must be installed in server load sequence (the first DIMM must be in the first slot, the second DIMM must be in the second slot, and so on).
- A minimum of 512 MB (2 x 256 MB DIMMs in a model A7136A server) or 1 GB (4 x 256 MB DIMMs in a model A7136B server) of memory must be installed in a HP 9000 rp3410 server.
- Maximum memory is 6 GB.
- A minimum of two DIMMs (one pair) is required in the model A7136A server.
- A minimum of four DIMMs (one quad) is required in the model A7136B server.
- All DIMMs within a quad must be identical.
- Memory can be ordered in amounts of 1 GB (4 x 256 MB), 2 GB (4 x 512 MB), 4 GB (4 x 1 GB), 8 GB (4 x 2 GB), and 16 GB (4 x 4 GB).
- Memory is loaded across both memory busses (two DIMMs on each bus) to ensure maximum bandwidth and performance.
- Total memory bandwidth is 8.5 GB/s, split across two 4.25 GB/s memory buses.
- Open page memory latency is 80 nanoseconds.

rp3440 Memory Configuration

The HP 9000 rp3440 supports DDR SDRAM DIMMs with ECC and chip spare protection. This server has 12 DIMM slots, but maximum system memory is 32 GB due to cooling limitations. Memory must be installed as quads (groups of four). This allows memory configurations of four, eight, or twelve DIMMs. Thus, the HP 9000 rp3440 server must include a minimum of 1 GB and can include up to 24 GB of memory in combinations of 256 MB, 512 MB, 1 GB, and 2 GB DIMMs, or 32 GB of memory consisting of eight 4 GB DIMMs. Different size DIMMs can be installed in the server (except when 4 GB DIMMs are used), but all four DIMMs in a quad must be identical.

Memory Loading Rules and Performance Guidelines

- Minimum memory is 1 GB (4 x 256 MB).
- Maximum memory is 32 GB (8 x 4 GB installed in the first eight slots—the remaining slots must remain empty if 4 GB DIMMs are installed).
- Memory DIMMs must be installed in groups of four (quads).
- All DIMMs within a quad must be identical.
- Memory must be loaded in the specific order outlined on the system board.
- Memory can be ordered in amounts of 512 MB (2 x 256 MB), 1 GB (4 x 256 MB), 2 GB (4 x 512 MB), 4 GB (4 x 1 GB), 8 GB (4 x 2 GB), and 16 GB (4 x 4 GB).
- Each quad of memory is loaded across both memory buses (two DIMMs on each bus) to ensure maximum bandwidth and performance.
- Total memory bandwidth is 8.5 GB/s, split across two 4.25 GB/s memory buses.
- Open page memory latency is 80 nanoseconds.

The memory subsystem supports chip-spare functionality. Chip spare enables an entire SDRAM chip on a DIMM to be bypassed (logically replaced) in the event that a multi-bit error is detected on that SDRAM.

In order to use the chip spare functionality, only DIMMs built with x4 SDRAM parts can be used, and these DIMMs must be loaded in quads (two DIMMs per memory cell, loaded in the same location in each memory cell).

System Firmware Requirements

If you are using 4 GB DIMMs in a HP 9000 rp3440 server, system firmware must be greater than revision 44.24. Use the BCH `FV` command, or the iLO MP `SR` command to display the system firmware revision status. If necessary, use the iLO MP `SR` command to upgrade system firmware. (Detailed instructions are downloaded with the upgrade.)

Installation Procedure

To install DIMMs, follow these steps:

Step 1. Power off the server and disconnect all power and external cables.

Step 2. Remove the server cover. (See “Removing and Replacing Server Covers and Bezels” on page 25.)

Step 3. Remove the memory airflow guide. (See “Removing the Memory Airflow Guide” on page 41.)

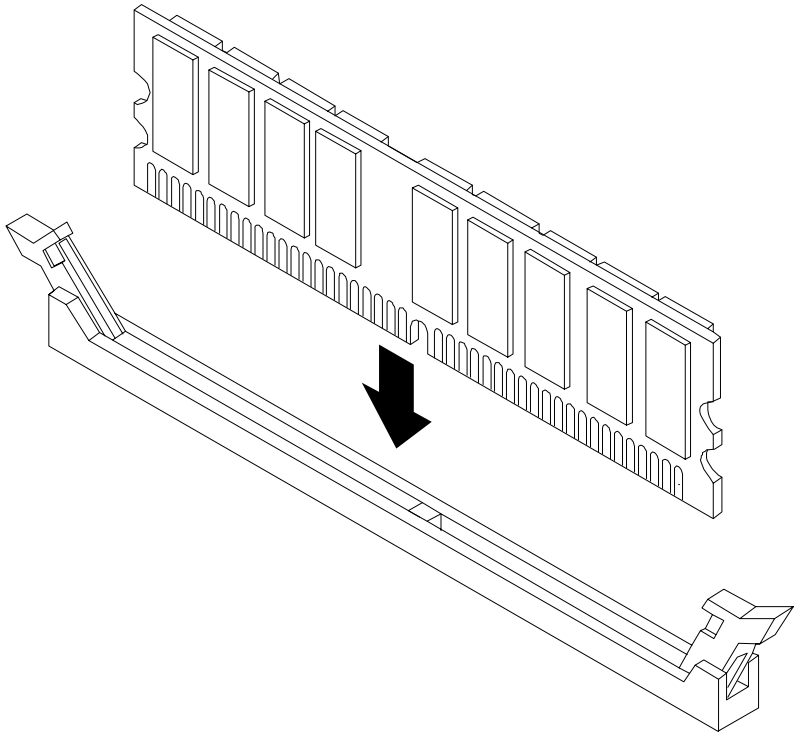
CAUTION To ensure that memory modules are not damaged during removal or installation, power off the server and unplug the power cord from the ac power outlet. Wait until the LED on the back of the power supply turns off before removing or installing memory.

Step 4. Locate the slot into which the DIMM will be installed. Holding the memory module by its left and right edges, insert the module into the socket (Figure 1-36.)

NOTE The memory modules are keyed and can only be inserted in one direction. When the module is correctly seated, the retainer clips will return to their fully upright position. Snap the clips firmly into place to ensure that the DIMMs are seated properly.

Step 5. Evenly push down firmly on each end of the DIMM until it seats in the socket. Ensure the extraction levers are in the closed position.

Figure 1-36 Inserting DIMM into Connector



Step 6. Replace the memory airflow guide. (See “Replacing the Memory Airflow Guide” on page 42.)

Step 7. Replace the server cover. (See “Removing and Replacing the Top Cover on a Rack-Mounted Server” on page 26.)

Step 8. Reconnect all power and external cables and turn on the server.

Step 9. Verify the memory installation by using the system utilities.

- Use the iLO MP commands to verify operation.
- Use the BCH commands to verify operation.
- Use diagnostics provided by the offline diagnostic environment (ODE) to exercise the memory added.

Removing and Replacing the PCI Card Cage

Accessory cards are installed in a removable PCI card cage. This section explains how to remove and replace the PCI card cage. Removal is required to install accessory cards.

Removing the PCI Card Cage

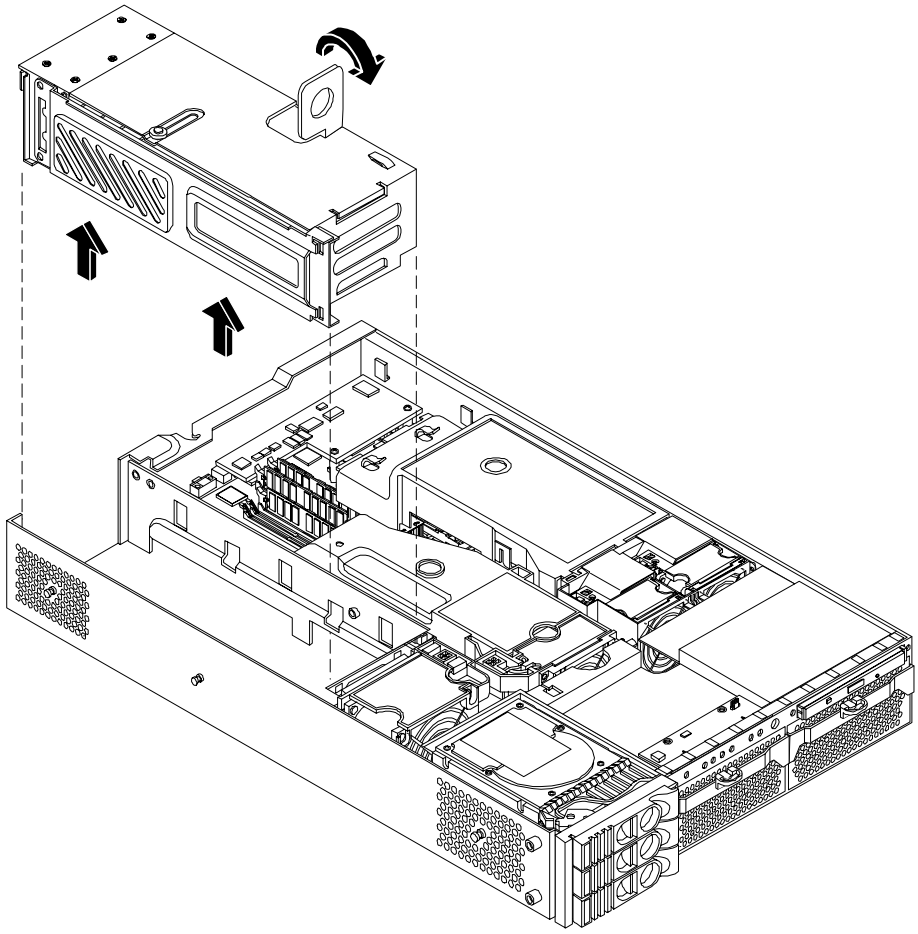
To remove the PCI card cage from the server, follow these steps:

Step 1. Remove the cover. (See “Removing and Replacing the Top Cover on a Rack-Mounted Server” on page 26.)

Step 2. Disconnect the cables from the PCI cards.

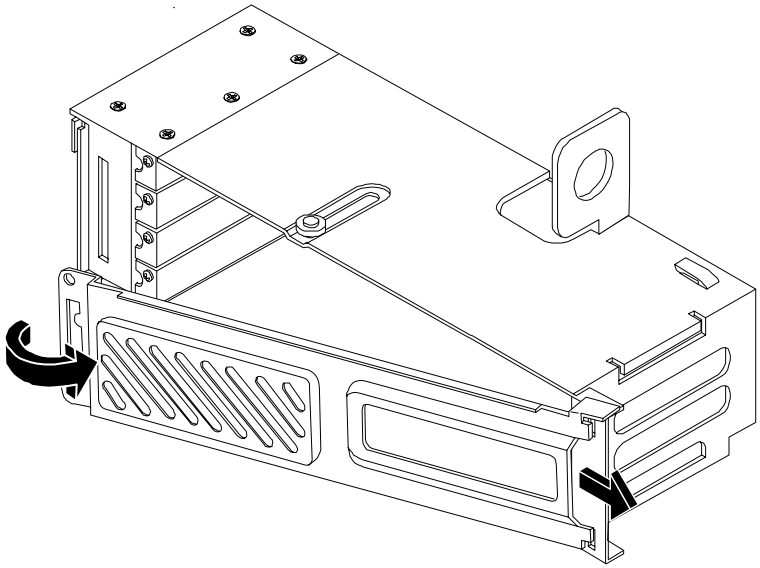
Step 3. Lift up on the PCI card cage release lever and the back edge of the PCI card cage and lift the PCI card cage out of the server.

Figure 1-37 Removing the PCI Card Cage



Step 4. Grasp the PCI card cage cover and slide it away from the bulkhead end of the cage, then lift the cover off.

Figure 1-38 Removing the PCI Card Cage Cover



Step 5. Unscrew the bulkhead screw that holds the accessory card holder (if installed) in place.

Step 6. The PCI slots are now accessible for installation of additional cards.

Replacing the PCI Card Cage

To replace the PCI card cage, follow these steps:

Step 1. Hold the PCI card cage cover in mounting position and slide it toward the bulkhead end of the cage.

Step 2. Hold the PCI card cage above the chassis mounting position, such that the bulkhead end of the cage is toward the rear of the server. (Figure 1-37.)

Step 3. Hold the PCI card cage release lever in the raised position and lower the card cage into the server chassis.

Step 4. Press the PCI card cage release lever into the lowered position to lock the card cage into the server chassis.

Installing PCI Cards

The server can contain up to 4 PCI cards. PCI cards are located in the PCI card cage. The HP 9000 rp3410 server provides two 64-bit, 133 MHz PCI-X card sockets as slots 1 and 2. The HP 9000 rp3440 server provides four 64-bit, 133 MHz PCI-X card sockets as slots 1 through 4.

HP 9000 rp3410 and rp3440 servers have the following accessory card sockets:

- Four 64-bit, 133 MHz PCI-X card sockets.

WARNING **Ensure that the server is powered off and all power sources have been disconnected from the server prior to removing or replacing a PCI card.**

Voltages are present at various locations within the server whenever an ac power source is connected. This voltage is present even when the main power switch is in the off position.

Failure to observe this warning can result in personal injury or damage to equipment.

CAUTION Observe all ESD safety precautions before attempting this procedure. Failure to follow ESD safety precautions can result in damage to the server.

Carefully read the following information concerning PCI slot configuration. Inserting a PCI card into a slot that is not configured to accept it can cause operation failure or the PCI card to operate at less than optimum speed. PCI slots are numbered 1 (top of card cage) through 4 (bottom of card cage). See the labels on the rear panel of the chassis for correct PCI slot number identification.

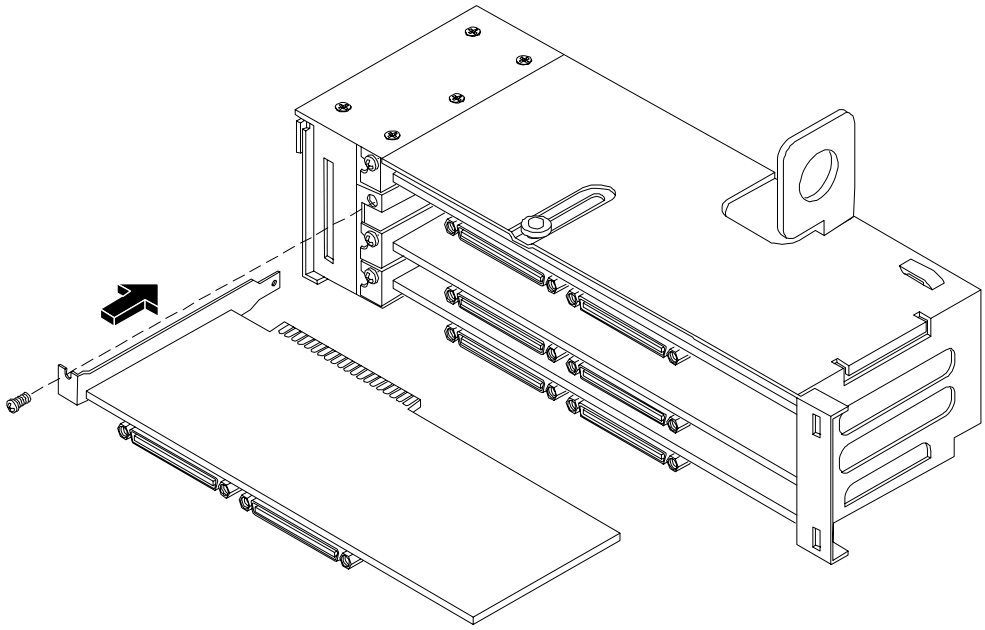
Installing a PCI Card

Step 1. Remove the cover. (See "Removing and Replacing the Top Cover on a Rack-Mounted Server" on page 26.)

Step 2. Remove the PCI cage. (See "Removing the PCI Card Cage" on page 50.)

Step 3. Grasp the edges of the PCI card to be installed and evenly press the card into the PCI backplane connector.

Figure 1-39 Installing a PCI Card



Step 4. Connect any internal cables that are required by the PCI card.

Step 5. Install the accessory card holder(s) and secure in place by tightening the associated bulkhead screw(s).

Step 6. Reinstall the PCI cage. (See "Replacing the PCI Card Cage" on page 52.)

Step 7. Replace the cover. (See "Removing and Replacing the Top Cover on a Rack-Mounted Server" on page 26.)

Step 8. Verify the PCI card installation by using the system utilities.

- Use the iLO MP commands to verify operation.
- Use the BCH commands to verify operation.
- Use diagnostics provided by the offline diagnostic environment to exercise the card added.

Installing an Additional Power Supply

The supported configuration of the HP 9000 rp3410 and rp3440 servers requires a minimum of one power supply to be installed. A second, optional hot-swappable power supply, can be installed to provide redundant (N+1) capability.

The power supplies in the server are hot-swappable; that is, if one power supply stops working or exhibits voltage problems, the remaining supply can support the server until the failed unit is replaced. A power supply can be removed and replaced without turning off the server on servers with two power supplies.

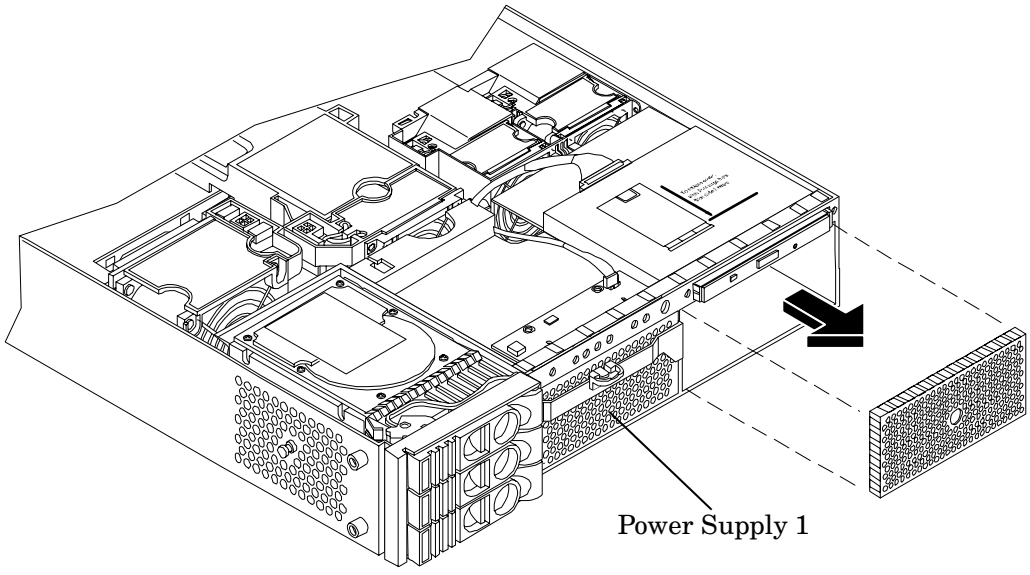
CAUTION Before removing a power supply, make sure the second power supply functions properly. The two green LEDs inside the supply must both be lit on the second supply before the failed power supply can be safely removed.

To replace the power supply, follow these steps:

Step 1. Remove the front bezel from the server (See “Removing and Replacing Front Bezel on a Pedestal-Mounted Server” on page 33.)

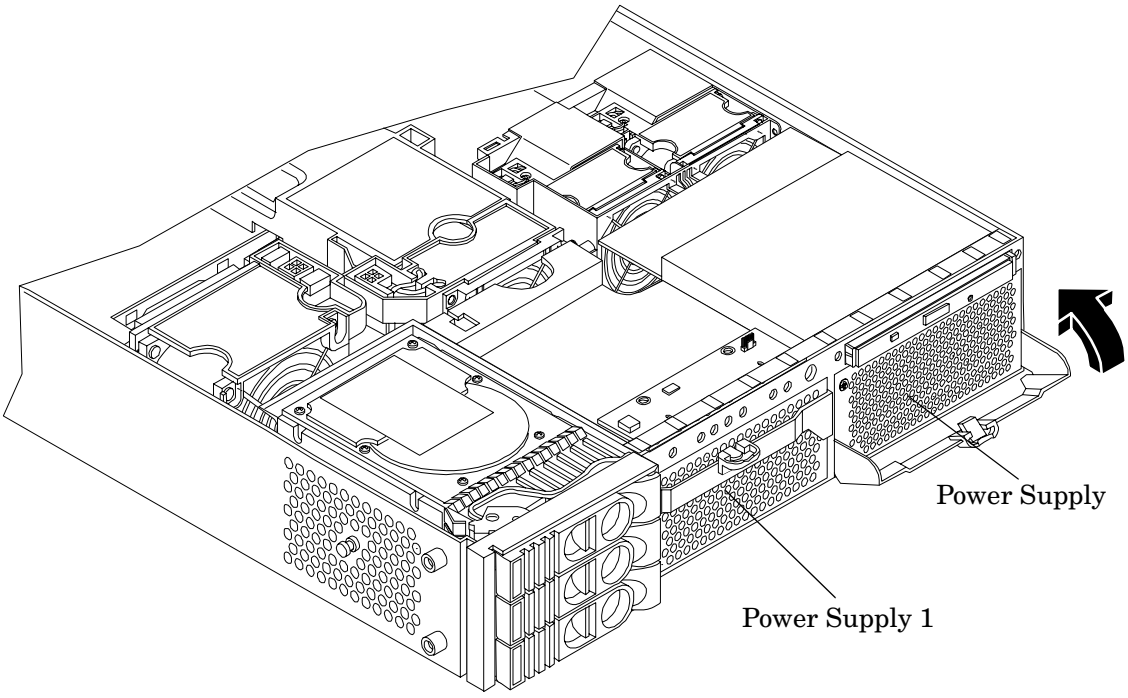
Step 2. Remove the power supply filler panel.

Figure 1-40 Removing the Power Supply Filler Panel



Step 3. Open the power supply release lever and slide the power supply into place.

Figure 1-41 Replacing the Power Supply



Step 4. Push in on the power supply release lever to lock the retaining clip in place.

Step 5. Replace the front bezel. (See “Removing and Replacing Front Bezel on a Pedestal-Mounted Server” on page 33.)

Step 6. Verify that both power supply LEDs are lit.

Step 7. Use the iLO MP `PS` command to verify power supply operation.

Installing an Additional Processor Module

This section provides information about installing dual processor modules. The modules are located on the system board which is accessible by removing the server cover.

The HP 9000 rp3410 server supports one processor socket. This socket will accept one dual processor module which contains two 800 MHz CPUs. The HP 9000 rp3410 server 1P/1C configuration includes two CPUs in a single module, but only one CPU is enabled. (The second CPU can be enabled as part of a server upgrade.)

The HP 9000 rp3440 server supports two processor sockets. Each socket will accept one dual processor module which contains either two 800 MHz CPUs or two 1 GHz CPUs.

WARNING **Ensure that the server is powered off and all power sources have been disconnected from the server prior to removing or replacing a dual processor module.**

Voltages are present at various locations within the server whenever an ac power source is connected. This voltage is present even when the main power switch is in the off position.

Failure to observe this warning can result in personal injury or damage to equipment.

CAUTION Failure to properly complete the steps in this procedure will result in erratic server behavior or system failure. For assistance with this procedure contact your local HP Authorized Service Provider.

Observe all ESD safety precautions before attempting this procedure. Failure to follow ESD safety precautions can result in damage to the server.

NOTE Processor tool kit (HP part number 5069-5441) is required for installation of a processor module.

Processor modules are located on the system board. The system board can support either one or two dual processor modules. The CPU0 socket is located at the right of the system board and the CPU1 socket is located at the left of the system board next to the bridge assembly. In a 1P/1C, 1P/2C server, the single dual processor module must be installed in the CPU0 socket.

Install a second dual processor module as follows:

Step 1. Power off the server and disconnect all power and external cables.

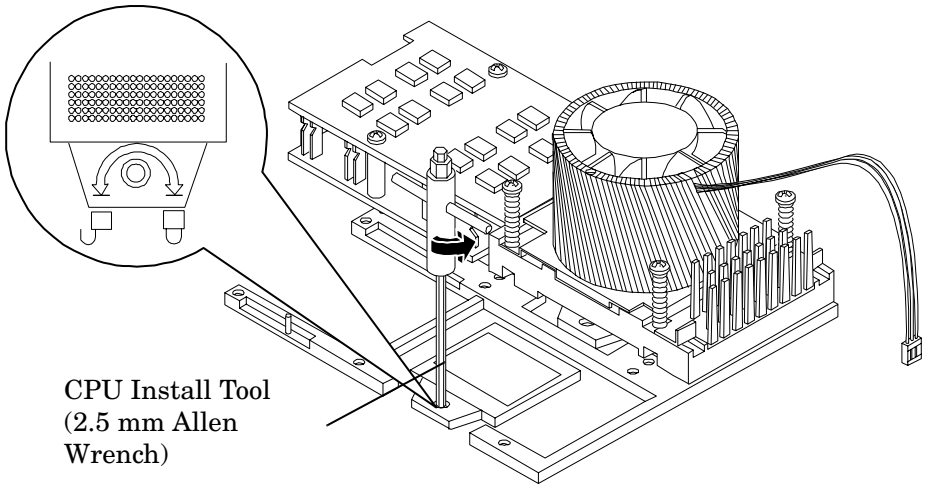
Step 2. Remove the cover. (See “Removing and Replacing Server Covers and Bezels” on page 25.)

Step 3. Remove the memory airflow guide. (See “Replacing the Memory Airflow Guide” on page 42.)

Step 4. Remove the processor airflow guide. (See “Removing the Processor Airflow Guide” on page 42.)

Step 5. Unlock the dual processor module locking mechanism using the CPU install tool (2.5 mm driver or Allen Wrench). Insert the tool into the hole that runs down through the edge of the heatsink and rotate the special processor tool 180 degrees counterclockwise. Verify that the dual processor module socket locking mechanism is rotated into the unlocked position.

Figure 1-42 Unlocking the Dual Processor Module Locking Mechanism

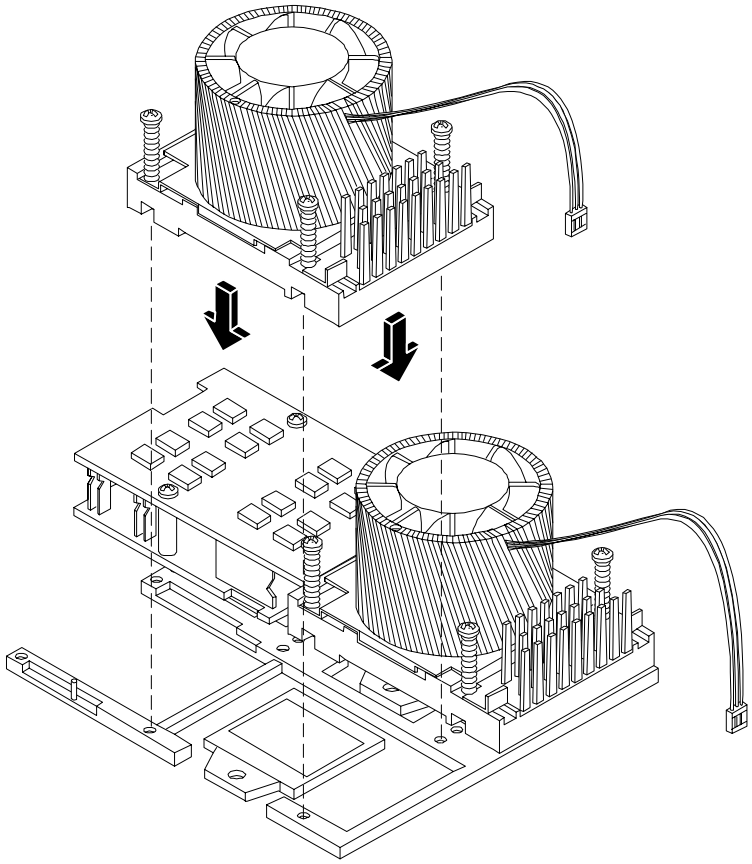


Step 6. Remove any protective packaging from the processor module.

NOTE Protective covers can be installed to protect connector pins. These covers can be saved for future use.

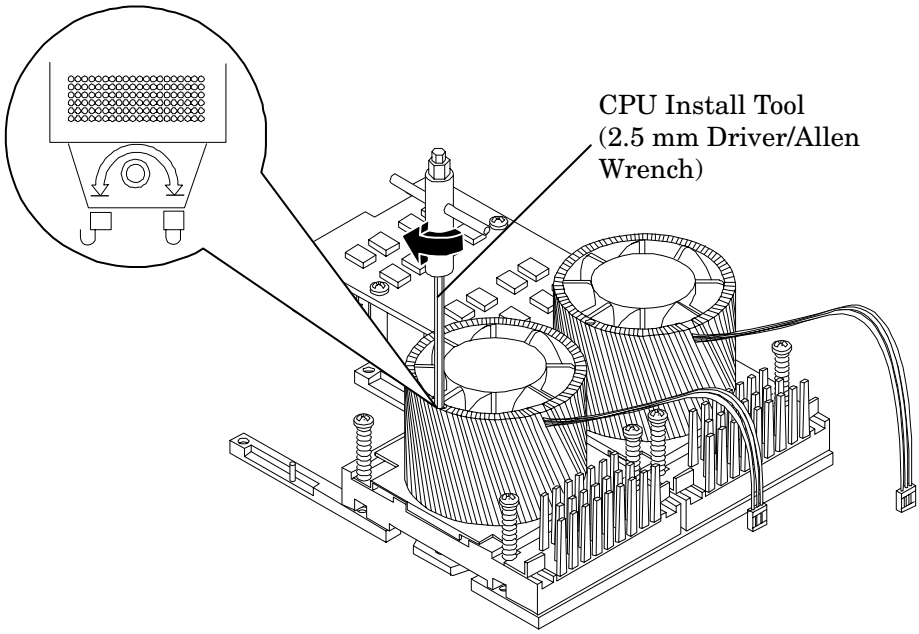
Step 7. Use the four locator posts on the heatsink and the turbo fan power cable to properly align the fan and dual processor module on the system board. The four locator posts will fit in locator holes on the system board processor module mount. The turbo fan power cable must be positioned so that it is located on the side of the heatsink that faces the front of the server.

Figure 1-43 Aligning the Processor Module



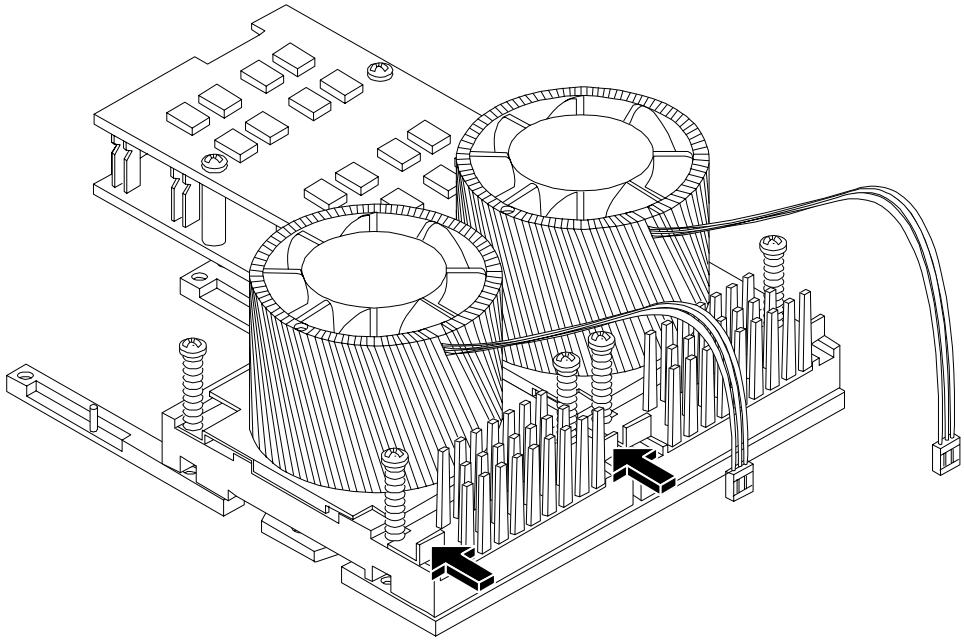
Step 8. Use the special CPU install tool (2.5 mm driver or Allen Wrench) to lock the dual processor module in place on the system board. To do this, insert the CPU install tool into the hole that runs down the side of the heatsink and rotate it clockwise 180 degrees.

Figure 1-44 Locking the Dual Processor Module in Place



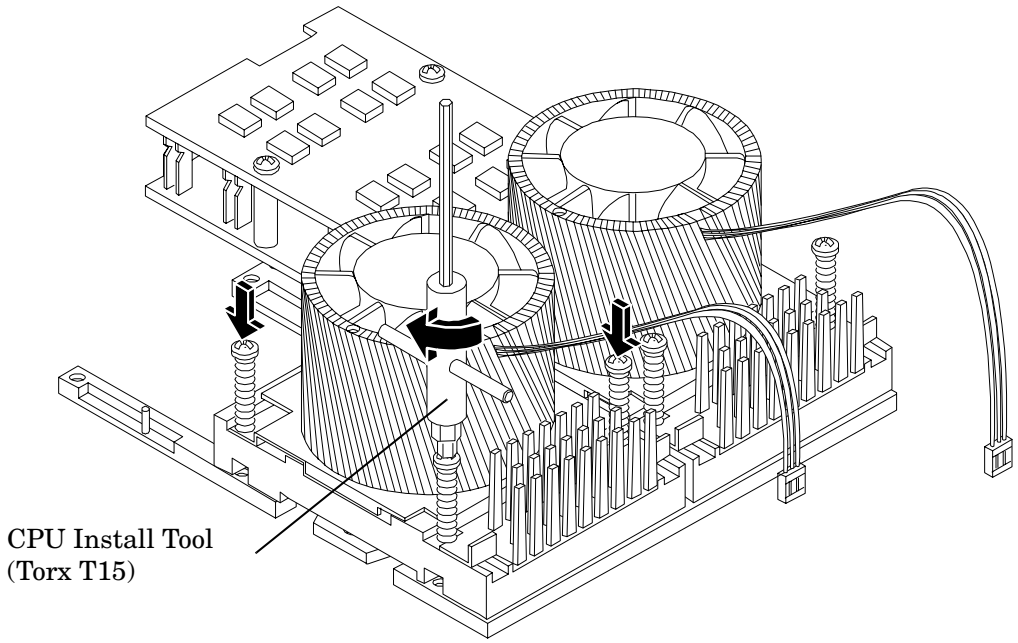
Step 9. Slide the sequencing retainer plate toward the front of the server.

Figure 1-45 Slide the Sequencing Retainer Plate



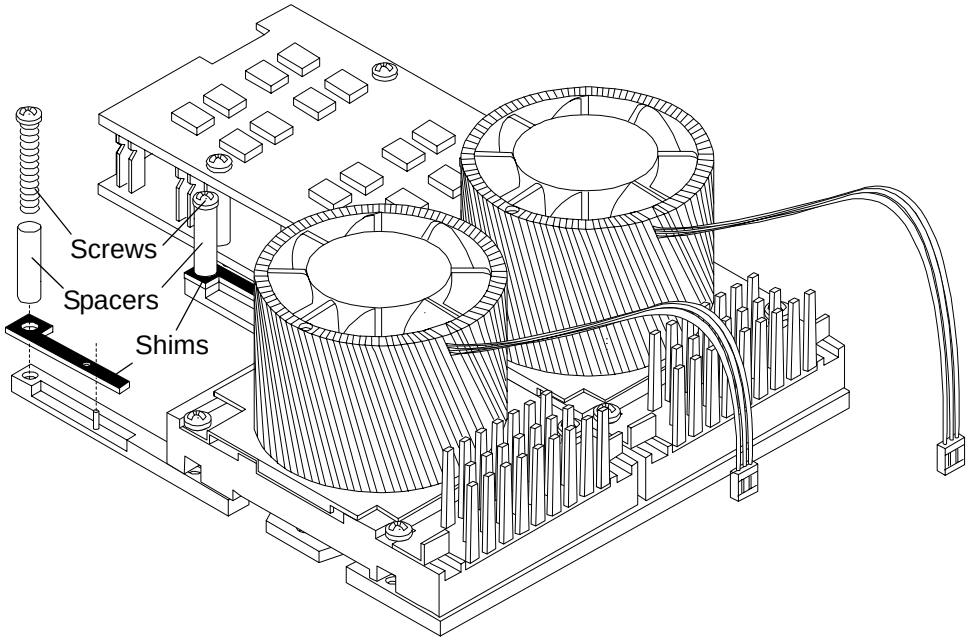
Step 10. Screw in the four heatsink captive screws in a criss-cross torquing pattern by alternately tightening the screws so as not to completely tighten one screw before the others.

Figure 1-46 Secure the Captive Screws



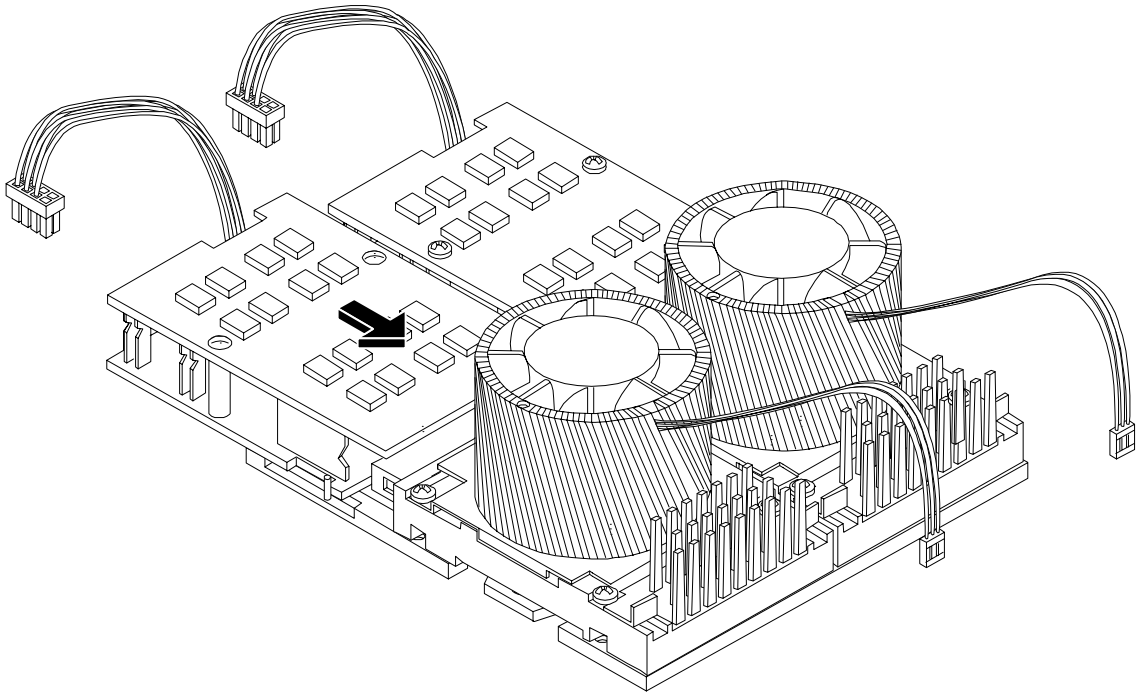
Step 11. Locate the two power pod module shims on the system board. (On servers delivered with only one dual processor module installed, the power module shims are held in place by screws with plastic spacers over the threads.) Remove the holding screws and discard the plastic spacers. Retain the screws for use when installing the power module.

Figure 1-47 Power Module Shims



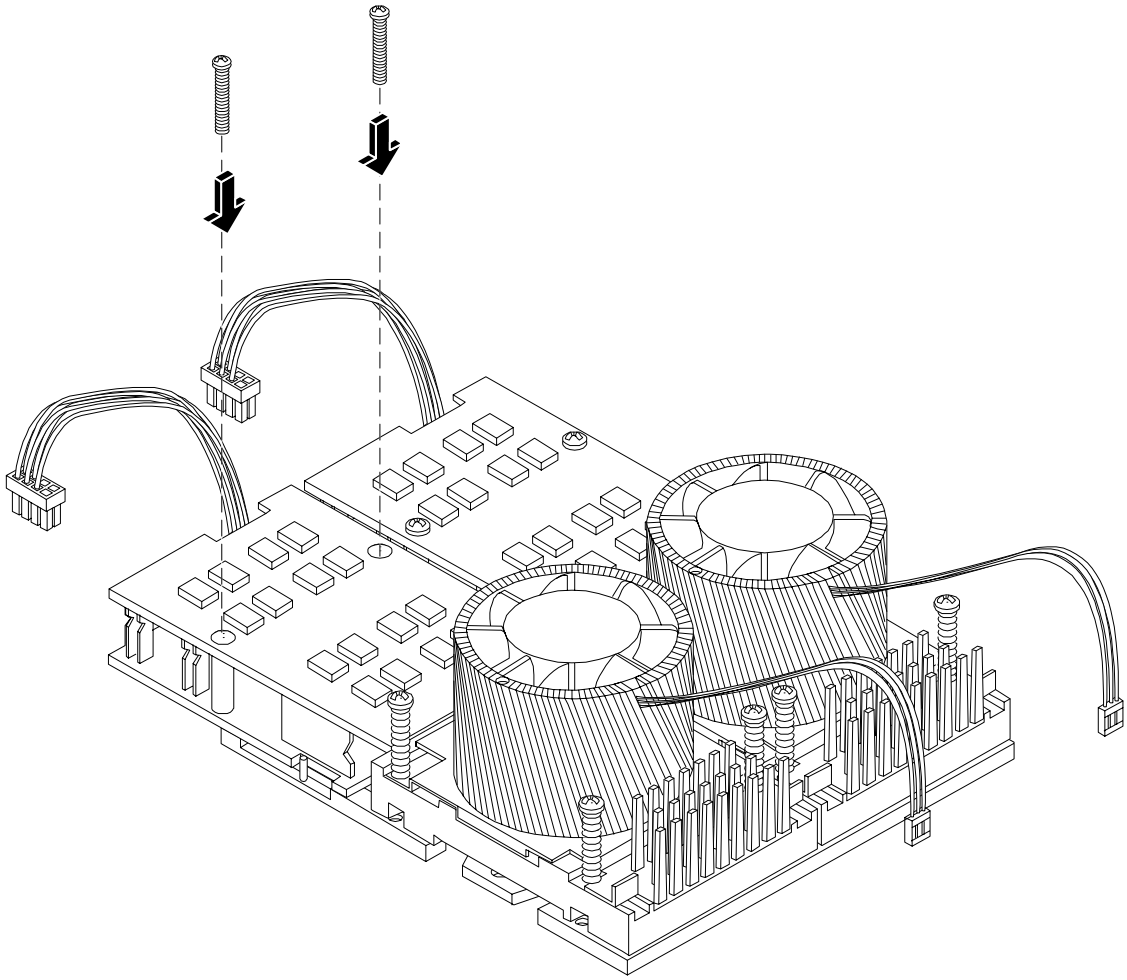
Step 12. Slide the power pod module on the system board's metal mounting bracket so that the power pod module connector connects with its connector on the processor module.

Figure 1-48 Aligning the Processor Module Power Pod



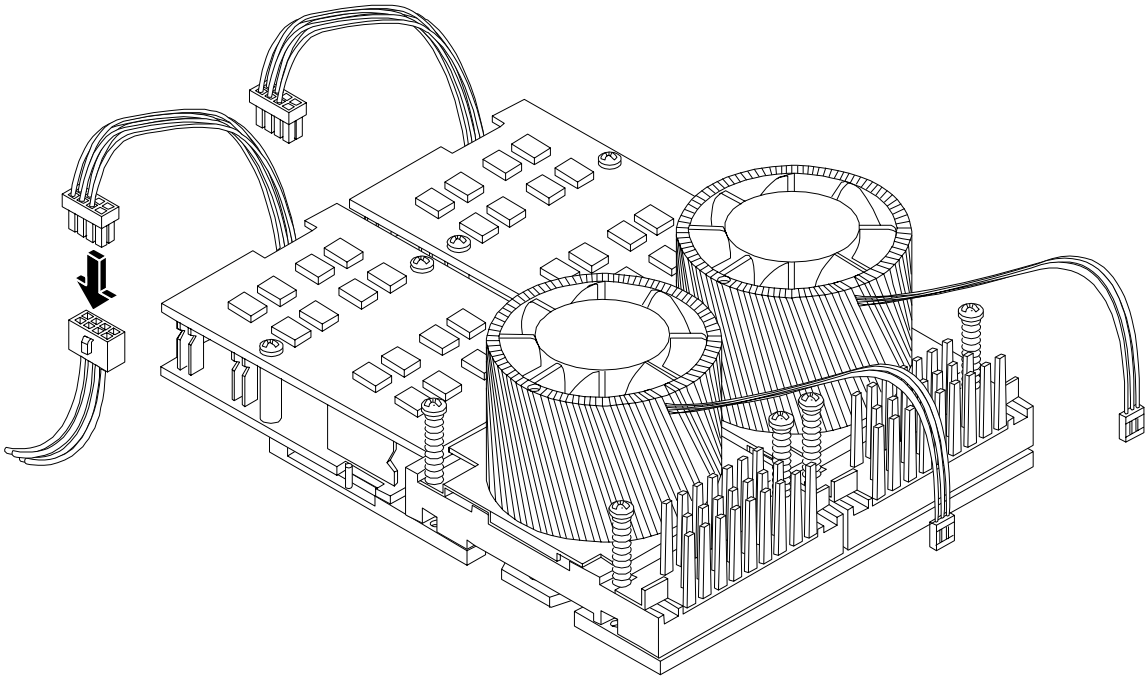
Step 13. Align the two mounting screw holes on the power pod module with the screw holes in the shims on the system board's metal mounting bracket. Screw in the power pod module mounting screws. (Use the screws removed in step 11.)

Figure 1-49 Install the Processor Module Power Pod Mounting Screws



Step 14. Connect the power pod cable to the power connector on the system board.

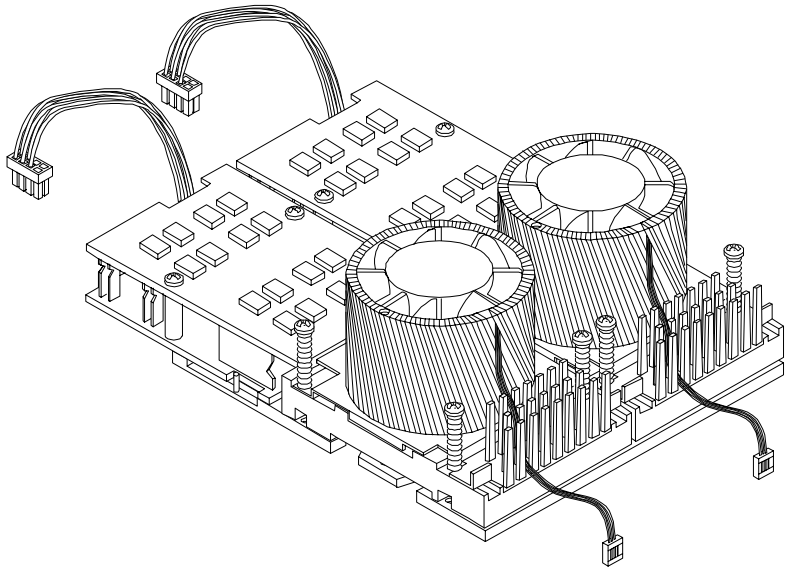
Figure 1-50 Connecting the Power Pod Cable



CAUTION Turbo fan power cables can be damaged if pinched between the heatsink posts and the processor airflow guide. Ensure that the cables are below the top surface of the heatsink posts before installing the processor airflow guide.

Step 15. Route the turbo fan power cables through the heatsink posts so that the cables will not be pinched when the processor airflow guide is set in place.

Figure 1-51 Routing the Turbofan Power Cables through Heatsink Posts



Step 16. Connect the turbo fan power cable to the system board.

Step 17. Replace the processor airflow guide. (See “Replacing the Processor Airflow Guide” on page 45.)

Step 18. Replace the memory airflow guide. (See “Replacing the Memory Airflow Guide” on page 42.)

Step 19. Replace the cover. (See “Removing and Replacing the Top Cover on a Rack-Mounted Server” on page 26.)

Step 20. Reconnect power and external cables and turn on the server.

Step 21. Verify processor installation by using the system utilities.

- Use the iLO MP commands to verify operation
- Use the BCH commands to verify operation
- Use `MAKODIAG` provided by the offline diagnostic environment to exercise the processor added

Replacing the System Battery

The server has two batteries. The main system battery is located on the system board. The other battery is located on the underside of the iLO MP card.

Battery Notice

This product contains a Lithium battery (HP part number 1420-0386).

WARNING **Lithium batteries can explode if mistreated. Do not recharge, disassemble, or dispose of lithium batteries in a fire. Failure to observe this warning can result in personal injury or damage to equipment.**

Replace only with the identical or equivalent battery. Follow the manufacturer's recommendations. Dispose of used batteries according to the manufacturer's instructions.

Replacing the System Battery

Step 1. Power off the server and disconnect power and external cables.

Step 2. Remove the cover. (See "Removing and Replacing Server Covers and Bezels" on page 25 for instructions.)

Step 3. Remove the memory airflow guide (See "Removing and Replacing the Memory Airflow Guide" on page 41.)

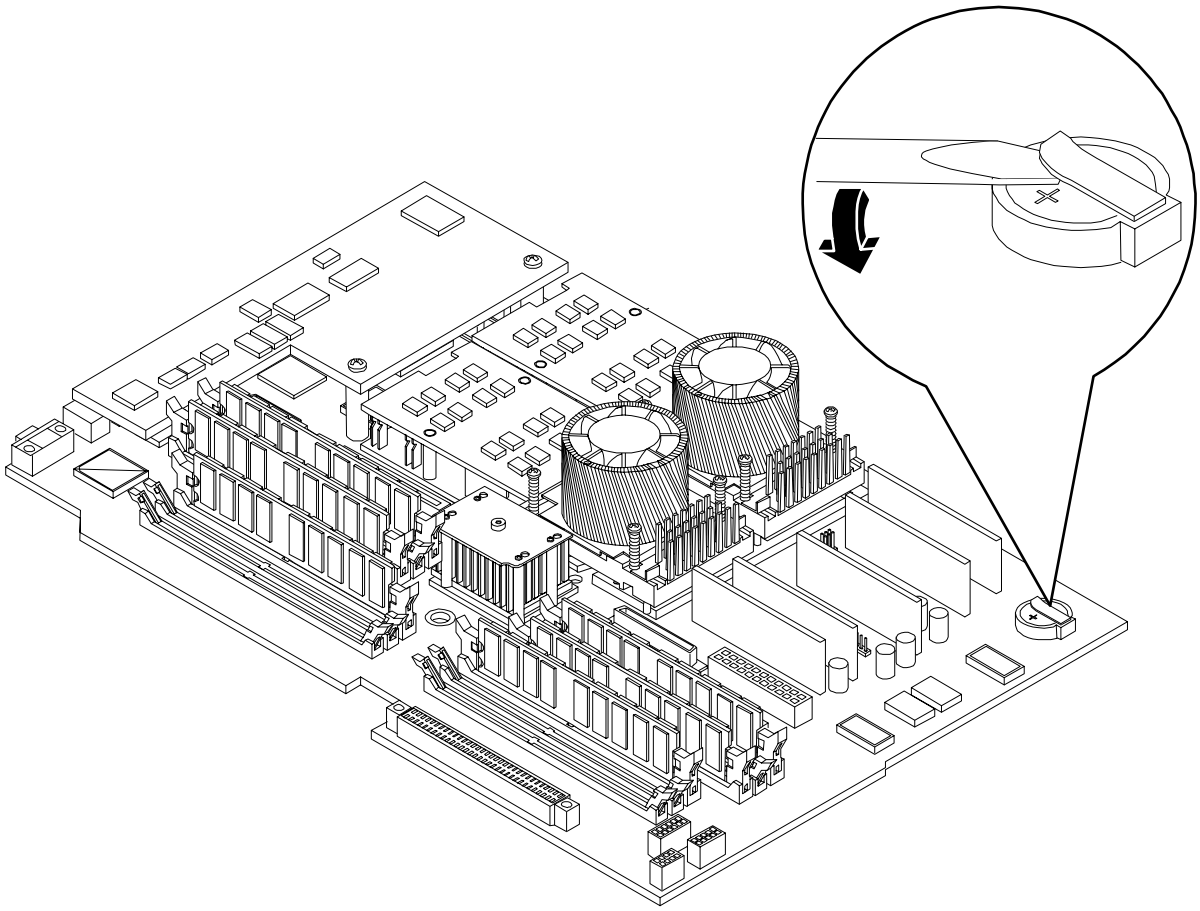
Step 4. Remove the processor airflow guide, the front portion of the processor airflow guide, and fans 1A and 1B (See "Removing and Replacing the Processor Airflow Guide" on page 42.)

Step 5. Lift up the battery retaining clip with a flat-head screwdriver and push on the back of the battery to remove the battery from its holder.

Step 6. Lift up on the battery holder retaining clip with a flat-head screwdriver and slide the battery into the holder. The positive (+) terminal of the battery faces up.

CAUTION Only lift the battery high enough to clear the holder. Excessive stress on the battery holder retaining clip can damage the clip.

Figure 1-52 Replacing the System Battery



Step 7. Replace the cover. (See “Removing and Replacing Server Covers and Bezels” on page 25 for instructions.)

Step 8. Reconnect power and external cables and turn on the server.

Step 9. Reset the server time and date using the BCH `DATE` command. Once you have set the time and date:

a. Power off power off the server, unplug the power cord, and wait for a minute before turning it back on.

b. Execute the `DATE` command again. If the time and date are now correct, you have installed the battery correctly.

Step 10. If necessary, reconfigure the iLO MP.

Installing the Server Into a Rack, Non-HP Rack, or Pedestal

The following information describes how to install the server into an HP rack. Information is also provided on approved non-HP rack and pedestal-mounted alternatives.

HP Rack

HP 9000 entry class servers that are installed into racks are shipped with equipment mounting slides. The *Mid-Weight Slide Kit*, (HP part number 5065-7291) is provided with each set of slides. Follow the steps in the kit installation guide to determine where and how to place the server into the rack.

The following are additional instructions for installing the server into the rack:

Step 1. Switch the CMA from a left- to a right-mount configuration. The cable management arm (CMA) is factory-configured to mount on the left side of the server (as viewed from the rear of the chassis). Mount the CMA on the right side of the server to ensure easy removal of the power supplies.

Step 2. Remove two T120 screws from the server bezel; one screw from the same location on each side of the server. The screws are located behind the pull handles.

Non-HP Rack

Use the *Mounting in non-HP racks* guide for evaluating the installation of HP equipment in non-HP racks. The guide provides information to help you determine if you need to qualify whether you can install, maintain, and service any HP equipment in a non-HP rack. The guide is located on the Web at:

`http://www.hp.com/racksolutions`

Once there, select *Mounting information* from the menu and select the guide titled *Mounting in non-HP racks*.

Pedestal Mount

If you ordered the server as rackless, it has a pedestal pre-installed at the factory.

If the server is a rack-mounted and you want to change it to a pedestal-mount (rackless), you need a Server Rackless Mount Kit. This kit comes with an installation guide titled *Converting Your Rack Server to a Rackless Mount* (part number A6979-96001).

To convert a rack-mount server to a pedestal-mount server, see *Converting Your Rack Server to a Pedestal Server* on the Web at:

`http://www.hp.com/`

Follow the instructions in the kit installation guide to attach the pedestal to the server.

Connecting the Cables

This section describes the cables to connect to power the server and to provide LAN connectivity for the server.

AC Input Power

The server comes with one or two power supplies installed. A power supply includes an ac input connector which is rated for 200 to 240 VAC at 13 amps. If two power supplies are installed, both power supplies must be connected separately to an ac power source.

Core I/O Connections

Each HP 9000 rp3410 and rp3440 server core I/O includes:

- Four USB ports.
- Two 9-pin serial ports (console A and serial B are for factory use only).
- One iLO MP I/O interface.
  - — One 10/100 management LAN-RJ45.
  - — One 25-pin serial, console/remote/UPS.
- LVD/SE SCSI port.
  - — The SCSI port is used to attach SCSI external mass storage to the server.
  - — Connections to the SCSI board include the external SCSI channels for external mass storage devices.

CAUTION Some restrictions apply to the mass storage devices that can be connected to the core I/O SCSI HBA. External connections to the SCSI HBA core I/O controller are only supported when the internal cable between the SCSI backplane and the SCSI HBA core I/O card is disconnected. The server is shipped in simplex configuration which supports external devices. If you convert the server to duplex configuration, you cannot install external SCSI devices.

- LAN Connection.
  - — The LAN board provides the basic external I/O connectivity for the server.
  - — One 10/100/1000 Base-T LAN RJ45 connector.
- One 15-pin VGA port. This port is currently disabled. DO NOT USE THE PORT. For graphics capability, install the accessory graphics PCI card (HP part number A6150B).

WARNING **Ensure that the server is powered off and all power sources have been disconnected from the server prior to attempting the following procedures.**

Voltage is present at various locations within the server whenever an ac power source is connected. This voltage is present even when the main power switch is in the off position.

Failure to observe this warning can result in personal injury or damage to equipment.

Applying Standby Power to the Server

To apply standby power to the server, follow these steps:

Step 1. If the server has one power supply installed in slot P1, plug the power cord into that receptacle. Plug the other end of the power cord into an appropriate outlet.

NOTE The LED on the power supply does not illuminate in the standby power state. The LED illuminates when the server is powered on to full power. If the power restore feature is set to Always On through the iLO MP PR command, the server automatically powers on to the full power state when the power cord is plugged into the server.

Step 2. If the server has two power supplies, plug the second power cord into the power supply in slot P2. Plug the other end of the power cord into an appropriate outlet.

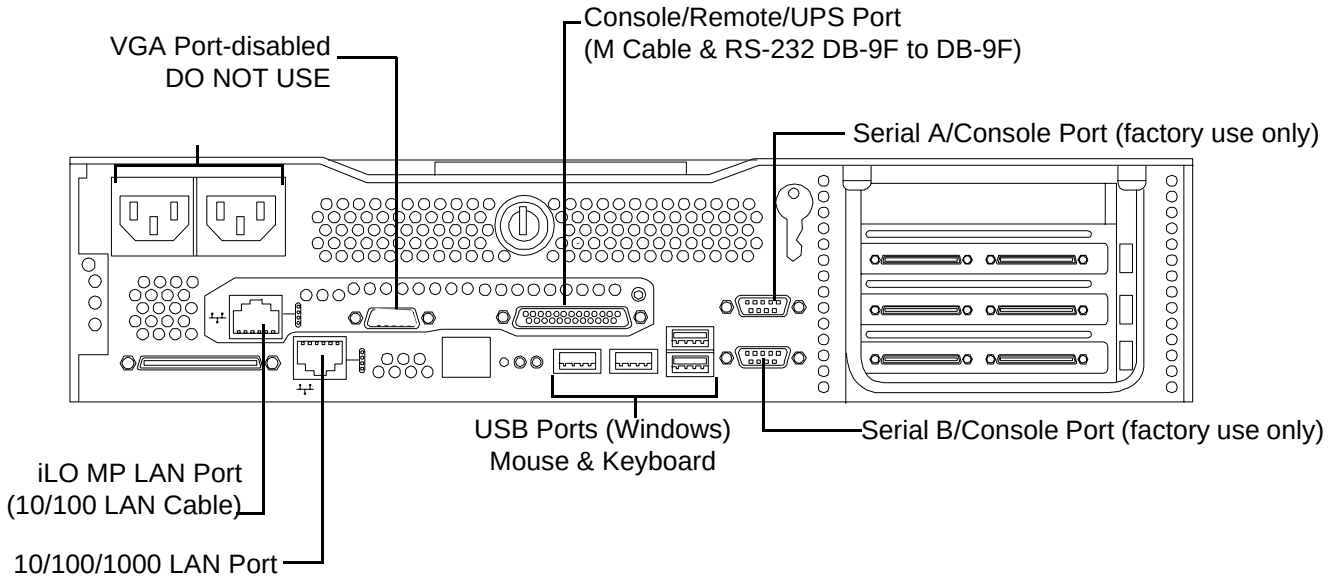
Connecting to the LAN

The server has the following ports that provide network connectivity:

- iLO MP LAN port. Use this port to access the iLO MP through the LAN.
- Console/Remote/UPS port (RS-232). Use this port to access the iLO MP through the console.

Figure 1-53 shows the LAN ports on the server rear.

Figure 1-53 LAN Ports on Server Rear



To enable general network connectivity for the server, follow these steps:

Step 1. Obtain a valid IP address for each LAN port you plan to activate.

Step 2. Connect the LAN cable from an available LAN port into a live connection on the network.

Console Setup

This section describes how to set up and start a console session on the server and includes the following steps:

- Determine the physical access method to connect cables. There are two physical connections to the iLO MP:
  - LAN
  - RS-232 serial port
- Configure the iLO MP and assign an IP address if necessary. Though there are several methods to configuring the LAN, DHCP with DNS is the preferred method. DHCP with DNS comes preconfigured with default factory settings, including a default user account and password. Other options include:
  - ARP Ping
  - Local RS-232 serial port
  - Remote/modem port

Setup Checklist

Use the setup checklist to assist with the iLO MP setup process.

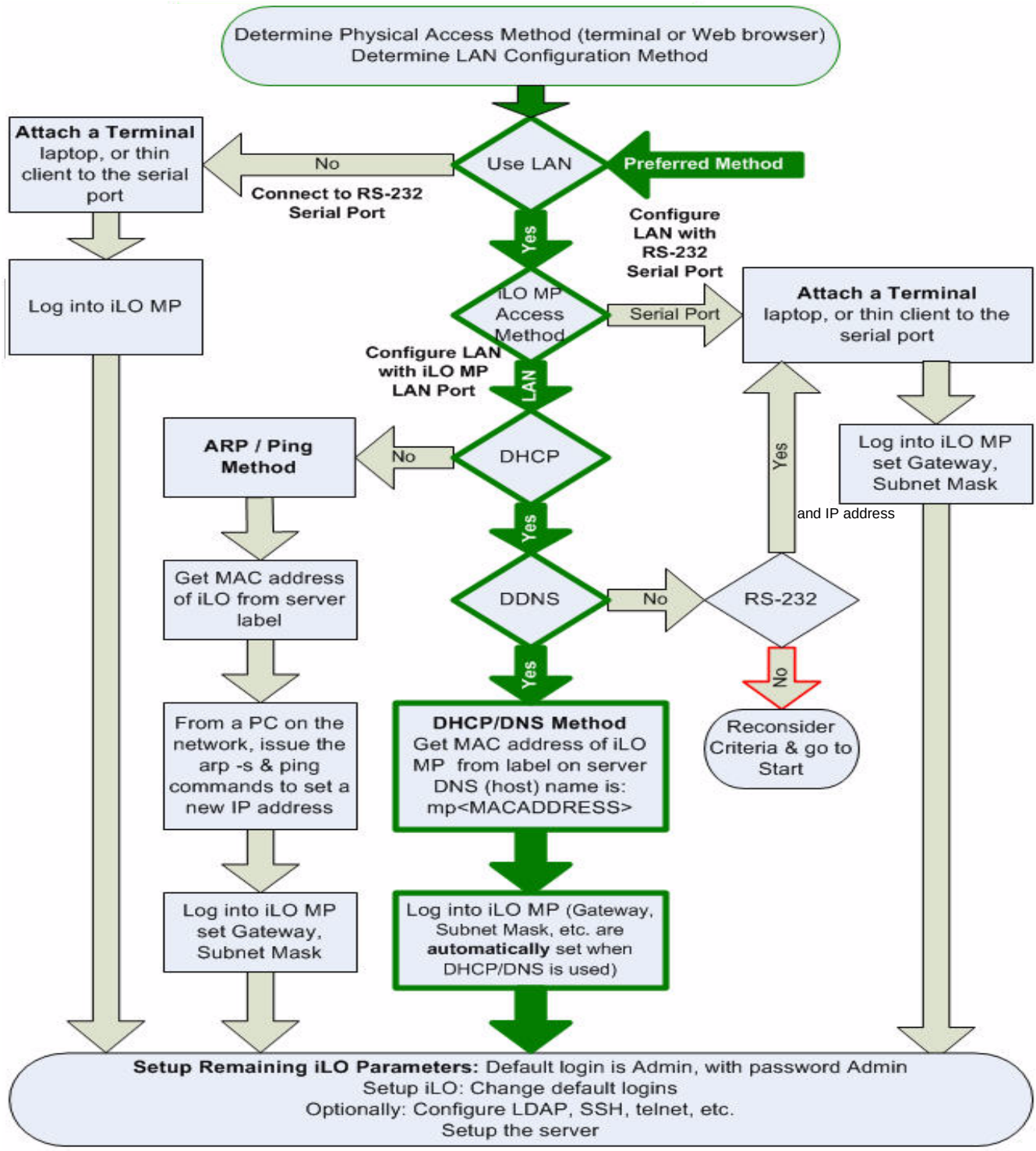
Table 1-7 Setup Checklist

	Step	Action	X
Standard Setup			
1	Preparation	1. Determine an access method to select and connect the cables. 2. Determine a LAN configuration method and assign an IP address if necessary.	
2	Configure the iLO MP LAN	Choose one of the three methods to configure the LAN for iLO MP access: • DHCP with DNS • ARP Ping • RS-232 serial port	
3	Log on to the iLO MP	Log in to the iLO MP from a supported Web browser or command line using the default user name and password.	
4	Change default user name and password	Change the default user name and password on the administrator account to your predefined selections.	
5	Set up user accounts	Set up the user accounts if you are using the local accounts feature.	
6	Set up security access	Set up the security access settings.	
Advanced Setup			
1	Activate Advanced Pack Features	Activate advanced features by entering a license key.	

Setup Flowchart

Use this flowchart as a guide to assist in the iLO MP setup process.

Figure 1-54 iLO MP Setup Flowchart



Preparation

You must perform the following tasks before you can configure the iLO MP LAN.

- Determine the physical access method to select and connect cables.
- Determine the iLO MP LAN configuration method and assign an IP address if necessary.

Determining the Physical iLO MP Access Method

Before you can access the iLO MP, you must first determine the correct physical connection method. The iLO MP has a separate LAN port from the system LAN port. It requires a separate LAN drop, IP address, and networking information from that of the port used by the operating system.

Table 1-8 lists the appropriate connection method, required connection components, and connectors to the host console. Use Table 1-8 to determine the physical connection method.

Table 1-8 Console Connection Matrix

Operating System	Console Connection Method	Required Connection Components
HP-UX	LAN	10/100 LAN cable
	LAN port Local RS-232 serial port Remote/modem port	1. RS-232 DB-9F to DB-9F straight cable 2. Console device (for example, a laptop or ASCII terminal)

Determining the iLO MP LAN Configuration Method

To access the iLO MP through the iLO MP LAN, the iLO MP must acquire an IP address. The way the iLO MP acquires an IP address depends on whether DHCP is enabled or disabled on the server, and if DHCP and DNS services are available to the server. (See Table 1-9 for possible scenarios.)

Once you have determined the iLO MP access, you must determine how you will configure the iLO MP LAN to acquire an IP address using the following methods:

- DHCP/DNS through the management LAN: use the DNS name located on the toe-tag on the server.
- Setting up a static IP number using a laptop with DHCP services and the management LAN.
- ARP Ping to set a static IP address using a laptop and the management LAN.
- Local RS-232 serial port and a serial console
- Remote/modem port

Table 1-9 provides all the possible scenarios. Use this table to help you select the appropriate LAN configuration method to obtain an IP address.

Table 1-9 LAN Configuration Methods

DHCP	DNS	RS-232 Serial Port (iLO MP LC command)	LAN Configuration Method
Yes	Yes	No	DHCP
Yes	Yes	Yes	DHCP, RS-232 serial port, or remote/modem port
No	No	No	ARP Ping

Table 1-9 LAN Configuration Methods (Continued)

DHCP	DNS	RS-232 Serial Port (iLO MP LC command)	LAN Configuration Method
No	Yes	No	ARP Ping
No	Yes	Yes	ARP Ping, RS-232 serial port, or remote/modem port
Yes	No	Yes	RS-232 serial port, or remote/modem port
No	No	Yes	RS-232 serial port, remote/modem port, or ARP Ping
Yes	No	No	Cannot set up the LAN. Reconsider your criteria.

Once you have determined how you will configure the iLO MP LAN in order to acquire an IP address, you must configure the iLO MP LAN using the selected method.

Configuring the iLO MP LAN Using DHCP and DNS

DHCP automatically configures all DHCP-enabled servers with IP addresses, subnet masks, and gateway addresses. All HP 9000 entry class servers with the iLO MP are shipped from the factory with DHCP enabled.

TIP HP recommends using the DHCP and DNS method to simplify access to the iLO MP.

When you use DHCP and DNS, you can connect to the iLO MP by typing the DNS name in your browser rather than an IP address only if the following conditions apply:

- DHCP must be enabled (DHCP is enabled by default).
- You are using a DHCP server that provides the domain name and the primary DNS server IP address.
- The primary DNS server accepts dynamic DNS (DDNS) updates.
- The primary DNS server IP address has been configured through the DHCP server.

To configure the iLO MP using DHCP and DNS, follow these steps:

Step 1. Obtain the factory-set DNS name from the toe-tag on the server. The DNS name is 14 characters long, consisting of the letters **mp** followed by the 12 characters of the MAC address, for example: `mp0014c29c064f`. This address is assigned to the iLO MP card. The iLO MP card has a unique MAC address that identifies the card on the network.

Step 2. Connect the LAN cable from the server to an active network port.

Step 3. Apply ac power to the server (if not already done).

Step 4. Open a browser, telnet, or SSH client and enter the default host name. The **iLO MP Log In** window opens.

Configuring the iLO MP LAN Using ARP Ping

The Address Resolution Protocol (ARP) and Packet Internet Grouper (Ping) utility uses ARP packets to ping, or discover, a device on the local network segment. The IP address you assign to the server must use the same network segment, or subnet, as the computer assigning the address. ARP does not work across routed or switched networks.

ARP Ping operational issues include the following:

- You can use ARP Ping regardless of the status of DHCP, unless an IP address has ever been acquired using DHCP
- When ARP Ping is successful, DHCP status is disabled
- Some DHCP server options can cause the apparent issuance of ARP Ping to the iLO MP which negates the DHCP/DDNS method
- The PC and the server must be on the same physical subnet
- When a new server is first booted, DHCP is automatically available (factory-set default); but ARP Ping does not start until three minutes after the iLO MP is booted. This applies to every subsequent boot of the iLO MP until an IP address is obtained by DHCP or has been assigned using the LC command, or ARP Ping succeeds

There are two ways to use the ARP Ping utility:

- Connect a PC to the network that is on the same physical subnet as the server and run the ARP Ping commands from the PC.
- Locate an existing server on the network, log into it, and run the ARP Ping commands from the server.

Table 1-10 lists the ARP Ping commands.

Table 1-10 ARP Ping Commands

Command	Description
arp -s	This command assigns an IP address to the iLO MP MAC address. This ARP table entry maps the MAC address of the iLO MP LAN interface to the static IP address designated for that interface.
ping	This command tests network connections. It verifies that the iLO MP LAN port is configured with the appropriate IP address.

The following procedure explains how to use the ARP Ping utility using a PC that is connected to the network that is on the same physical subnet as the server.

To configure a static IP address using the ARP Ping utility, follow these steps:

Step 1. Obtain the iLO MP MAC address. To set the IP address using ARP, you must know the MAC address of the iLO MP LAN. You can find the MAC address of the iLO MP LAN on a label on the server.

IMPORTANT Make sure you obtain the MAC address to the iLO MP LAN and not the MAC address to the server core LAN.

Step 2. Verify that an active LAN cable on the local subnet is connected to the iLO MP LAN port on the server.

Step 3. Access a PC on the same physical subnet as the server.

Step 4. Open a DOS window on the PC.

Step 5. At the DOS prompt, enter **`arp -s`** to assign the IP address to the iLO MAC address.

`arp -s` *<IP address you assign to the MP MAC address> <MP MAC address>*

For example:

```
arp -s 192.0.2.1 00-00-0c-07-ac-00
```

Step 6. At the DOS prompt, enter **ping** followed by the IP address to verify that the iLO MP LAN port is configured with the appropriate IP address. The destination address is the IP address that is mapped to the MP MAC address. Perform this task from the PC that has the ARP table entry.

ping <*IP address you assigned to the MP MAC address*>

For example:

```
ping 192.0.2.1
```

Step 7. Connect to the iLO MP LAN using this IP address.

Step 8. Use Web or telnet access to connect to the iLO MP from a host on the local subnet and finish setting up the LAN parameters (gateway and subnet).

Configuring the iLO MP LAN Using the RS-232 Serial Port

The following procedure shows how to configure the iLO MP LAN using the RS-232 serial port.

IMPORTANT Do not configure duplicate IP addresses on different servers within the same network. Duplicate server IP addresses conflict and the servers cannot connect to the network.

The `LC` command enables you to configure an IP address, host name, subnet mask, and gateway address.

IMPORTANT Ensure you have a console connection through the RS-232 serial port or a network connection through the LAN to access the iLO MP and use the `LC` command.

To assign a static IP address using the `LC` command, follow these steps:

Step 1. Ensure the emulation software device is properly configured. The terminal emulation device runs software that interfaces with the server. The software emulates console output as it would appear on an ASCII terminal screen and displays it on a console device screen.

Step 2. To ensure the emulation software is correctly configured, verify the following:

a. Verify that the communication settings are configured as follows:

- 8/none (parity)
- 9600 baud
- None (receive)
- None (transmit)

b. Verify that the terminal type is configured appropriately. Supported terminal types are as follows:

- hpterm
- vt100
- vt100+
- vt-utf8

IMPORTANT Do not use hpterm and vt100 terminal types at the same time.

There are many different emulation software applications. Consult the help section of your emulation software application for instructions on how to configure the software options.

Step 3. Use Table 1-8 to determine the required connection components and the ports used to connect the server to the console device.

Step 4. Connect the cables.

a. Connect the DB-9 end of the RS-232 serial port female-to-female cable to the console RS-232 serial port.

b. Connect the other end of the DB-9 female-to-female cable to the console device.

Step 5. Start the emulation software on the console device.

Step 6. Log in to the iLO MP. See “Logging In to the iLO MP” on page 76.

Step 7. At the **MP Main Menu**, enter **CM** and press **Enter** to select command mode.

Step 8. At the command mode prompt, enter **LS** and press **Enter**. The screen displays the default LAN configuration values. Write down the default values or log the information to a file for future troubleshooting.

Step 9. Use the LC command to disable DHCP.

a. From the LC command menu, type **D** and press **Enter**.

b. Follow the instructions on the screen to change the DHCP status from Enabled to Disabled.

c. Enter **XD -R** to reset the iLO MP.

Step 10. Use the LC command to enter information for the IP address, host, subnet mask, gateway parameters, and so on.

Step 11. Enter **XD -R** to reset the iLO MP.

Step 12. After the iLO MP resets, log in to the iLO MP again and enter **CM** at the MP> prompt.

Step 13. Enter **LS** to confirm that DHCP is disabled and display a list of updated LAN configuration settings.

Logging In to the iLO MP

To log in to the iLO MP, follow these steps:

Step 1. Access the iLO MP using the LAN, RS-232 serial port, telnet, SSH, or Web method. The iLO MP login prompt displays.

Step 2. Log in using the default the iLO MP user name and password (**Admin/Admin**). The **MP Main Menu** screen displays.

TIP For security reasons, HP strongly recommends that you modify the default settings during the initial login session. See "Modifying User Accounts and Default Password" on page 76.

Following is the **MP Main Menu** screen:

```
MP MAIN MENU:
       CO: Console
      VFP: Virtual Front Panel
       CM: Command Menu
       CL: Console Logs
       SL: Show Event Logs
       HE: Main Menu Help
        X: Exit Connection
```

This example shows the **MP Main Menu** accessed through the local serial port. The list of commands displayed on the screen can be different depending on the method of access to the iLO MP.

When logging in using the local or remote RS-232 serial ports, the login prompt may not display if another user is logged in through these ports. Use **Ctrl-B** to access the **MP Main Menu** and the iLO MP prompt (MP>).

Additional Setup

This section provides additional information to help you set up the iLO MP.

Modifying User Accounts and Default Password

The iLO MP comes preconfigured with default factory settings, including a default user account and password. The two default user accounts at initial login are:

- All Rights (Administrator) level user:
  login = **Admin**
  password = **Admin**
- Console Rights (Operator) level user:
  login = **Oper**
  password = **Oper**

NOTE User account and password are case sensitive.

IMPORTANT For security reasons, HP strongly recommends that you modify the default settings during the initial login session.

Make the following changes using any of the iLO MP user interfaces.

To modify default account configuration settings, follow these steps:

Step 1. Log in as the administrator. You must log in as the administrator in order to modify default user configuration settings.

Step 2. To modify default passwords, follow these steps:

a. Access the **MP Main Menu**.

b. Enter **CM** at the MP> prompt.

c. Enter **UC** at the MP:CM> prompt and follow the prompts to modify default passwords.

Step 3. To set up user accounts, follow these steps:

a. Access the **MP Main Menu**.

b. Enter **CM** at the MP> prompt.

c. Enter **UC** at the MP:CM> prompt and follow the prompts to modify user accounts.

Setting Up Security

For greater security and reliability, HP recommends that iLO MP management traffic be on a separate dedicated management network and that only administrators be granted access to that network. This not only improves performance by reducing traffic load across the main network, it also acts as the first line of defense against security attacks. A separate network enables administrators to physically control which servers are connected to the network.

HP also strongly recommends that you modify the default settings during the initial login session and determine the security access required and what user accounts and privileges are needed. Create local accounts or use directory services to control user access. See “Modifying User Accounts and Default Password” on page 76.

Security Access Settings

CAUTION When DHCP is enabled, the system is vulnerable to security risks because anyone can access the iLO MP until you change the default user name and password.

HP strongly recommends you assign user groups and rights before proceeding.

Determine the security access required and user accounts and privileges needed. The iLO MP provides options to control user access. Select one of the following options to prevent unauthorized access to the iLO MP:

- Change the default user name and password. See “Modifying User Accounts and Default Password” on page 76.
- Create local accounts. You can store up to 19 user names and passwords to manage iLO MP access. This is ideal for small environments such as labs and small-to-medium sized businesses.
- Use directory services. Use the corporate directory to manage iLO MP user access. This is ideal for environments with a large number of frequently changing users. If you plan to use directory services, HP recommends leaving at least one local account enabled as an alternate method of access.

Accessing the Host Console

This section describes the different ways to access the host console of the server.

Accessing the Host Console With the TUI - CO Command

This section describes the steps to access the host console using the text user interface (TUI).

To access the host console through the iLO MP, follow these steps:

Step 1. Log in using your user account name and password at the login page.

Step 2. At the iLO MP login prompt (`MP>`), enter the `CO` command to switch the console terminal from the **MP Main Menu** to mirrored/redirected console mode. All mirrored data is displayed.

Step 3. To return to the iLO MP command interface, type **Ctrl-B** or **Esc** and **+** and press **Enter**.

Interacting with the iLO MP Using the Web GUI

Web browser access is an embedded feature of the iLO MP.

The iLO MP has a separate LAN port from the system LAN port. It requires a separate LAN drop, IP address, and networking information from that of the port used by the operating system.

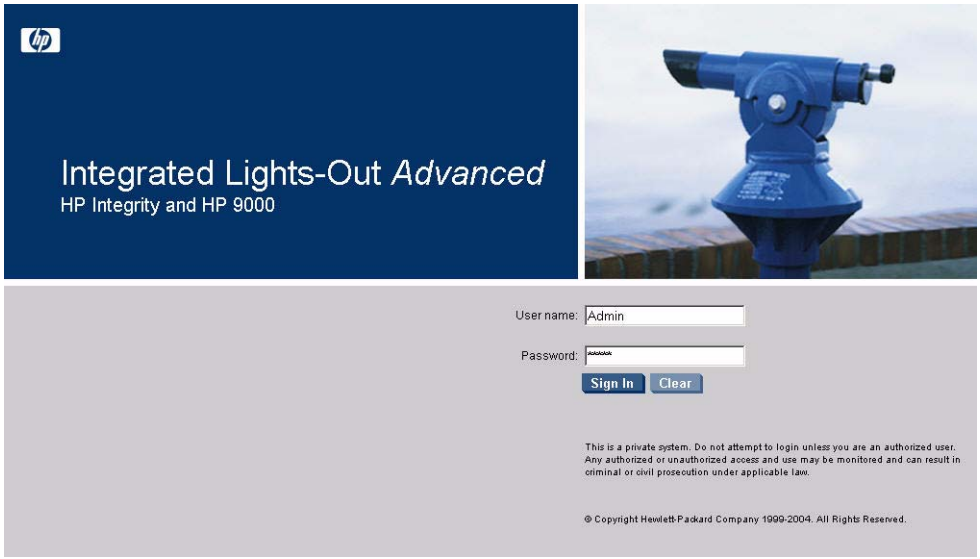
Before starting this procedure, you must have the following information:

- DNS name for the iLO MP LAN
- Host name (used when messages are logged or printed)

To interact with the iLO MP through the Web GUI, follow these steps:

Step 1. Open a Web browser and enter the DNS name for the iLO MP. The iLO MP login page opens.

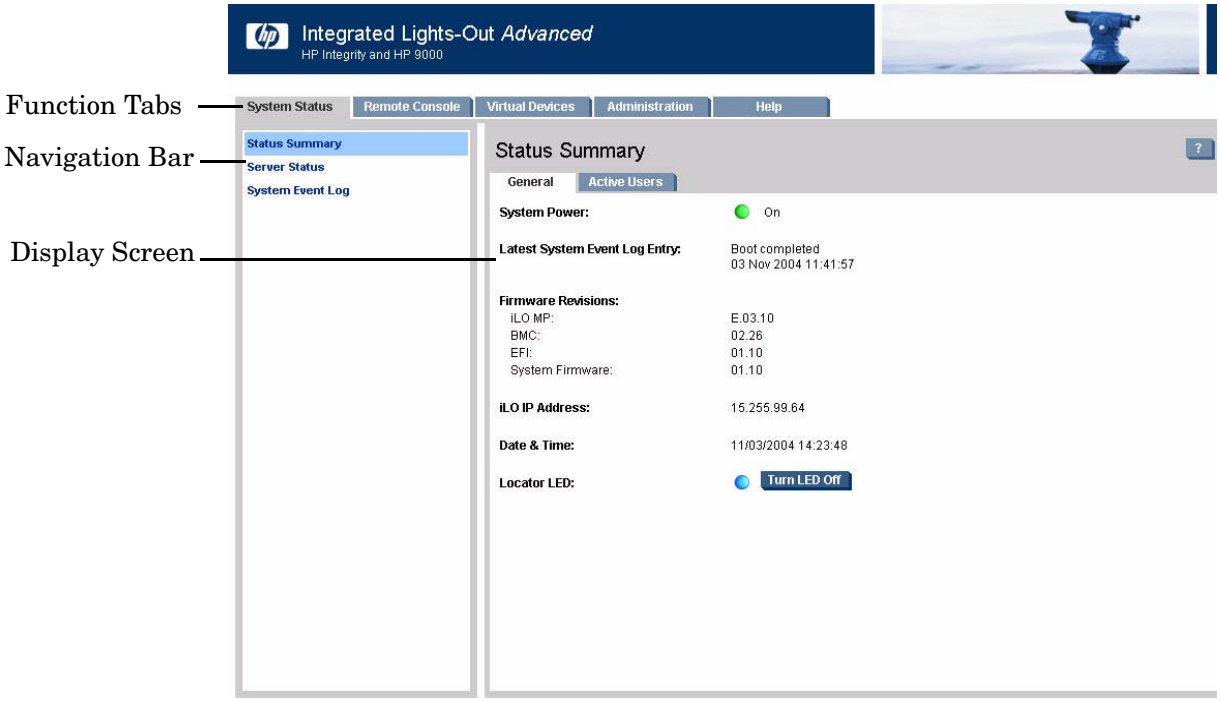
Figure 1-55 Web Login Page



Step 2. Log in using your user account name and password at the login page.

Step 3. Click **Sign In**. The **Status Summary** page displays after login.

Figure 1-56 Status Summary Page



Step 4. Select the Web interface functions by clicking the **Function** tabs at the top of the page. Each function lists options in the **Navigation Bar** on the left side of the page.

Step 5. Click an option link to display data in the **Display** screen.

Step 6. Click **Refresh** to update the display.

The iLO MP Web interface has a robust help system. To launch iLO MP help, click the **Help** tab in the **Display** screen or click the question mark key (**?**) at the top right corner of each page to display help about that page.

Accessing the Graphic Console Using VGA

VGA is a method you can use to access the graphic console.

NOTE You cannot access the iLO MP using VGA.

This method requires three elements:

- Monitor (VGA connector)
- Keyboard (USB connector)
- Mouse (USB connector)

The graphic console output displays on the monitor screen.

IMPORTANT The server console output does not display on the console device screen until the server boots to the BCH **Main Menu**. Start a console session using the RS-232 serial port method to view console output prior to booting to the BCH **Main Menu** or to access the iLO MP.

To access the graphic console with VGA, follow these steps:

Step 1. Connect the monitor, keyboard, and mouse cables.

a. Connect the monitor VGA cable to the appropriate VGA port on the server.

b. Connect the keyboard USB cable to the appropriate USB port on the server.

c. Connect the mouse USB cable to the appropriate USB port on the server.

Step 2. Power on the server. The BCH **Main Menu** prompt displays.

Powering ON and Powering OFF

This section provides information and procedures for powering on and powering off the server.

Power States

The server has three power states:

- Standby power
- Full power
- Off

Plug the power cord into the appropriate receptacle on the rear of the server to achieve the standby power state; the front panel power button is not turned on. Full power occurs when the power cord is plugged into the appropriate receptacle, and either the power is activated through the iLO MP `PC` command, or the power button is activated. In the off state, the power cords are not plugged in.

Table 1-11 lists the server power states.

Table 1-11 Power States

Power States	Power Cable Plugged Into Receptacle?	Power Activated through the iLO MP `PC` Command; or Front Panel Power Button Activated?	Standby dc Voltage Applied?	dc Voltage Applied?
Standby power	Yes	No	Yes	No
Full power	Yes	Yes	Yes	Yes
Off	No	No	No	No

NOTE If the power restore feature is set to **Always On** through the iLO MP PR command, the server automatically powers on to the full power state when the power cord is plugged in to the server.

Powering On the Server

Power on the server to full power using the following methods if the server is in the standby power state:

- iLO MP PC command
- Power button

Powering On the Server Using the iLO MP PC Command

NOTE If the power restore feature is set to **Always On** through the iLO MP PR command, the server automatically powers on to the full power state when the power cord is plugged in to the server.

To power on the server using the iLO MP PC command, follow these steps:

Step 1. Plug all power cables into the receptacles on the rear panel of the server.

Step 2. Initiate a console session, and access the **MP Main Menu**.

Step 3. Enter **CM** to enable command mode.

Step 4. Enter **PC** to use the remote power control command.

Step 5. Enter **ON** to power on the server, and enter **YES** when prompted to confirm the action.

Step 6. Start the operating system.

Powering On the Server Manually

NOTE If the power restore feature is set to **Always On** through the iLO MP PR command, the server automatically powers on to the full power state when the power cord is plugged in to the server.

To manually power on the server, follow these steps:

Step 1. Plug all power cables into the receptacles on the rear panel of the server.

Step 2. Press the power button to start the server.

Step 3. Start the operating system.

Powering Off the Server

Power off the server using the following methods if the server is in the standby or full power state:

- iLO MP PC command
- Power button

Powering Off the Server Using the iLO MP PC Command

To power off the server using the iLO MP PC command, follow these steps:

Step 1. Gracefully shut down the operating system.

Step 2. Initiate a console session, and access the **MP Main Menu**.

Step 3. Enter **CM** to enable command mode.

Step 4. Enter **PC** to use the remote power control command.

Step 5. Enter **OFF** to power off the server, and enter **YES** when prompted to confirm the action.

CAUTION	The main dc voltage is now removed from the server; however, ac voltage for standby power is still present in the server.

Step 6. Unplug all power cables from the receptacles on the rear panel of the server.

Powering Off the Server Manually

To manually power off the server, follow these steps:

Step 1. Gracefully shut down the operating system.

Step 2. Press the power button to power off the server.

CAUTION	The main dc voltage is now removed from the server; however, ac voltage for standby power is still present in the server.

Step 3. Unplug all power cables from the receptacles on the rear panel of the server.

Booting the Operating System

This section covers procedures for booting and shutting down an operating system on the server.

Supported Operating System

The only supported operating system on the HP 9000 rp3410 and rp3440 servers is HP-UX 11i Version 1 (and higher HP-UX versions that support PA-RISC servers.)

Booting and Shutting Down HP-UX

This section describes booting and shutting down HP-UX on the HP 9000 rp3410 and rp3440 servers.

- To boot HP-UX, follow these steps:
  - — “Standard HP-UX Booting Using Boot Console Handler” on page 83 describes the standard way to boot HP-UX. Typically this results in booting HP-UX in multi-user mode.
  - — “Booting HP-UX in Single-User Mode” on page 83 describes how to boot HP-UX in single-user mode.
  - — “Booting HP-UX in LVM Maintenance Mode” on page 83 describes how to boot HP-UX in Logical Volume Management (LVM) maintenance mode.

- To shut down the HP-UX operating system, see “Shutting Down HP-UX” on page 83.

Standard HP-UX Booting Using Boot Console Handler

To the autoboot function is enabled, the server boots to the installed operating system. If autoboot is not enabled, the server enters the boot console handler (BCH). The BCH enables you to control the server’s booting environment.

To set the boot path if HP-UX is at a path other than the primary path, follow these steps:

To boot HP-UX, follow these steps:

Step 1. At the BCH **Main Menu**, enter **`Menu> co`**.

Step 2. From the **COnfiguration Menu** > prompt, enter **`pa pri xx/xx/xx`**.

Step 3. From the **COnfiguration Menu**> prompt, enter **`ma`**.

To boot HP-UX once you have set the primary path, follow these steps:

Step 1. At the BCH **Main Menu**, enter **`Menu> bo pri`**. The following prompt displays:

```
Do you wish to stop at the ISL prompt prior to booting (y/n)?
```

Step 2. Enter **`n`**.

NOTE If the server fails to boot, you may be required to boot from a DVD that contains the operating system and other necessary software.

Booting HP-UX in Single-User Mode

To boot to HP-UX in single-user mode, follow these steps:

Step 1. At the BCH **Main Menu**, enter command or menu> **`bo pri`**. The following message displays:
`Interact with IPL (Y, N, or Cancel)?>`

Step 2. To interact with IPL, answer **`y`**.

Step 3. At the **ISL>** prompt, type **`hpux-is`**.

Booting HP-UX in LVM Maintenance Mode

To boot to HP-UX in LVM maintenance mode, follow these steps:

Step 1. At the BCH **Main Menu**, enter command or menu> **`bo pri`**. The following message displays:
`Interact with IPL (Y, N, or Cancel)?>`

Step 2. To interact with IPL, answer **`y`**.

Step 3. At the **ISL>** prompt, type **`hpux-lm`**.

Shutting Down HP-UX

To shut down HP-UX running on a server, use the `shutdown` command. You have the following options when shutting down HP-UX:

- To shut down and reboot an HP-UX system, use the `shutdown -r` command.
- To shut down and halt (power off) an HP-UX system, use the `shutdown -h` command.

For details, see the *shutdown* (1M) manpage and follow these steps:

Step 1. From the HP-UX command line, issue the `shutdown` command to shut down the HP-UX operating system.

Step 2. Log in to HP-UX running on the server that you want to shut down.

You should log in to the iLO MP for the server and use the **Console** menu to access the server console. Accessing the console through the iLO MP enables you to maintain console access to the server after HP-UX has shut down.

Step 3. Issue the `shutdown` command with the appropriate command-line options.

The command-line options you specify dictate the way in which HP-UX shuts down, and whether the server is rebooted.

Use the following list to choose an HP-UX shutdown option for the server:

- To shut down HP-UX and halt (power off) the server, issue the `shutdown -h` command.

  To reboot a halted server you must power on the server using the `PC` command at the iLO MP **Command** menu.

- To shut down HP-UX and reboot the server, issue the `shutdown -r` command.

Verifying the Server Configuration Using Boot Console Handler

From the BCH **Main Menu**, enter `in` to go the **INformation Menu**. Use the corresponding command from the menu to verify the type and quantity of processors, memory, and I/O cards:

Step 1. To enter the POSSE shell, type `CO` from the **iLO MP Main Menu**. To list all the categories available in the shell, type **`help`** .

- pr (Processors)
- me (Memory)
- io (Check the PCI device information to determine if the values match the devices installed in the server)

Step 2. Verify the parameters.

Step 3. To return to the BCH **Main Menu**, use the `ma` command .

Troubleshooting

This section provides basic server troubleshooting information. It is designed to help you diagnose common issues that can occur during server installation.

Troubleshooting Methodology

The server was tested prior to shipping. Failures encountered during installation can be due to damage that occurred in transit. Reseating connectors can clear problems that result from rough handling. If you are installing components or assemblies, compatibility problems or incorrect installations can be the cause of the problems. If you are installing components or assemblies, check that items are correctly installed and that all connectors are fully engaged. If the unit does not power on, check the power source before proceeding.

If a problem is encountered during initial operation, remove any add-in or optional components and retest the server before continuing. Verify basic server operation before installing additional cards and configuring software and hardware for the server requirements.

Troubleshooting is based on observation of server status indications and error messages, and by checking system event logs. You can observe the LED indicators on the front and rear of the server. Error messages are displayed on local and remote consoles. System history (console, event, and history logs) is available through the iLO MP, and is accessed through the console.

Offline troubleshooting programs are available on the resource CD that is shipped with the server. To troubleshoot the server, you must be familiar with the Offline Diagnostics Environment (ODE) which runs from BCH. Descriptions and user information about offline troubleshooting tools are available on the Web at:

`http://www.docs.hp.com`.

The offline tools are available for downloading at:

`http://www.software.hp.com`.

Troubleshooting Using the Server Power Button

The server power button on the front panel operates differently depending on how long the button is held in, and on what the server is doing when the button is pressed. You must be aware of its uses to properly troubleshoot the server.

Table 1-12 describes what happens when the server is at BCH, and you press the power button.

Table 1-12 Server Power Button Functions When Server is On and at BCH

Action	Reaction
One to three seconds	System power turns off immediately (hard power off).
Five seconds or longer	System power turns off immediately (hard power off).

Table 1-13 describes what happens when the server is on with the operating system running, and you press the power button.

Table 1-13 Server Power Button Functions When Server is On and OS is Running

Action	Reaction
One to three seconds	System power turns off (software controlled power off).
Five seconds or longer	System power turns off immediately (hard power off).

If the server is off, and power is not connected to server power supplies, pressing the power button has no effect.

If the server is off, and power is connected to server power supplies, the front panel power LED blinks at a 1 Hz rate. In this state, standby power is available to server circuits, but main power is off.

Table 1-14 describes what happens when the server is off, and you press the power button.

Table 1-14 Server Power Button Functions When Server is Off

Action	Reaction
One to three seconds	System power turns on

Server Does Not Power On

The server power button on the front panel operates differently depending on how long the button is held, and on what the server is doing when the button is pressed. You must be aware of its uses to properly troubleshoot the server.

NOTE If the server is off, and power is not connected to server power supplies, pressing the power button has no effect.

Power problems during installation are usually related to the installation process. If the server does not power on, check the LED indicators on the power supply rear panels and follow these steps.

- If the ac power LED on the power supply on the rear panel of the server is lit, power is available to the server.
- If the ac power LED is not lit, the server is either in standby power mode, or there is a problem. Reseat the power supply. If the problem persists, remove and reseat the board within the server. If the problem persists, replace the power supply or the power supply interface board.
- If the console shows that the server is powered on, but server LEDs indicate that power is off, remove and reseat connectors on the LED status board. If the problem persists, replace the LED status board.

  If the console shows that the server is not powered on (server is off), remove and reseat connectors on the system board. If the problem persists, replace the power supply interface board, or the system board.

Operating System Does Not Boot

If the operating system does not boot, but you are able to reach the BCH from either the main disk partition or the CD, use the following tools to help solve the problem:

- Check the system logs and analyze any error messages.

- Offline Diagnostic Environment (ODE)

Operating System Boots with Problems

If the operating system is running and you are experiencing problems, use the following tools to help solve the problem:

- LEDs
- Error Messages and event logs

Intermittent Server Problems

You can usually trace intermittent problems that occur during installation to power source problems, a loose connector, or some other hardware problem. If you are experiencing intermittent problems, follow these steps:

1. Check iLO MP logs and analyze the problem. Determine if there is more than one symptom and if the problem is random.
2. Verify that the ac power source is stable.
3. Reseat all rear panel connectors.
4. Reseat all hot-swappable fans and power supplies.
5. Reseat all main memory DIMMs.
6. Reseat all cable harnesses and board connectors.

DVD Problems

DVD problems that occur during installation are usually related to faulty connections. If you are experiencing DVD problems, follow these steps:

1. Remove and reinsert the disk.
2. Replace the disk.
3. Remove and reinstall the DVD drive. Check that connectors are fully engaged.
4. Replace the DVD drive.

Hard Drive Problems

Hard drive problems that occur during installation are usually due to rough handling. The drive may not be correctly seated or may have been damaged in transit. If you are experiencing hard drive problems, follow these steps:

1. Remove and reinsert the faulty hard drive.
2. Swap the hard drive with one from another slot or with a known good spare.
3. Remove and reinstall the hard drive backplane. Check that connectors are fully engaged.
4. Replace the hard drive backplane.

Console Problems

Console problems during installations can be caused by faulty interconnections. If you are experiencing monitor, keyboard, or mouse problems, follow these steps:

1. Check the monitor controls. Adjust contrast and brightness as required.
2. Inspect all power and interconnecting cables. Check that all console connectors are fully engaged.
3. Check that all iLO MP board connectors are fully engaged.
4. Exercise the appropriate self-test features of the console software.

Downloading and Installing the Latest Version of the Firmware

HP makes every effort to provide you with the most current version of firmware. However, there can be instances when this is not the case.

To ensure you have the latest version of the firmware running on the server, download the latest version of the firmware from the Web, and create a CD to install the firmware on the server.

Downloading the Latest Version of the Firmware

To download the latest version of the firmware from the Web, follow these steps:

Step 1. Go to: **`http://www.hp.com/go/bizsupport`**

Step 2. Select **download drivers and software**.

Step 3. Select **Itanium-based servers** from the Server category.

Step 4. Select your product from the servers listed.

Step 5. Select the operating system.

Step 6. Select the firmware package you want to download.

Step 7. Download the firmware package, and follow the instructions for updating the firmware included in the release notes.

Installing the Latest Version of the Firmware on the Server

To install the latest version of the firmware on the server, follow these steps:

Step 1. Initiate a server console session.

Step 2. Insert the CD with the copy of the latest version of the firmware.

Step 3. Using the BCH **Main Menu**, boot to the drive that contains the CD with the updated firmware.

Step 4. Follow the instructions to update the firmware.

Troubleshooting Using LEDs

If you suspect a hardware failure during installation, the power and system LEDs, located on the front control panel, will help you identify the problem. The following sections describe their functions. You may want to back up your data or replace a component before it fails.

The boot process will be monitored by the iLO MP. With the current ILO MP functionality, the four diagnostic LEDs are disabled (always off). You can monitor server operation from a console using the iLO MP.

Figure 1-57 Control Panel **LEDs**

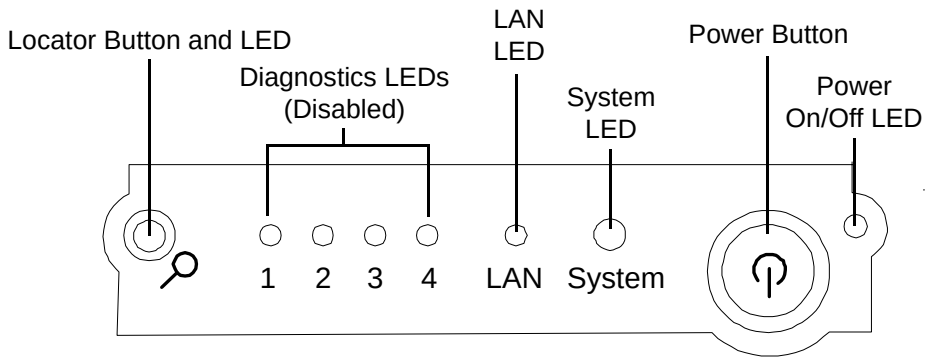


Table 1-15 provides control panel LED information.

Table 1-15 Control Panel LEDs and Switches

Name	Function
Power on/off LED	The green on/off LED is illuminated when the power is on.

Table 1-15 Control Panel LEDs and Switches (Continued)

Name	Function
Power Button	Controls the power supply (turns system power on or off) if power is available to the power supply. (Controls both power supplies if two are installed). If power is off but power is available to the power supplies, pressing the power button does the following: • Momentarily (less than one second) turns on the power supplies and applies power to server circuits. • More than one second then released, has no effect. If power is on and the system is at initial system loader, pressing the power button: • Momentarily (less than one second) has no effect. • More than one second, but less than five seconds—do not use. This initiates e-buzzer functions that are not supported in the server. • More than five seconds then released causes an immediate hard power off. If power is on and the system is at BCH, pressing the power button does the following: • Momentarily (less than one second) causes a immediate and hard power down. • More than one second, but less than five seconds—do not use. This initiates e-buzzer functions that are not supported in the server. • More than five seconds then released causes an immediate hard power off. If power is on but the OS has been shut down, pressing the power button: • Momentarily (less than one second) has no effect. • More than one second, but less than five seconds—do not use. This initiates e-buzzer functions that are not supported in the servers. • More than five seconds then released causes an immediate hard power off. If the OS is running, pressing the power button does the following: • Momentarily (less than one second) has no effect. • More than one second, but less than five seconds—do not use. This initiates e-buzzer functions that are not supported in the servers. • More than five seconds then released causes an immediate hard power off.
System LED	The System LED provides information about the system status. When operation is normal, the LED is green. When there is a system warning, the LED is flashing yellow. When there is a system fault, the LED is flashing red.
LAN LED	The LAN LED provides status information about the LAN interface. When the LAN LED is flashing, there is activity on the LAN.
Locator button and LED	The locator button and LED are used to help locate this server within a rack of servers. When the button is engaged, the blue LED illuminates and an additional blue LED on the rear panel of the server illuminates. You can remotely activate this function.

Power and System LEDs

The power and system LEDs indicate the state of the system. When the system LED is blinking yellow or red, a problem exists.

Table 1-16 provides system LED states.

Table 1-16 System LED States

System LED	State
Off	ac power is off if power LED is off.
Solid green	Running OS.
Blinking green	Booting or running BCH.
Blinking yellow (1/sec.)	Attention: Alerts of levels 3–5 detected in the iLO MP logs. The LED turns off once the event log has been read.
Blinking red (2/sec.)	Fault: System Alert 7 detected, LED blinks until the problem is resolved and the system boots successfully . Fatal hardware error detected by BMC, LED blinks until problem is corrected.

For system alerts of levels 3–5, you can clear the attention condition on the LED by accessing the logs using the `sl` command available in the iLO MP command mode.

You can clear the fault condition for system alerts of level 7 by resolving the problem and cycling power. See the SL error logs for additional error information.

NOTE Always check the iLO MP status logs in the case of a blinking yellow or red system LED before replacing any hardware.

LAN LEDs

The front panel LAN LED indicates the system is communicating over the Gigabit or system management LAN:

- Blinking green: the system is communicating over the LAN.
- Solid green: LAN link is established; no current LAN activity.
- Not green: no LAN cable attached; LAN network dead or the system is off.

10/100/1000 LAN LEDs are on the rear panel.

Table 1-17 lists the 10/100/1000 Base-T ethernet LAN connector LEDs.

Table 1-17 10/100/1000 Base-T Ethernet LAN Connector LEDs

LED	Description
1000BT	Blinking green: the 1000 MHz with ethernet protocol and twisted-pair wiring is enabled; off; no link.
100BT	Blinking green: the 100 MHz with ethernet protocol and twisted-pair wiring is enabled; off; no link.
10BT	Blinking green: the 10 MHz with ethernet protocol and twisted-pair wiring is enabled; off; no link.
Activity	Blinking green: LAN activity.

Table 1-18 lists the iLO MP card LAN LEDs. iLO MP card LAN LEDs are also on the rear panel.

Table 1-18 iLO MP Card LAN LEDs

LAN LED	Location	Color	State
Self-test	Top	Yellow	iLO MP running self-test or error
		Off	iLO MP has booted
10BT	2nd from top	Green	10BT link established
		Blinking green	10BT activity
		Off	No link or 100BT link
100BT	2nd from bottom	Green	100BT link established
		Blinking green	100BT activity
		Off	No link or 10BT link
Standby Power	Bottom	Green	Standby power on
		Off	Standby power off

Information to Collect Before You Contact Support

Before you contact HP support, you should:

Step 1. Check information on troubleshooting and attempt to solve the problem.

- Note failure symptoms and error indications (LEDs and messages) by checking the system event log.
- Try to determine precisely what did or did not happen.

Step 2. Collect the following information:

- The model number of the server (for example, HP 9000 rp3440)
- The product number of the server. This is found on the identification label, which is found at the front of the unit (typically A9956A, A9951A, and so on).
- The serial number of the server. This is found on the identification label.

Step 3. Become familiar with the server configuration:

- Are you using the LAN, RS232, or Web interface to monitor the server?
- How many processors, DIMMs, and PCI cards have been installed?
- What versions of processor, memory, and PCI cards are used and where are they installed?
- What accessories are installed?

Step 4. Determine the following:

- Which firmware versions are in use?
- When did the problem start?
- Have recent changes been made to the system?
- Which operating system and version is in use?