

Server Upgrade Guide

HP 9000 rp3410 and HP 9000 rp3440



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U.S.A.

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Preface

This preface contains the following sections:

- Intended Audience
- What's New?
- Notational Conventions
- Reader Comments and Feedback
- Related Information
- Printing History

Intended Audience

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

What's New?

- The layout of this document was changed to improve usability.
- Added Chapter 5 “RAID - Smart Array 6402 and 6404 Controller HP-UX Installation”

Notational Conventions

The following notational conventions are used in this publication.

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.

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

- Commands and options are represented using this font.
- **Text that you type exactly as shown** is represented using **this font**.
- *Text to be replaced with text that you supply* is represented using *this font*.

Example:

“Enter the `ls -l filename` command” means you must replace *filename* with your own text.

- **Keyboard keys and graphical interface items (such as buttons, tabs, and menu items)** are represented using **this font**.

Examples:

The **Control** key, the **OK** button, the **General** tab, the **Options** menu.

- **Menu** → **Submenu** represents a menu selection you can perform.

Example:

“Select the **Partition** → **Create Partition** action” means you must select the **Create Partition** menu item from the **Partition** menu.

- Example screen output is represented using this font.

Reader Comments and Feedback

HP welcomes your feedback on this publication. Please address your comments to edit@presskit.rsn.hp.com and note that you will not receive an immediate reply. All comments are appreciated.

Related Information

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

Web Site for HP Technical Documentation:

<http://docs.hp.com>

The main Web site for HP technical documentation is <http://docs.hp.com>, which has complete information available for free.

Server Hardware Information:

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

The <http://docs.hp.com/hpux/hw/> Web site is the systems hardware portion of the docs.hp.com and provides HP nPartition server hardware management details, including site preparation, installation, and more.

Windows Operating System Information

You can find information about administration of the Microsoft® Windows® operating system at the following Web sites, among others:

- http://docs.hp.com/windows_nt/
- <http://www.microsoft.com/technet/>

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.

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HP's IT resource center Web site at <http://us-support2.external.hp.com/> provides comprehensive support information for IT professionals on a wide variety of topics, including software, hardware, and networking.

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

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Printing History

The Printing History below identifies the edition dates of this manual. Updates are made to this publication on an unscheduled, *as needed*, basis. The updates will consist of a complete replacement manual and pertinent on-line or CD-ROM documentation.

First Edition	February 2004
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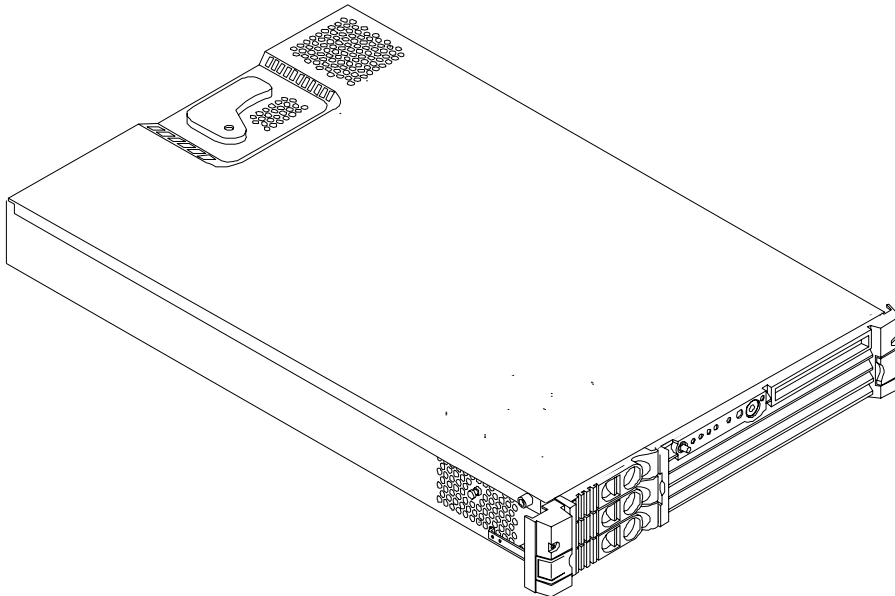
1 Overview and Common Procedures—Server Upgrade

Overview

This guide presents instructions for upgrading the HP 9000 rp3410 and HP 9000 rp3440 servers to more capable configurations. This change enables, replaces, or installs Dual Processor Modules (DPMs) to increase server speed and L2 cache size, or increase server overall capability. Upon completion of this upgrade, your servers will be functionally identical to the newest HP 9000 rp34xx server configurations, and may include the use of new processors, more and larger DIMMs, and enhanced software and firmware.

This chapter describes and summarizes the upgrade process, refers you to the appropriate sections of this guide for detailed information, and provides common procedures that are applicable to two or more upgrade procedures. Also included is information to help you estimate the time required to upgrade your server and details about hardware requirements.

Figure 1-1 HP 9000 rp3410 and HP 9000 rp3440 Server



Processor Upgrade Procedures

This guide describes five unique server upgrades which may be performed individually to increase server capability. In addition, two or more upgrade procedures can be performed together to accomplish greater increases in server capability.

Table 1-1 HP 9000 rp34xx Server Upgrade Procedures

Starting Configuration	Configuration After Upgrade	800 MHz CPU		1 GHz CPU		Procedure
		32 MB L2 Cache	64 MB L2 Cache	32 MB L2 Cache	64 MB L2 Cache	
Processors with 32 MB L2 cache	Processors with 64 MB L2 cache	NA	Install DPM AB534A and upgrade firmware	NA	Install DPM AB535A and upgrade firmware	See Chapter 2 for upgrade instructions
HP 9000 rp3410 1-way	HP 9000 rp3410 2-way	Upgrade Kit A9770A	Upgrade Kit A9770A	NA	NA	See Chapter 3 for upgrade instructions
HP 9000 rp3410	HP 9000 rp3440	Upgrade Kit A9771A	Upgrade Kit A9771A	Upgrade kit A9771A	Upgrade kit A9771A	See Chapter 4 for upgrade instructions
HP 9000 rp3440 1-way	HP 9000 rp3440 2-way	Upgrade Kit AB473A	Upgrade Kit AB473A	Upgrade Kit AB474A	Upgrade Kit AB474A	See Chapter 5 for upgrade instructions
HP 9000 rp3440 2-way	HP 9000 rp3440 4-way	Install DPM A7138A	Install DPM AB534A	Install DPM AB354A	Install DPM AB535A	Install DPM as described in this chapter

Limitations

All processors within a server must have equal speed and identical cache size. This is best verified by using processors with identical part numbers.

Memory Upgrade Procedures

The HP 9000 rp3410 or HP 9000 rp3440 server includes 12 DIMM connectors (slots) on the system board. Memory DIMMs are installed in pairs (groups of two) or quads (groups of four). You may replace any or all of the DIMMs within a server or install additional DIMMs to increase server memory.

Memory usage in the HP 9000 rp3410 server varies with the model designation. In the original server (model A7136A), memory is installed as one or two pairs in the first quad (group of four). This allows memory configurations of two, four, eight, or 12 DIMMs. In the current server (model A7136B), memory must be installed as quads (groups of four). This allows memory configurations of four, eight, or 12 DIMMs. Thus, the HP 9000 rp3410 server may include a minimum of 512 MB (model A7136A) or 1 GB (model A7136B) and may include up to six GB of memory in combinations of 256-MB, 512-MB, and 1-GB DIMMs. Different size DIMMs may be installed in the server, but all four DIMMs in a quad (group of four) must be identical.

The HP 9000 rp3440 server may include up to 32 GB of memory in combinations of 256-MB, 512-MB, 1-GB, 2-GB, and 4-GB DIMMs. Again, DIMM sizes can be mixed within the server (except when 4 GB DIMMs are used), but all four DIMMs in a quad (group of four) must be identical. If 4 GB DIMMs are used, only one configuration (8 X 4 GB in the first eight sockets) is supported. Only complete quads (four DIMMs) can be installed in the HP 9000 rp3440 server.

NOTE There is only one configuration of 4 GP DIMMs that is supported; two (2) quads of 4 GP DIMMs. You cannot mix one quad of 4 GB DIMMs with any other quads.

NOTE The first eight sockets are the first eight sockets according to the *memory loading rules* and not the first sequential sockets.

See “Common Procedures” on page 15 for memory installation procedures.

Limitations

Limitations on DIMM installation are:

- 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 (model A7136A) or 1 GB (model A7136B) of memory must be installed in an HP 9000 rp3410 server
- A maximum of six GB of memory can be installed in an HP 9000 rp3410 server
- A minimum of one GB of memory must be installed in an HP 9000 rp3440 server
- A maximum of 24 GB or 32 GB of memory can be installed in an HP 9000 rp3440 server (a 24 GB memory configuration requires 2 GB DIMMs, a 32 GB memory configuration requires 4 GB DIMMs)
- DIMM sizes within a quad must be the same (DIMMs of different sizes can be installed in a server but all four DIMMs within a quad must be identical)
- If 4 GB DIMMs are used in an HP 9000 rp3440 server, only eight DIMMs (in the first eight sockets) can be installed (This is the only supported configuration that uses 4 GB DIMMs)
- Use of 4 GB DIMMs requires that system firmware is upgraded

Time Required

Upgrading the HP 9000 rp34xx server may require several hours, depending on preparatory time and the type and number of upgrades planned. If you perform several upgrades together, preparatory time can be saved and efficiency improved. In addition, combining upgrades eliminates the need for multiple system backup and boot cycles. Table 1-2 lists the various upgrades described in this guide and the approximate time required to perform each upgrade procedure.

Table 1-2 Time Required for Upgrade Procedures

Procedure	Estimated Time Required
Replace Dual Processor Module	15 minutes
Upgrade HP 9000 rp3410 1-way server to the 2-way configuration	1 hour
Upgrade HP 9000 rp3410 2-way server to the HP 9000 rp3440 2-way configuration	15 minutes
Upgrade HP 9000 rp3440 1-way server to the 2-way configuration	1 hour
Upgrade HP 9000 rp3440 2-way server to the 4-way configuration (Install a Dual Processor Module)	15 minutes
Replace or install memory DIMMs	10 minutes

Before You Start

You may need some or all of the following items before you upgrade your HP 9000 rp3410 or HP 9000 rp3440 server:

- Upgrade licence for processor upgrades
- Upgrade kit for processor upgrades
- DIMMs for memory upgrades
- Electrically Conductive Field Service Grounding kit, HP P/N 9300-1155
- Special processor tool kit, HP P/N 5069-5441 for processor upgrades
- Standard tools

Common Procedures

This section provides information on how to remove and replace server components for the upgrades described in this guide.

Safety Information

This section describes gaining access, removing, and installing components in your HP 9000 rp3410 and HP 9000 rp3440 server. Always disconnect power to prevent injury. Always take the appropriate measures to prevent equipment damage by electrostatic discharge.

Disconnect power from external server connectors before you upgrade the server. Voltages are present within the server whenever power is connected, even when the power switch is set to OFF.

WARNING **Ensure that the system is powered down and all power sources have been disconnected from the server prior to working with the server.**

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 could result in personal injury or damage to equipment.

Many server components are electrostatic discharge (ESD) sensitive. Use care to prevent equipment damage. Observe the following practices:

- Use an antistatic wrist strap and a grounding mat, such as those included in the Electrically Conductive Field Service Grounding Kit (HP 9300-1155)
- Handle accessory boards and components by the edges only. Do not touch any metal-edge connectors or any electrical components on accessory boards
- Do not wear clothing subject to static charge build-up, such as wool or synthetic materials

Removing and Replacing the System Covers

The HP 9000 rp3410 and HP 9000 rp3440 servers are designed to be tower or rack mounted. This section explains how to remove and replace the cover for both tower and rack mount configurations.

WARNING **Do not remove the system cover without first turning the system 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 system on.**

WARNING Ensure 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.

Tower Configuration

To access the internal components on a tower system, you must remove the plastic and metal left-side covers.

Removing the Plastic Side Cover

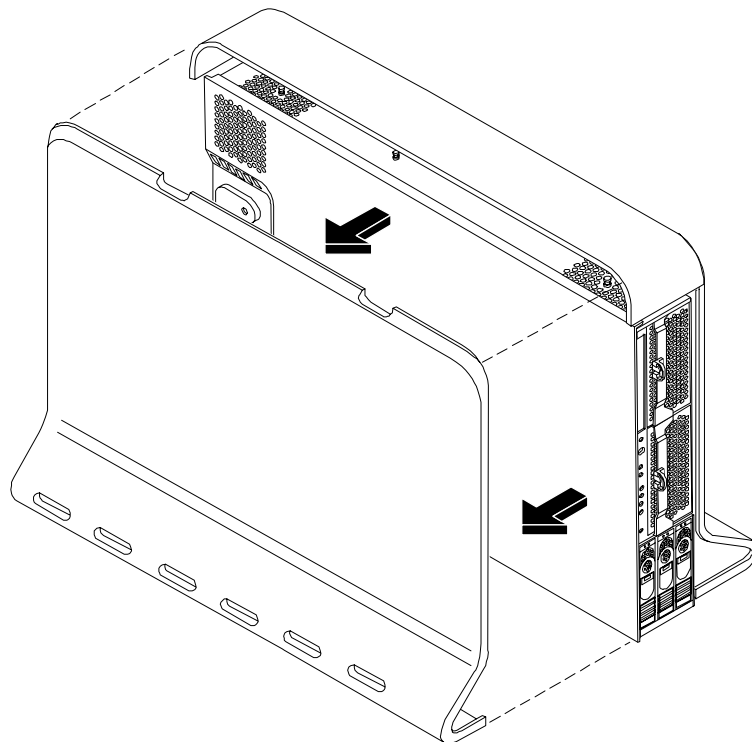
NOTE If you are replacing a hot-swappable item, you can leave the system on and external cables (including the power cord) connected.

Step 1. Turn off the system and disconnect the power and external cables.

Step 2. Remove the plastic cover.

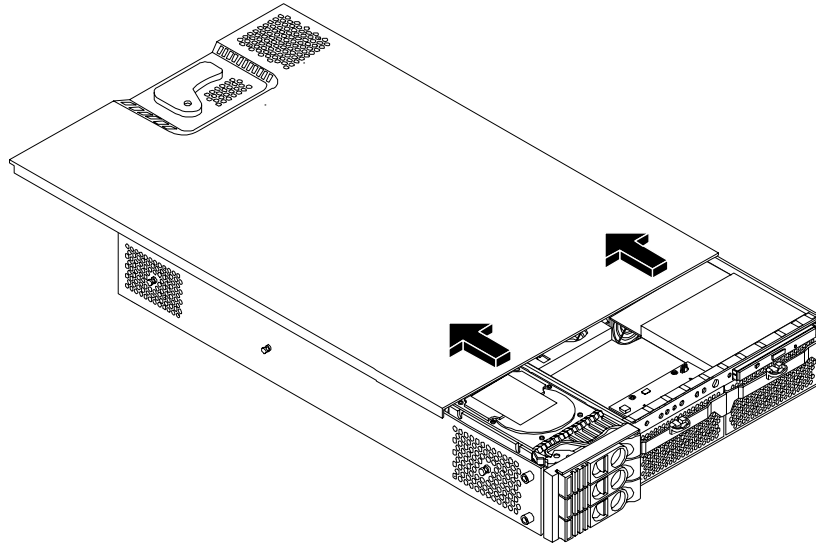
- a. Grasp both indentations at the top of the side panel and pull outward.
- b. Lift the plastic cover off of the system chassis.

Figure 1-2 Removing the Plastic Side Cover



Step 3. Remove the top cover.

Figure 1-3 Removing the Top Cover



- a. Turn the top cover lock keyswitch to the unlocked position.
- b. Rotate the blue release handle to release the latch.
- c. Slide the cover toward the back of the chassis and lift it off.

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

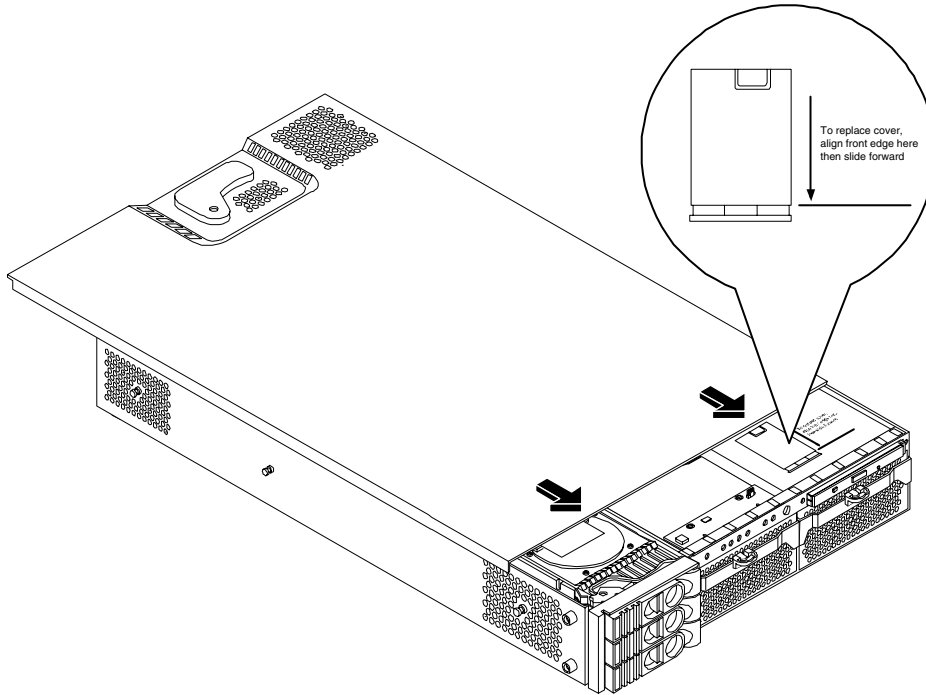
Replacing the Top Cover

Step 1. Replace the top cover:

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

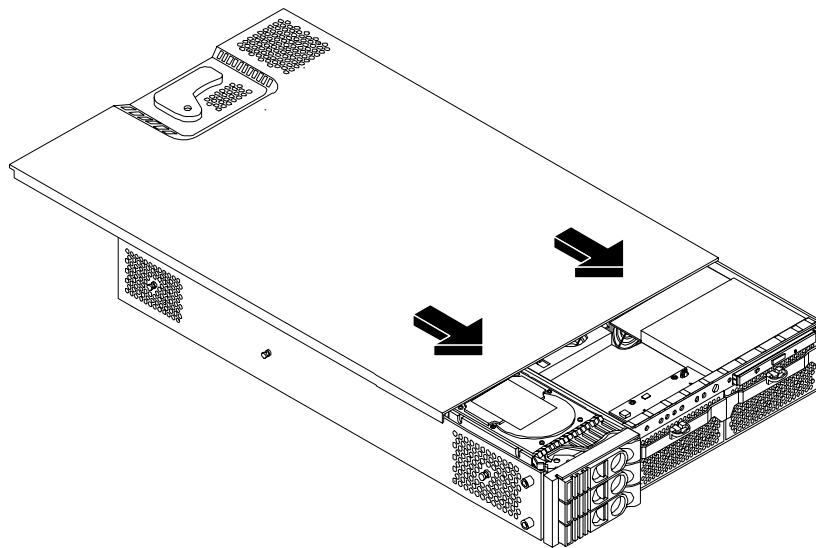
- a. Align the front edge of the top cover with the alignment mark on the optical drive bay (Figure 1-4).

Figure 1-4 Top Cover Alignment Mark



- b. Place the top cover on the chassis and slide it toward the front of the system until the blue release lever snaps in place (Figure 1-5).

Figure 1-5 Replacing the Top Cover

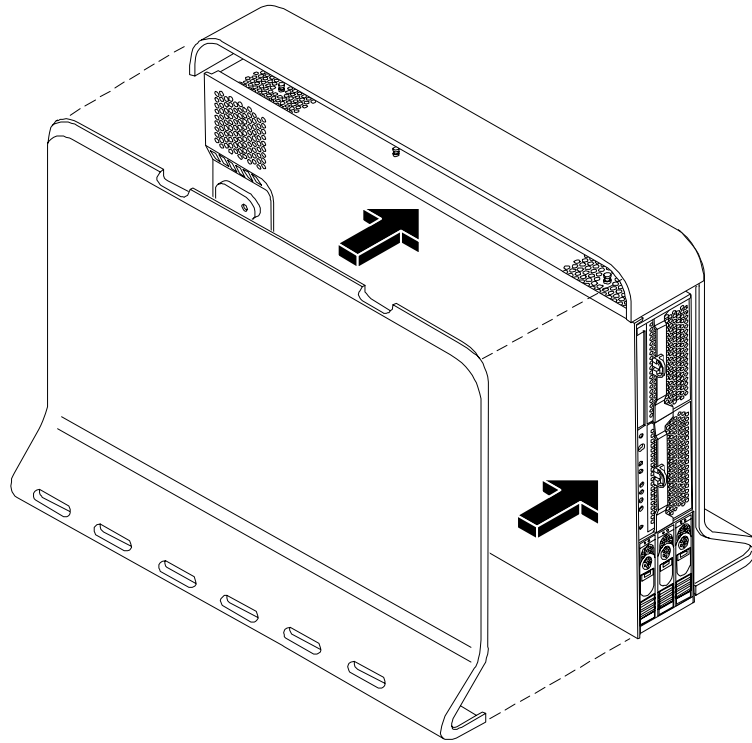


Step 2. Replace the plastic side cover:

- a. Align the cover's mounting holes with the matching tabs on the system chassis.

- b. Close the cover until it snaps onto the system chassis.

Figure 1-6 Replacing the Plastic Side Cover



Rack-Mount System

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

Accessing a Rack Mounted Server

The HP 9000 rp3410 and HP 9000 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, refer to the *Installation Guide, Mid-Weight Slide Kit, 5065-7291*.

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

Extend the Server from the Rack

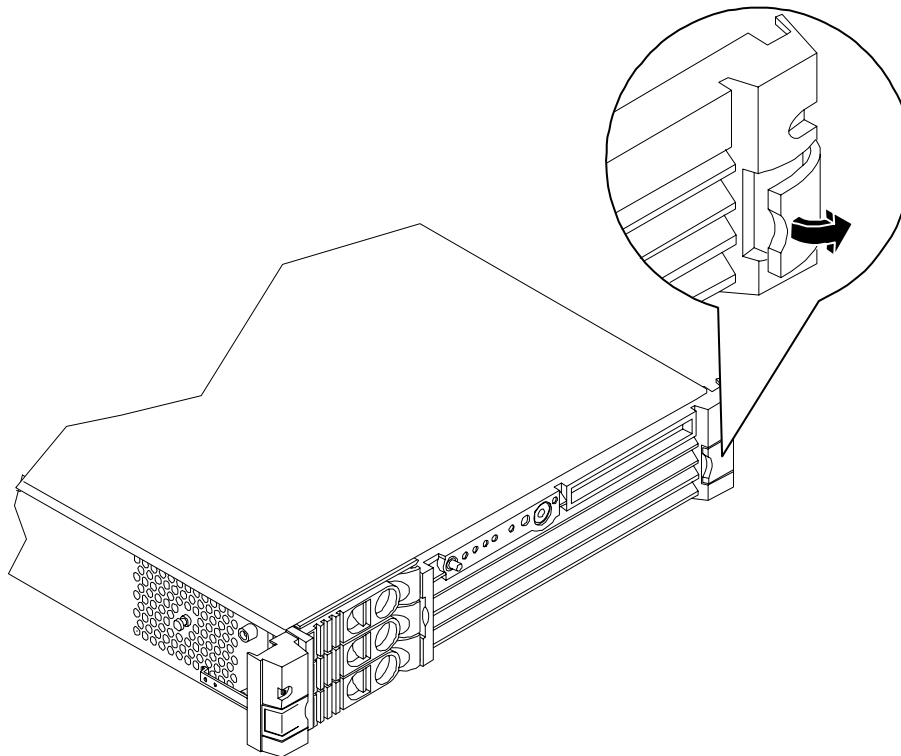
NOTE Ensure that there is enough area (approximately 1.5 meters [4.5 ft.]) to fully extend the server out the front to work on it.

To extend the server from the rack, perform the following steps:

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

- Step 1.** Turn off the system and disconnect the power and external cables from the back of the system.
- Step 2.** Release the rack latches by rotating them outward.

Figure 1-7 Release the Rack Latches



- Step 3.** Slide the system 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, perform the following 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

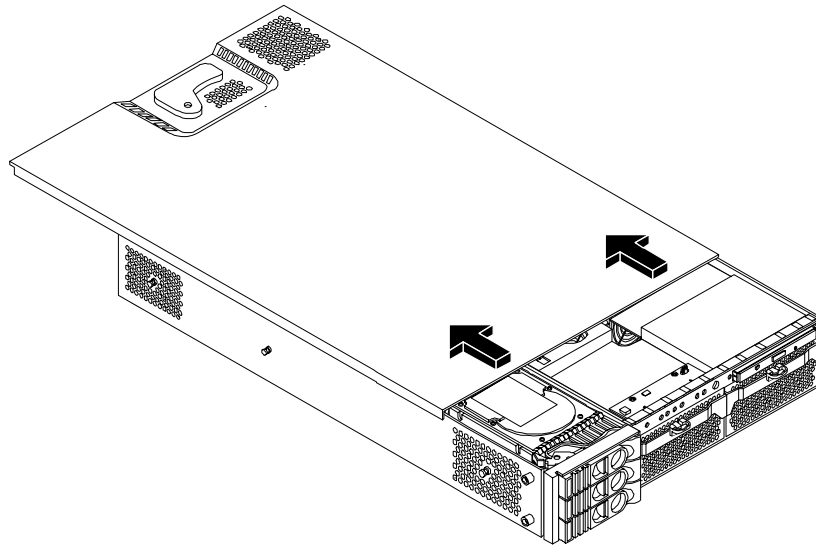
Removing the Top Cover

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

- Step 1.** Turn off the system and disconnect the power and external cables from the back of the system.

- Step 2.** Ensure the top cover lock keyswitch is in the unlocked position. Rotate the blue release lever toward the back of the system and slide the cover toward the back of the system (Figure 1-8).

Figure 1-8 Removing and Replacing the Top Cover



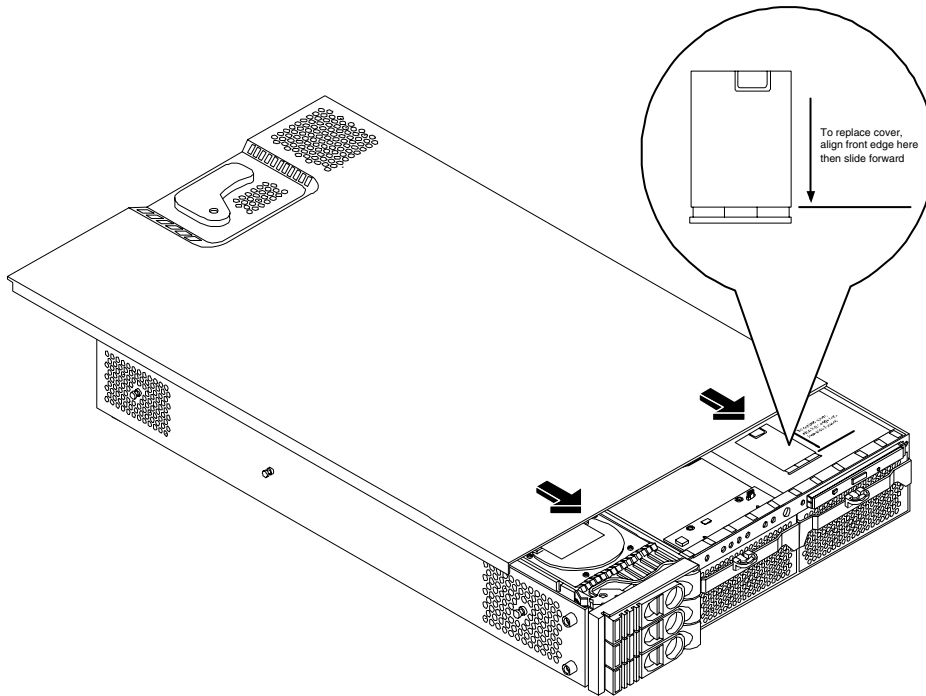
- Step 3.** Lift the top cover off the system chassis.

Replacing the Top Cover

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

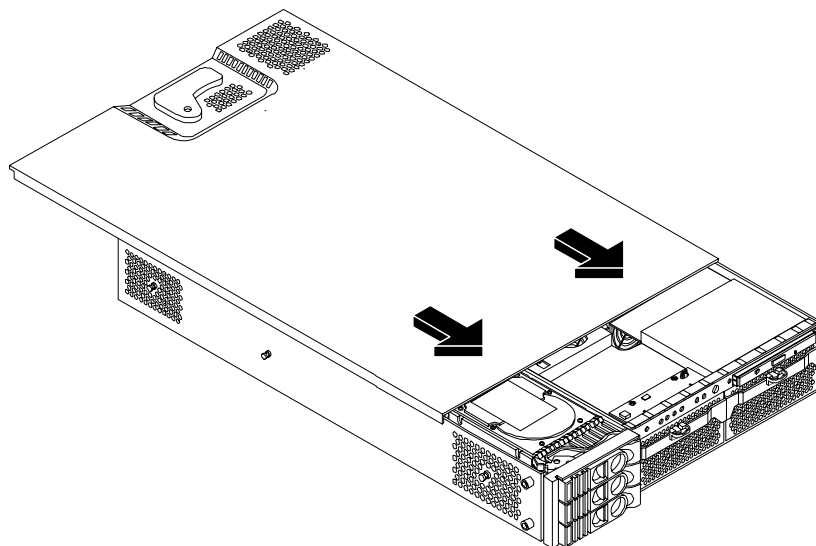
Step 1. Align the front edge of the top cover with the alignment mark on the optical drive bay (Figure 1-9).

Figure 1-9 Aligning the Top Cover



Step 2. Grasp the blue release lever and slide the top cover toward the front of the system until the lever snaps into place (Figure 1-10).

Figure 1-10 Closing the Top Cover



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

Removing and Replacing System Fans

There are four system fans to keep the system cool when it is running. The system fans are hot-swappable, enabling you to replace a fan while the system is running.

CAUTION When the system is running, the top cover must be replaced within 5 minutes to prevent components from overheating.

Removing a System Fan

Step 1. Remove the top cover. See “Removing the Top Cover” on page 20.

Step 2. Remove the fan.

- a. To remove fan 1A, 1B, 2 or 3 from a rack-mounted system, or fan 3 from a tower system, grasp the appropriate fan and lift it out of the fan socket (Figure 1-11; Figure 1-12; Figure 1-13).

Figure 1-11 Fan 1A or Fan 1B Removal

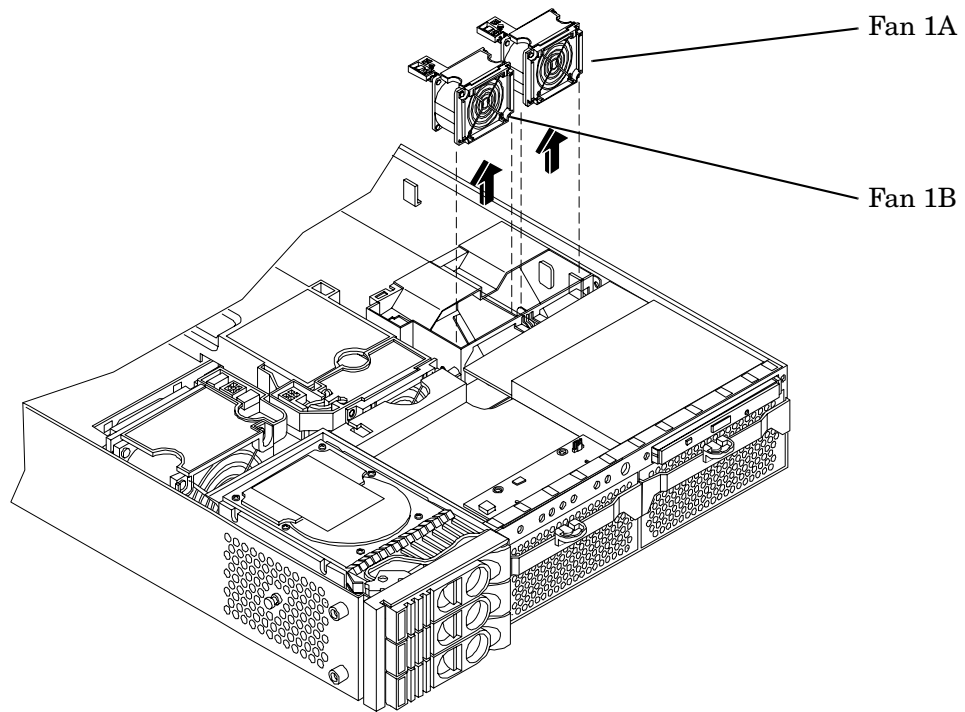


Figure 1-12 Fan 2 Removal

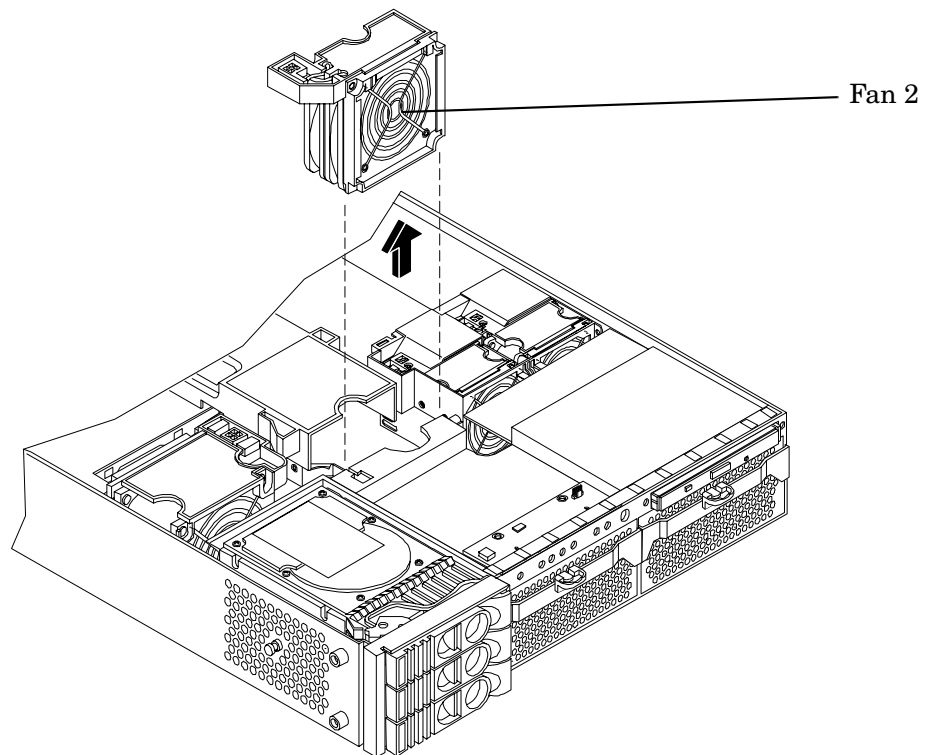
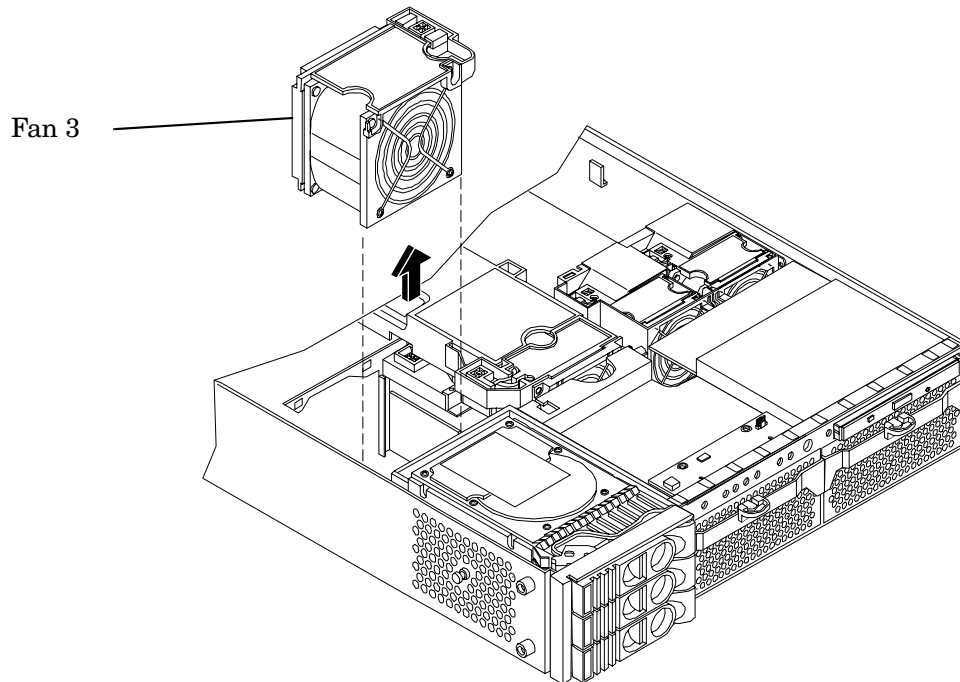


Figure 1-13 Fan 3 Removal



Replacing a System Fan

- Step 1.** Grasp the replacement fan module and insert it into its fan socket.
- Step 2.** For fans 1A, 1B, or 2, connect the fan power connector.

CAUTION Replace the top cover within 5 minutes to prevent damage to the system components.

- Step 3.** Replace the top cover. (See “Replacing the Top Cover” on page 21.)
- Step 4.** Use the `PS` command of the MP to verify fan operation. (Refer to the Utilities chapter of the *HP 9000 rp3410 and HP 9000 rp3440 Operations Guide* for additional information.)

Removing and Replacing Airflow Guides

The system has the following airflow guides:

- The processor airflow guide ensures that the proper volume of air for cooling the processor module power pods, processor module(s), and voltage regulator module(s) flows over these components

You must remove the processor airflow guide:

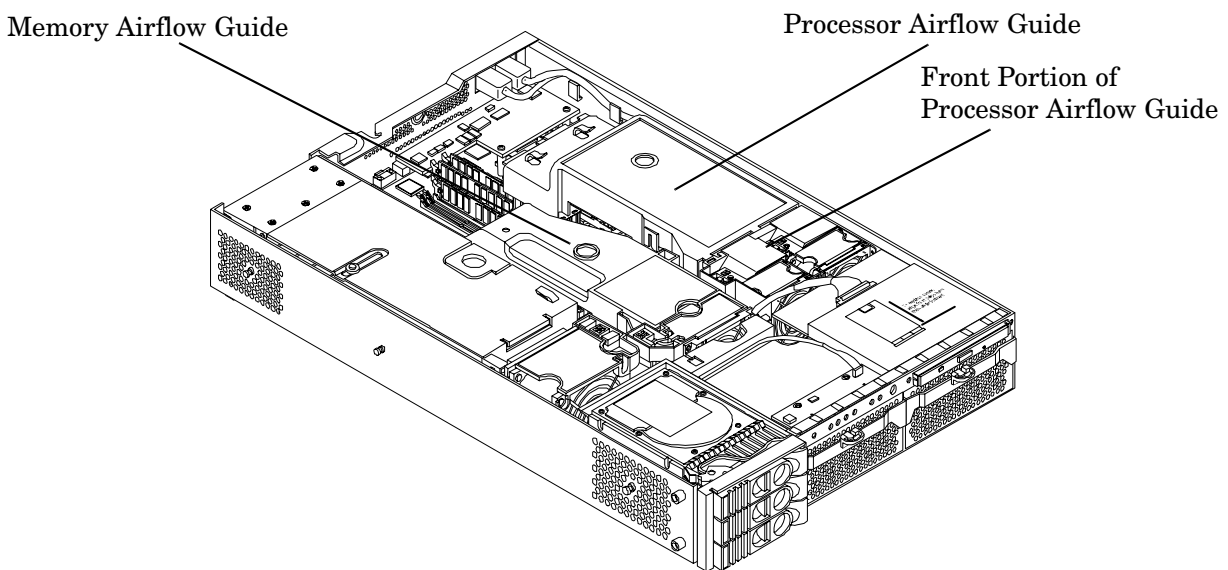
- If it is damaged to the point that airflow across the dual processor module(s) is restricted
- To access components under the airflow guide
- The memory airflow guide ensures that the proper volume of air flows over the memory DIMMs to cool them

You must remove the memory airflow guide:

- If it is damaged to the point that airflow across the memory DIMMs is restricted
- To access memory DIMMs and sockets

NOTE Air flows through the system from front to back.

Figure 1-14 Airflow Guides Locations



Removing and Replacing the Memory Airflow Guide

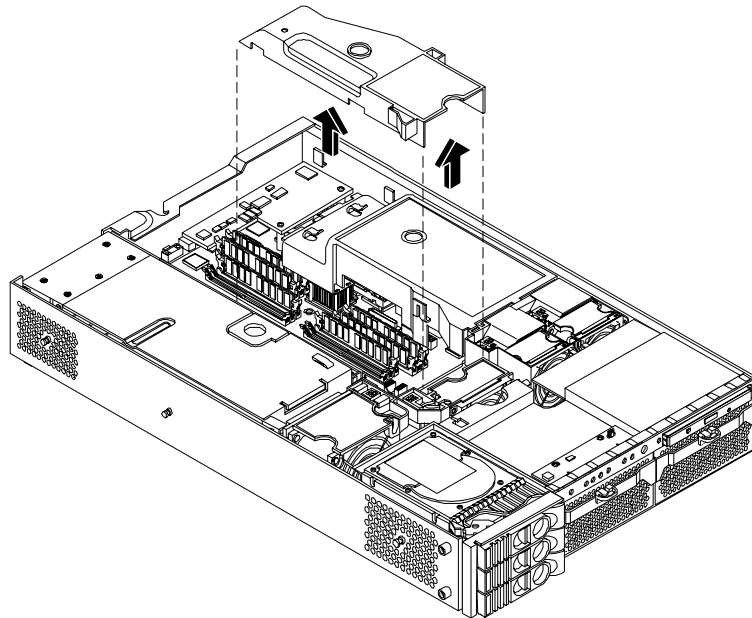
Removing the Memory Airflow Guide

Step 1. Turn off the system and disconnect external cables.

Step 2. Remove the top cover. (See “Removing the Top Cover” on page 20.)

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

Figure 1-15 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 top cover. (See “Replacing the Top Cover” on page 21.)

Step 4. Reconnect power and external cables.

Removing and Replacing the Processor Airflow Guide

Removing the Processor Airflow Guide

Step 1. Turn off the system and disconnect power and external cables.

Step 2. Remove the top cover. (See “Removing the Top Cover” on page 20.)

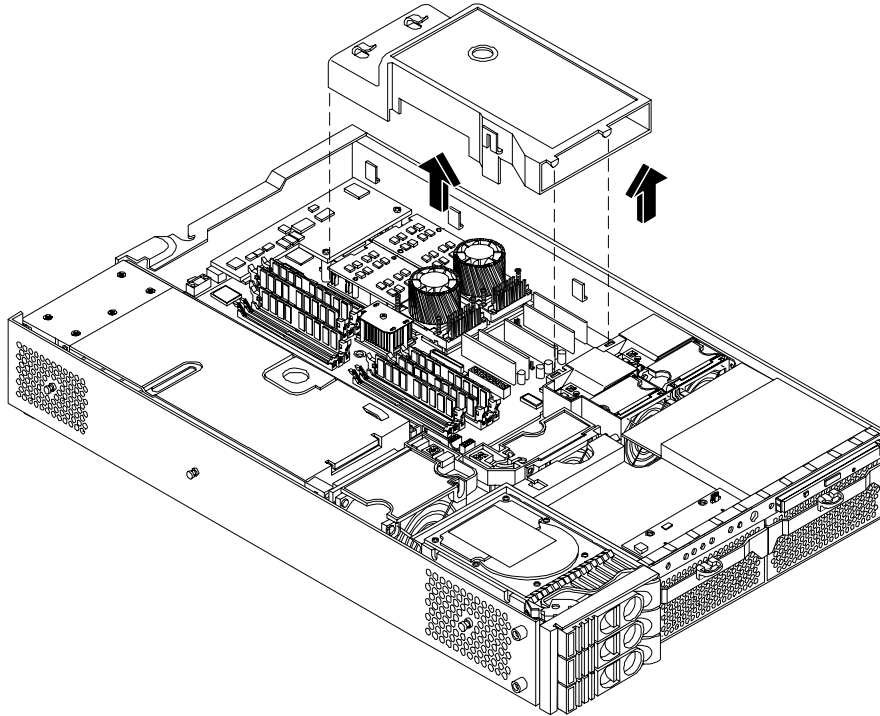
Step 3. Remove the IDE cable and power module cables from the processor airflow guide cable clips.

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 airflow guide and lift the guide out of the system (Figure 1-16).

Figure 1-16 Removing the Processor Airflow Guide

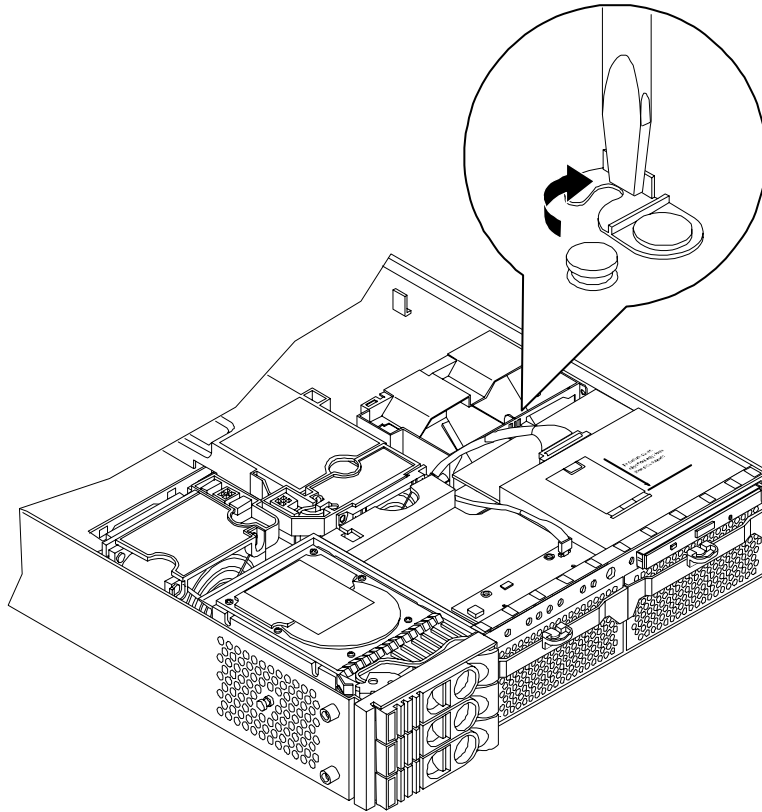


Step 5. Remove the front portion of the airflow guide:

- a.** Remove system fans 1A and 1B. (See “Removing a System Fan” on page 23.)
- b.** Remove the memory airflow guide. (See “Removing the Memory Airflow Guide” on page 26.)

- c. Rotate the clip clockwise to release the latch (Figure 1-17).

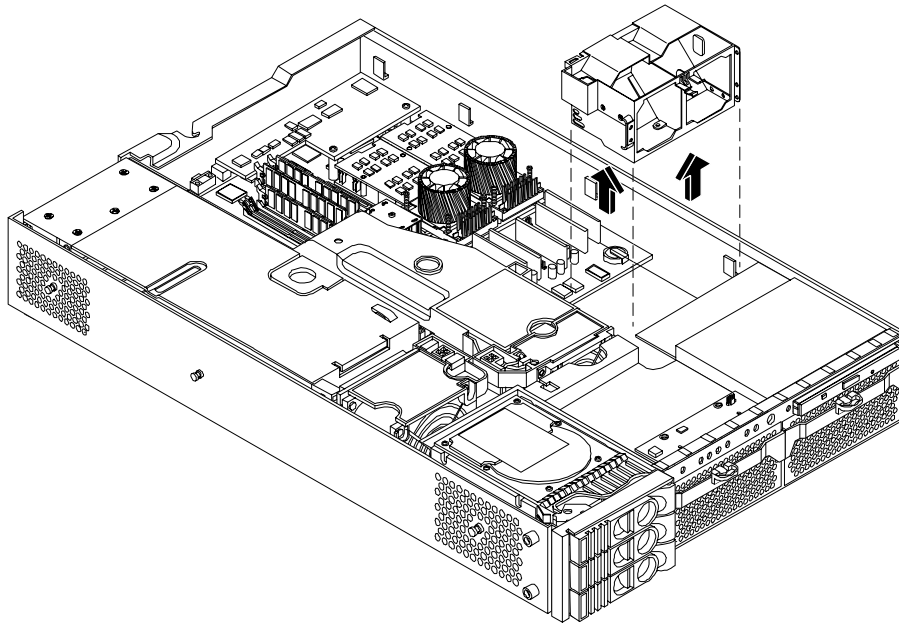
Figure 1-17 Open the Release Clip



- d. Disconnect the power cable connected to the guide from the system board by squeezing the clip.

- e. Lift the front portion of the processor airflow guide out of the system (Figure 1-18.)

Figure 1-18 Remove the Front Portion of the Processor Airflow Guide



Replacing the Processor Airflow Guide

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

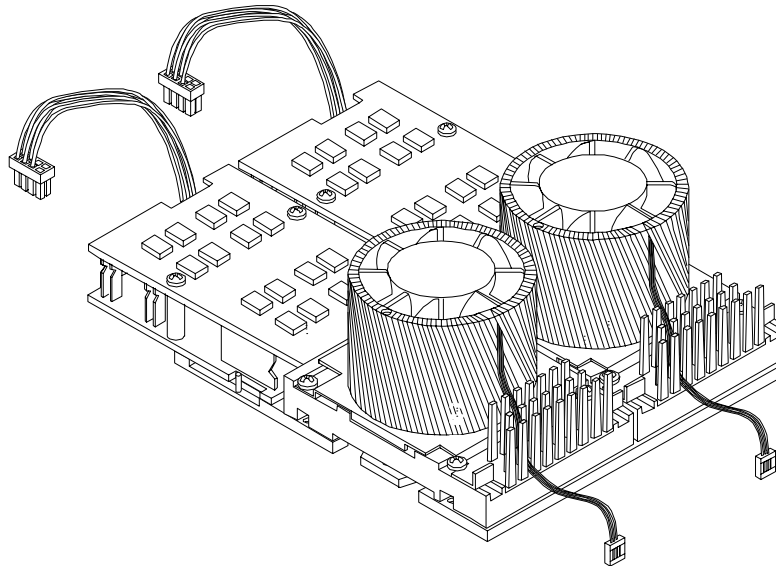
- a. Align the release latch of the front half of the airflow guide over the release latch post and snap it in place.
- b. Connect the power connector on the front portion of the guide to the connector on the system board.

Step 2. Replace system fans 1A and 1B. (See “Replacing a System Fan” on page 25.)

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 1-19).

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 1-19).

Figure 1-19 Routing Power Cables through Heatsink Posts

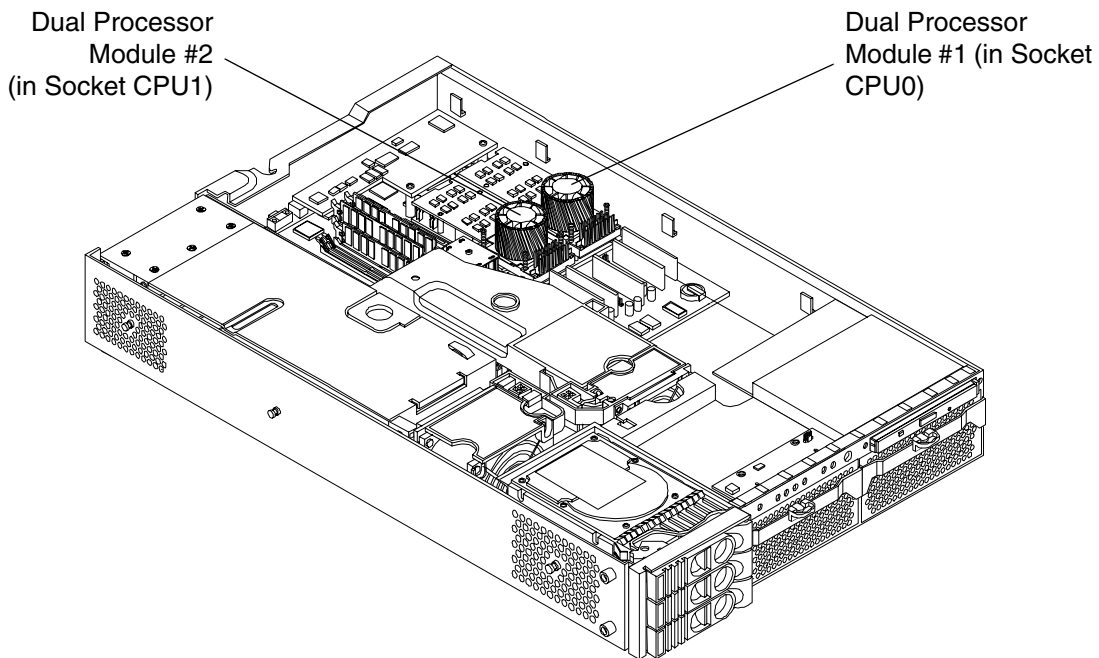


- Step 4.** Replace the main portion of the airflow guide:
- Hold the opening on top of the processor airflow guide.
 - At the same time, grasp the back end of the airflow guide and insert the airflow guide into the system.
 - Connect the power module cable.
 - Place the power and IDE cables in the cable clips.
 - Insert the two airflow guide retaining tabs into the two slots on the front half of the airflow guide.
- Step 5.** Replace the memory airflow guide. (See “Removing and Replacing the Memory Airflow Guide” on page 26.)
- Step 6.** Replace the top cover. (See “Replacing the Top Cover” on page 21.)
- Step 7.** Reconnect power and external cables.

Dual Processor Module

One or two dual processor modules (up to four processors) can be installed in the server. The modules are located on the system board which is accessible by removing the top cover (Figure 1-20).

Figure 1-20 Dual Processor Modules on System Board



Removing a Dual Processor Module

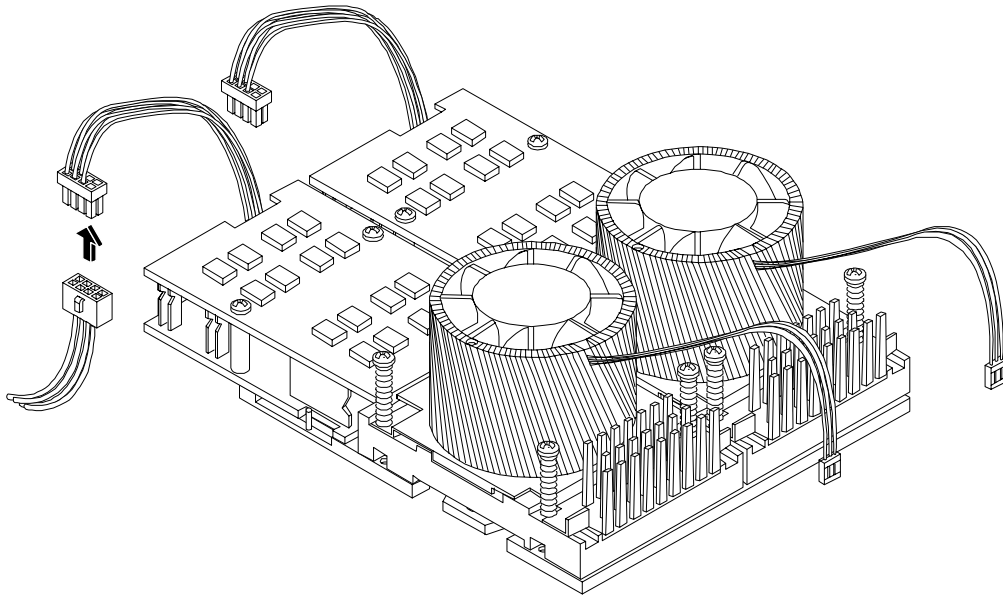
To remove a dual processor module, perform the following steps:

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

- Step 1.** Turn off the system and disconnect all cables.
- Step 2.** Remove the top cover. (See “Removing the Top Cover” on page 20.)
- Step 3.** Remove the memory airflow guide. (See “Removing the Memory Airflow Guide” on page 26.)
- Step 4.** Remove the processor airflow guide. (See “Removing the Processor Airflow Guide” on page 27.)
- Step 5.** Disconnect processor cables.

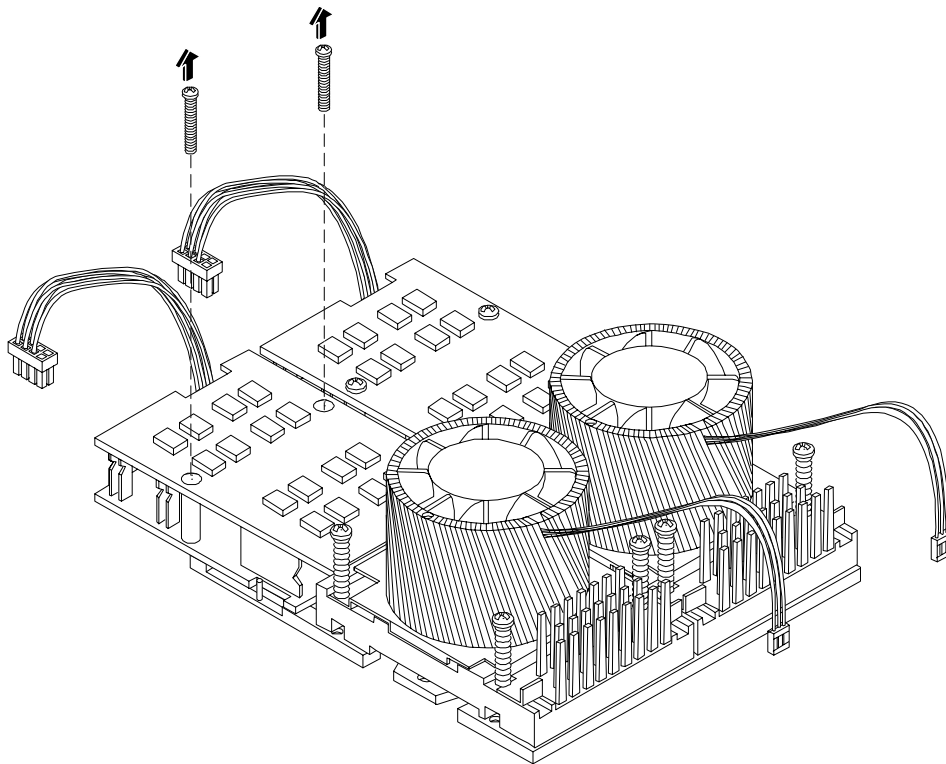
Step 6. Disconnect the power pod cable from the power connector on the system board.

Figure 1-21 Disconnect Power Pod Cable



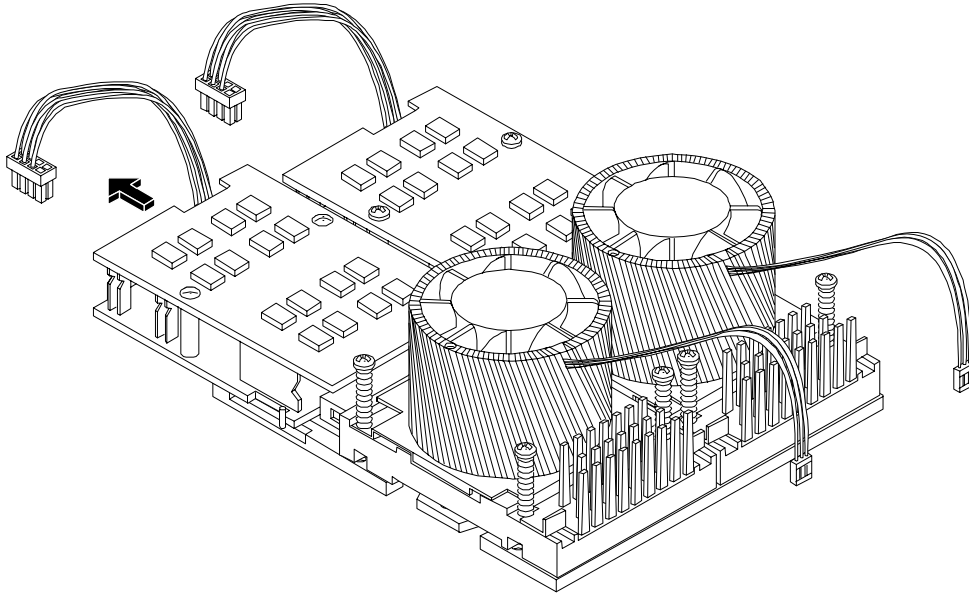
Step 7. Remove the two power pod mounting screws.

Figure 1-22 Remove Power Pod Mounting Screws



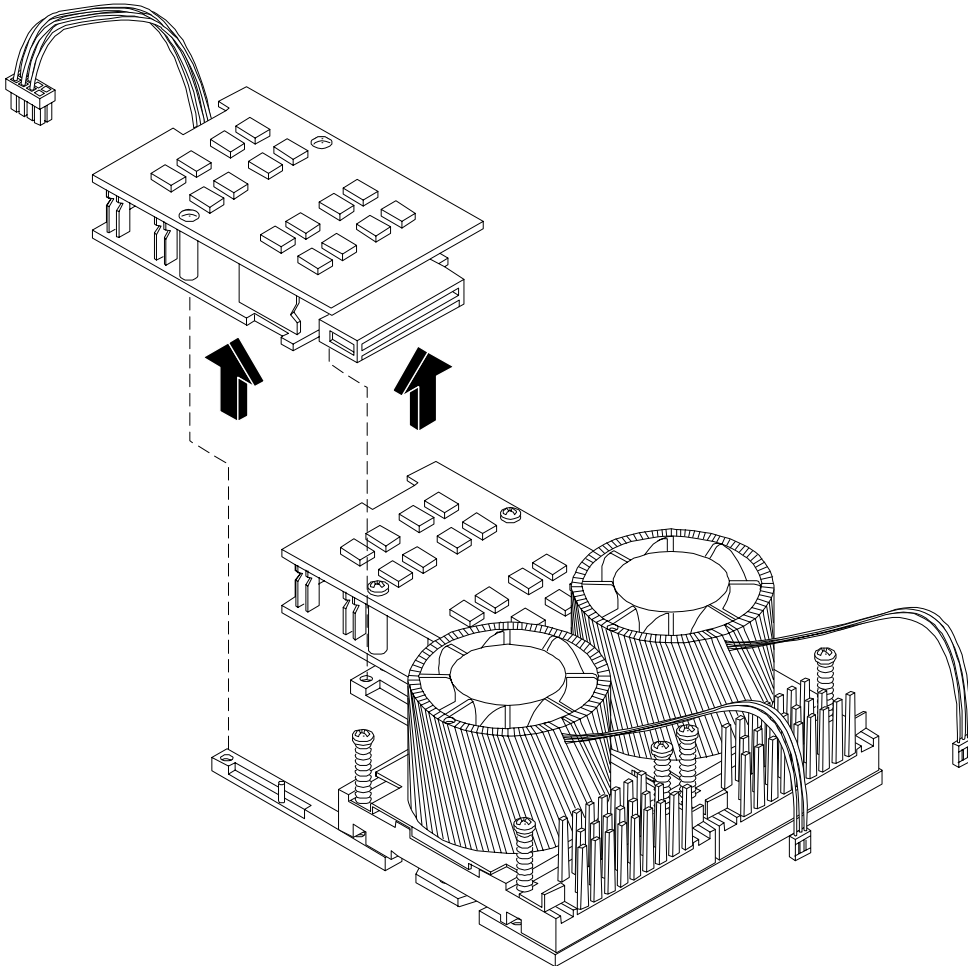
- Step 8.** Slide the power pod toward the rear of the system board so that the power pod connector disconnects from its connector on the dual processor module.

Figure 1-23 Disconnect Power Pod from Dual Processor Module



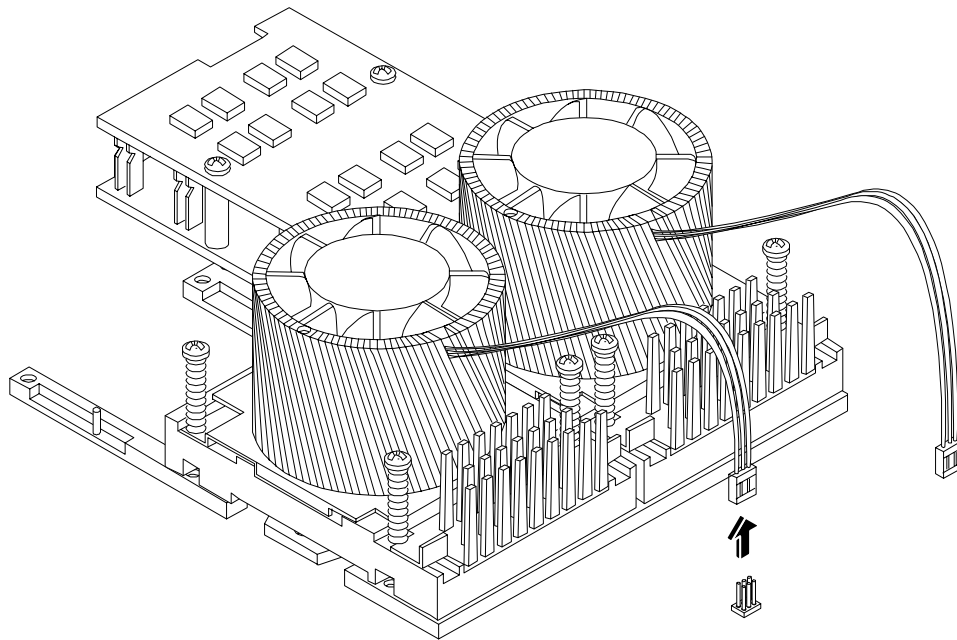
Step 9. Lift the power pod up and out of the chassis. Place the power pod into an anti-static container.

Figure 1-24 Remove Power Pod



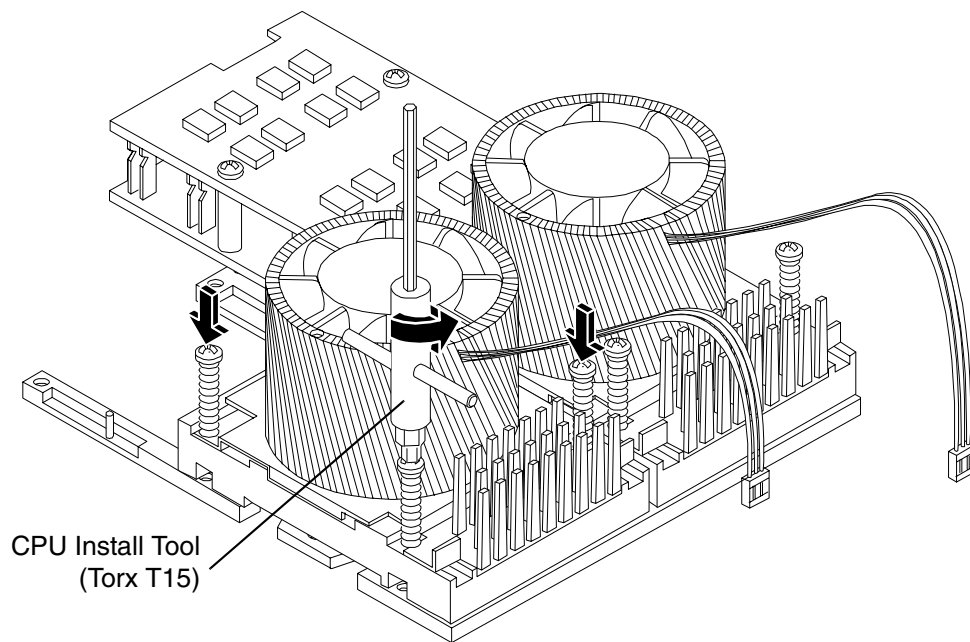
Step 10. Disconnect the turbo fan power cable.

Figure 1-25 Disconnect the Turbo Fan Cable



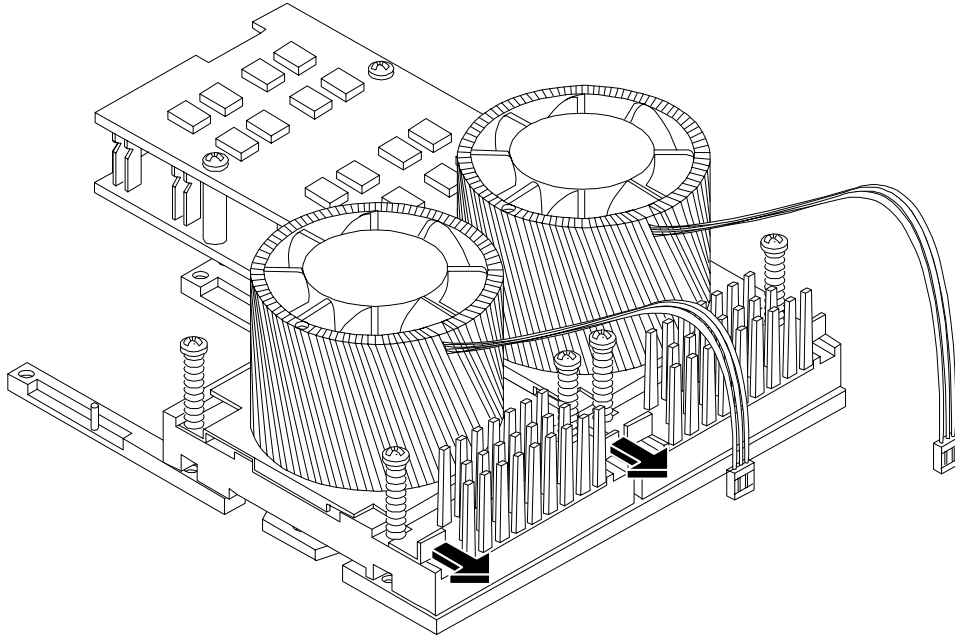
Step 11. Release the four heatsink captive screws on the module heat sink.

Figure 1-26 Release Heatsink Captive Screws



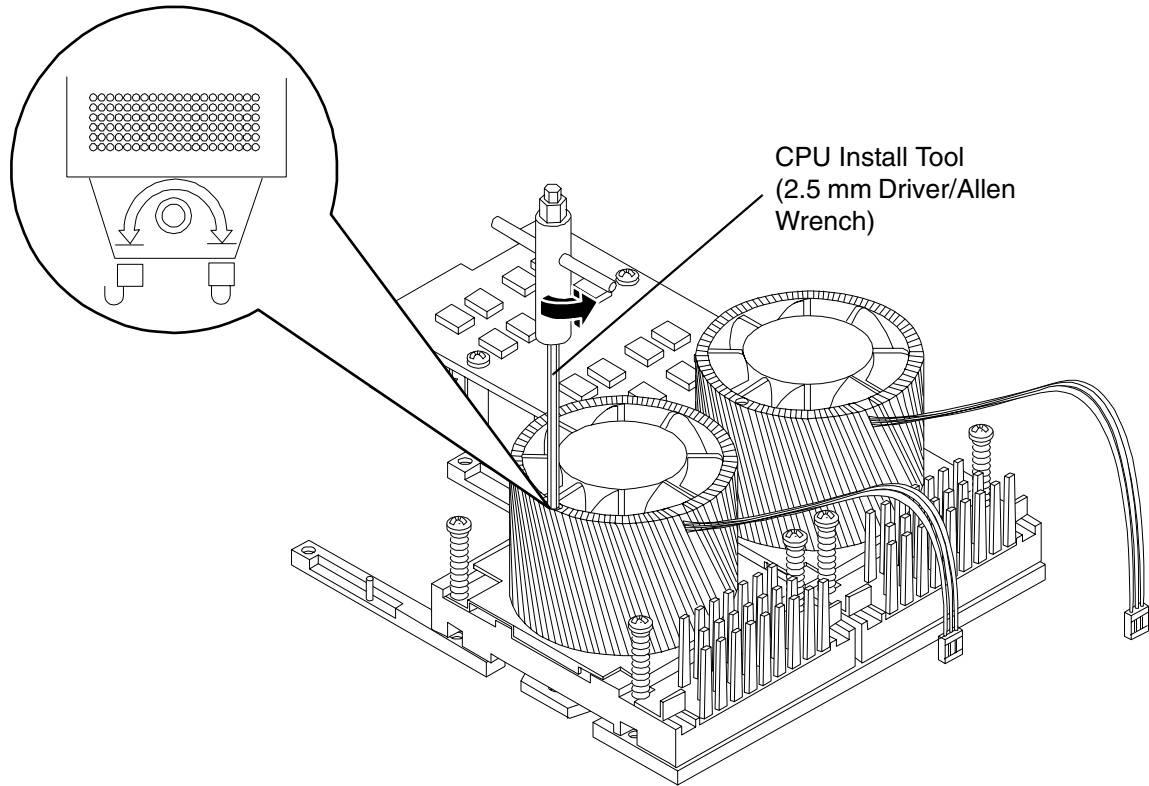
Step 12. Slide the sequencing retainer plate toward the front of the system to open the hole in the edge of the heatsink for insertion of the special processor tool into the processor module locking mechanism.

Figure 1-27 Slide Sequencing Retainer Plate



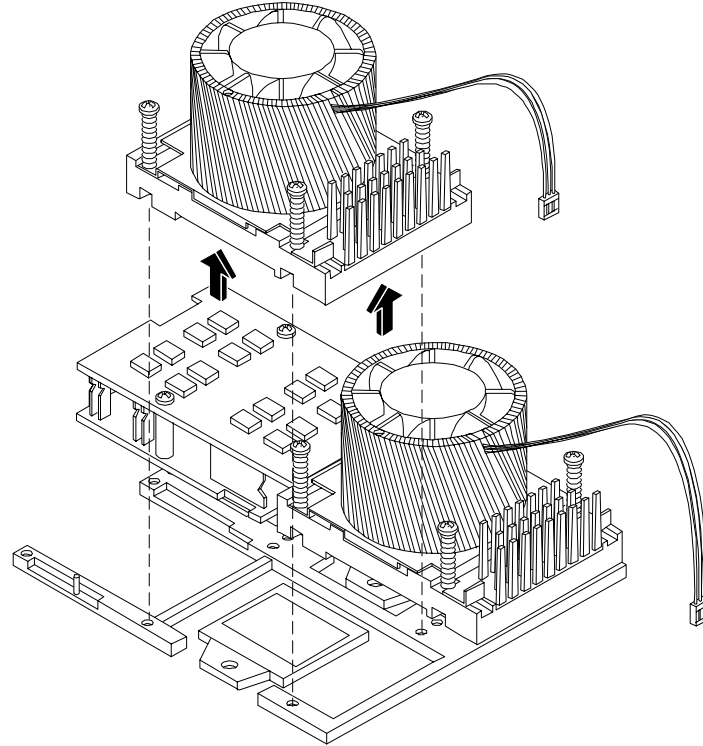
Step 13. Unlock the dual processor module locking mechanism using the CPU install tool. Insert the tool into the hole that runs down through the edge of the turbo fan heatsink and rotate the special processor tool 180 degrees counterclockwise.

Figure 1-28 Unlock Dual Processor Module Locking Mechanism



Step 14. Lift the dual processor module and the turbo fan assembly up and out of the chassis. If protective pin covers are available, install the cover on processor connectors to shield connector pins. Place the dual processor module into an anti-static container.

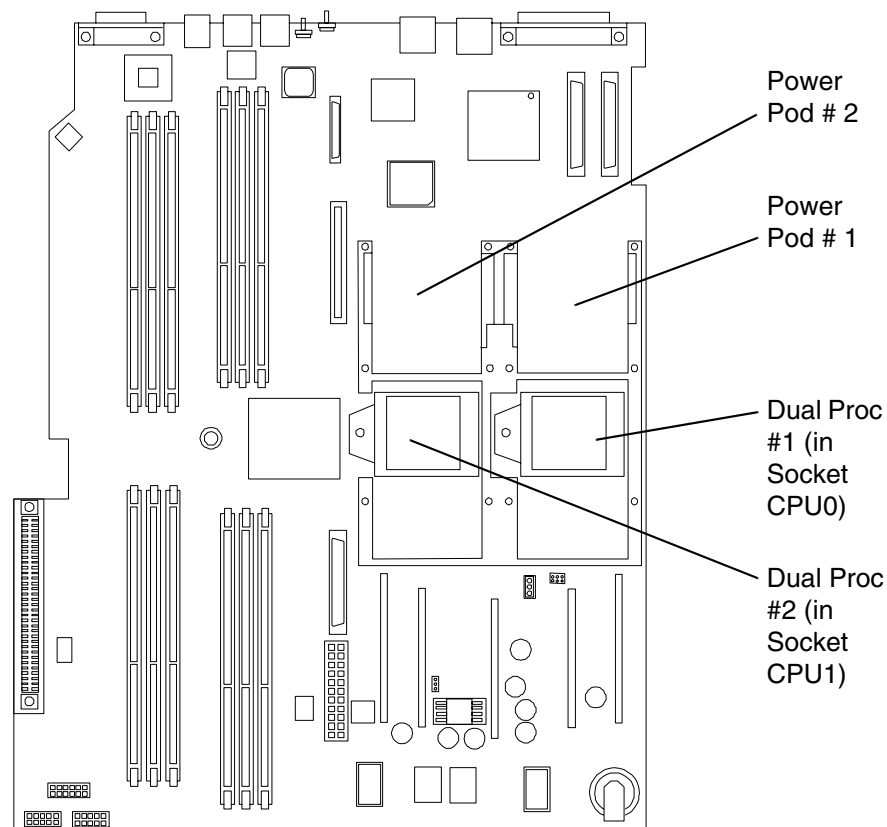
Figure 1-29 Remove Dual Processor Module



Installing a Dual Processor Module

Either one or two dual processor modules can be installed on the system board. Module #1 is located to the right of the system board and module #2 (when installed) is located at the center of the system board next to the bridge assembly. In a 1-way or 2-way configuration, the one dual processor module must be installed in CPU0 socket.

Figure 1-30 Dual Processor Module Installation



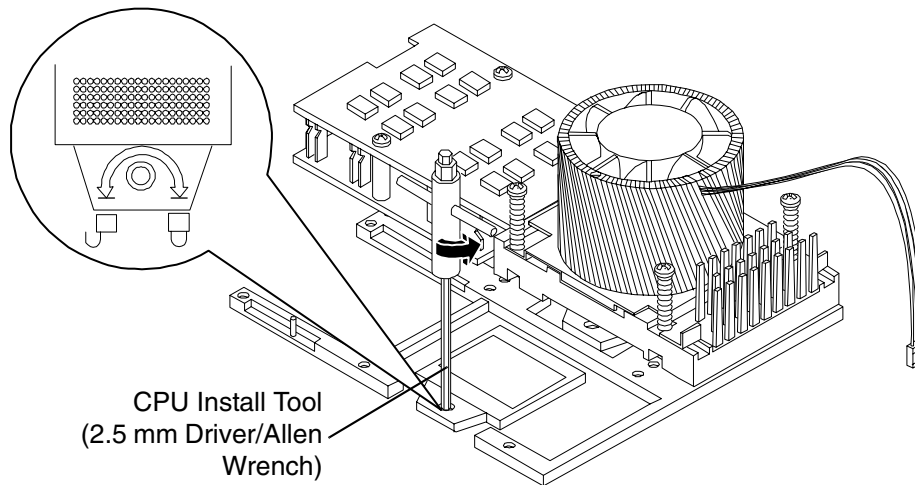
Each dual processor module has an associated power pod that is required.

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

- Step 1.** Turn off the system and disconnect all cables.
- Step 2.** Remove the top cover. (See “Removing the Top Cover” on page 20.)
- Step 3.** Remove the processor airflow guide. (See “Removing the Processor Airflow Guide” on page 27.)
- Step 4.** If you are replacing a dual processor module, remove the old module as described in “Removing a Dual Processor Module” on page 32.

- Step 5.** Unlock the dual processor module locking mechanism using the CPU install tool. 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 1-31).

Figure 1-31 Unlocking the Dual Processor Module Locking Mechanism

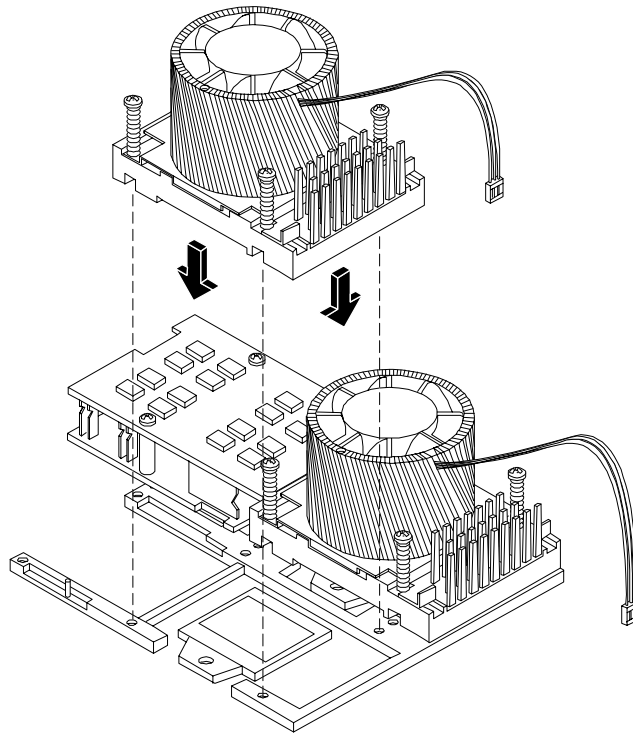


- Step 6.** Remove any protective packaging from the processor modules.

NOTE Protective covers may be installed to protect connector pins. These covers should be installed on processor modules removed for this upgrade.

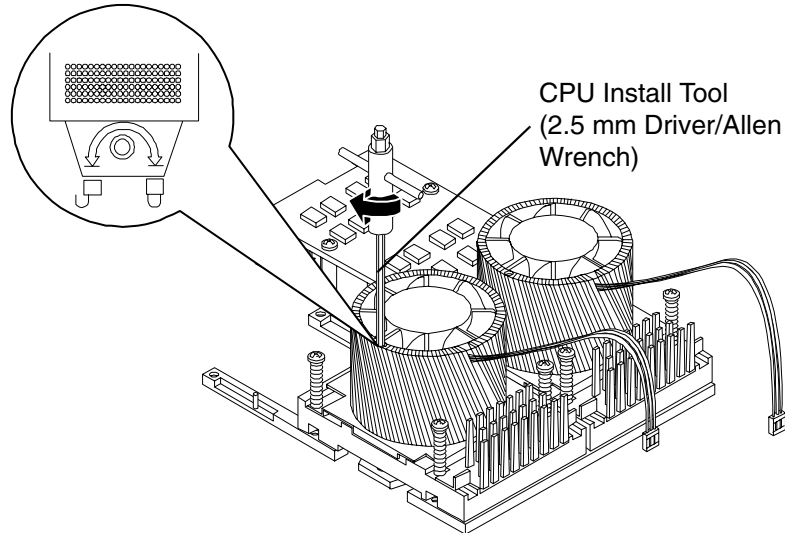
- Step 7.** Use the four locator posts on the heatsink and the turbo fan power cable to properly align the fan and module on the system board. The four locator posts will fit in locator holes on the system board dual processor module mount. The turbo fan power cable must be positioned so that it is located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

Figure 1-32 Aligning the Dual Processor Module



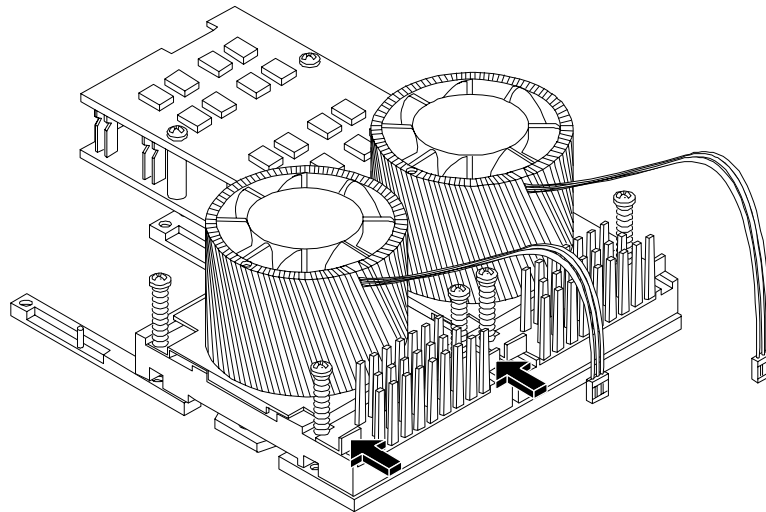
- Step 8.** Use the special processor tool to lock the dual processor module in place on the system board. To do this, insert the special processor tool into the hole that runs down the side of the heatsink and rotate it clockwise 180 degrees.

Figure 1-33 Locking the Dual Processor Module in Place



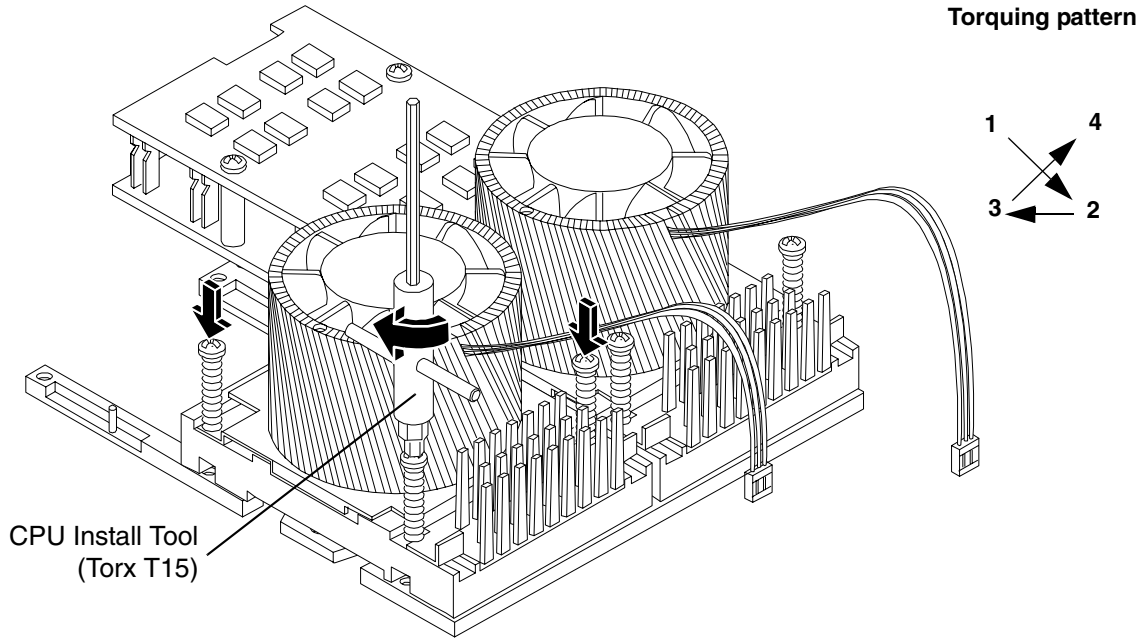
- Step 9.** Slide the sequencing retainer plate toward the back of the system.

Figure 1-34 Slide the Sequencing Retainer Plate



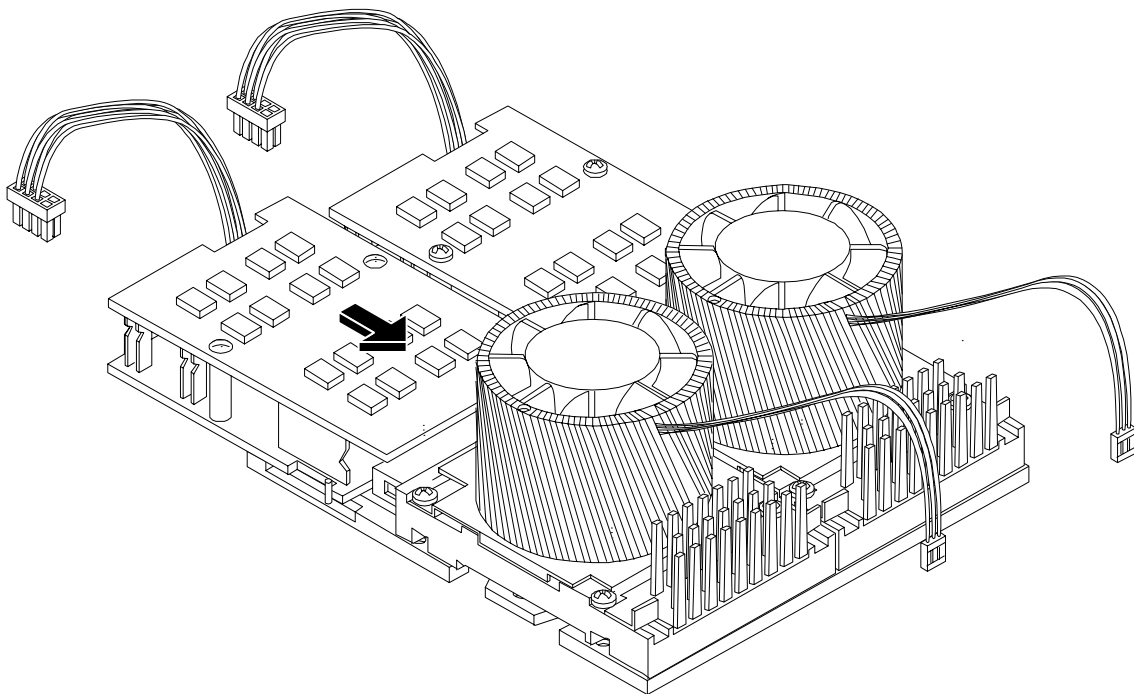
Step 10. Screw in the four heatsink captive screws in a criss-cross torquing pattern by alternately tightening the screws so as not to completely tighten one screw before the others (Figure 1-35).

Figure 1-35 Secure the Captive Screws



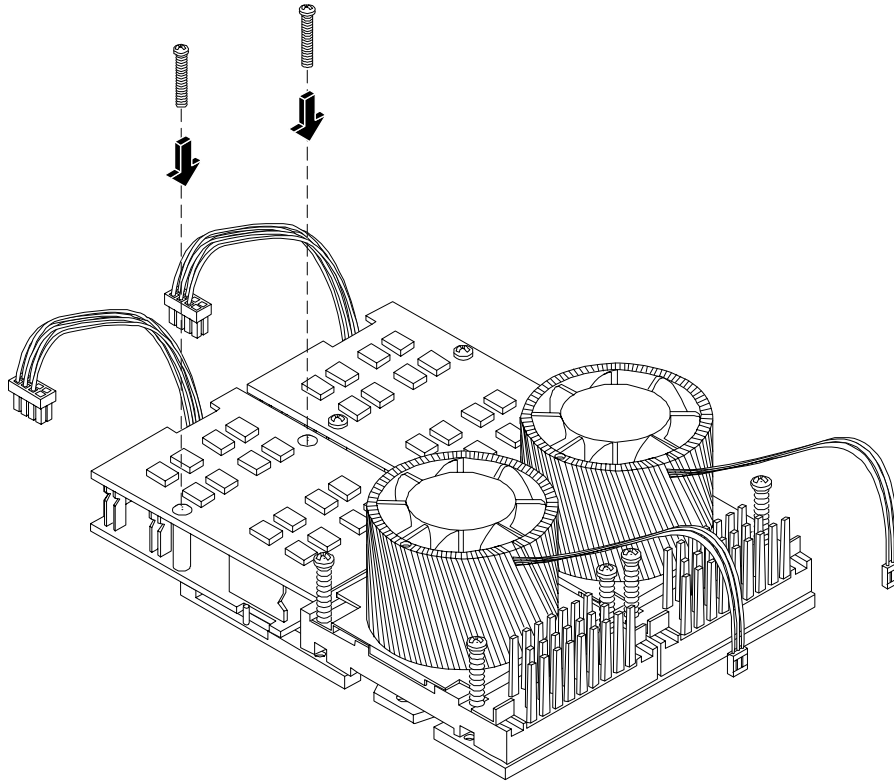
Step 11. Slide the power module on the system board metal mounting bracket so that the connector on the power module makes contact with its connector on the dual processor module.

Figure 1-36 Aligning the Processor Module Power Pod



Step 12. Align the two mounting screw holes on the power module with their screw holes on the system board's metal mounting bracket. Screw in the power module mounting screws.

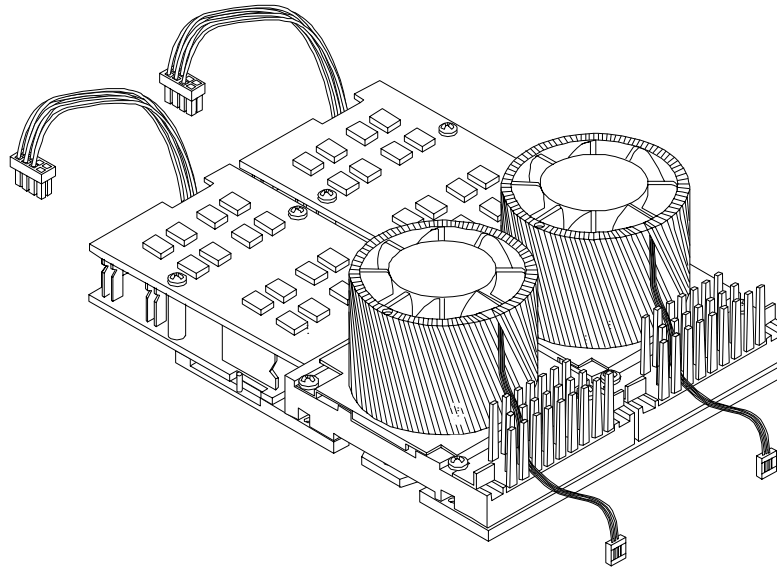
Figure 1-37 Install the Processor Module Power Pod Mounting Screws



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 13. 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.

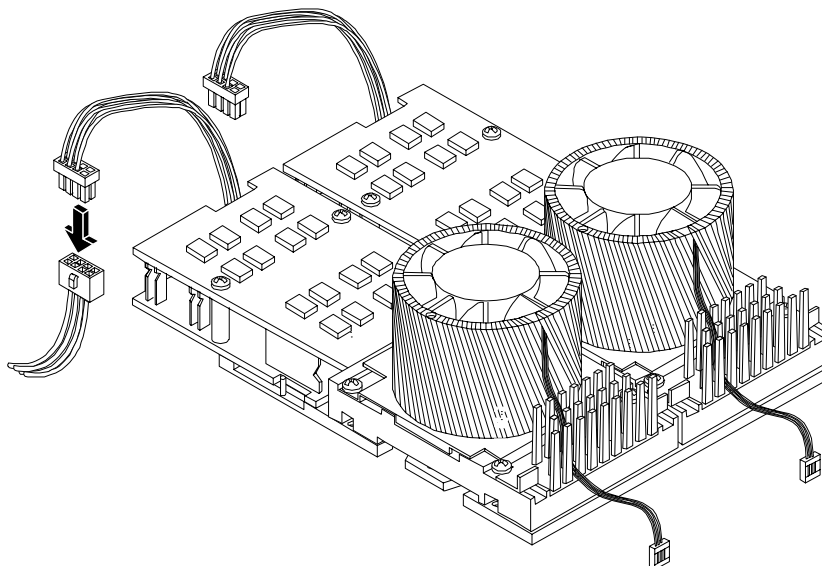
Figure 1-38 Routing Turbofan Power Cables through Heatsink Posts



Step 14. Connect the turbo fan power cables.

Step 15. Connect the power pod cable to the power connector on the system board.

Figure 1-39 Connecting the Power Pod Cable



Step 16. Replace the processor airflow guide. (See “Removing the Processor Airflow Guide” on page 27.)

Step 17. Replace the memory airflow guide. (See “Replacing the Memory Airflow Guide” on page 27.)

Step 18. Replace the top cover. (See “Replacing the Top Cover” on page 21.)

Step 19. Verify processor replacement and operation by using the system utilities. (Refer to the Utilities chapter of the *HP 9000 rp3410 and HP 9000 rp3440 Operations Guide* for additional information.)

- Use the MP commands to verify operation
- Use the BCH commands to verify operation
- Use MAKODIAG provided by the ODE to exercise the newly installed processor(s)

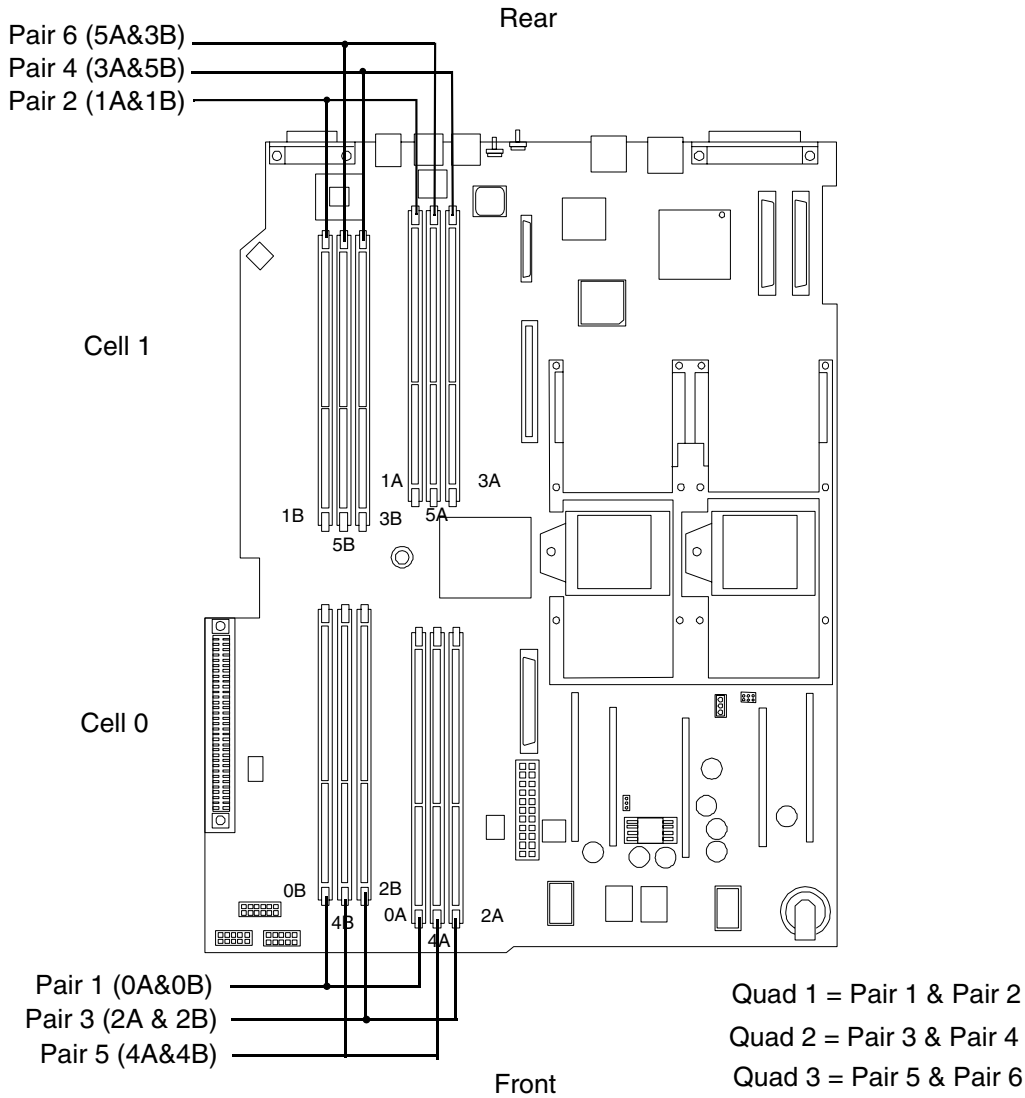
Memory DIMMs

Your system has 12 memory sockets for installing DDR SDRAM memory modules. Supported DIMM sizes are 256 MB, 512 MB, 1 GB, 2 GB and 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. The system supports combinations from 512 MB up to six GB in an HP 9000 rp3410 server and from one GB up to 32 GB in an HP 9000 rp3440 server. No restrictions are applied to the use of 2-GB DIMMs. You can use 2-GB DIMMs together with other sizes (all DIMMs of a quad must be equal) and you can create a 24-GB memory using 12 2-GB DIMMs.

NOTE If you are installing 4 GB DIMMs, you must upgrade the system firmware before DIMM installation.

System memory DIMMs are located on the server system board (Figure 1-40).

Figure 1-40 DIMM Slot Identification



Upgrade System Firmware

If you are installing 4 GB DIMMs in an HP 9000 rp3440 server, you must upgrade system firmware before installing the DIMMs. Upgrade the system firmware using an HP-UX firmware patch. Download and install the patch from the IT Resource Center at <http://www.itrc.hp.com/>. Select the *patch / firmware database* link to find the appropriate patch.

Removing a DIMM

To remove system memory, perform the following steps:

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

- Step 1.** Turn off the system and disconnect power.
- Step 2.** Remove the top cover. (See “Removing the Top Cover” on page 20.)
- Step 3.** Remove the memory airflow guide. (See “Removing the Memory Airflow Guide” on page 26.)
- Step 4.** Identify the DIMM to be removed and, at the same time, push the appropriate extraction levers found on either side of the DIMM connector outward to the open position. The DIMM ejects from the connector.
- Step 5.** Remove the DIMM from the socket. If the removed memory is functional, store it in a static-free container for future use.

Installing DIMMs

Memory modules must be loaded in the correct order:

- In the HP 9000 rp3410 server, the first four DIMMs must be installed as pairs of equal size. The DIMM in socket 0A must match the DIMM in socket 0B. If a second pair is added (sockets 1A and 1B), the DIMMs must match the DIMMs in sockets 0A and 0B. Additional DIMMs (DIMM sockets 5 through 12) must be installed as quads (groups of four identical DIMMs). This requirement is summarized as:
 - 0A and 0B must be an identical pair (model A7136A only)
 - 1A and 1B must be identical to the pair in sockets 0A and 0B (model A7136A only)
 - 0A, 0B and 1A, 1B must be an identical quad (two pairs/four DIMMs) (model A7136B)
 - 2A, 2B and 3A, 3B must be an identical quad (four DIMMs)
 - 4A, 4B and 5A, 5B must be an identical quad (four DIMMs)
- In the HP 9000 rp3440 server, DIMMs must be installed in matched quads. Two matched memory card pairs of equal size (that is, four identical DIMMs) must be installed, one pair per memory cell, as listed below:
 - 0A, 0B and 1A, 1B must be an identical quad (four DIMMs)
 - 2A, 2B and 3A, 3B must be an identical quad (four DIMMs)
 - 4A, 4B and 5A, 5B must be an identical quad (four DIMMs)

NOTE DIMMs match if they have the same HP part number.

Module sizes can be mixed in most configurations, as long as DIMMs in each quad match. For example:

- On the HP 9000 rp3410 server, it is acceptable to load four 256 MB DIMMs in sockets 0A, 0B, 1A, and 1B and four 512 MB or 1 GB DIMMs in sockets 2A, 2B, 3A, and 3B
- On the HP 9000 rp3440 server, it is acceptable to load a quad of 256 MB DIMMs in sockets 0A, 0B, 1A and 1B, and four 512 GB, 1 GB, or 2 GB DIMMs in sockets 2A, 2B, 3A and 3B
- On the HP 9000 rp3440 server, if 4 GB DIMMs are used, eight DIMMs must be installed in the first two quads (sockets 0A, 0B, 1A, 1B, 2A, 2B, 3A and 3B).

To install DIMMs, perform the following steps:

NOTE If you are installing 4 GB DIMMs, eight DIMMs must be installed in the first two quads and system firmware must be upgraded before DIMM installation.

Step 1. Turn off the system and disconnect all cables.

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

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 2. Remove the top cover. (See “Removing the Top Cover” on page 20.)

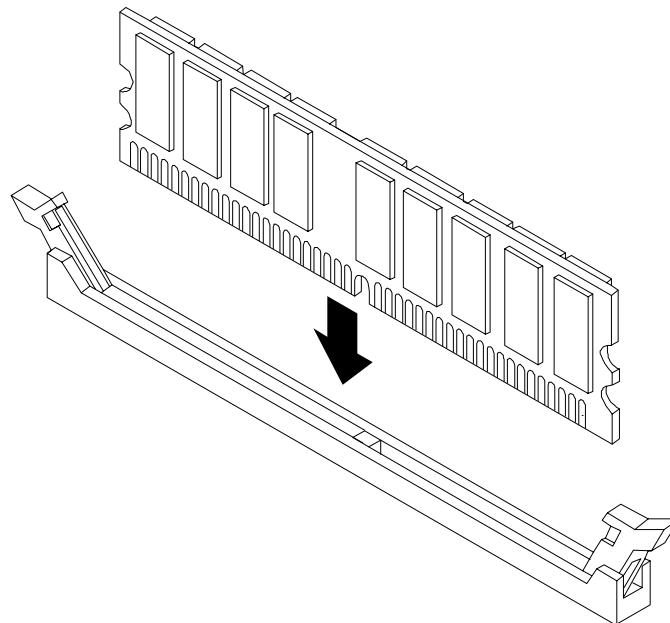
Step 3. Remove the memory airflow guide. (See “Removing the Memory Airflow Guide” on page 26.)

Step 4. Locate the socket/slot into which the DIMM will be installed. Holding the memory module by its left and right edges, insert the module into the socket.

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.

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

Figure 1-41 Inserting DIMM into Connector



Memory DIMMs

Step 6. Replace the memory airflow guide. (See “Replacing the Memory Airflow Guide” on page 27.)

Step 7. Replace the top cover. (See “Replacing the Top Cover” on page 21.)

Step 8. Verify the memory replacement and operation by using the system utilities. (Refer to the Utilities chapter of the *HP 9000 rp3410 and HP 9000 rp3440 Operations Guide* for additional information.)

- Use the MP commands to verify operation
- Use the BCH commands to verify operation
- Use diagnostics provided by the ODE to exercise the newly installed memory

2 Processor Upgrade Procedure—Increase L2 Cache Size

Introduction

This chapter provides procedures for upgrading HP 9000 rp3410 and HP 9000 rp3440 servers by replacing dual processor modules. The change involves replacing existing processors with new processors that operate at 800 MHz or 1 GHz and have increased L2 cache size. Included are instructions to protect your data, back up the existing operating system (OS) software (in case of an error condition during the update), download new firmware, and install new hardware. After performing these procedures, restart your server.

Required Tools

You need an ESD-safe workstation and special tools when replacing a dual processor module. You must use a static-dissipating work surface and a wrist strap. The following tools are required:

- Electrically Conductive Field Service Kit (P/N 9300-1155)
- 1/4 inch flat blade screwdriver
- ACX-15 Torx® screwdriver
- Special processor tool kit, HP P/N 5069-5441

Back Up Your System

Before replacing a dual processor module, back up all data and your server OS. In the event of interruptions (for example power failure or interference), it may be necessary to resume operation in the old configuration.

Back Up Your Data

Back up your data in accordance with local procedures.

Back Up the Operating System

Always keep a backup copy of the current operating system (OS) available for emergency use. The OS is provided on the CD that shipped with your server. You can obtain a copy from your HP Information Technology Resource Center (ITRC) or download the HP-UX™ OS from <http://www.software.hp.com>.

Software/Firmware Requirements

Ensure the server meets the minimum software and firmware revisions listed below. Update as necessary.

- HP-UX 11i (December 2004 update)
- System Firmware 45.11 or greater
- Management Processor (MP) firmware E.03.15 or greater

Download Firmware and Shut Down the Server

To download firmware and shut down the server, proceed as follows:

Step 1. Make sure that all users are logged off and that the server is not in use.

Introduction

- Step 2.** Download server firmware. Current revisions of firmware and utilities, together with download instructions, are available from your ITRC.
- Step 3.** Update the server firmware.
- Step 4.** Perform an orderly shut down of the server operating system.
- Step 5.** Press and hold the power button (on the server front panel) for more than 5 seconds. Verify that the power LED goes off.
- Step 6.** Disconnect the AC power cords from the server rear panel.

Gain Access to Server Components

To access server components, perform the following steps:

NOTE See “Common Procedures” on page 15 for detailed instructions on how to accomplish the following steps.

- Step 1.** If rack-mounted, extend the server from the rack.
- Step 2.** Remove the top cover. See “Removing the Top Cover” on page 20.
- Step 3.** Remove processor airflow guide. See “Removing the Processor Airflow Guide” on page 27.

Replacing the Processor Module(s)

See “Common Procedures” on page 15 for instructions on how to remove and install dual processor modules.

NOTE All processors in the server must have identical speed and cache size.

Verification of Upgrade Installation

After completing the upgrade, verify that the sever is ready for operation as follows:

- Step 1.** Reconnect AC power to rear panel connectors.
- Step 2.** Press the front panel power switch to power on the server.
- Step 3.** Wait for completion of the power-on-self-test. Verify that no errors have been detected. If the server fails to power up, check that all processor assembly connectors are correctly seated. (Perform the processor removal and installation procedures in “Common Procedures” on page 15 of this guide to verify processor installation.)
- Step 4.** Use the boot console handler (BCH) command **in pr** to verify that the newly installed processor is recognized and responding correctly. Use the Information Menu to view processor characteristics.

Main Menu : Enter command or menu > in ca

CACHE INFORMATION

Processor	Instruction Cache Size	Data Cache Size
0	67108864	67108864
1	67108864	67108864

Step 5. Initiate the OS. Check for error messages. Check the System Event Log for erroneous system events.

Introduction

3 HP 9000 rp3410 1-way Server to HP 9000 rp3410 2-way Server Upgrade Procedure

Processor Upgrade Procedure

To upgrade your HP 9000 rp3410 1-way server to an HP 9000 rp3410 2-way server you need Processor Upgrade Kit A9770A. This kit contains the following:

- Read me first
- Upgrade key request form
- System upgrade license certificate
- License number label
- Documentation CD

Preparation

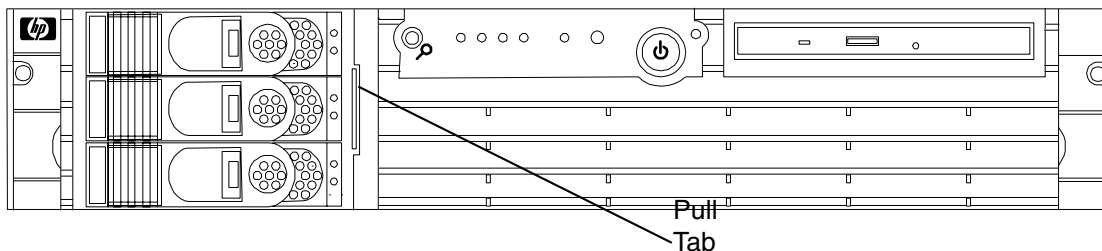
You must complete the following preparations one to three days before the upgrade is to take place. This procedure requires you to obtain information from HP.

Step 1. Verify the contents of the upgrade kit with the packing list. Resolve any discrepancies before continuing.

Step 2. Locate the system serial number and copy it onto the key request form provided in your upgrade kit. The system serial number can be found in two places:

- On the left of the front bezel, locate a removable pull tab. A label containing the system serial number is on the reverse side of the pull tab.

Figure 3-1 HP 9000 rp3410 Server Pull Tab Location



- On the right side of the chassis, as you face the server, locate a label containing the system serial number.

Figure 3-2 HP 9000 rp3410 Server ID Labels




- Step 3.** Follow the instructions on your system upgrade license certificate to obtain your upgrade key number.

Contact HP through the Web at: <http://licensing.hp.com/welcome.slm>. You can fill out the key request form online. (Alternatively, you can fax the key request form to HP. Fax instructions are provided on the system upgrade license certificate.)

Figure 3-3 Sample HP rp3410 Upgrade—System Upgrade License Certificate

HP rp3410 Upgrade System Upgrade License Certificate



With this certificate Hewlett-Packard provides the customer with the ability to obtain a License File that allows the software to run. Rights and restrictions on the use, transfer and copying of the software are set forth in the Hewlett-Packard Company's Software License Terms Agreement.

HP Order Number	TEST-STMPK2-CL120903		
License Number	UY4AGJJG26EA	Product Number	A9770A
		Model Number	rp3410
Product Description	Model rp3410 1-way to 2-way Upgrade		

Hewlett-Packard World Wide Licensing Services:

To redeem your license key ON-LINE, 24H a day, 7 days a week :

<http://licensing.hp.com>


Hewlett-Packard Company HP Licensing Services North America Phone: +1(650) 960-5111 or (800) 538-1733 Fax: +1(650) 960-5670 or (800) 541-2633 E-mail: hplicense.na@hp.com Business hours: Monday to Friday 6:00am - 4:30pm PST	Hewlett-Packard Ireland HP Licensing Services Ireland Phone: +353 (0)91 75 40 06 Fax: +353 (0)91 70 10 02 E-mail: codeword_europe@hp.com Business hours: Monday to Friday 8.30am - 5.30pm GMT	Hewlett-Packard Japan HP Licensing Services Japan Phone: 0120.42.1231 (Inside Japan) or +81.426.48.9310 (Outside Japan) or +81.426.48.9312 (Outside Japan) Fax: 0120.52.1231 (Inside Japan) or +81.426.39.4983 (Outside Japan) E-mail: sw_codeword@hp.com Business hours: Monday to Friday 9:00am - 5:30pm GMT+9
If faxing from ... Belgium 080019135 Denmark 80010935 Finland 980013331 Germany 08001819813 India, Vietnam +81.426.39.4983* Indonesia 803.81.0209 Italy 800 875165 Netherlands 0800229350	Dial: Norway 80011232 Spain 900973321 Sweden 020792141 Switzerland 0800553608 United Kingdom 0800897936 All other European countries +33 476142515* All other Asia Pacific countries +800.2025.1231 All other countries +1 6509605670* (* non-toll-free numbers)	If faxing from ... Dial: Norway 80011232 Spain 900973321 Sweden 020792141 Switzerland 0800553608 United Kingdom 0800897936 All other European countries +33 476142515* All other Asia Pacific countries +800.2025.1231 All other countries +1 6509605670* (* non-toll-free numbers)

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Figure 3-4 Sample HP rp3410 Upgrade—Key Request Form

HP rp3410 Upgrade Key Request Form



HP Order Number

License Number Country

To have your key generated, you will need to provide the serial number of the system to be upgraded. Please, provide this information below:

System Serial number

Please complete clearly in capital letters

Company Name

Contact Name

Country Code Area Code Local Number

Phone Number

Please choose the way you wish to receive your codeword:

Fax Number

E-mail Address

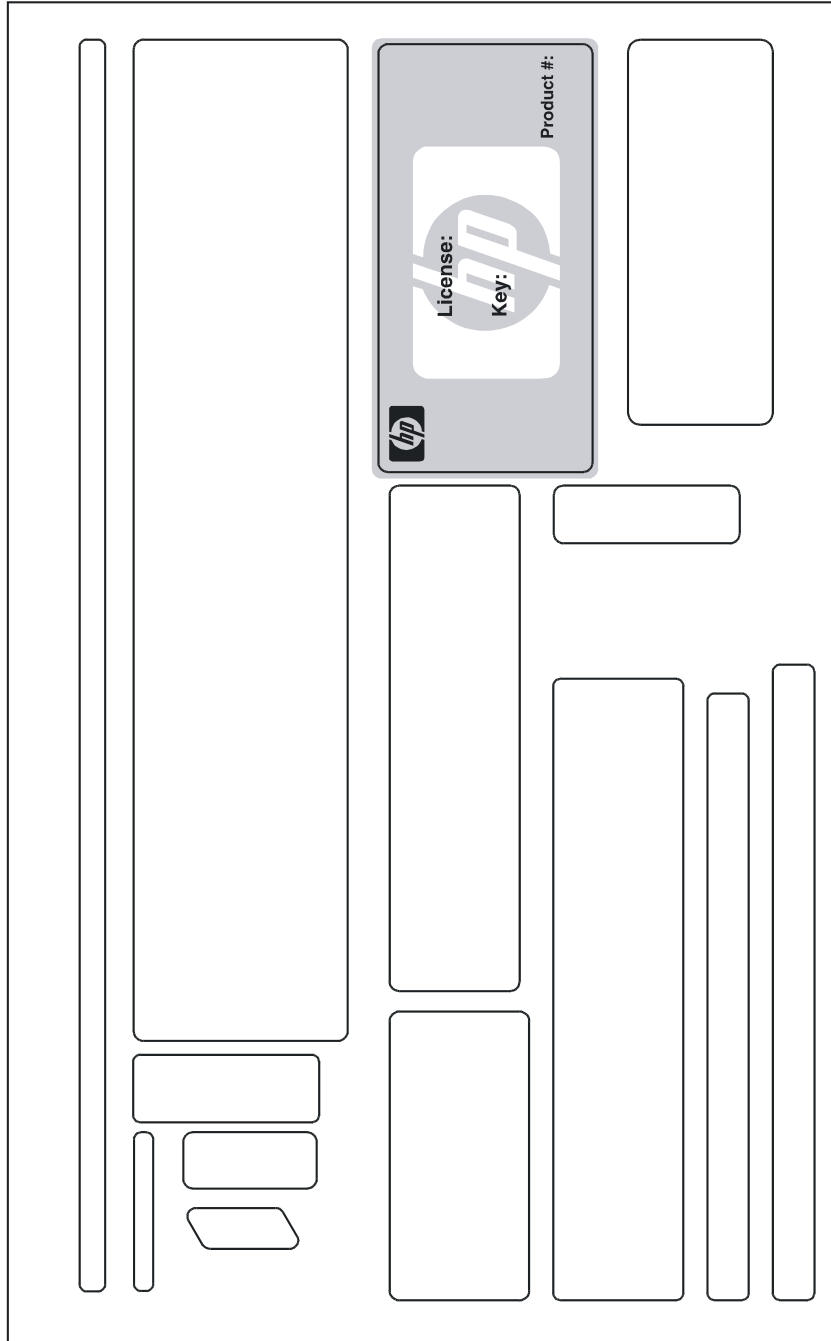
Date and Signature _____

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- Step 4.** Your upgrade kit comes with a set of labels. Copy the key number and the license number onto the system upgrade label. Take upper and lower case sensitivity into account when entering the key number. An example of the label set is shown:

Figure 3-5 Upgrade Label Set



You are now ready to begin the system upgrade.

Detailed Upgrade Procedure

Upgrade Procedure Overview

1. Back up the system.
2. Shut down the system OS.
3. Enter the upgrade command.
4. Verify the newly enabled processor is operating.
5. Apply the labels.
6. Boot the server.

Upgrade Procedure

Step 1. Perform a full system backup.

Step 2. Shut down the operating system. Example:

```
shutdown -r 0
```

NOTE If AUTOBOOT is enabled, the server displays a message indicating:

```
Autoboot enabled, Hit any key within 10 seconds to interrupt the  
boot process
```

Step 3. Interrupt the boot process.

Step 4. From the Boot Console Handler (BCH) Main Menu, select the service menu. Example:

```
Main Menu: Enter command or menu > ser
```

```
---- Service Menu -----
```

Command	Description
-----	-----
CLEARPIM	Clear (zero) the contents of PIM
SCSI [option] [<path>] [<val>]	Display or set SCSI controller values
MemRead <address> [<len>]	Read memory and I/O locations
PDT [CLEAR]	Display or clear the PDT
PIM [<proc>] [HPMC LPMC TOC]	Display PIM information
ProductNum <O C> [<number>]	Display or set Product Number
ScRoll [ON OFF]	Display or change scrolling ability
SELftests [ON OFF]	Enable/disable self test execution

BOot [PRI ALT <path>]	Boot from specified path
DIsplay	Redisplay the current menu
HElp [<command>]	Display help for specified command
RESET	Restart the system
MAin	Return to Main Menu

Service Menu: Enter command or menu >

- Step 5.** Enter **upgrade**. The server responds with a message indicating that this command performs an rp3410 1-way to rp3410 2-way model upgrade and that the server must be reset following the operation. Enter **Y** (yes) to continue. The server prompts you to enter the key number. Enter the key number that you copied onto the system upgrade label. Take upper and lower case sensitivity into account when entering the key number. Example:

```
Service Menu: Enter command > upgrade
System serial number: USS3915004
Enter key from key certificate for this serial number: 3B567636ACDD

Current system: 9000/800/rp3410 1 socket 1 core restricted speed DC- -
Upgraded system: 9000/800/rp3410 1 sockets 2 cores

Do you wish to continue with this change? [y/n]: Y

You must restart the system to complete this change.
```

NOTE The upgrade command is a hidden command. It will not appear in response to the `ls` (list commands) command in the firmware menus.

If the key number is accepted, the server displays a message indicating the upgrade was successful and that the system must be reset for the change to take place. If the key is **not** accepted, the server displays a message indicating the key is invalid. Retry the `upgrade` command and re-enter the key value. Check for case sensitivity. If still unsuccessful, contact your HP representative.

- Step 6.** Enter the command `rs` to reset the server. If AUTOBOOT is enabled, the server displays a message: Autoboot enabled, Hit any key within 10 seconds to interrupt the boot process. Interrupt the boot process. Example:

```
CM> rs
```

NOTE This step must be done for the upgrade to take effect.

- Step 7.** Verify the upgrade. In the BCH Main Menu, enter: **in pr**

Examine the model string value. It should be *9000/800/rp3410*.

Example:

Main Menu: Enter command or menu > in pr

Model: hp server . (model string 9000/800/rp3410)

PROCESSOR INFORMATION

Processor	Speed	HVERSION Model	SVERSION Model/Op	CVERSION	Processor State
0	800 MHz	0x0889	0x0491	3.0	Active
1	800 MHz	0x0889	0x0491	3.0	Idle

Central Bus Speed (in MHz) : 200

Software ID (dec) : 4471560586272672004

Software ID (hex) : 0x3e0e2ca9706b8904

Software Capability : 0x01f0

Step 8. Apply the label containing the system serial number to the reverse side of the pull tab.

Step 9. Boot the operating system.

Downgrade Procedure

If you need to downgrade the recently upgraded server, perform the following steps:

- Step 1.** Repeat steps 1-4 of the “Detailed Upgrade Procedure” on page 62 to get to the firmware service menu.
- Step 2.** Enter the command **downgrade**. The server displays a message indicating functionality may be lost and that a system reset is necessary to make the change take effect. Enter **Y** (yes) to continue. The server responds with a message indicating the command was successful and that the server must be reset for the change to take effect. Example:

```
Service Menu: Enter command > downgrade

System serial number: USS3915004

Enter key from key certificate for this serial number: 3B567636ACDD

Current system: 9000/800/rp3410 1 sockets 2 cores

Downgraded system: 9000/800/rp3410#1 1 socket 1 core restricted speed DC- -

Do you wish to continue with this change? [y/n]: Y

You must restart the system to complete this change.
```

NOTE The downgrade command is a hidden command. It does not appear in response to the **ls** (list commands) command in the firmware menus.

- Step 3.** Enter the command **rs** to reset the server. If AUTOBOOT is enabled, the server displays a message: Autoboot enabled, Hit any key within 10 seconds to interrupt the boot process. Interrupt the boot process. Example:

```
CM> rs
```

NOTE This step must be done for the downgrade to take effect.

- Step 4.** Verify the downgrade took effect. From the server Main Menu, enter **in pr** and observe processor information.

```
Main Menu: Enter command or menu > in pr

Model: hp server . (model string 9000/800/rp3410)

PROCESSOR INFORMATION
```

HP 9000 rp3410 1-way Server to HP 9000 rp3410 2-way Server Upgrade Procedure
Processor Upgrade Procedure

Processor	Speed	HVERSION Model	SVERSION Model/Op	CVERSION	Processor State
0	800 MHz	0x0886	0x0491	3.0	Active
1	800 MHz	0x0886	0x0491	0.0	Stopped:Deconfigured

Central Bus Speed (in MHz) : 200
Software ID (dec) : 4471560586272672004
Software ID (hex) : 0x3e0e2ca9706b8904
Software Capability : 0x01f0

Step 5. Restart the operating system.

4 HP 9000 rp3440 1-Way Server to HP 9000 rp3440 2-Way Server Upgrade Procedure

Processor Upgrade Procedure

To upgrade your HP 9000 rp3440 1-way server to an HP 9000 rp3440 2-way server you need the AB473A Processor Upgrade Kit for 800 MHz systems or the AB474A Processor Upgrade Kit for 1 GHz systems. The kits are similar and contain the following:

- Read me first
- Upgrade key request form
- System upgrade license certificate
- License number label
- Documentation CD

Preparation

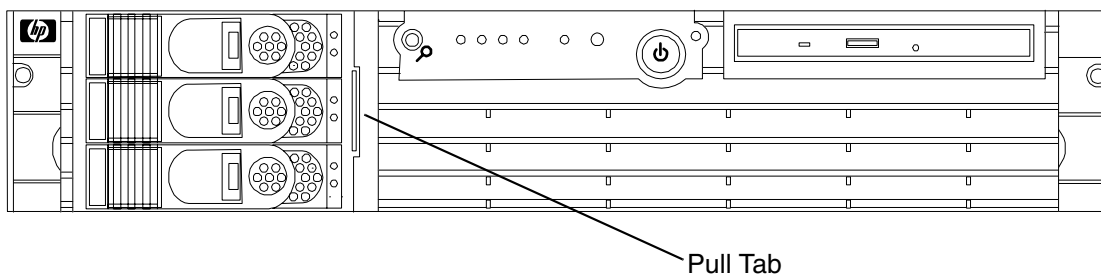
You must complete the following preparations one to three days before the upgrade is to take place. This procedure requires you to obtain information from HP.

Step 1. Verify the contents of the upgrade kit with the packing list. Resolve any discrepancies before continuing.

Step 2. Locate the system serial number and copy it onto the label provided in your upgrade kit. The system serial number can be found in two places:

- On the left of the front bezel, locate a removable pull tab. A label containing the system serial number is on the reverse side of the pull tab.

Figure 4-1 HP 9000 rp3440 Server Pull Tab Location



- On the right side of the chassis, as you face the server, locate a label containing the system serial number.


Figure 4-2 HP 9000 rp3440 Server ID Labels



- Step 3.** Follow the instructions on your system upgrade license certificate to obtain your upgrade key number.

Contact HP through the Web at: <http://licensing.hp.com/welcome.slm>. You can fill out the key request form online. (Alternatively, you can fax the key request form to HP. Fax instructions are provided on the system upgrade license certificate.)

Figure 4-3 Sample rp3440 Upgrade - 800 Mhz System Upgrade License Certificate



**rp3440 Upgrade - 800 Mhz
 System Upgrade License Certificate**

With this certificate Hewlett-Packard provides the customer with the ability to obtain a License File that allows the software to run. Rights and restrictions on the use, transfer and copying of the software are set forth in the Hewlett-Packard Company's Software License Terms Agreement.

HP Order Number	TEST-STRMPK-CL093004		
License Number	DG56HCDC2ADY	Product Number	AB473A
		Model Number	rp3440
Product Description	HP rp3440 2nd CPU firmware activation		

Hewlett-Packard World Wide Licensing Services:

To redeem your license key ON-LINE, 24H a day, 7 days a week :


<http://licensing.hp.com>

Hewlett-Packard Company HP Licensing Services North America Phone: +1(650) 960-5111 or (800) 538-1733 Fax: +1(650) 960-5670 or (800) 541-2633 E-mail: hplicense.na@hp.com Business hours: Monday to Friday 6:00am - 4:30pm PST	Hewlett-Packard Ireland HP Licensing Services Ireland Phone: +353 (0)91 75 40 06 Fax: +353 (0)91 70 10 02 E-mail: codeword_europe@hp.com Business hours: Monday to Friday 8.30am - 5.30pm GMT	Hewlett-Packard Japan HP Licensing Services Japan Phone: 0120.42.1231 (Inside Japan) or 0426.48.9310 (Inside Japan) or +81.426.48.9312 (Outside Japan) Fax: 0120.52.1231 (Inside Japan) or +81.426.39.4983 (Outside Japan) E-mail: sw_codeword@hp.com Business hours: Monday to Friday 9:00am - 5:30pm GMT+9																																					
<table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">If faxing from ...</td> <td style="width: 50%;">Dial:</td> </tr> <tr> <td>Belgium</td> <td>080019135</td> </tr> <tr> <td>Denmark</td> <td>80010935</td> </tr> <tr> <td>Finland</td> <td>980013331</td> </tr> <tr> <td>Germany</td> <td>08001819813</td> </tr> <tr> <td>India, Vietnam</td> <td>+81.426.39.4983*</td> </tr> <tr> <td>Indonesia</td> <td>803.81.0209</td> </tr> <tr> <td>Italy</td> <td>800 875165</td> </tr> <tr> <td>Netherlands</td> <td>0800229350</td> </tr> </table>	If faxing from ...	Dial:	Belgium	080019135	Denmark	80010935	Finland	980013331	Germany	08001819813	India, Vietnam	+81.426.39.4983*	Indonesia	803.81.0209	Italy	800 875165	Netherlands	0800229350	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">If faxing from ...</td> <td style="width: 50%;">Dial:</td> </tr> <tr> <td>Norway</td> <td>80011232</td> </tr> <tr> <td>Spain</td> <td>900973321</td> </tr> <tr> <td>Sweden</td> <td>020792141</td> </tr> <tr> <td>Switzerland</td> <td>0800553608</td> </tr> <tr> <td>United Kingdom</td> <td>0800897936</td> </tr> <tr> <td>All other European countries</td> <td>+33 476142515*</td> </tr> <tr> <td>All other Asia Pacific countries</td> <td>+800.2025.1231</td> </tr> <tr> <td>All other countries</td> <td>+1 6509605670*</td> </tr> <tr> <td colspan="2" style="text-align: center;">(* non-toll-free numbers)</td> </tr> </table>	If faxing from ...	Dial:	Norway	80011232	Spain	900973321	Sweden	020792141	Switzerland	0800553608	United Kingdom	0800897936	All other European countries	+33 476142515*	All other Asia Pacific countries	+800.2025.1231	All other countries	+1 6509605670*	(* non-toll-free numbers)	
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All other Asia Pacific countries	+800.2025.1231																																						
All other countries	+1 6509605670*																																						
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Figure 4-4 Sample rp3440 Upgrade - 1.0 GHz System Upgrade License Certificate



rp3440 Upgrade - 1.0 GHz
System Upgrade License Certificate

With this certificate Hewlett-Packard provides the customer with the ability to obtain a License File that allows the software to run. Rights and restrictions on the use, transfer and copying of the software are set forth in the Hewlett-Packard Company's Software License Terms Agreement.

HP Order Number	TEST-STRMPK-CL093004		
License Number	DGUHHCDDCA3Y	Product Number	AB474A
		Model Number	rp3440
Product Description	HP rp3440 2nd CPU firmware activation		

Hewlett-Packard World Wide Licensing Services:

To redeem your license key ON-LINE, 24H a day, 7 days a week :

<http://licensing.hp.com>

Hewlett-Packard Company HP Licensing Services North America Phone: +1(650) 980-5111 or (800) 538-1733 Fax: +1(650) 960-5670 or (800) 541-2633 E-mail: hplicense.na@hp.com Business hours: Monday to Friday 6:00am - 4:30pm PST	Hewlett-Packard Ireland HP Licensing Services Ireland Phone: +353 (0)91 75 40 06 Fax: +353 (0)91 70 10 02 E-mail: codeword_europe@hp.com Business hours: Monday to Friday 8.30am - 5.30pm GMT	Hewlett-Packard Japan HP Licensing Services Japan Phone: 0120.42.1231 (Inside Japan) or 0426.48.9310 (Outside Japan) or +81.426.48.9312 (Outside Japan) Fax: 0120.52.1231 (Inside Japan) or +81.426.39.4983 (Outside Japan) E-mail: sw_codeword@hp.com Business hours: Monday to Friday 9:00am - 5:30pm GMT+9	
If faxing from ... Belgium 800119135 Denmark 80010935 Finland 980013331 Germany 08001819813 India, Vietnam +81.426.39.4983* Indonesia 803.81.0209 Italy 800 875165 Netherlands 0800229350	Dial: 800119135 80010935 980013331 08001819813 +81.426.39.4983* 803.81.0209 800 875165 0800229350	If faxing from ... Norway 80011232 Spain 900973321 Sweden 020792141 Switzerland 0800553608 United Kingdom 0800897936 All other European countries +33 476142515* All other Asia Pacific countries +800.2025.1231 All other countries +1 6509605670* (* non-toll-free numbers)	Dial: 80011232 900973321 020792141 0800553608 0800897936 +33 476142515* +800.2025.1231 +1 6509605670*

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Figure 4-5 Sample rp3440 Upgrade - 800 Mhz Key Request Form

**rp3440 Upgrade - 800 Mhz
Key Request Form**



HP Order Number

License Number Country

To have your key generated, you will need to provide the serial number of the system to be upgraded. Please, provide this information below:

System Serial number

Please complete clearly in capital letters

Company Name

Contact Name

Phone Number

Please choose the way you wish to receive your codeword:

Fax Number

E-mail Address

Date and Signature _____

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Figure 4-6 Sample rp3440 Upgrade - 1.0 GHz Key Request Form

**rp3440 Upgrade - 1.0 GHz
Key Request Form**



HP Order Number
License Number Country

To have your key generated, you will need to provide the serial number of the system to be upgraded. Please, provide this information below:

System Serial number

Please complete clearly in capital letters

Company Name
Contact Name
Phone Number

Please choose the way you wish to receive your codeword:

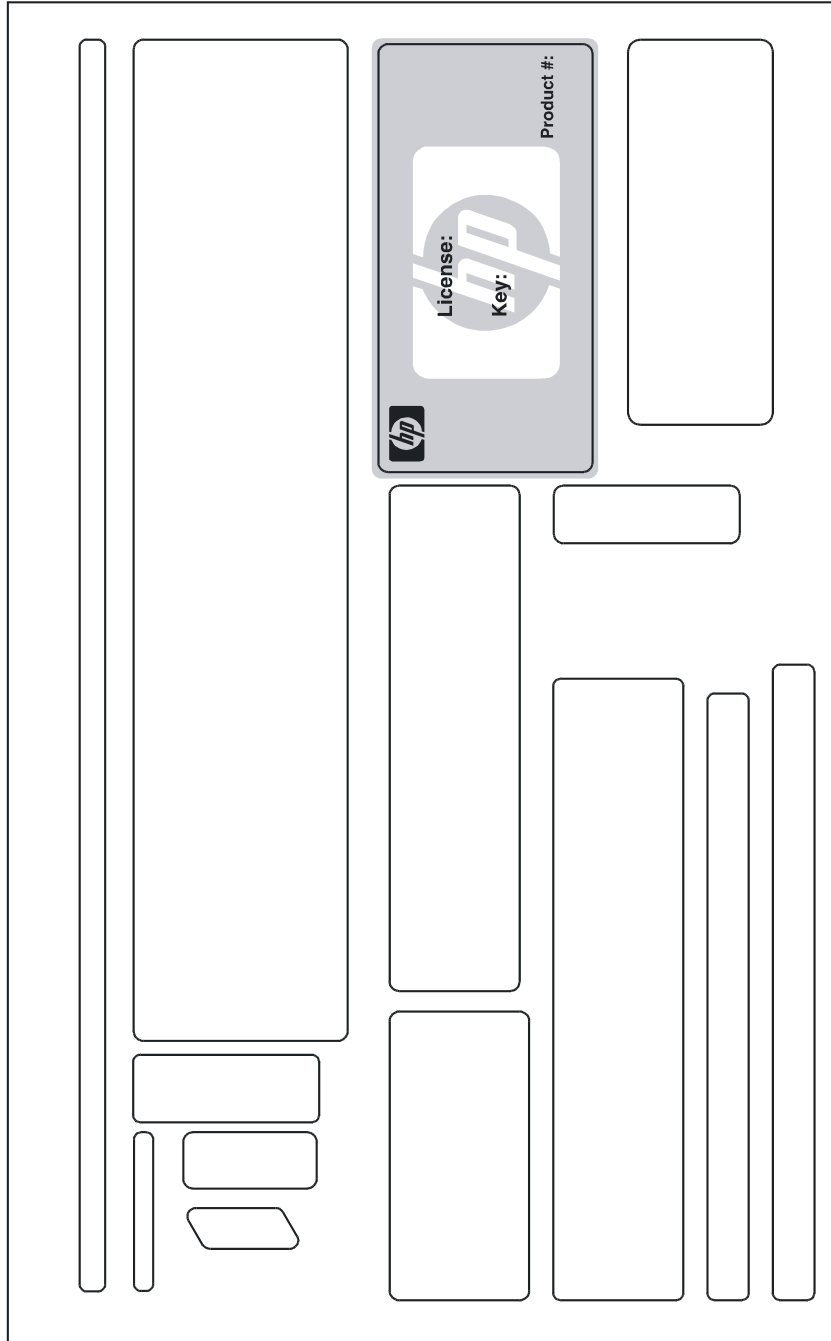
Fax Number
 E-mail Address

Date and Signature _____



- Step 4.** Your upgrade kit comes with a set of labels. Copy the key number and the license number onto the system upgrade label. Take upper and lower case sensitivity into account when entering the key number. An example of the label set is shown:

Figure 4-7 Upgrade Label Set



You are now ready to begin the system upgrade.

Detailed Upgrade Procedure

Upgrade Procedure Overview

1. Back up the system.
2. Shut the system down.
3. Enter the upgrade command.
4. Verify the upgrade.
5. Apply the labels.
6. Boot the server.

Detailed Upgrade Procedure

Step 1. Perform a full system backup.

Step 2. Shut down and reboot the operating system. Example:

```
shutdown -r 0
```

NOTE If AUTOBOOT is enabled, the server displays a message indicating:

```
Autoboot enabled, Hit any key within 10 seconds to interrupt the
boot process
```

Step 3. Interrupt the boot process.

Step 4. From the firmware Main Menu, select the service menu. Example:

```
Main Menu: Enter command or menu > ser
```

```
---- Service Menu -----
```

Command	Description
-----	-----
CLEARPIM	Clear (zero) the contents of PIM
SCSI [option] [<path>] [<val>]	Display or set SCSI controller values
MemRead <address> [<len>]	Read memory and I/O locations
PDT [CLEAR]	Display or clear the PDT
PIM [<proc>] [HPMC LPMC TOC]	Display PIM information
ProductNum <O C> [<number>]	Display or set Product Number
ScRoll [ON OFF]	Display or change scrolling ability
SELftests [ON OFF]	Enable/disable self test execution

BOot [PRI ALT <path>]	Boot from specified path
DIisplay	Redisplay the current menu
HElp [<command>]	Display help for specified command
RESET	Restart the system
MAin	Return to Main Menu

Service Menu: Enter command or menu >

- Step 5.** Enter **upgrade**. The server responds with a message indicating that this command performs an rp3440 1-way to rp3440 2-way upgrade and that the server must be reset following the operation. Enter **y** (yes) to continue. The server prompts you to enter the key. Enter the key value that you copied onto the system label. Take upper and lower case sensitivity into account when entering the key number. Example:

NOTE This example is taken from an 800 MHz system. In 1 GHz systems, processor speed is shown as 1000 MHz.

```
Service Menu: Enter command > upgrade
```

```
System serial number: USS3915004
```

```
Enter key from key certificate for this serial number: 3B567636ACDD
```

```
Current system: 9000/800/rp3440 1 socket 1 core restricted speed DC- -
```

```
Upgraded system: 9000/800/rp3440 1 sockets 2 cores
```

```
Do you wish to continue with this change? [y/n]: Y
```

```
You must restart the system to complete this change.
```

NOTE The **upgrade** command is a hidden command. It does not appear in response to the **ls** (list commands) command in the firmware menus.

If the key number is accepted, the server displays a message indicating the upgrade was successful and that the system must be reset for the change to take place. If the key number was **not** accepted, the server displays a message indicating the key was invalid. Retry the **upgrade** command and re-enter the key value. Check for case sensitivity. If still unsuccessful, contact your HP representative.

- Step 6.** Enter the command **rs** to reset the server. If AUTOBOOT is enabled, the server displays a message: Autoboot enabled, Hit any key within 10 seconds to interrupt the boot process. Interrupt the boot process. Example:

```
CM> rs
```

NOTE This step must be done for the upgrade to take effect.

Step 7. Verify the upgrade. From the server Main Menu, enter: **in pr**

Examine the model string value. It should be *9000/800/rp3440* or *9000/1000/rp3440*.

Example:

NOTE This example was taken from an 800 MHz system. In 1 GHz systems, processor speed is shown as 1000 MHz.

Main Menu: Enter command or menu > in pr

Model: hp server . (model string 9000/800/rp3440)

PROCESSOR INFORMATION

Processor	Speed	HVERSION Model	SVERSION Model/Op	CVERSION	Processor State
0	800 MHz	0x0889	0x0491	3.0	Active
1	800 MHz	0x0889	0x0491	3.0	Idle

Central Bus Speed (in MHz) : 200

Software ID (dec) : 4471560586272672004

Software ID (hex) : 0x3e0e2ca9706b8904

Software Capability : 0x01f0

Step 8. Apply the label containing the system serial number to the reverse side of the pull tab.

Step 9. Boot the operating system.

Downgrade Procedure

If you need to downgrade your recently upgraded server, perform the following steps:

- Step 1.** Repeat steps 1-4 of the “Detailed Upgrade Procedure” on page 74 to get to the firmware service menu.
- Step 2.** Enter the command `downgrade`. The server displays a message indicating functionality may be lost and that a system reset is necessary to make the change take effect. Enter **Y** (yes) to continue. The server responds with a message indicating the command was successful and that the server must be reset for the change to take effect. Example:

NOTE This example was taken from an 800 MHz system. In 1 GHz systems, processor speed is shown as 1000 MHz.

```
Service Menu: Enter command > downgrade
```

```
System serial number: USS3915004
```

```
Enter key from key certificate for this serial number: 3B567636ACDD
```

```
Current system: 9000/800/rp3440 1sockets 2 cores
```

```
Downgraded system: 9000/800/rp3440#1 1 socket 1 core restricted speed DC- -
```

```
Do you wish to continue with this change? [y/n]: Y
```

```
You must restart the system to complete this change.
```

NOTE The `downgrade` command is a hidden command. It does not appear in response to the `ls` (list commands) command in the firmware menus.

- Step 3.** Enter the command `rs` to reset the server. If AUTOBOOT is enabled, the server displays a message: `Autoboot enabled, Hit any key within 10 seconds to interrupt the boot process.` Interrupt the boot process. Example:

```
CM> rs
```

NOTE This step must be done for the downgrade to take effect.

- Step 4.** Verify the downgrade took effect. From the server Main Menu, enter: **in pr.**

NOTE This example was taken from an 800 MHz system. In 1 GHz systems, processor speed is shown as 1000 MHz.

HP 9000 rp3440 1-Way Server to HP 9000 rp3440 2-Way Server Upgrade Procedure
Processor Upgrade Procedure

Main Menu: Enter command or menu > in pr

Model: hp server . (model string 9000/800/rp3440)

PROCESSOR INFORMATION

Processor	Speed	HVERSION Model	SVERSION Model/Op	CVERSION	Processor State
0	800 MHz	0x0889	0x0491	3.0	Active
1	800 MHz	0x0889	0x0491	0.0	Stopped:Deconfigured

Central Bus Speed (in MHz) : 200
Software ID (dec) : 4471560586272672004
Software ID (hex) : 0x3e0e2ca9706b8904
Software Capability : 0x01f0

Step 5. Restart the operating system.

5 HP 9000 rp3410 Server to HP 9000 rp3440 Server Processor Upgrade Procedure

Processor Upgrade Procedure

NOTE The starting condition for this upgrade is an HP 9000 rp3410 2-way system. If you are upgrading a 1-way system, perform the procedures in Chapter 3, “HP 9000 rp3410 1-way Server to HP 9000 rp3410 2-way Server Upgrade Procedure,” on page 57 before performing this upgrade.

To upgrade your HP 9000 rp3410 server to an HP 9000 rp3440 server you need Processor Upgrade Kit A9771A. This kit contains the following:

- Read me first
- Upgrade key request form
- System upgrade license certificate
- License number label
- Tower nameplate, rp3440
- Rack nameplate, rp3440
- Documentation CD

Preparation

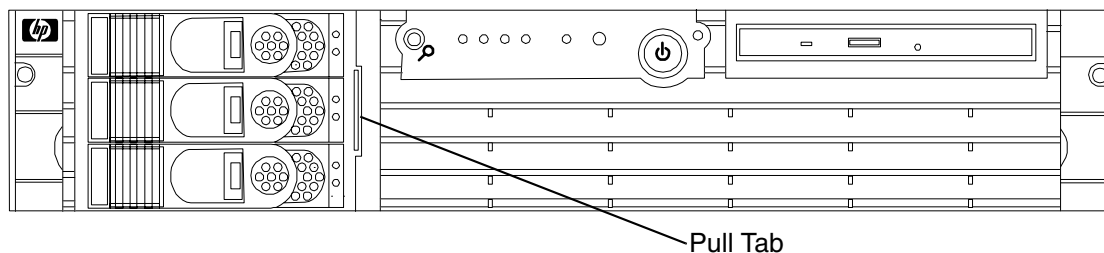
You must complete the following preparations one to three days before the upgrade is to take place. This procedure requires you to obtain information from HP.

Step 1. Verify the contents of the upgrade kit against the packing list. Resolve any discrepancies before continuing.

Step 2. Locate the system serial number and copy it onto the label provided in your upgrade kit. The system serial number can be found in two places:

- On the left of the front bezel, locate a removable pull tab. A label containing the system serial number is on the reverse side of the pull tab.

Figure 5-1 HP 9000 rp3410 Server Pull Tab Location



- On the right side of the chassis, as you face the server, locate a label containing the system serial number.

Figure 5-2 HP 9000 rp3410 Server ID Labels




- Step 3.** Follow the instructions on your system upgrade license certificate to obtain your upgrade key number.

Contact HP through the Web at: <http://licensing.hp.com/welcome.slm>. You can fill out the key request form online. (Alternatively, you can fax the key request form to HP. Fax instructions are provided on the system upgrade license certificate.)

Figure 5-3 Sample HP rp3410 to rp3440 Upgrade—System Upgrade License Certificate

HP rp3410 to rp3440 Upgrade
System Upgrade License Certificate



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		Model Number	rp3440
Product Description	Model rp3410 Srvr to rp3440 Srvr Upgrade		

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		(* non-toll-free numbers)			

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Figure 5-4 Sample HP rp3410 to rp3440 Upgrade—Key Request Form

HP rp3410 to rp3440 Upgrade Key Request Form



HP Order Number

License Number Country

To have your key generated, you will need to provide the serial number of the system to be upgraded. Please, provide this information below:

System Serial number

Please complete clearly in capital letters

Company Name

Contact Name

Country Code Area Code Local Number

Phone Number

Please choose the way you wish to receive your codeword:

Fax Number

E-mail Address

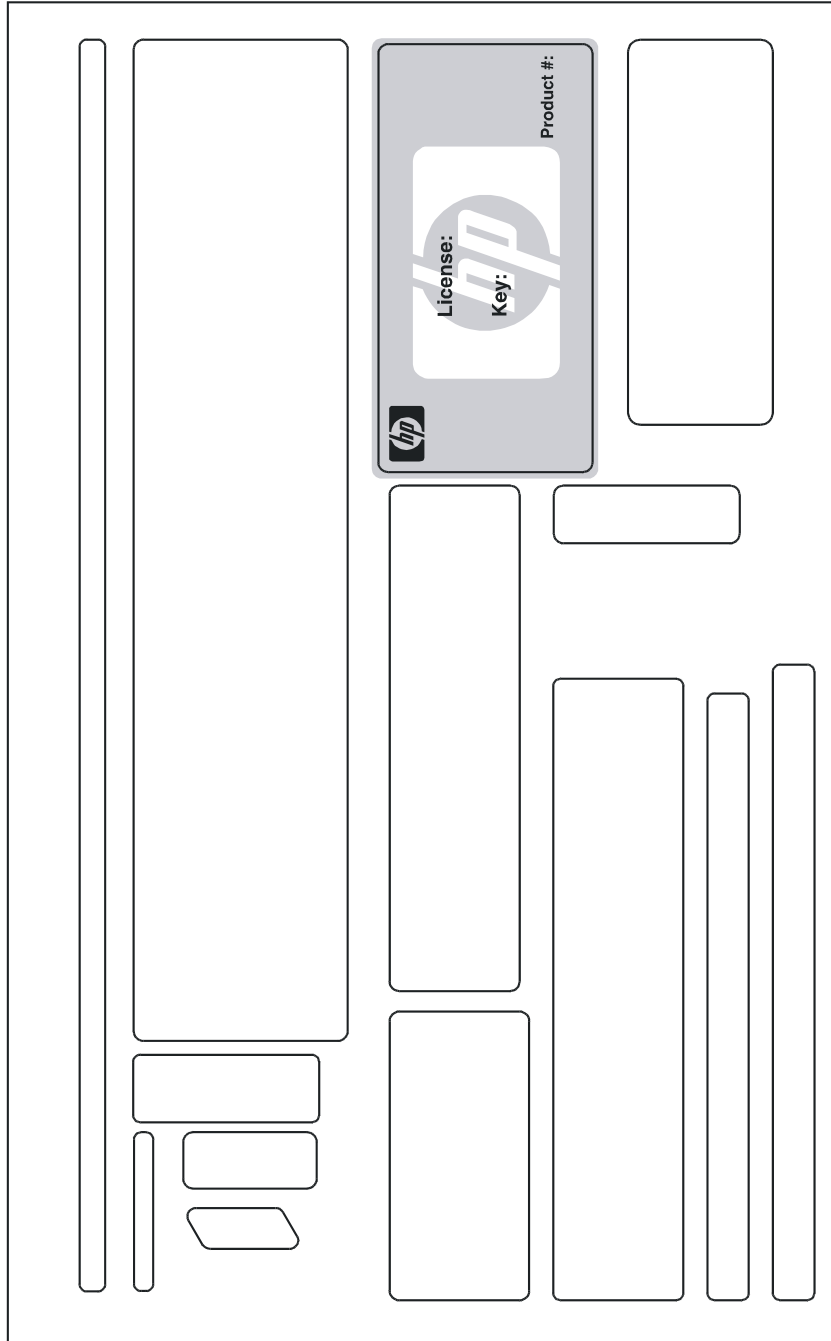
Date and Signature _____

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- Step 4.** Your upgrade kit comes with a set of labels. Copy the key number and the license number onto the system upgrade label. Take upper and lower case sensitivity into account when entering the key number. An example of the label set is shown:

Figure 5-5 Upgrade Label Set



You are now ready to begin the system upgrade.

Detailed Upgrade Procedure

Upgrade Procedure Overview

1. Back up the system.
2. Shut down the system operating system.
3. Enter the upgrade command.
4. Verify the upgrade.
5. Apply the labels.
6. Install additional components.
7. Boot the server.

Detailed Upgrade Procedure

Step 1. Perform a full system backup.

Step 2. Shut down the operating system. Example:

```
shutdown -r 0
```

NOTE

If AUTOBOOT is enabled, the server displays a message indicating:

```
Autoboot enabled, Hit any key within 10 seconds to interrupt the  
boot process
```

Step 3. Interrupt the boot process.

Step 4. From the Boot Console Handler (BCH) Main Menu, select the service menu. Example:

```
Main Menu: Enter command or menu > ser
```

```
---- Service Menu -----
```

Command	Description
-----	-----
CLEARPIM	Clear (zero) the contents of PIM
SCSI [option] [<path>] [<val>]	Display or set SCSI controller values
MemRead <address> [<len>]	Read memory and I/O locations
PDT [CLEAR]	Display or clear the PDT
PIM [<proc>] [HPMC LPMC TOC]	Display PIM information
ProductNum <O C> [<number>]	Display or set Product Number
ScRoll [ON OFF]	Display or change scrolling ability

SELftests [ON OFF]	Enable/disable self test execution
BOot [PRI ALT <path>]	Boot from specified path
DIisplay	Redisplay the current menu
HElp [<command>]	Display help for specified command
RESET	Restart the system
MAin	Return to Main Menu

MService Menu: Enter command or menu >

Step 5. Enter **upgrade**. The server responds with a message indicating that this command performs an rp3410 to rp3440 model upgrade and that the server must be reset following the operation. Enter **y** (yes) to continue. The server prompts you to enter the key. Enter the key value that you copied onto the system label. Take upper and lower case sensitivity into account when entering the key number. Example:

NOTE This example was taken from an 800 MHz system.

```
Service Menu: Enter command > upgrade
System serial number: USS3915004
Enter key from key certificate for this serial number: 3B567636ACDD

Current system: 9000/800/rp3410 1 socket 2 cores restricted speed DC- -
Upgraded system: 9000/800/rp3440 2 sockets 4 cores

Do you wish to continue with this change? [y/n]: Y

You must restart the system to complete this change.
```

NOTE The **upgrade** command is a hidden command. It will not appear in response to the **ls** (list commands) command in the firmware menus.

Step 6. If the key number is accepted, the server displays a message indicating the upgrade was successful and that the system must be reset for the change to take place. If the key number was **not** accepted, the server displays a message indicating the key was invalid. Retry the **upgrade** command and re-enter the key value. Check for case sensitivity. If still unsuccessful, contact your HP representative.

Step 7. If a second dual processor module is to be installed, install the module in slot CPU1 on the system board. (See Chapter 1, “Overview and Common Procedures—Server Upgrade,” on page 11 for complete instructions for installing processors.)

Step 8. Verify the upgrade. If AUTOBOOT is enabled, the server displays a message: Autoboot enabled, Hit any key within 10 seconds to interrupt the boot process. **Interrupt the boot process.**
Example:

```
CM> rs
```

Step 9. Verify the upgrade. In the BCH Main Menu, enter: **in pr**

Examine the model string value. It should be *9000/800/rp3440*

Example:

NOTE Processors 2 and 3 are listed in this example because a dual processor module is installed in CPU socket 1.

```
Main Menu: Enter command or menu > in pr
```

```
Model: hp server . (model string 9000/800/rp3440)
```

```
PROCESSOR INFORMATION
```

Processor	Speed	HVERSION Model	SVERSION Model/Op	CVERSION	Processor State
0	800 MHz	0x0889	0x0491	3.0	Active
1	800 MHz	0x0889	0x0491	3.0	Idle
2	800 MHz	0x0889	0x0491	3.0	Idle
3	800 MHz	0x0889	0x0491	3.0	Idle

```
Central Bus Speed (in MHz) : 200
```

```
Software ID (dec) : 4471560586272672004
```

```
Software ID (hex) : 0x3e0e2ca9706b8904
```

```
Software Capability : 0x01f0
```

Step 10. Apply the label containing the system serial number to the reverse side of the pull tab.

Step 11. On the front bezel, replace the HP 9000 rp3410 server nameplate with the HP 9000 rp3440 server nameplate.

Step 12. Boot the operating system.

Downgrade Procedure

If you need to downgrade the recently upgraded server, follow this procedure:

- Step 1.** Repeat steps 1-4 of the “Detailed Upgrade Procedure” on page 74 to get to the firmware service menu.
- Step 2.** Enter the command `downgrade`. The server displays a message indicating functionality may be lost and that a system reset is necessary to make the change take effect. Enter **Y** (yes) to continue. The server responds with a message indicating the command is successful and that the server must be reset for the change to take effect. Example:

```
Service Menu: Enter command > downgrade

System serial number: USS3915004

Enter key from key certificate for this serial number: 3B567636ACDD

Current system: 9000/800/rp3440 2sockets 4 cores

Downgraded system: 9000/800/rp3410 1 socket 1 core restricted speed DC- -

Do you wish to continue with this change? [y/n]: Y

You must restart the system to complete this change.
```

NOTE The downgrade command is a hidden command. It does not appear in response to the `ls` (list commands) command in the firmware menus.

- Step 3.** Remove the additional dual processor module from slot CPU1 this time. (See Chapter 1, “Overview and Common Procedures—Server Upgrade,” on page 11 for complete instructions for removing processors.)
- Step 4.** Enter the command `rs` to reset the server. If AUTOBOOT is enabled, the server displays a message: `Autoboot enabled, Hit any key within 10 seconds to interrupt the boot process.` Interrupt the boot process. Example:

```
CM> rs
```

NOTE This step must be done for the downgrade to take effect.

- Step 5.** Verify the downgrade took effect. From the BCH Main Menu, enter: **in pr**.

```
Main Menu: Enter command or menu > in pr

Model: hp server . (model string 9000/800/rp3410)
```

HP 9000 rp3410 Server to HP 9000 rp3440 Server Processor Upgrade Procedure
Processor Upgrade Procedure

PROCESSOR INFORMATION

Processor	Speed	HVERSION Model	SVERSION Model/Op	CVERSION	Processor State
0	800 MHz	0x0886	0x0491	3.0	Active
1	800 MHz	0x0886	0x0491	0.0	Idle

Central Bus Speed (in MHz) : 200
Software ID (dec) : 4471560586272672004
Software ID (hex) : 0x3e0e2ca9706b8904
Software Capability : 0x01f0

Step 6. Reboot the operating system.

6 RAID - Smart Array 6402 or 6404 Controller for Internal RAID Installation

Smart Array 6402 RAID or 6404 RAID Cards

This section provides information and instructions for installing the HP A9890A PCI-X 2-Channel RAID SA SCSI Controller (Smart Array 6402) or the HP A9891A PCI-X 4-Channel RAID SA SCSI Controller (Smart Array 6404).

Before installing either Smart Array card, ensure the following hardware and software prerequisites are met:

- Check the *RAID-01 HP Smart Array Controller Driver Release Notes* available at <http://www.docs.hp.com> in the Networking & Communications section for known problems or other information needed for installation.
- Confirm that the Smart Array 6402 or 6404 controller and software are supported on the HP Integrity server and I/O slot chosen. Refer to the *Smart Array Controller Support Matrix* located at <http://www.docs.hp.com> in the Networking & Communications section for more information.
- Check the HP Integrity server's documentation to determine if additional tools are required for component installation at <http://www.docs.hp.com>.
- Smart Array 6402 or 6404 controller software media is available. It is included on CD or on the Web through <http://www.software.hp.com>.
- Confirm that HP-UX super-user privileges are available; they are necessary to complete the installation.
- Confirm that the `/usr/bin`, `/usr/sbin`, and `/sbin` directories are in your PATH by logging in as root and using the `echo $PATH` command.

CAUTION Smart Array cards contain electronic components that can easily be damaged by small amounts of electricity. To avoid damage, follow these guidelines:

- Store controllers in their anti-static plastic bags until installation.
 - Work in a static-free area.
 - Handle controllers by the edges only. Do not touch electronic components or electrical traces.
 - Use a grounding wrist strap.
 - Use a suitable ground—any exposed metal surface on the computer chassis.
-

Internal and External RAID

You can use RAID cards for internal and external connections:

- Internal RAID refers to connecting embedded or internal disks to the RAID card
- External RAID refers to connecting external devices to the RAID card

SCSI Cabling Kit and Cabling Guide

In addition to the Smart Array 6402 and 6404 RAID cards, you must also have the Internal Smart Array Cable kit (HP P/N A9827A).

- Cable A7231-63024 is used for the single channel or simplex RAID card
- Cable A7231-63025 is used for the dual channel or duplex RAID card

Before installing the RAID card, refer to the *Internal Cabling Guide for HP Smart Array Controllers* HP P/N 5971-4280 available at <http://www.docs.hp.com>.

PCI Slots

Before inserting a RAID card, be certain of which PCI slot are available for RAID and if the slot can be used for internal or external RAID. Internal RAID is not supported on rp3410 systems.

NOTE Internal RAID is not supported on rp3410 systems.

The following table lists the PCI slots and information about the RAID card that can be inserted into each slot.

Table 6-1 PCI Slots

PCI Slot #	Description
1	Cannot be used with internal or external RAID.
2	Used only for external RAID 6402 or 6404. Use this slot for rp3410.
3	Only slot that can be used for internal RAID 6402 or 6404. Can be used for external RAID also. Use this slot for rp3440.
4	Cannot be used with internal or external RAID.

IMPORTANT Do not use both the internal and external connectors on one port simultaneously. The card will not function if both connectors on one port are used.

Installing RAID for Simplex Configuration

The RAID card comes pre-configured. You do not have to set any jumpers or connectors.

WARNING Ensure that the system is powered down and all power sources have been disconnected from the server prior to working with the server.

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 could result in personal injury or damage to equipment.

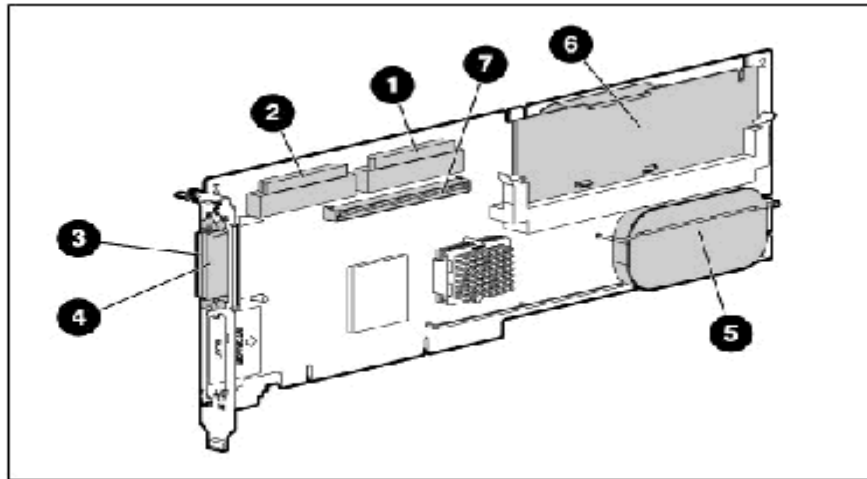
Step 1. Back up data before installing the RAID card.

Step 2. Shut down the system.

Step 3. Power off the system, and unplug the power cord.

- Step 4.** Remove the PCI card cage. Refer to “Removing and Replacing the PCI Card Cage” in the *HP 9000 rp3410 and HP 9000 rp3440 Maintenance Guide*.
- Step 5.** Disconnect the SCSI cable(s) from the internal SCSI backplane.
- Step 6.** Install the Smart Array 6402 or 6404 card.

Figure 6-1 Smart Array 6402 RAID Card



The following table lists the RAID card components.

Table 6-2 RAID Card Components

Item ID	Description
1	Internal SCSI connector, port A1
2	Internal SCSI connector, port A2
3	External SCSI connector, port A1
4	External SCSI connector, port A2
5	Controller battery
6	Battery-backed cache module
7	Connector for expansion board

- Step 7.** Slide the RAID card edge-connector into the slot until it is fully seated.
- Step 8.** Route the new SCSI cable(s) from the internal disks to the Smart Array card and connect the cables.

- a. For simplex mode, connect SCSI cable A7231-63024 to connector A1 on the RAID card. Do not connect any other SCSI cables.
- b. Leave connector A-2 available for external connections.

Step 9. Replace the PCI card cage and top cover and power up the system.

Step 10. Configure logical drive and install operating system. (See “Setting up a Smart Array RAID Card As a Boot Device” on page 93 for detailed instructions.)

Installing Smart Array RAID for Duplex Configuration

The RAID card comes pre-configured. You do not have to set any jumpers or connectors.

Step 1. Back up data before installing the RAID card.

Step 2. Shut down the system.

Step 3. Power off the system, and unplug the power cord.

Step 4. Remove the PCI card cage. Refer to “Removing and Replacing the PCI Card Cage” in the *HP 9000 rp3410 and HP 9000 rp3440 Maintenance Guide*.

Step 5. Disconnect the SCSI cable(s) from the internal SCSI backplane.

Step 6. Install the Smart Array RAID card and slide the RAID card edge-connector into the slot until it is fully seated.

Step 7. Route the SCSI cable(s) from the internal disks to the Smart Array cards and reconnect the cables.

- a. For duplex mode, connect SCSI cable A7231-63025 to connector A2 on the RAID card; and connect SCSI cable A7231-63024 to connector A1 on the RAID card.

Step 8. Replace PCI card cage and top cover and power up the system.

Step 9. Configure logical drive and install operating system. (See “Setting up a Smart Array RAID Card As a Boot Device” on page 93 for detailed instructions.)

CAUTION Do not operate the server for long periods without the cover installed. Operating the server without the cover results in improper airflow and improper cooling that can lead to thermal damage.

WARNING To reduce the risk of personal injury or damage to the equipment, consult the safety information and user documentation provided with your server before attempting installation.

Setting up a Smart Array RAID Card As a Boot Device

The Smart Array RAID card can be set up as a boot device.

NOTE For PA-RISC systems, use Ignite/UX and saconfig to create the logical drives. For Integrity systems, use the Option ROM Configuration for Arrays (ORCA) to create the logical drives.

Offline Configuration of HP-UX 11i v1 or HP-UX 11i v2 Using Ignite-UX

To set up a Smart Array 6402 Controller as a boot device, you must install HP-UX 11i v1 or HP-UX 11i v2 on one of the controller's logical drives. Follow this procedure:

Step 1. Start Ignite-UX from the HP-UX 11i v1 or HP-UX 11i v2 Core OS Install and Recovery Media. The Ignite-UX Welcome screen displays:

```

Welcome to Ignite-UX!
Use the <tab> key to navigate between fields, and the arrow keys
within fields. Use the <return/enter> key to select an item.
Use the <return/enter> or <space-bar> to pop-up a choices list. If the
menus are not clear, select the "Help" item for more information.

Hardware Summary:          System Model: 9000/800/A500-5X
+-----+-----+-----+-----+ [ Scan Again ]
| Disks: 3 (204.6GB) | Floppies: 0 | LAN cards: 1 |
| CD/DVDs: 0 | Tapes: 0 | Memory: 4096Mb |
| Graphics Ports: 0 | IO Buses: 7 | CPUs: 1 | [ H/W Details ]
+-----+-----+-----+-----+
                        [ Install HP-UX ]
                        [ Run a Recovery Shell ]
                        [ Advanced Options ]

[ Reboot ] [ Help ]

```

Step 2. Select Run a Recovery Shell. The Recovery Shell screen displays:

```

NOTE: Creating the second RAM disc and mounting on /dev ...
* Generating device file for the second ramdisc...
* Loading mkfs to make a file system...
version 4 layout
15625 sectors, 15625 blocks of size 1024, log size 1024 blocks
unlimited inodes, largefiles not supported
15625 data blocks, 14529 free data blocks
1 allocation units of 32768 blocks, 32768 data blocks
last allocation unit has 15625 data blocks
* Loading mount to mount/dev/ram1 file system...
* Mounting /dev/ram1 file system succeeded!
* Copying /dev.old files back to /dev succeeds!
* Loading insf to create disk device files...
* Creating disk device files...
* Loading in a shell...

NOTE: Pushing a shell, you will have to use "reboot" to reboot the system when done. Use
the "loadfile" command to bring in more commands as you need them.
#

```

Step 3. At the recovery shell prompt, enter:

```
loadfile -l INSTCMDS /opt/raidsa/bin/ciss_insf
```

```
# loadfile -l INSTCMDS /opt/raidsa/bin/ciss_insf
```

Step 4. Verify that the device file for the Smart Array 6402 Card, or the Smart Array 6404 Card has been created. At the next prompt, enter:

```
/opt/raidsa/bin/ciss_insf
```

Step 5.

NOTE The following example is for the Smart Array 6402 Card. The Smart Array 6404 Card has more devices than what is shown for the 6402 card.

```
# /opt/raidsa/bin/ciss_insf
```

```
Installing special file for Smart Array 6402
```

```
/dev/ciss3 installed
```

Step 6. At the prompt enter:

```
loadfile -l INSTCMDS /opt/raidsa/bin/saconfig
```

```
# loadfile -l INSTCMDS /opt/raidsa/bin/saconfig
```

Step 7. Configure the array(s) and logical drive(s) following the instructions for the **saconfig** configuration utility. You must enter the entire path `/opt/raidsa/bin/saconfig /dev/cissX` for **saconfig** to run.

Step 8. Once you configure the logical drive(s) and array(s), exit the recovery shell by entering **reboot** at the prompt. The system reboots and you are returned to the Boot Console Handler (BCH) prompt.

Step 9. At the BCH prompt, start Ignite-UX from the HP-UX 11i v1 or HP-UX 11i v2 Core OS Install and Recovery Media. The Ignite-UX `Welcome` screen displays (see **Step 1**).

Step 10. Choose Install HP-UX.

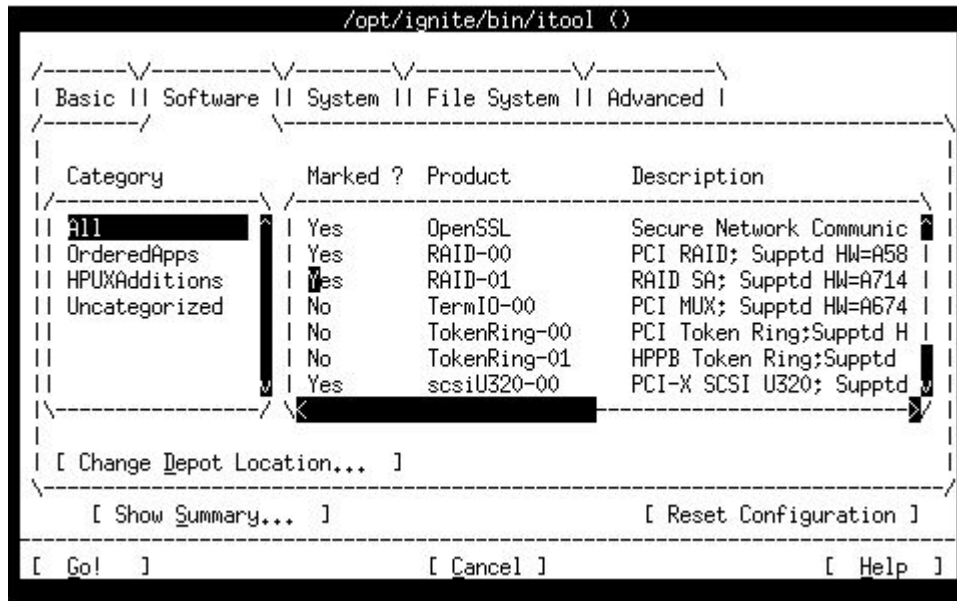
Step 11. Choose the Advanced installation option.

The installation starts, and the Ignite-UX graphical interface (GUI) launches.

Step 12. Under the Basic tab, select the configuration to use HP-UX system.

Step 13. Select the Smart Array 6402, or Smart Array 6404 logical drive on which you want to install the HP-UX operating system.

Step 14. Verify that the Software tab (next to the Basic tab referenced in the previous step) contains the following entry:



Step 15. Complete the installation.

Step 16. Once the installation is complete, you can boot from the Smart Array 6402 logical drive.

Configuring the Server for RAID

To complete the installation and set up RAID for your server's internal hot swap drives, follow the instructions in the *HP A9890A Smart Array 6402 Controller User Guide*; or the *HP A9891A Smart Array 6404 Controller User Guide* on <http://docs.hp.com/>

- Install and use operating system-specific HP Smart Array 6402 and HP Smart Array 6404 utilities and software that help you manage your RAID.
- Configure the HP Smart Array 6402 and the HP Smart Array 6404 for an external RAID storage system.

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