

Single-Core to Dual-Core Processor Upgrade Guide

HP Integrity rx2620 Server



Manufacturing Part Number: AD117-9009A

First Edition

September 2006

U.S.A.

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About This Document

This document provides information and instructions on upgrading the single-core processors in your HP Integrity rx2620 server to dual core processors.

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

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

The latest version of this document can be found online at <http://www.docs.hp.com>.

Intended Audience

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

This document is not a tutorial.

New and Changed Information in This Edition

- This is a new document as part of upgrading the HP Integrity rx2620 server.

Publishing History

The publishing 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 documentation.

Table 1 Publishing History Details

Document Manufacturing Part Number	Operating Systems Supported	Supported Product Versions	Publication Date
AD117-9009A	HP-UX, Windows®, Linux®	rx2620	September 2006

Document Organization

This guide is divided into the following chapters.

Chapter 1 **Upgrading the Processors in the Server** Use this chapter to learn about upgrading the processors from single-core to dual-core in the HP Integrity rx2620 server.

Typographic Conventions

This document uses the following conventions.

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

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

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

<i>Book Title</i>	The title of a book. On the Web and on the Instant Information CD, it may be a hot link to the book itself.
KeyCap	The name of a keyboard key or graphical interface item (such as buttons, tabs, and menu items). Note that Return and Enter both refer to the same key.
<i>Emphasis</i>	Text that is emphasized.
Bold	Text that is strongly emphasized.
Bold	The defined use of an important word or phrase.
ComputerOut	Text displayed by the computer.
UserInput	Commands and other text that you type.
Command	A command name or qualified command phrase.
Option	An available option.
Screen Output	Example of computer screen output.
[]	The contents are optional in formats and command descriptions. If the contents are a list separated by , you must select one of the items.
{ }	The contents are required in formats and command descriptions. If the contents are a list separated by , you must select one of the items.
...	The preceding element may be repeated an arbitrary number of times.
	Separates items in a list of choices.

HP-UX Release Name and Release Identifier

Each HP-UX 11i release has an associated release name and release identifier. The `uname (1)` command with the `-r` option returns the release identifier. This table shows the releases available for HP-UX 11i.

Table 2 HP-UX 11i Releases

Release Identifier	Release Name	Supported Processor Architecture
B.11.11	HP-UX 11i v1	PA-RISC
B.11.20	HP-UX 11i v1.5	Intel® Itanium®
B.11.22	HP-UX 11i v1.6	Intel Itanium
B.11.23	HP-UX 11i v2.0	Intel Itanium

Related Documents

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>

Server Hardware Information:

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

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.

Web Site for HP Technical Support:

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

Books about HP-UX Published by Prentice Hall

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

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

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

HP Encourages Your Comments

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

Please send comments to: netinfo_feedback@cup.hp.com.

Please include title, manufacturing part number, and any comment, error found, or suggestion for improvement you have concerning this document. Also, please include what we did right so we can incorporate it into other documents.

1 Upgrading the Processors in the Server

The HP Integrity rx2620 server is a 2-socket server based on the Itanium processor architecture. These procedures show how to upgrade the single-core processors to dual-core processors in the server.

This chapter addresses the following topics:

- “Introduction” on page 14
- “Upgrade Checklist” on page 14
- “Upgrade Kit Contents” on page 15
- “Service Tools Required” on page 15
- “Safety and Environmental Considerations” on page 16
- “Upgrade Preparation” on page 17
- “Upgrading the Server to Dual-Core Processors” on page 18
- “Verification of Upgrade Installation” on page 37

Introduction

This hardware upgrade guide lists the required components and provides the instructions for upgrading the single-core processors to dual-core processors in an HP Integrity rx2620 server.

The upgrade guide is organized into the following sections:

- “Introduction” on page 14
- “Upgrade Checklist” on page 14
- “Upgrade Kit Contents” on page 15
- “Safety and Environmental Considerations” on page 16
- “Upgrade Preparation” on page 17
- “Upgrading the Server to Dual-Core Processors” on page 18

Time Required

Upgrading your HP Integrity rx2620 server from single-core processors to dual-core processors may require several hours, depending on preparatory time, but you should plan for one hour of server downtime. Preparatory time includes checking the upgrade kit, preparing an ESD-safe work area, and backing up your data.

Upgrade Checklist

Use the following checklist to assist in completing your upgrade from single-core processors to dual-core processors in an HP Integrity rx2620 server.

Table 1-1 **Upgrade Checklist**

Step	Procedure	Completed
1	Verify upgrade kit contents	
2	Upgrade preparation	
3	Update operating system	
4	Update firmware	
5	Shut down server	
6	Install new processor(s)	
7	Validate server upgrade	
8	Power on the server	

Upgrade Kit Contents

The following items comprise the contents of the upgrade kit. The hardware components listed under the “Additional Upgrade Components Required” list are also required for the upgrade, but must be ordered separately. Verify the contents of the upgrade kit against the packing list. Resolve any discrepancies before continuing.

Table 1-2 Upgrade Kit Hardware Contents

Part No.	Description	Quantity
AD117-3400A	CPU baffle	1
AD117-2000A	CPU adapter cable	1
5182-4119	ESD kit	1
5021-1184	Read Me First	1
Additional Upgrade Products Required		
AD122A or AD123A	1.4 MHz / 12 GB dual-core processor 1.6 MHz / 18 GB dual-core processor NOTE: Do not mix CPU types within the same server	1 min; 2 max
A7231-04046	CPU install tool (included with processors)	1

Service Tools Required

Service of this product may require one or more of the following tools:

- IPF CPU Install Tool Kit, consisting of:
 - Disposable ESD Kit
 - Label-less CPU install tool (2.5mm hex and Torx 15)
- 1/4 inch Flat Blade Screwdriver
- Phillips No. 1 Screwdriver
- ACX-10 Torx Screwdriver
- ACX-15 Torx Screwdriver
- ACX-25 Torx Screwdriver

Safety and Environmental Considerations

WARNING 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.

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

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

Communications Interference

HP system compliance tests are conducted with HP supported peripheral devices and shielded cables, such as those received with the server. The server meets interference requirements of all countries in which it is sold. These requirements provide reasonable protection against interference with radio and television communications.

Installing and using the server in strict accordance with HP's instructions minimizes the chances that the server will cause radio or television interference. However, HP does not guarantee that the server will not interfere with radio and television reception.

Take these precautions:

- Use only shielded cables.
- Install and route the cables per the instructions provided.
- Ensure that all cable connector screws are firmly tightened.
- Use only HP supported peripheral devices.
- Ensure that all panels and cover plates are in place and secure before server operation.

Electrostatic Discharge Information

HP servers and peripherals contain assemblies and components that are sensitive to electrostatic discharge (ESD). Carefully observe the precautions and recommended procedures in this manual to prevent component damage from static electricity.

WARNING Connect to ground with a wrist strap. Connection can be made to any grounded metal assembly in the cabinet. Both you and the electronic devices must be grounded to avoid static discharges that may cause damage.

Take these precautions:

- Prepare an ESD safe work surface large enough to accommodate the various assemblies handled during the upgrade. Use a grounding mat and an anti-static wrist strap, such as those included in the ESD Field Service Kit
- The anti-static bag can not function as a static dissipating mat. Do not use the anti-static bag for any other purpose than to enclose a product.

- Treat all assemblies, components, and interface connections as static-sensitive.
- When unpacking cards, interfaces, and other accessories that are packaged separately from the server, keep the accessories in their conductive plastic bags, until they are ready to be installed.
- Avoid working in carpeted areas, and keep body movement to a minimum while installing accessories.

Upgrade Preparation

In general, your server should be stable before beginning the upgrade procedure. In addition, perform the following actions before you begin your server upgrade:

- Verify the server meets minimum software and firmware requirements
- Update system firmware and software
- Back up your server

Firmware Requirements

Ensure the server meets the minimum firmware revision listed below. Update as necessary.

- System firmware version must be greater than version 03.17A. System firmware includes the BMC and iLO MP firmware. Verify OS information.

Go to <http://www.hp.com/bizsupport> for the latest system firmware version. Follow the instructions provided online to update your firmware.

Minimum Operating System Requirements

Ensure the server meets the minimum operating system (OS) requirements. Refer to your OS documentation for updating procedures.

- HP-UX 11i v2 (11.23), HWE 0606
- MicroSoft Windows Server 2003, Enterprise Edition for 64 bit Itanium 2 Systems
- SuSE Linux Enterprise Server 10
- OpenVMS I64 Version 8.3

Back Up Your Server

Before performing the server upgrade, protect yourself by backing 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 before upgrading the server.

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 was provided on CD with your server.

Server Shutdown

Step 1. Press the power switch on the server front panel. Verify that the power LED goes off.

Step 2. Disconnect the AC power cords from the server rear panel.

Upgrading the Server to Dual-Core Processors

This section contains detailed instructions for upgrading the rx2620 server from single-core processors to dual-core processors. The steps are:

Step 1. Extend the server from the rack.

Step 2. Remove server top metal cover.

Step 3. Remove the airflow guide.

Step 4. Upgrade the processors.

Step 5. Replace server top metal cover.

Step 6. Perform system validation and reconfiguration procedures after processor upgrade.

Extending the Server from the Rack

The HP Integrity rx2620 server is designed to be rack mounted. The following procedure explains how to gain access to an HP Integrity rx2620 server that is mounted in an approved rack. If the server is pedestal-mounted, go to “Accessing a Pedestal-Mounted Server” on page 19.

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.**

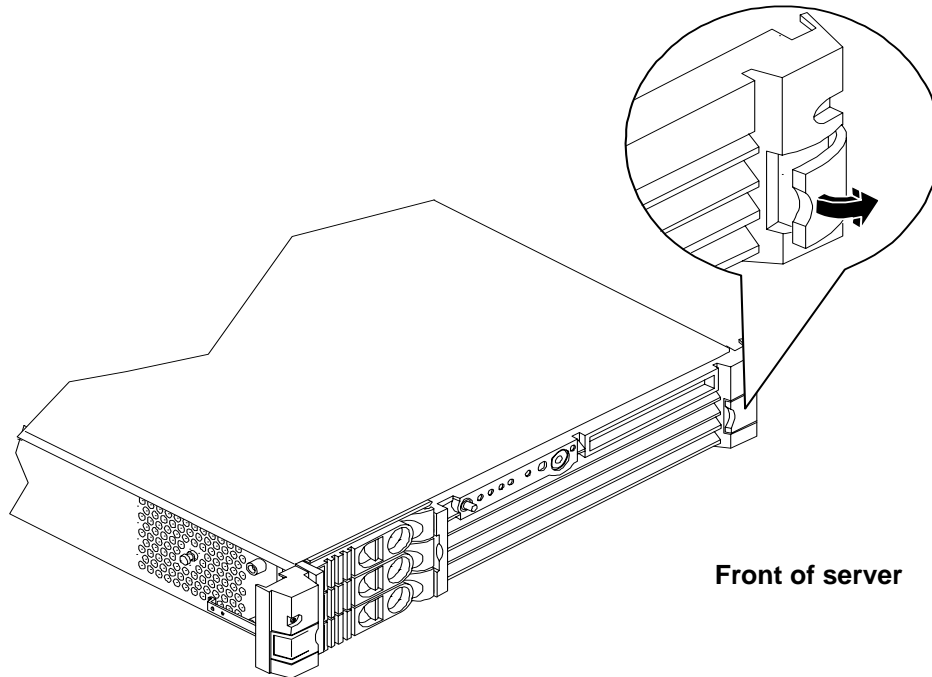
NOTE Ensure that there is enough area (approximately 1.5 meters (4.5 ft.) to fully extend the server out the front of the rack and work on it.

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

Step 1. Remove the T-25 screws that fasten the server to the rack.

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

Figure 1-1 Releasing the Rack Latches

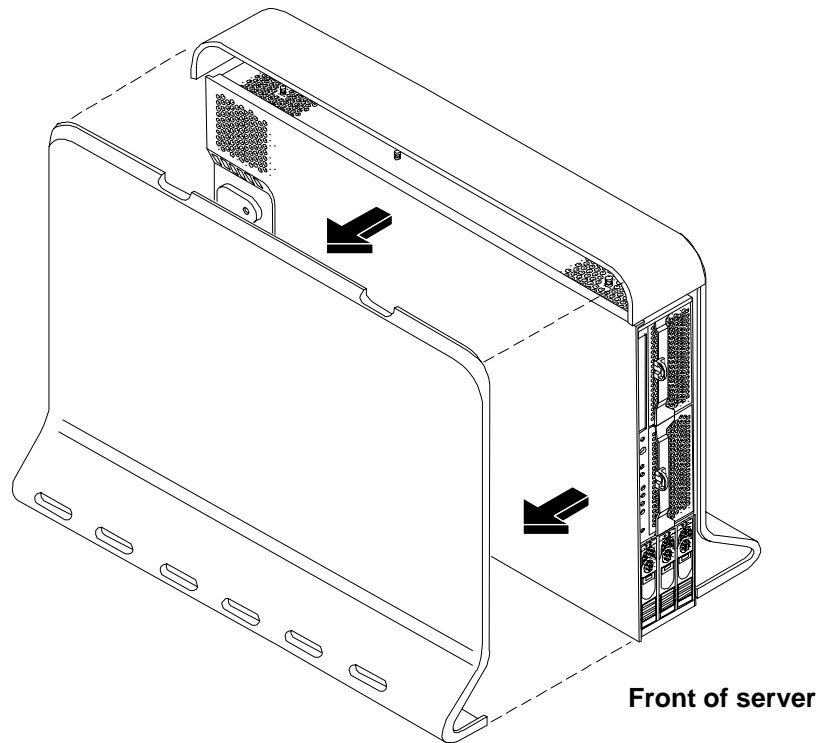


Step 3. Slide the server out of the rack until the guide-rail release clips are visible.

Accessing a Pedestal-Mounted Server

The HP Integrity rx2620 server is also designed to be pedestal mounted. You do not need to remove the entire pedestal from the HP server to gain access to internal components. The front bezel, front cover, and top cover may be removed with the pedestal attached to the HP server.

Figure 1-2 Pedestal Mounted HP Integrity rx2620 Server



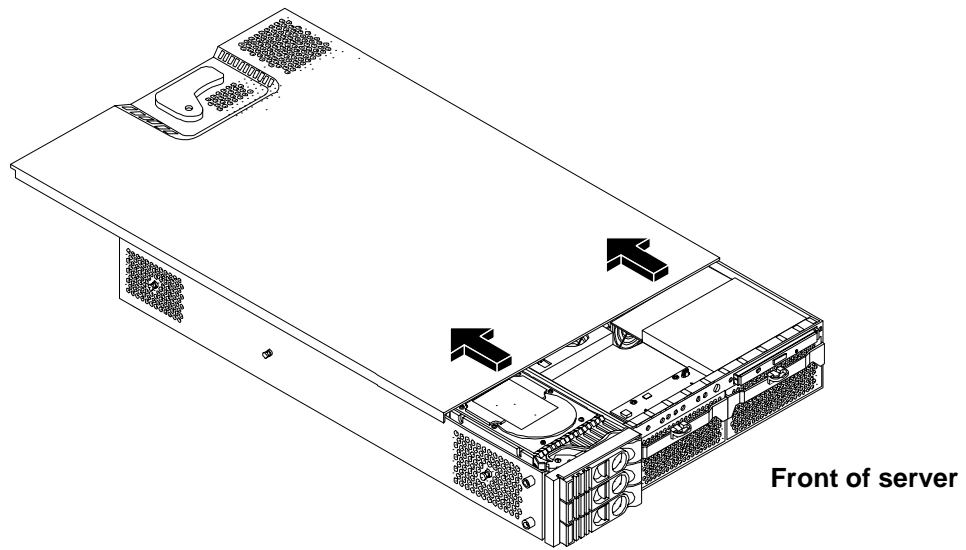
Removing the Top Metal Cover

To upgrade, remove, or replace most server components, you must first remove the top metal cover from the server. This section explains how to remove the cover for both the rack-mount and pedestal configurations.

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

- Step 1.** Extend the server from the rack. See “Extending the Server from the Rack” on page 18.
- Step 2.** Ensure the top metal cover lock keyswitch is in the unlocked position. Rotate the blue release lever toward the back of the server and slide the cover toward the back of the server. See Figure 1-3.

Figure 1-3 Removing the Top Metal Cover



Step 3. Lift the top metal cover off the server chassis.

Removing the Single-Core Processors

The following procedure show how to remove the single-core processors from the HP Integrity rx2620 server.

Figure 1-4 Internal Physical Layout

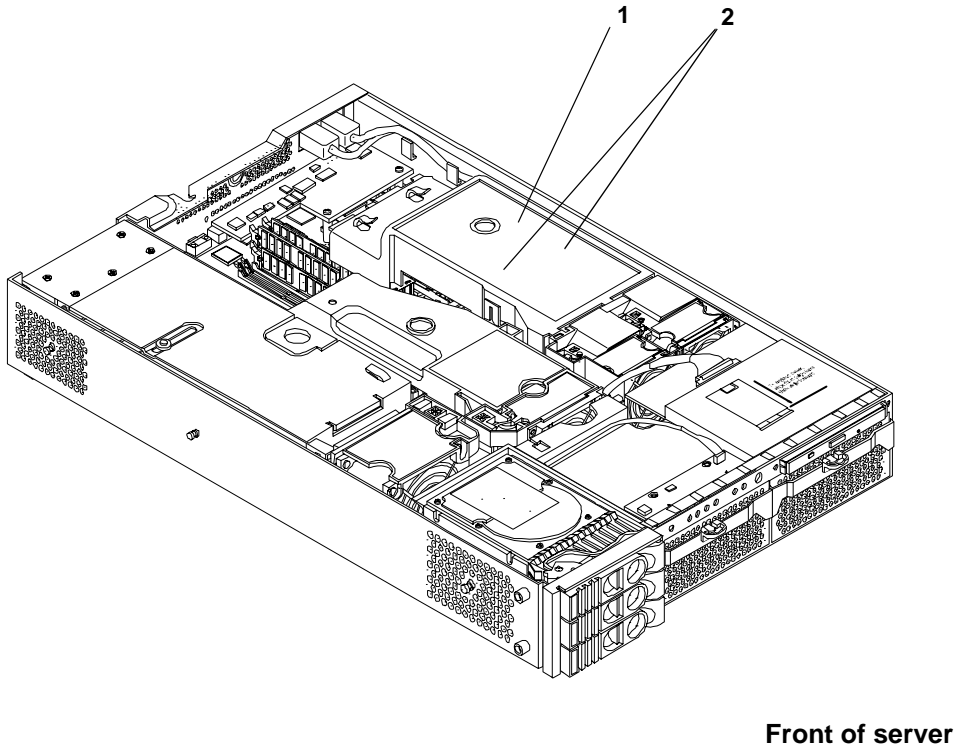
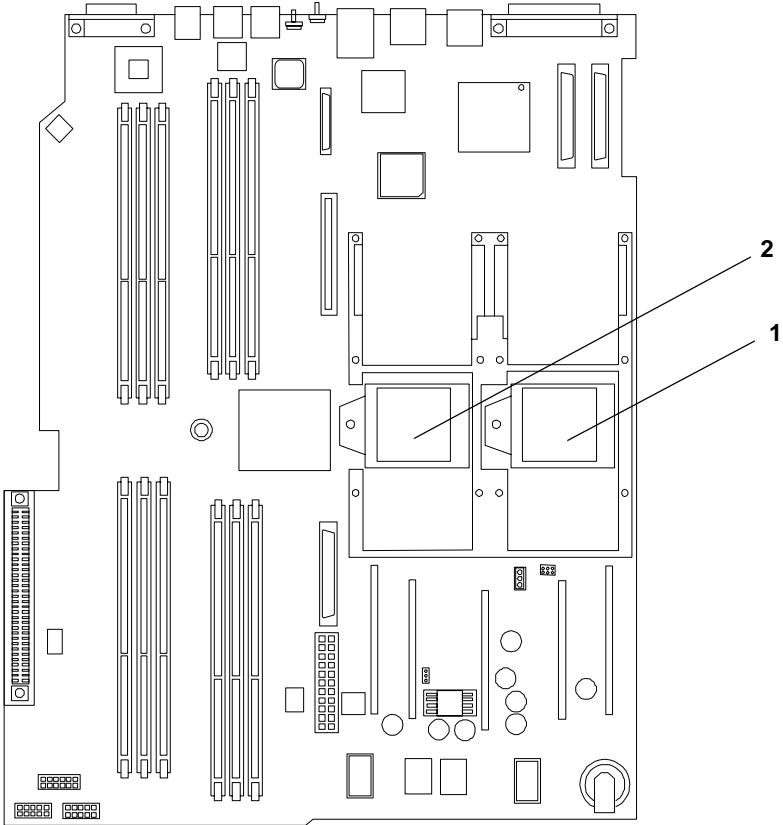


Table 1-3 Component Locations

1	Processor airflow guide
2	Processors (under airflow guide)

Figure 1-5 System Board Processor Slot Locations



Front of server

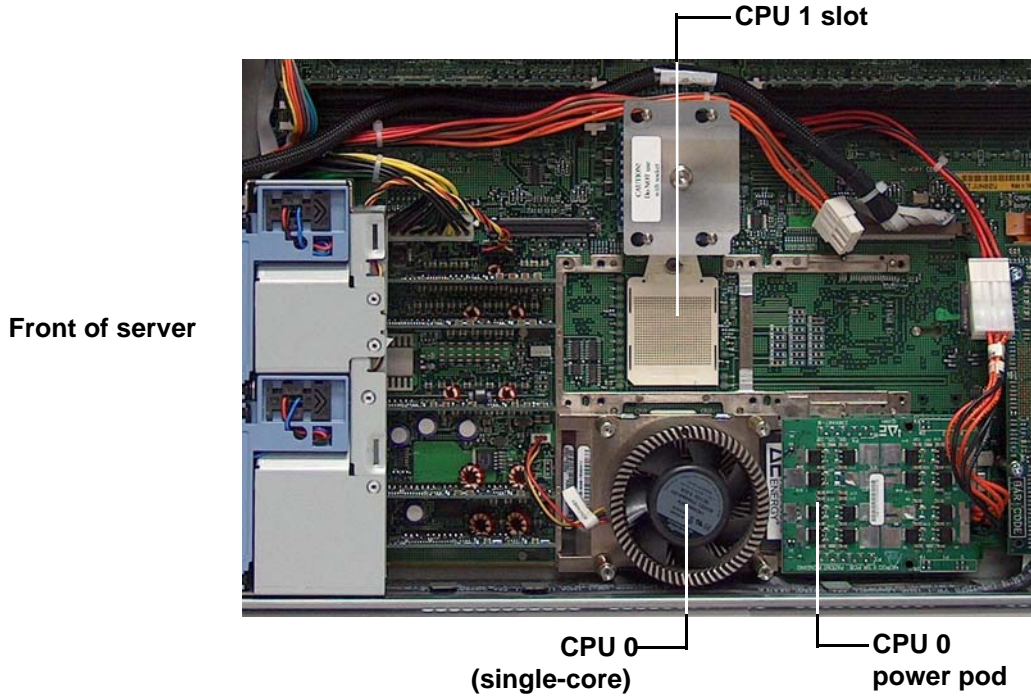
Table 1-4 Slot Locations

1	CPU 0 slot
2	CPU 1 slot

Removing the Processor Modules

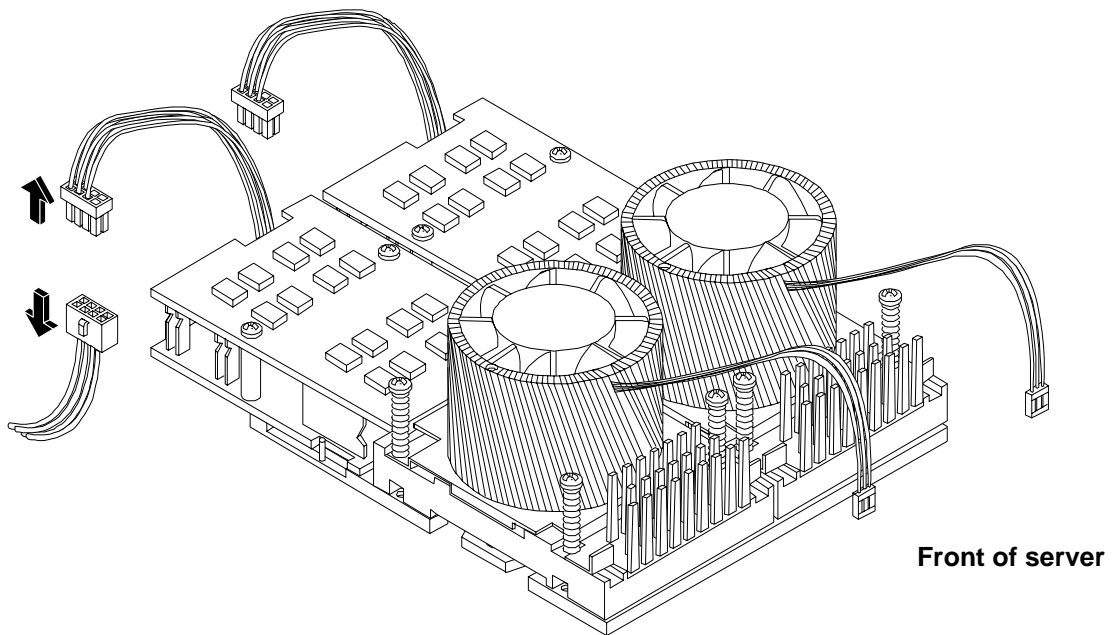
Figure 1-6 shows the location of the processor slots on the system board.

Figure 1-6 Processor Location



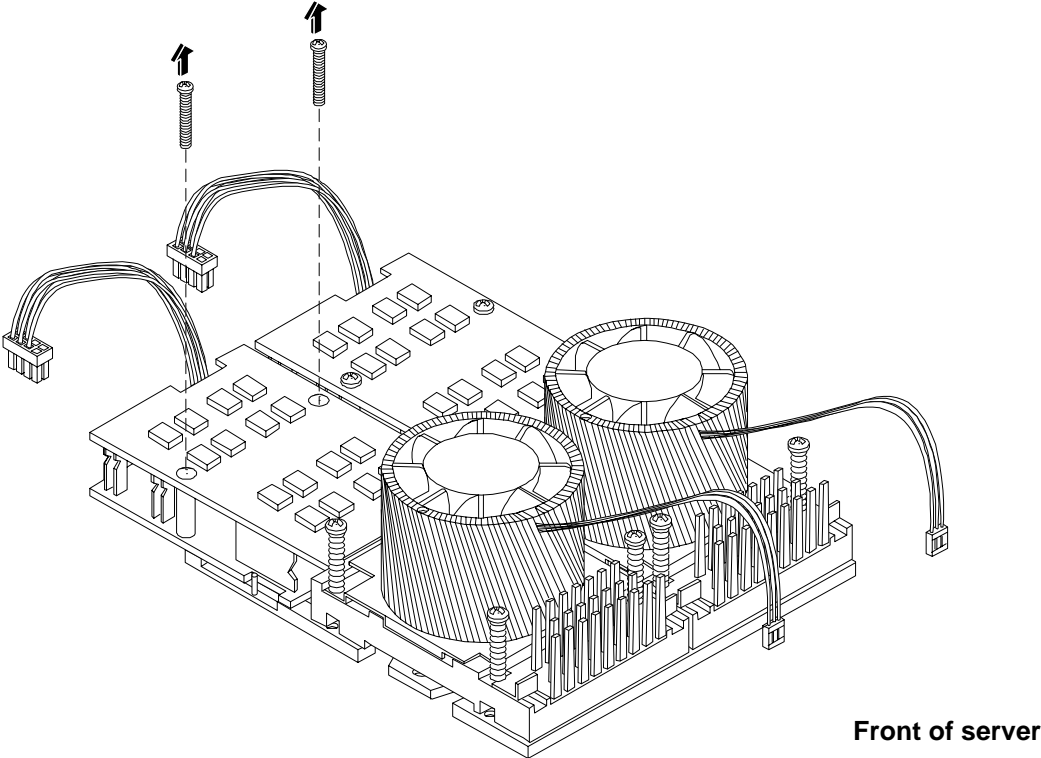
Step 1. Disconnect the power pod cable from the power connector on the system board.

Figure 1-7 Disconnect Power Pod Cable



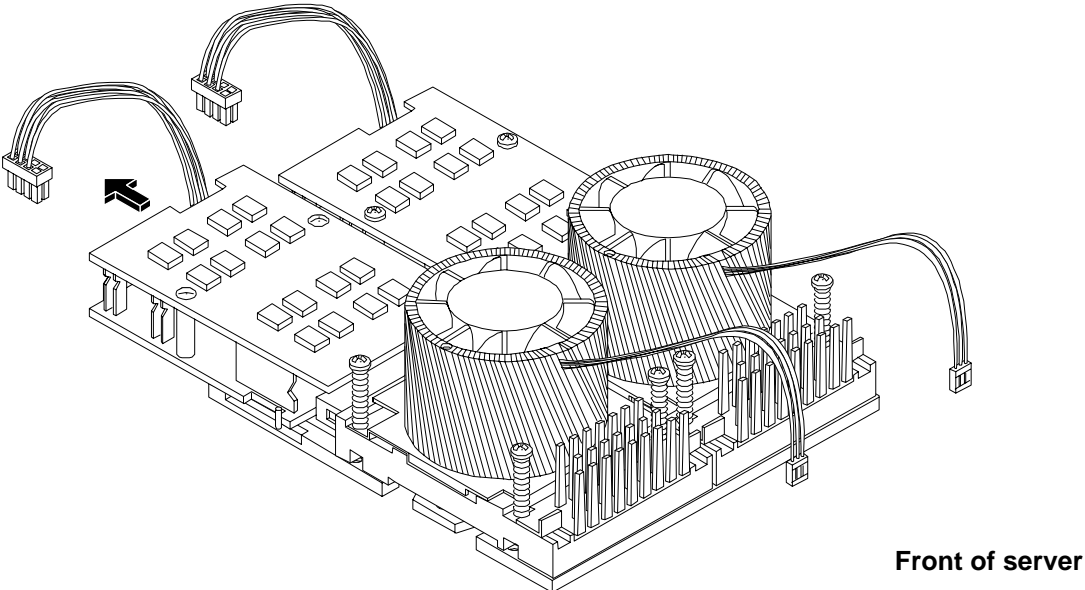
Step 2. Remove the two power pod mounting screws.

Figure 1-8 Remove Power Pod Mounting Screws



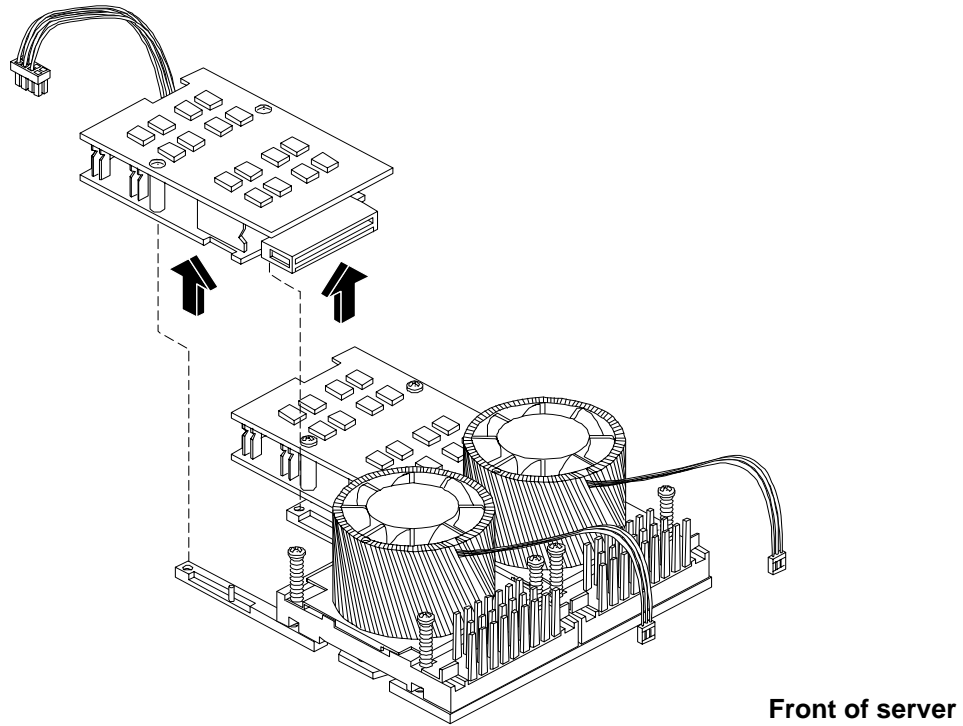
Step 3. Slide the power pod toward the rear of the system board disconnecting the power pod from the processor module.

Figure 1-9 Disconnect Power Pod from Processor Module



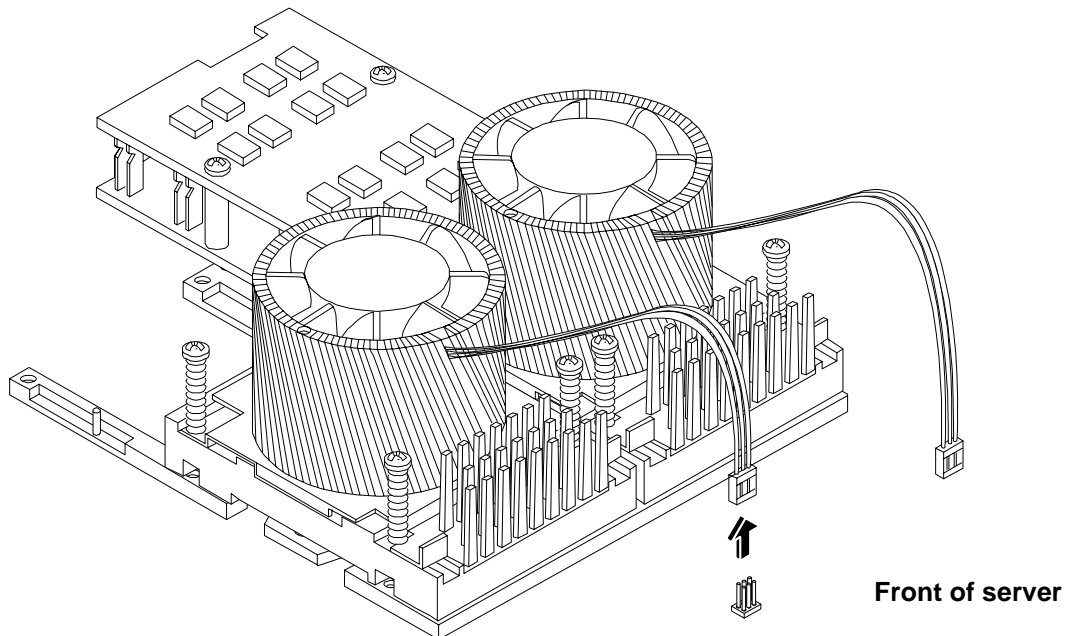
Step 4. Lift the power pod up and out of the chassis. Place the power pod into an anti-static container.

Figure 1-10 Remove Power Pod



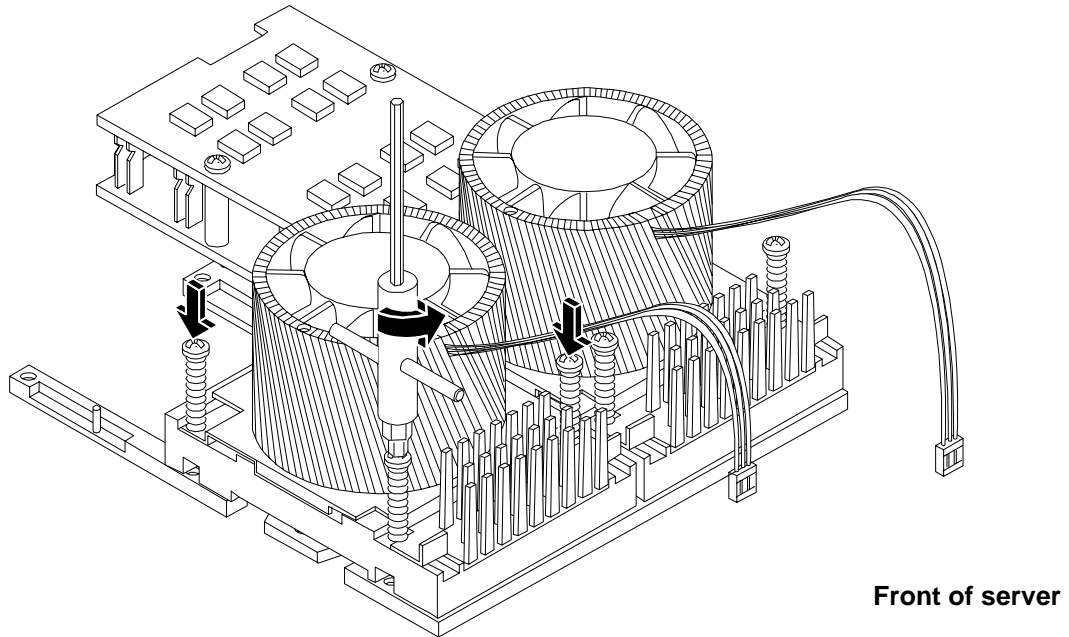
Step 5. Disconnect the processor module turbo fan power cable.

Figure 1-11 Disconnect the Turbo Fan Cable



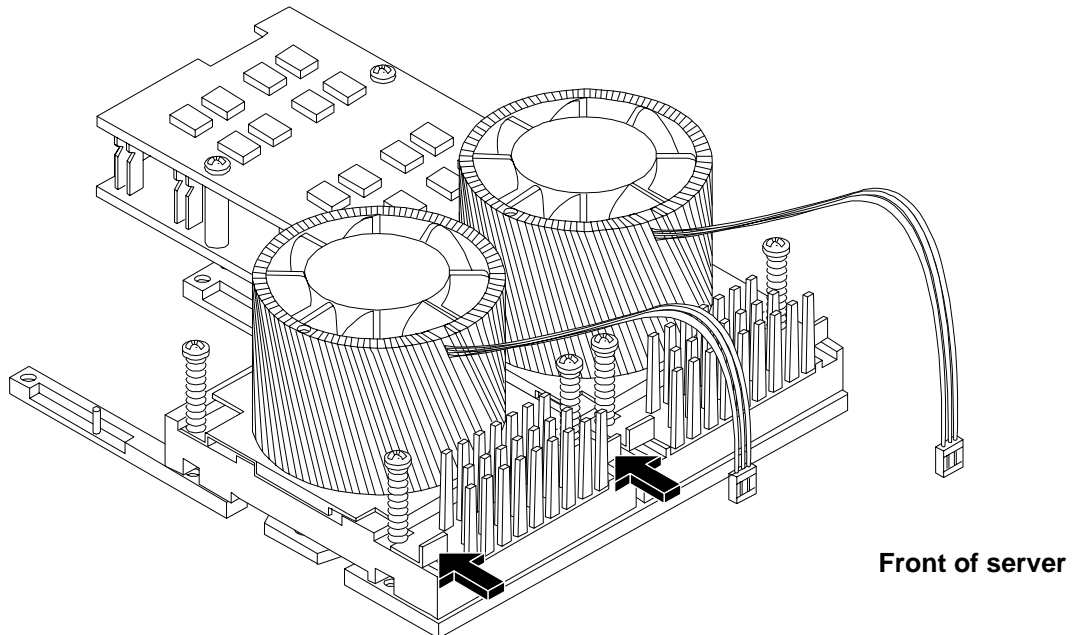
Step 6. Release the four heatsink captive screws on the processor module heat sink.

Figure 1-12 Release Heatsink Captive Screws



Step 7. Slide the sequencing retainer plate toward the back of the server to open the hole in the edge of the heatsink for insertion of the CPU install tool into the ZIF socket.

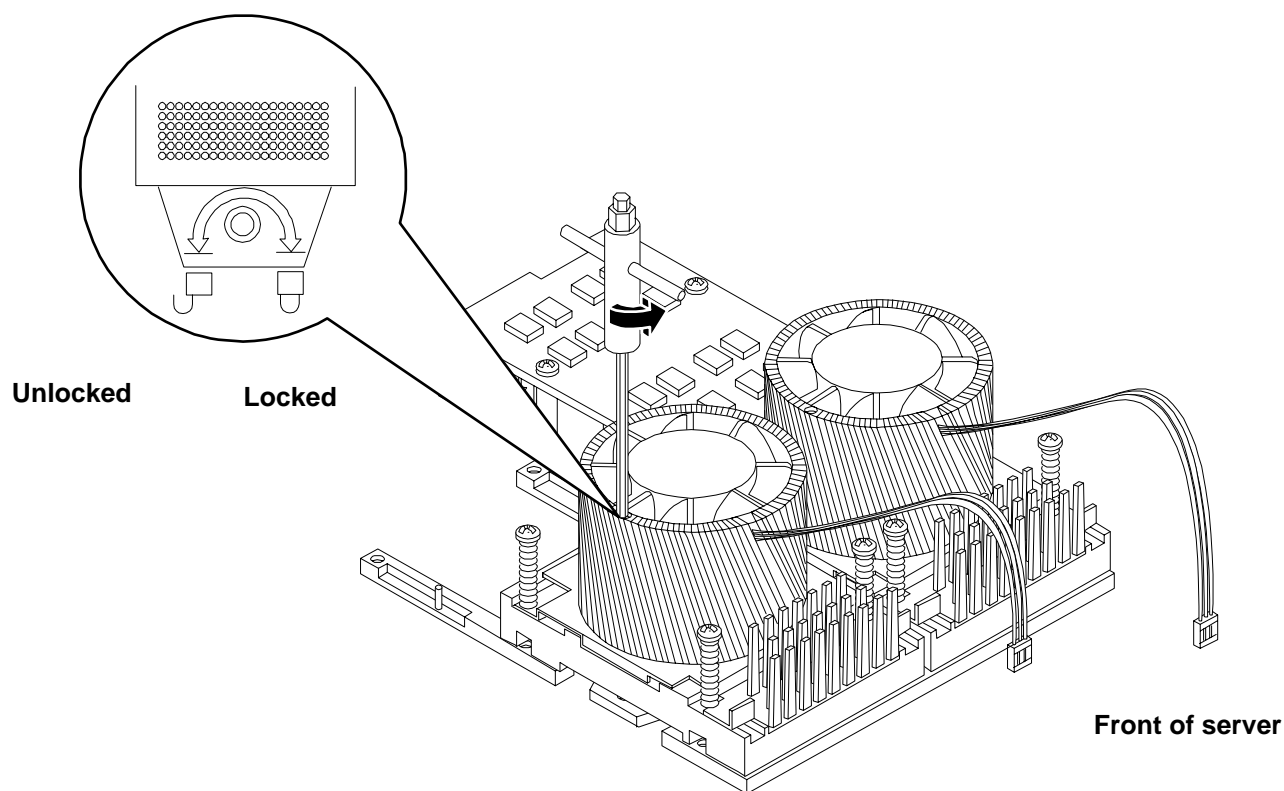
Figure 1-13 Slide Sequencing Retainer Plate



Step 8. Unlock the processor-locking mechanism using the CPU install tool (P/N 5069-5441), or equivalent 2.5 mm hex tool, shipped with your replacement processor assembly. Insert the tool into the lock and rotate the special processor tool 180 degrees counterclockwise. Verify that the processor-locking mechanism is rotated into the unlocked position.

WARNING The zero insertion force (ZIF) socket for the processor is locked and unlocked by 1/2 of a full turn of the 2.5 mm hex tool. The counterclockwise 180 degree rotation (1/2 turn) unlocks the socket. A clockwise 180 degree rotation locks the socket. Attempting to turn the locking mechanism more than 180 degrees can severely damage the socket.

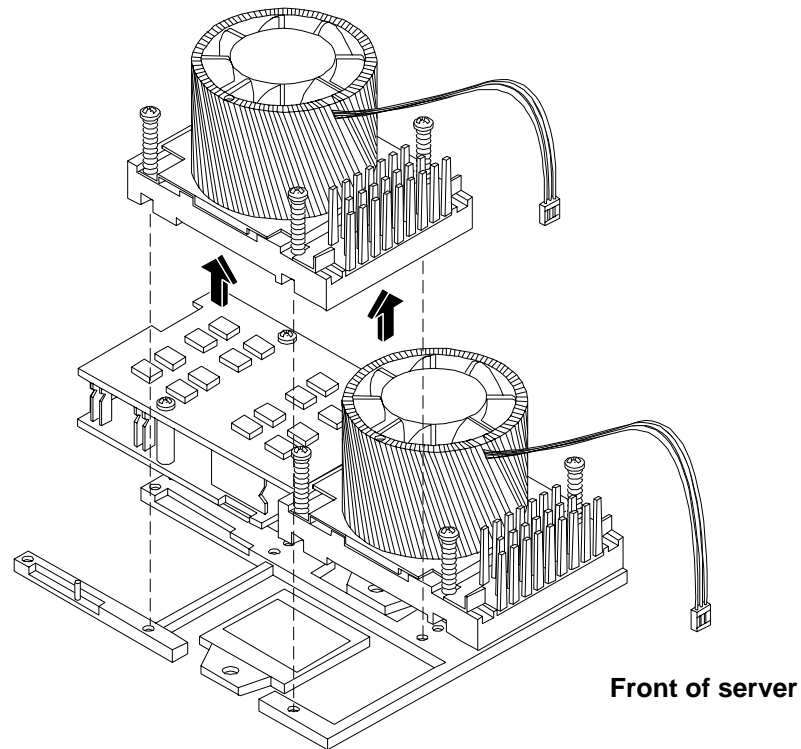
Figure 1-14 Unlock Processor Module Locking Mechanism



Step 9. Lift the processor module and the turbo fan assembly up and out of the chassis. Place the processor module into an anti-static container.

WARNING Carefully handle the processor to avoid damaging the pins. If possible, cover the exposed processor pins with a pin cover.

Figure 1-15 Remove Processor Module



Step 10. Remove the second processor module from the server (if necessary) using these procedures.

Installing the Processors

This section provides information about installing processors. The processors are located on the system board, accessible by removing the top metal cover.

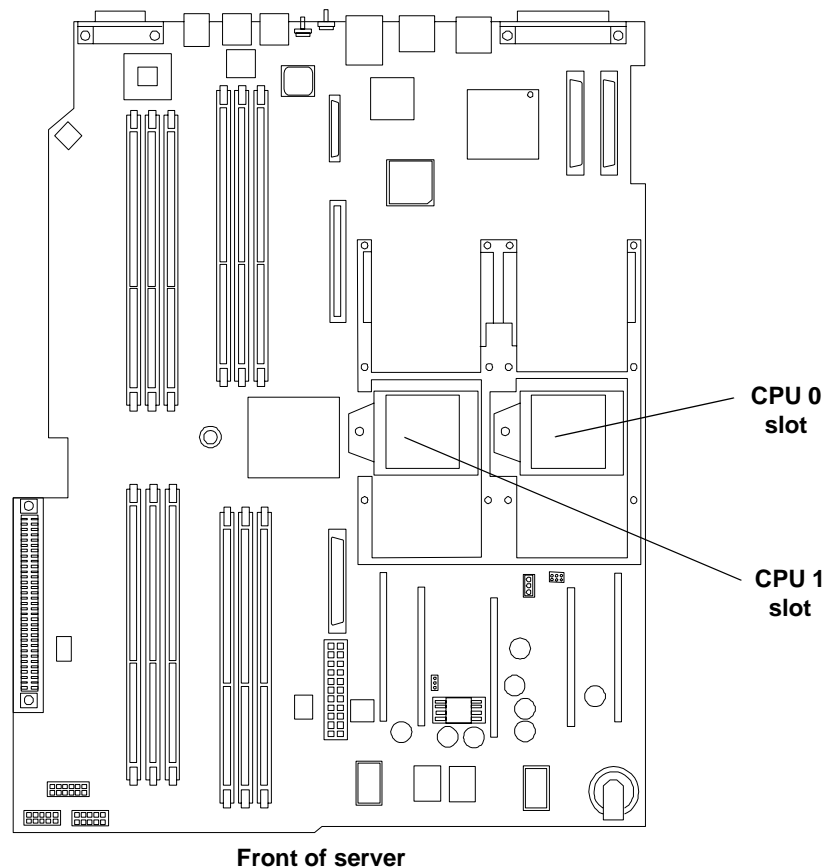
CAUTION Failure to properly complete the steps in this procedure will result in erratic server behavior or server failure. For assistance with this procedure contact your local HP Authorized Service Provider.

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

The server supports either one or two processors. The CPU 0 socket is located to the right of the system board (closer to the server chassis) and the CPU 1 socket is located on the left of the system board near the memory DIMMs. In a single CPU configuration, install the single processor in the CPU 0 socket. The load order is CPU 0, then CPU 1.

Figure 1-16 show the processor slot locations).

Figure 1-16 Processor Location on System Board



CAUTION Ensure that the cache size is identical for all processors. Failure to observe this caution will result in server failure.

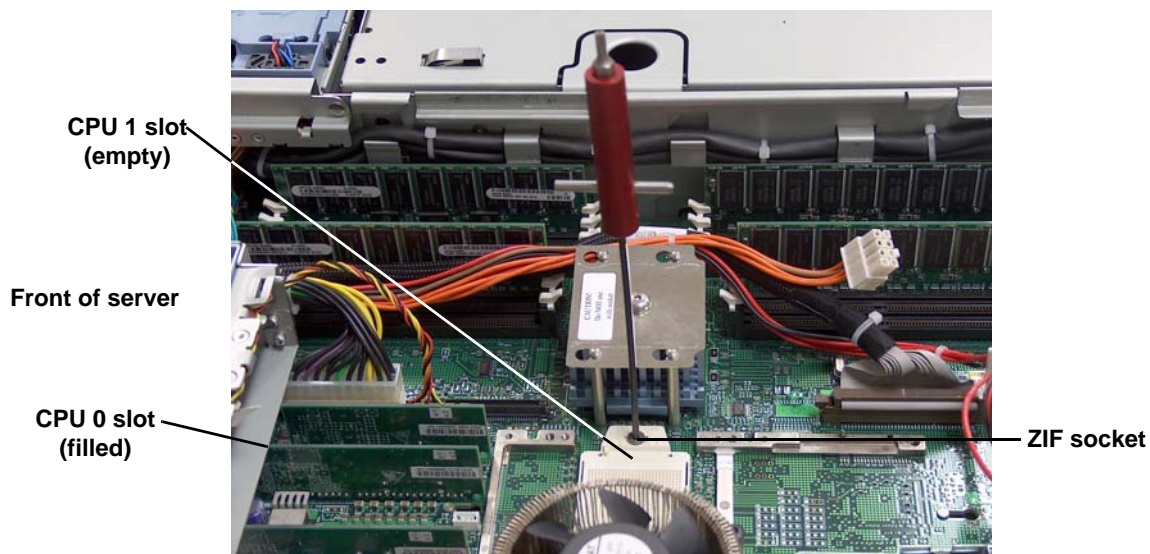
Ensure that all processors are rated for use at the same speed. Failure to observe this caution will result in performance degradation.

Valid processors are identified in the Parts Information chapter of the *HP Integrity rx2620 Maintenance Guide*.

Step 11. Ensure the ZIF socket processor locking mechanism is unlocked using the CPU install tool, or equivalent 2.5 mm hex tool. Insert the tool into the lock and rotate the special processor tool 180 degrees counterclockwise. Verify that the ZIF socket is rotated into the unlocked position. Figure 1-17 shows how to unlock the ZIF socket.

CAUTION The ZIF socket for the processor is locked and unlocked by 1/2 of a full turn of the CPU install tool. The counterclockwise 180 degree rotation (1/2 turn) unlocks the socket. A clockwise 180 degree rotation locks the socket. Attempting to turn the locking mechanism more than 180 degrees will severely damage the socket.

Figure 1-17 Unlocking the ZIF Socket



Step 12. Use the two alignment pins on the processor to properly align the processor on the system board. The two alignment pins fit in the alignment holes on the system board processor mount. The turbo fan power cable must be positioned so that it is located on the side of the heatsink that faces the front of the server. Figure 1-18 shows the alignment pins on the processor.

NOTE For the dual-core processors, the power pod and processor are a single assembly.

Figure 1-18 Alignment Pins on Processor

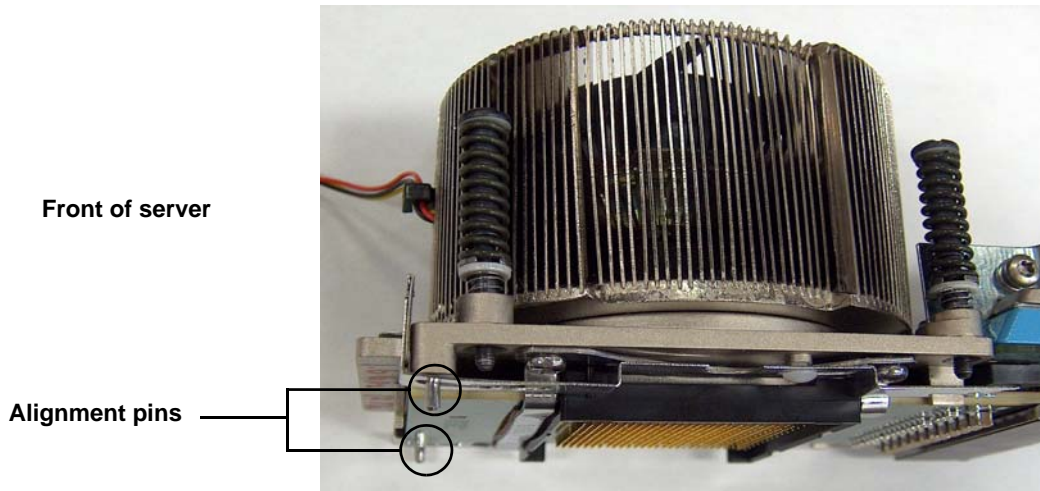
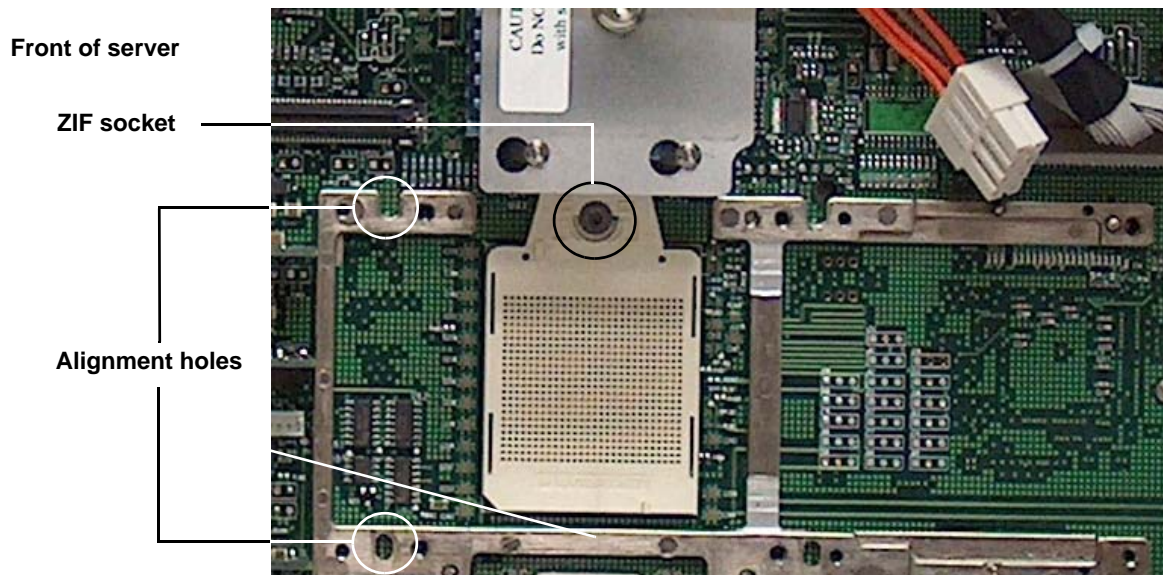


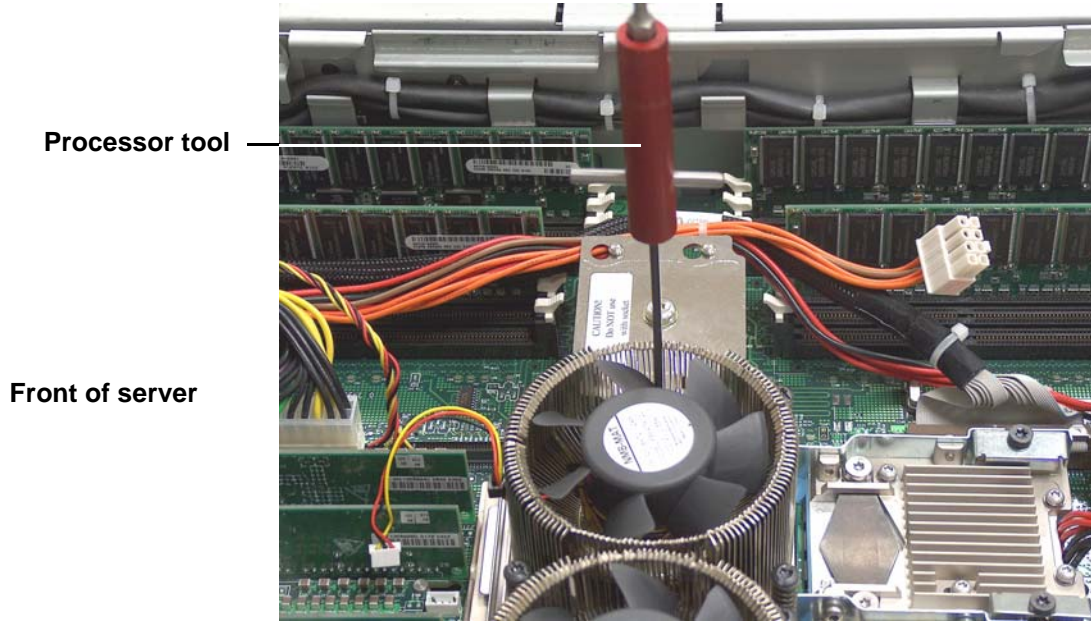
Figure 1-19 shows the alignment holes on the system board for the CPU 1 slot.

Figure 1-19 Aligning the Processor



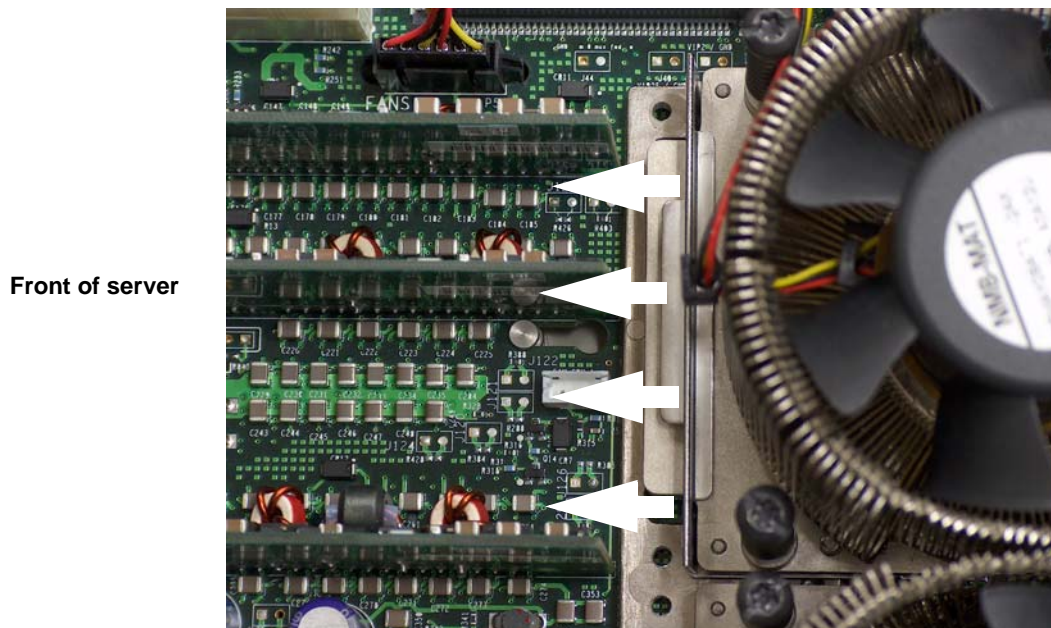
Step 13. Use the CPU install tool shipped with your processor to lock the processor in place on the system board. To do this, insert the CPU install tool between the turbofan blades into the lock, and rotate it clockwise 180 degrees. Figure 1-20 shows how to lock the processor in place.

Figure 1-20 Locking the Processor Module in Place



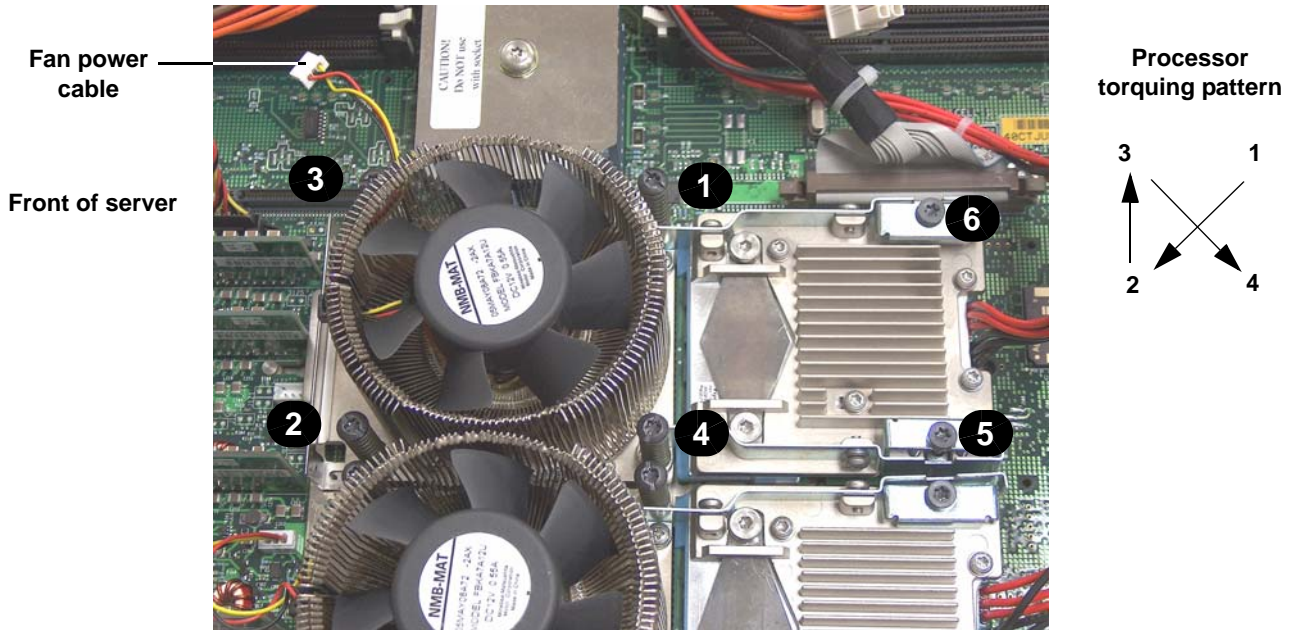
Step 14. Slide the sequencing retainer plate toward the front of the server. Figure 1-21 shows how to slide the sequencing retainer plate into place.

Figure 1-21 Slide the Sequencing Retainer Plate



Step 15. Screw in the four processor captive screws, and the two heat sink captive screws. Refer to Figure 1-22 for the screw locations and the torquing pattern.

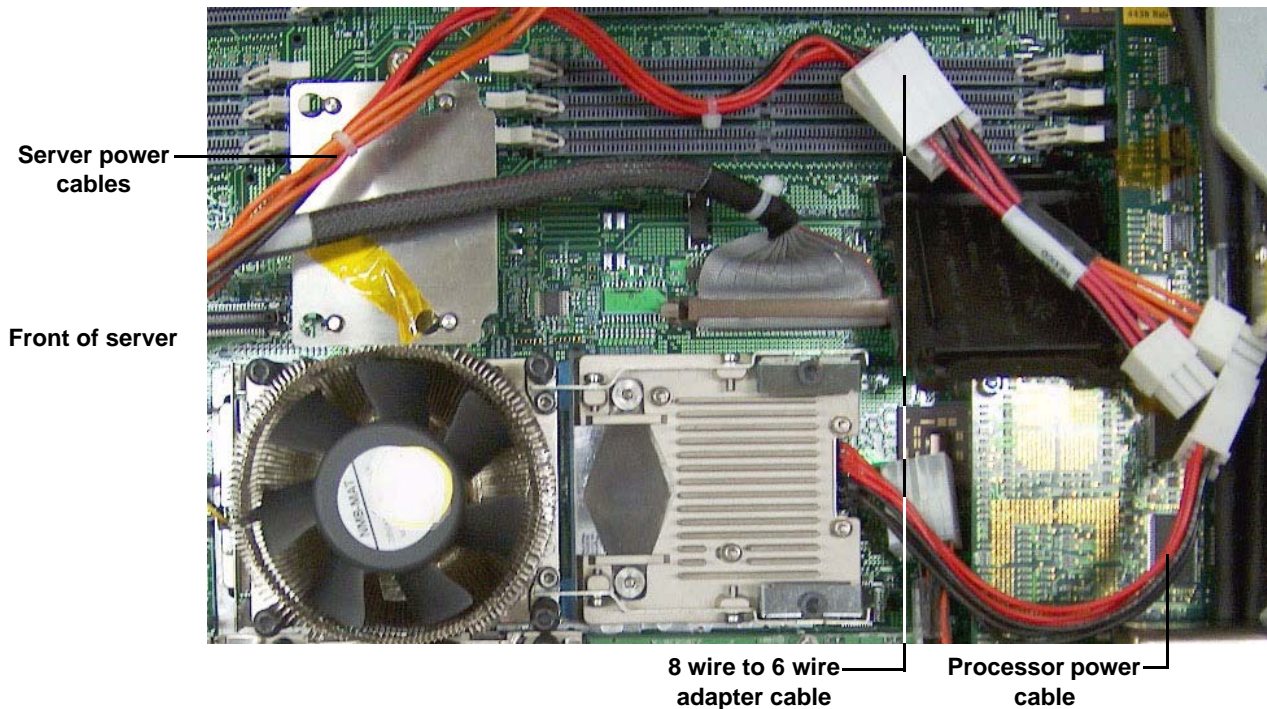
Figure 1-22 Secure the Captive Screws



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

Step 17. Connect the server power cable to the eight-wire to six-wire adapter cable. See Figure 1-23.

Figure 1-23 Processor Power Cable Adapter



Step 18. Connect the processor power cable to the adapter cable.

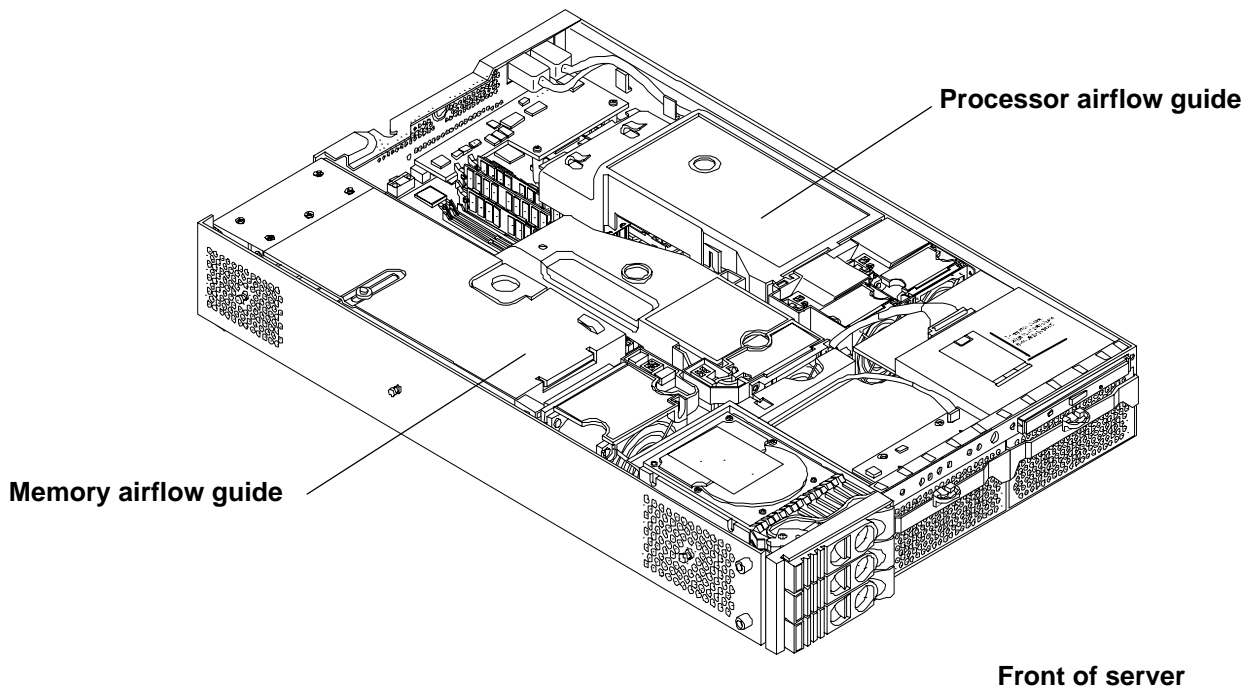
NOTE The adapter cable has two sets of wire connectors for the two processors. Ensure the cable is routed correctly for each processor.

Step 19. Install the new processor airflow guide, and route the IDE and power cables as previously recorded.

Step 20. Install the top metal cover. See “Replacing the Top Metal Cover” on page 35.

Replacing the Processor Airflow Guide

Figure 1-24 Airflow Guides Locations

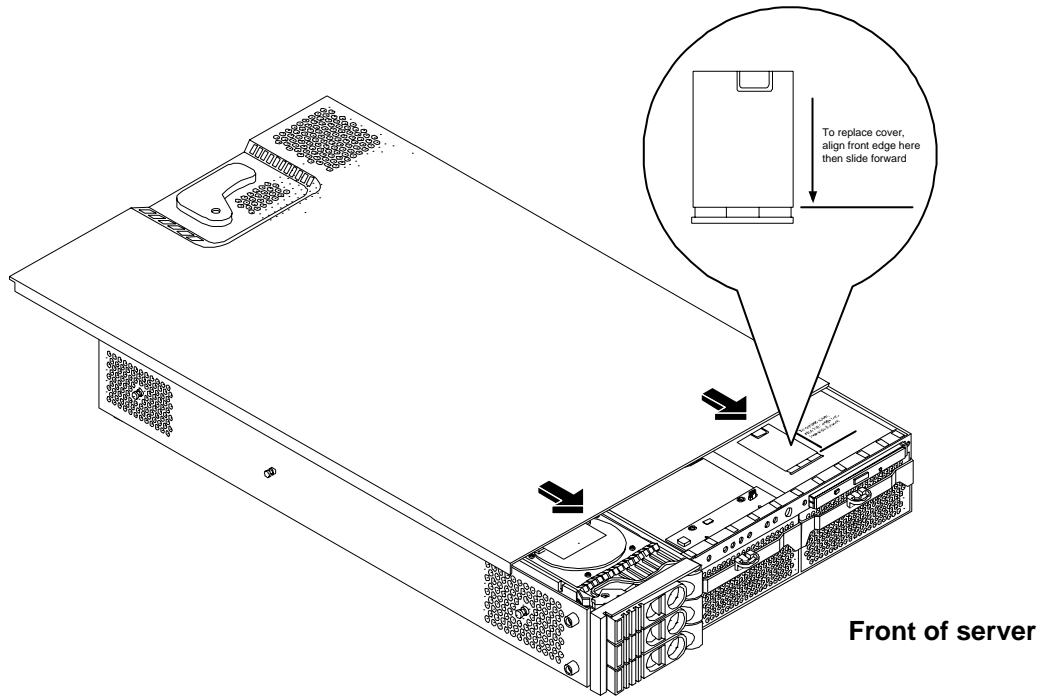


Replacing the Top Metal Cover

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

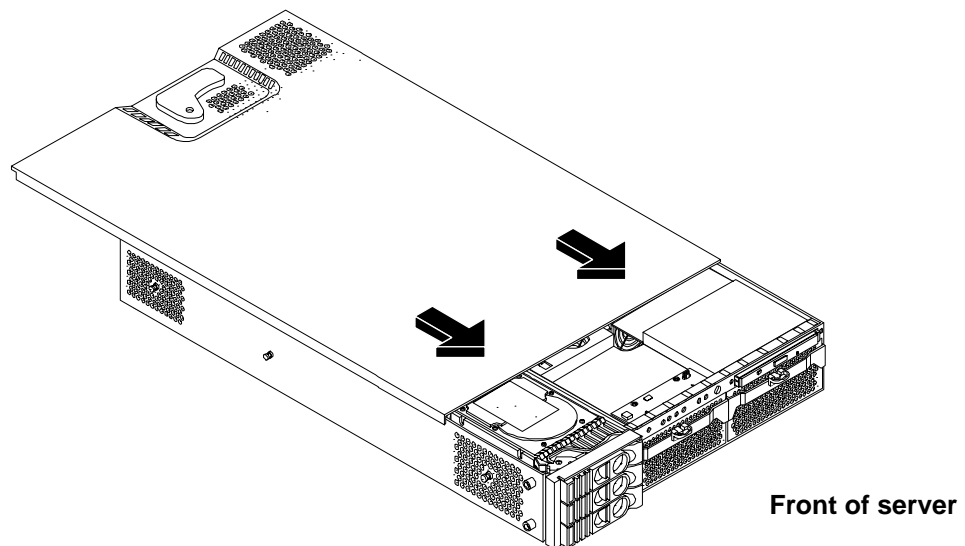
Step 1. Align the front edge of the top metal cover with the alignment mark on the optical drive bay.

Figure 1-25 Aligning the Top Metal Cover



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

Figure 1-26 Closing the Top Metal Cover



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

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.** Power on the server, and get to the server firmware main menu.

NOTE If Autoboot is enabled, interrupt the Autoboot process to access the server firmware main menu.

- Step 3.** Type **info warnings** in the server main menu. If warnings display, take appropriate actions.
- Step 4.** Type the **Info CPU** command and verify two logical processors display for each processor installed.

```
Shell> info cpu

PROCESSOR MODULE INFORMATION
```

CPU Module	# of Logical CPUs	Speed	L3 Cache Size	L4 Cache Size	Family/Model (hex.)	Rev	Processor State
0	2	1.4 GHz	6 MB	None	20/00	B0	Active
1	2	1.4 GHz	6 MB	None	20/00	B0	Active

CPU threads are turned off.

- Step 5.** Use the **cpu config** command to enable threads (optional).

```
Shell> cpuconfig threads on

cpuconfig: CPU threads will be on after a reset.
```

NOTE Threading provides thread-level parallelism on each processor, resulting in more efficient use of processor resources, higher processing throughput, and improved performance on multithreaded software.

- Step 6.** Type the **Info CPU** command and verify four logical processors display for each processor installed.

```
Shell> info cpu

PROCESSOR MODULE INFORMATION
```

CPU Module	# of Logical CPUs	Speed	L3 Cache Size	L4 Cache Size	Family/Model (hex.)	Rev	Processor State
0	4	1.4 GHz	6 MB	None	20/00	B0	Active
1	4	1.4 GHz	6 MB	None	20/00	B0	Active

CPU threads are turned off.

Step 7. Boot OS and resume normal operation.