

**hp 9000 rp4440 to hp Integrity rx4640
Upgrade Guide
A7124A to AB383A Configuration
A7134A to AB383A Configuration**



**Manufacturing Part Number : upgr-rp4440-rx4640
November 2004**

U.S.A.

© Copyright 2004 Hewlett-Packard Development Company, L.P.

Legal Notices

Copyright Notices. ©Copyright 2004 Hewlett-Packard Development Company, L.P.

The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

HP-UX Release 10.20 and later and HP-UX Release 11.00 and later (in both 32 and 64-bit configurations) on all HP 9000 computers are Open Group UNIX 95 branded products.

Printed in the U.S.A.

Reproduction, adaptation, or translation of this document without prior written permission is prohibited, except as allowed under the copyright laws.

Related Documents. The *HP Server Documentation CD-ROM* has been provided with your server. It contains a complete documentation set for the server, including localized versions of key documents. Included on the CD-ROM are the *Site Preparation* and *Operations and Maintenance* guides, which contain in-depth troubleshooting, installation, and repair information.

In addition, the latest versions of these documents, and any updates to these documents, are posted under the appropriate server at <http://docs.hp.com>.

For online access to technical support information, self-solve tools, online assistance, community forums of IT experts, broad multivendor knowledge base, and monitoring and diagnostic tools, go to <http://www.hp.com/support>.

1. Overview—Server Upgrade

Overview	7
Time Required	7
Upgrade Tasks	7
Common Procedures	9
Accessing a Rack Mounted Server	9
Extend the Server from the Rack	9
Insert the Server into the Rack	10
Accessing a Pedestal Mounted Server	10
Front Bezel	12
Removing the Front Bezel	13
Installing the Front Bezel	13
Front and Top Covers	14
Removing the Front Cover	15
Installing the Front Cover	15
Removing the Top Cover	17
Installing the Top Cover	17
Processor Extender Board	18
Removing the Processor Extender Board	18
Installing the Processor Extender Board	20
Hot-Swap Chassis Fan Unit	20

2. Upgrade Procedures for 1.3 GHz (A7158A) or 1.5 GHz (A7159A) Processors

Introduction	24
Required Tools	24
Back Up Your System	24
Installing Processors	25
Removing a Processor	26
Installing a Processor	26
Enabling the Onboard VGA	31
Installing Server Components	33
Verification of Upgrade Installation	33

3. Upgrade Procedures for 1.1 GHz mx2 Dual Processor Modules (A9730A)

Introduction	35
Required Tools	35
Back Up Your System	35
Installing Processors	36
Removing a Processor	37
Installing a Processor	37
Enabling the Onboard VGA	44
Installing Server Components	45
Verification of Upgrade Installation	45

4. Upgrade Procedures for 1.5 GHz (A9731AX) or 1.6 GHz (A9732AX or A9733AX) Dual Processors

Contents

Introduction	48
Required Tools	48
Back Up Your System	48
Installing Processors	49
Removing a Processor	50
Installing a Processor	50
Enabling the Onboard VGA	55
Installing Server Components	57
Verification of Upgrade Installation	57

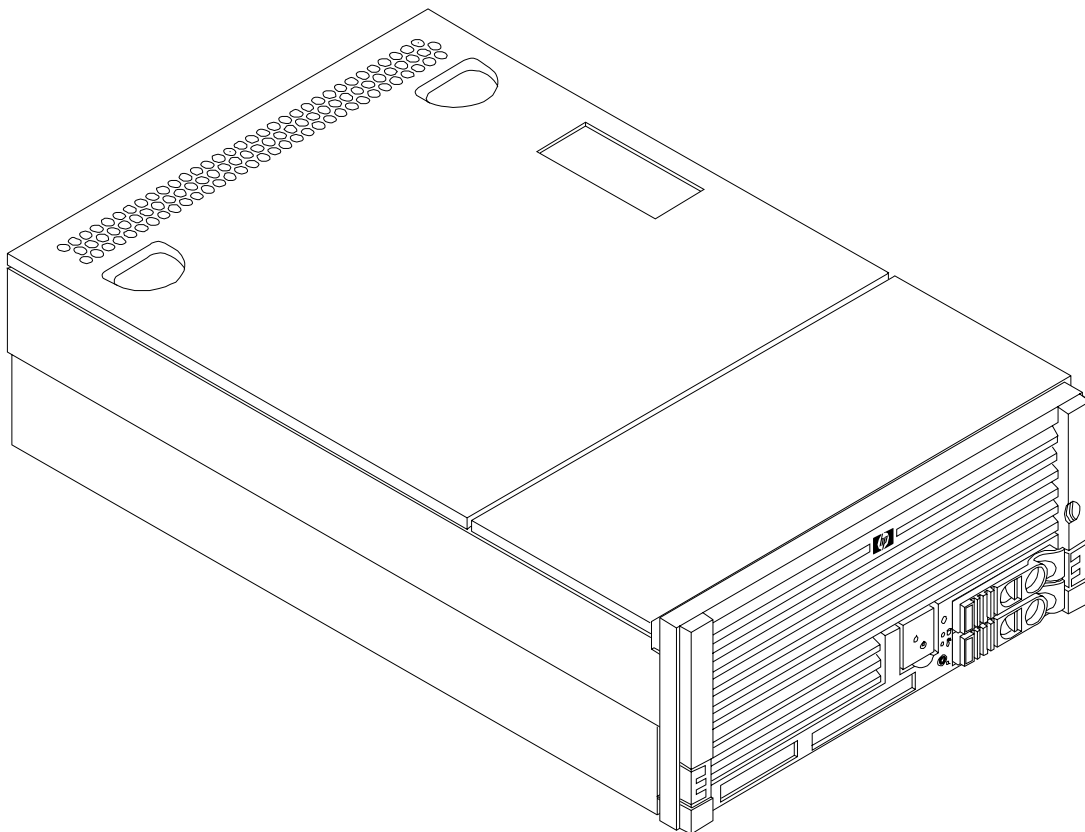
Figure 1-1. hp 9000 rp4440 Server	7
Figure 1-2. Accessing 25MM Torx Screws	10
Figure 1-3. Pedestal Mounted hp Server	11
Figure 1-4. Removing and Installing the Front Bezel	12
Figure 1-5. Removing and Installing the Front Cover	14
Figure 1-6. Removing and Installing the Top Cover	16
Figure 1-7. Processor Extender Board	19
Figure 1-8. Hot-Swap I/O Chassis Fans Removal and Replacement.	21
Figure 2-1. Processor Cable Placed Correctly	28
Figure 2-2. Processor Cable Placed Incorrectly	28
Figure 2-3. Installing Processor on Extender Board.	30
Figure 2-4. Processor Extender Board Switches	31
Figure 2-5. IO Baseboard Select Switches	32
Figure 2-6. VGA Port Cover Panel	33
Figure 3-1. Processor Cable Placed Correctly	39
Figure 3-2. Processor Cable Placed Incorrectly	39
Figure 3-3. Installing Processor on Extender Board.	42
Figure 3-4. Processor Extender Board Switches	43
Figure 3-5. IO Baseboard Select Switches	44
Figure 3-6. VGA Port Cover Panel	45
Figure 4-1. Processor Cable Placed Correctly	52
Figure 4-2. Processor Cable Placed Incorrectly	52
Figure 4-3. Installing Processor on Extender Board.	54
Figure 4-4. Processor Extender Board Switches	55
Figure 4-5. IO Baseboard Select Switches	56
Figure 4-6. VGA Port Cover Panel	57

1 Overview—Server Upgrade

Overview

This guide presents instructions for upgrading the hp 9000 rp4440 to a hp Integrity rx4640 server. This change replaces the processor, updates server firmware, and enables the onboard VGA.

Figure 1-1 **hp 9000 rp4440 Server**



Time Required

Upgrading the hp 9000 rp4440 Server may require several hours, depending on preparatory time, but you should plan for one hour of system downtime. Preparatory time includes checking the upgrade kit, preparing an ESD-safe work station, and backing up your data.

Upgrade Tasks

The upgrade procedure is accomplished as follows:

Step 1. Back up your data.

Step 2. Download and initialize new server firmware from <http://hpitrc.hp.com>.

Overview

- Step 3.** Shut down your server (disconnect AC power) and remove the processor extender board from the server chassis.
- Step 4.** Remove old processors and install new processors on the processor extender board.
- Step 5.** Set the IPF switch on the Processor Extender Board.
- Step 6.** Select the processor type on the IO baseboard.
- Step 7.** Enable the onboard VGA on the IO baseboard and remove the VGA port cover plate.
- Step 8.** Reinstall the processor extender board in the server chassis.
- Step 9.** Attach the new product ID labels. (Identify the server as the new configuration.)
- Step 10.** Power up the server, answer prompts, and verify hardware.
- Step 11.** Install the Operating System. Refer to the Operating System documentation.

Common Procedures

The procedures in this section are for removing and replacing server components for this upgrade.

Accessing a Rack Mounted Server

The hp Server is designed to be rack mounted. The following procedure explains how to gain access to your hp Server that is mounted in an approved rack. For rack installation instructions, review the document titled *Installation Guide, Mid-Weight Slide Kit, 5065-7291*. This document can be accessed at: <http://www.hp.com/racksolutions>.

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

Extend the Server from the Rack

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

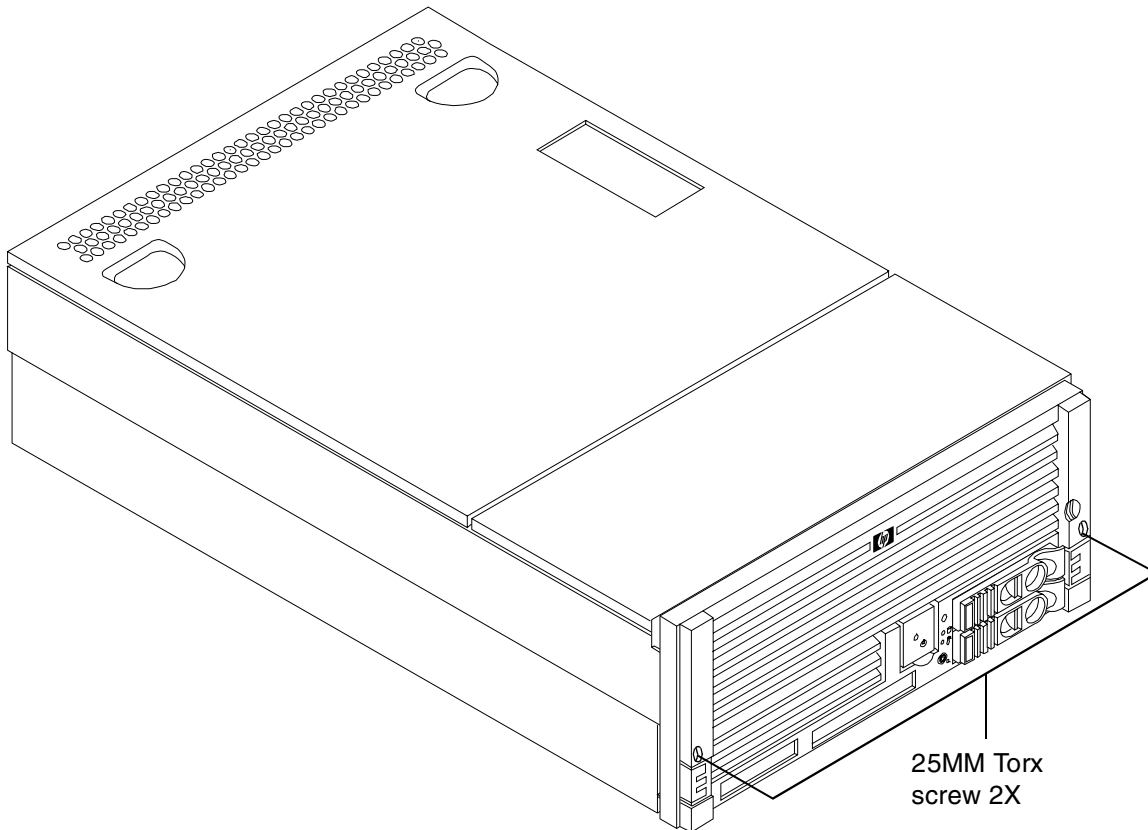
To extend the server from the rack, perform the following steps:

- Step 1.** Remove the T-25 screws that fasten the server to the rack. See Figure 1-2, “Accessing 25MM Torx Screws.”

Accessing a Rack Mounted Server

- Step 2.** Flip out the two pull handles at either end of the front bezel and slowly pull the unit forward by the handles. The server is fully extended when the rail clips are locked in place. When fully extended, the front and top covers are fully accessible.

Figure 1-2 Accessing 25MM Torx Screws



Insert the Server into the Rack

To insert the server into the rack, perform the following steps:

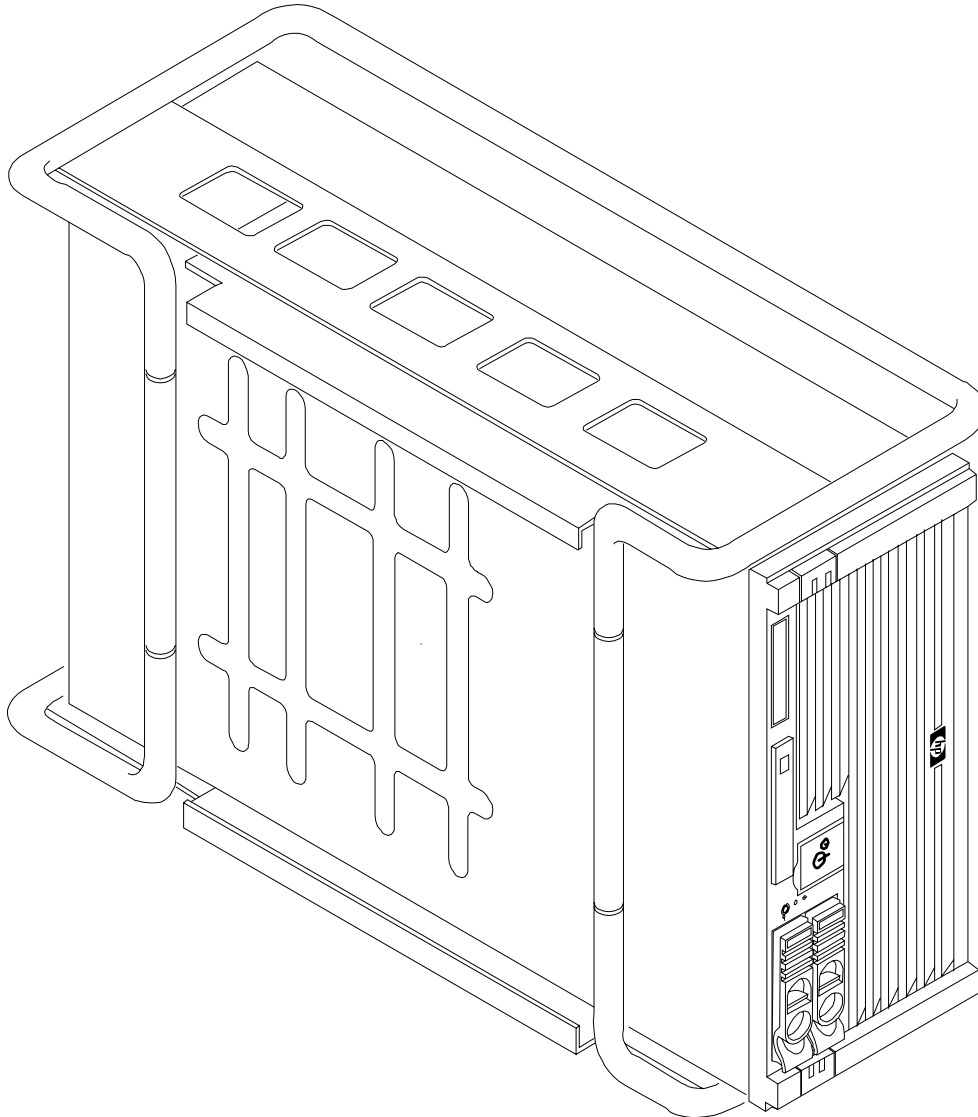
- Step 1.** Press the rail clips on either side of the server inward and push the server into the rack until it stops.
- Step 2.** Replace the T-25 screws that fasten the server to the rack.

Accessing a Pedestal Mounted Server

The hp Server is also designed to be pedestal mounted. You do not need to remove the 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.

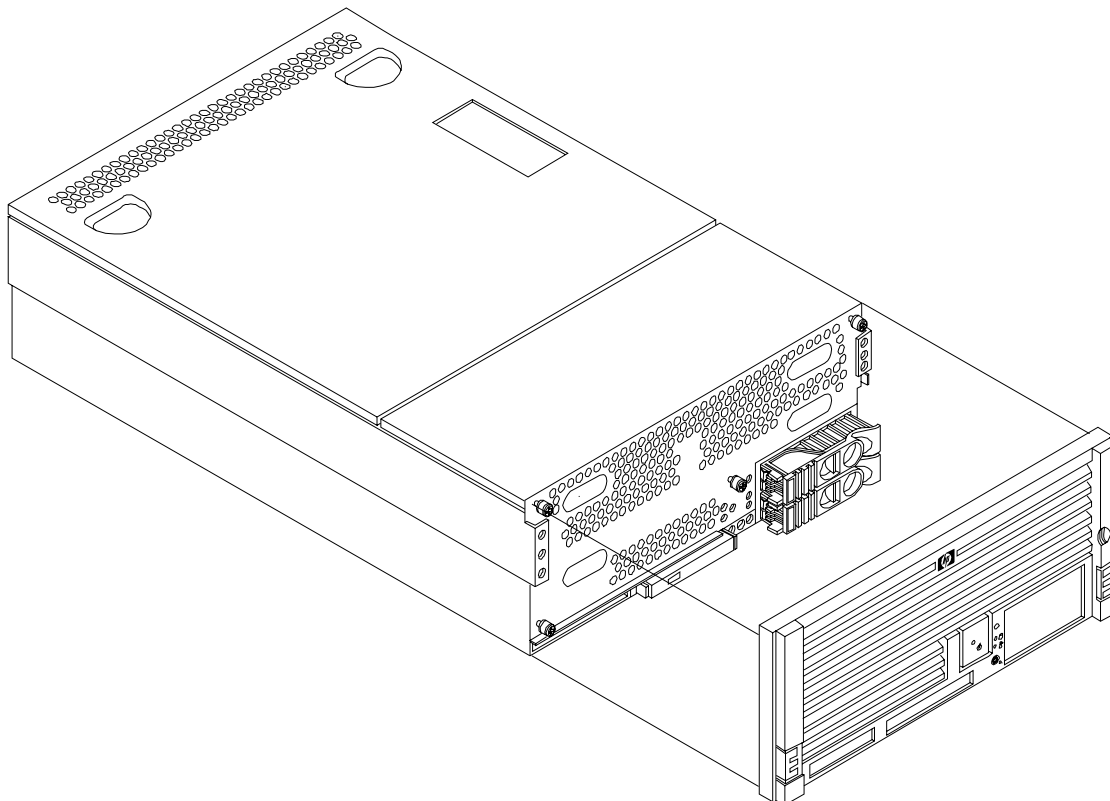
WARNING Ensure that the hp Server is properly grounded when performing remove-and-replace procedures. Use an antistatic wrist strap and grounding mat similar to those found in the hp Electrically Conductive Field Service Kit.

Figure 1-3 Pedestal Mounted hp Server



Front Bezel

Figure 1-4 Removing and Installing the Front Bezel



Removing the Front Bezel

To remove the front bezel, perform the following step:

Step 1. Grasp the front bezel at the outer edges and pull straight out.

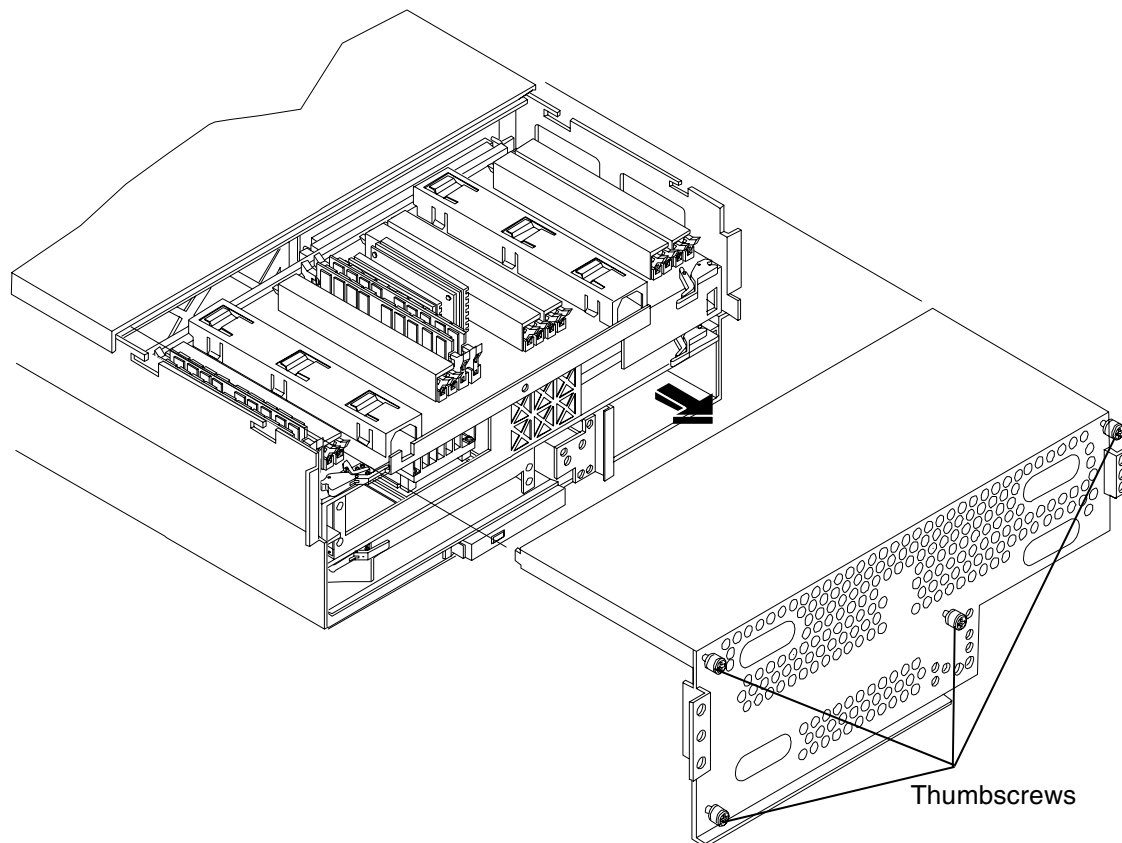
Installing the Front Bezel

To install the front bezel, perform the following step:

Step 1. Push the front bezel straight into the chassis until it snaps into place.

Front and Top Covers

Figure 1-5 Removing and Installing the Front Cover



Removing the Front Cover

To remove the front cover, perform the following steps:

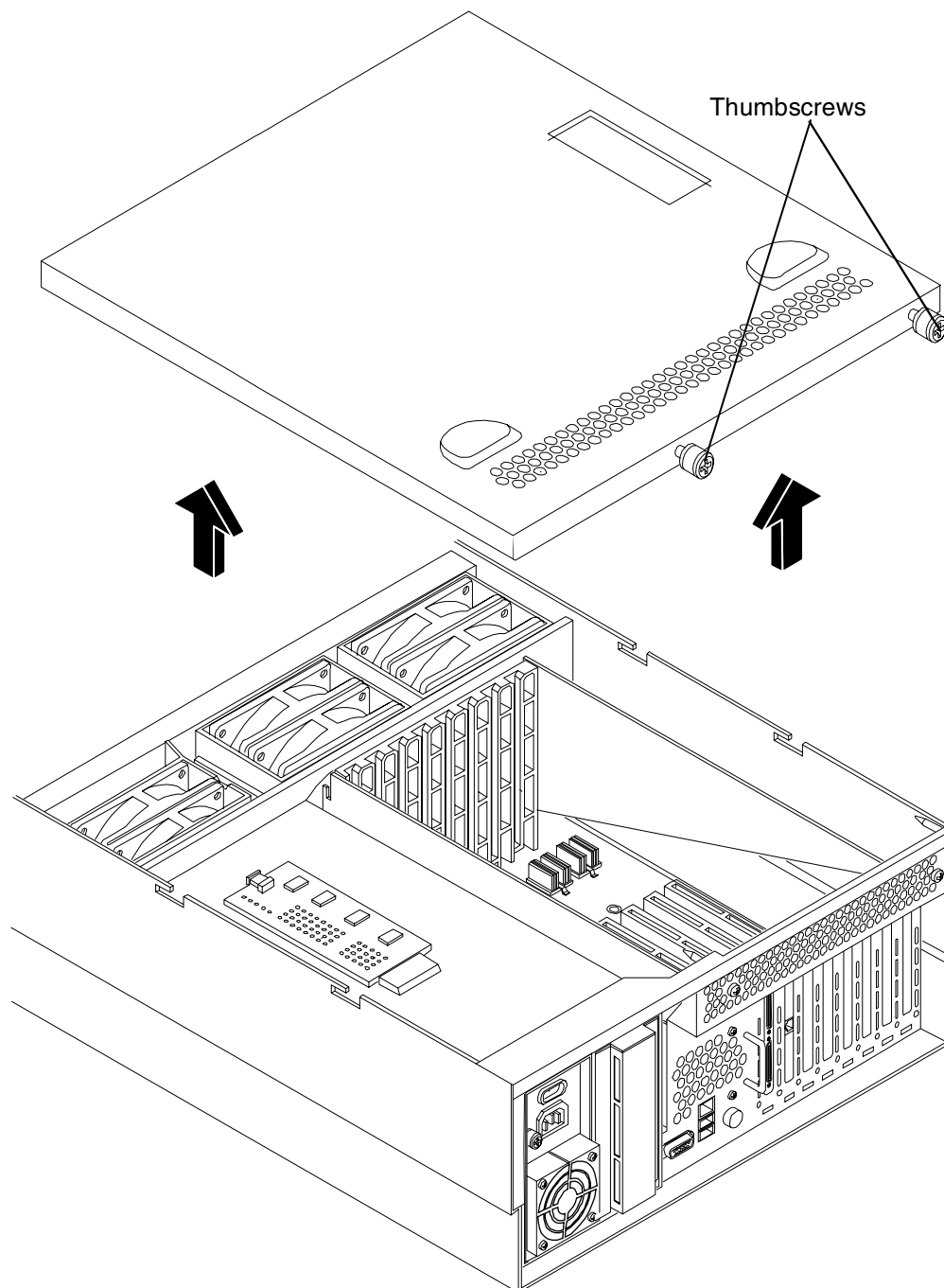
- Step 1.** If rack mounted, slide the hp Server out from the rack until it stops. See “Accessing a Rack Mounted Server” on page 9.
- Step 2.** Remove the front bezel. See “Front Bezel” on page 12.
- Step 3.** Using a Torx T15 driver, loosen the four captive thumbscrews that hold the front cover in place.
- Step 4.** Raise the cover slightly, and pull the cover toward the front of the server to free the tabs from the slots in the center of the chassis.

Installing the Front Cover

To install the front cover, perform the following steps:

- Step 1.** Align the tabs at the rear of the front cover with the corresponding slots in the chassis and fully seat the tabs into the slots.
- Step 2.** Tighten the four thumbscrews securely.
- Step 3.** Replace the front bezel.
- Step 4.** If rack mounted, slide the hp Server into the rack until it stops.

Figure 1-6 **Removing and Installing the Top Cover**



Removing the Top Cover

To remove the top cover, perform the following steps:

- Step 1.** If rack mounted, slide the hp Server out from the rack until it stops. See “Accessing a Rack Mounted Server” on page 9.
- Step 2.** Loosen the two captive thumbscrews that hold the top cover in place.
- Step 3.** Push the cover toward the rear of the server to free the tabs from the slots in the center of the chassis and lift it straight up.

Installing the Top Cover

To install the top cover, perform the following steps:

- Step 1.** Align the tabs at the rear of the top cover with the corresponding slots in the chassis, fully seat the tabs into the slots, and push forward until it seats.
- Step 2.** Using a Torx T15 driver, tighten the two thumbscrews securely.
- Step 3.** If rack mounted, slide the hp Server into the rack until it stops.

Processor Extender Board

The processor extender board is located directly under the memory extender board. The processor extender board can hold between one and four processors.

WARNING **Ensure that the system is powered down and all power sources have been disconnected from the server prior to removing or replacing the processor extender board.**

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.

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

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

Removing the Processor Extender Board

To remove the processor extender board, perform the following steps:

Step 1. If rack mounted, slide the hp Server out from the rack until it stops. See “Accessing a Rack Mounted Server” on page 9.

NOTE If desired, the processor extender board may be removed without removing the hp Server from the rack.

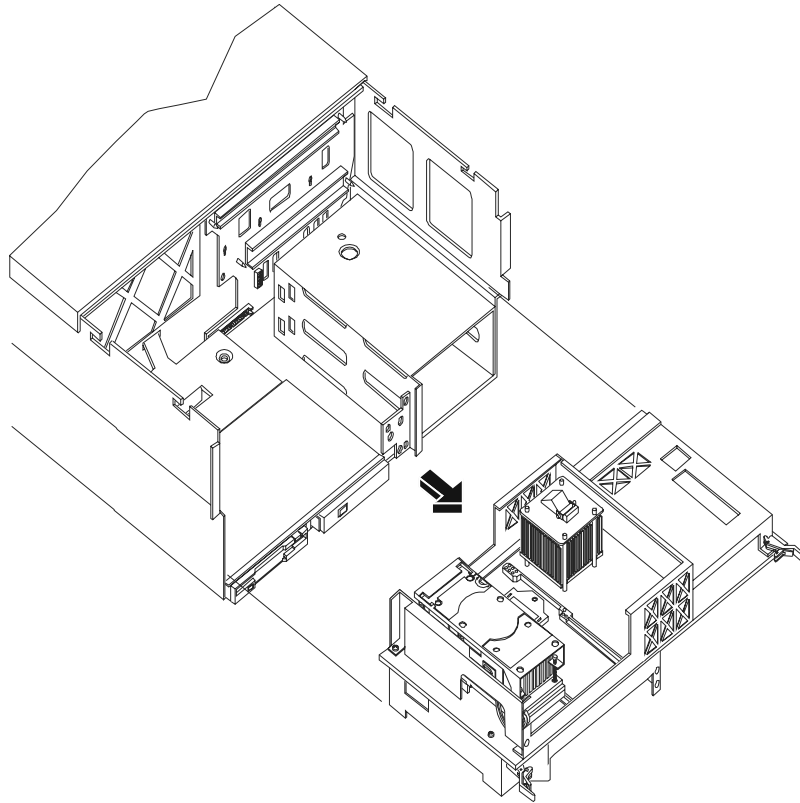
Step 2. Remove the front bezel. See “Front Bezel” on page 12.

Step 3. Remove the front cover. See “Front and Top Covers” on page 14.

Step 4. Press the latch on the extraction levers located on each side of the processor extender board.

Step 5. Pull out on the extraction levers to unplug the processor extender board from the socket located on the midplane riser board.

Figure 1-7 Processor Extender Board



Installing the Processor Extender Board

To install the processor extender board, perform the following steps:

- Step 1.** Ensure the extraction levers are positioned in the outward, unlocked position.
- Step 2.** Align the processor extender board with the front and rear card guides.
- Step 3.** Slide the processor extender board down until it begins to seat in the socket located on the midplane riser board.
- Step 4.** Push the extraction levers inward to the locked position in order to fully seat the processor extender board into the socket on the midplane riser board.
- Step 5.** Replace the front cover.
- Step 6.** Replace the front bezel.
- Step 7.** If rack mounted, slide the hp Server into the rack until it stops.

Hot-Swap Chassis Fan Unit

There are three hot-swap chassis fan units in the hp Server. Fan units 0, 1, and 2 are in the center of the chassis spanning the full chassis width. Fan units 0 and 1 are interchangeable and are in the left and center positions. Fan unit 2 is smaller and only fits into the right-most position (behind the power supply).

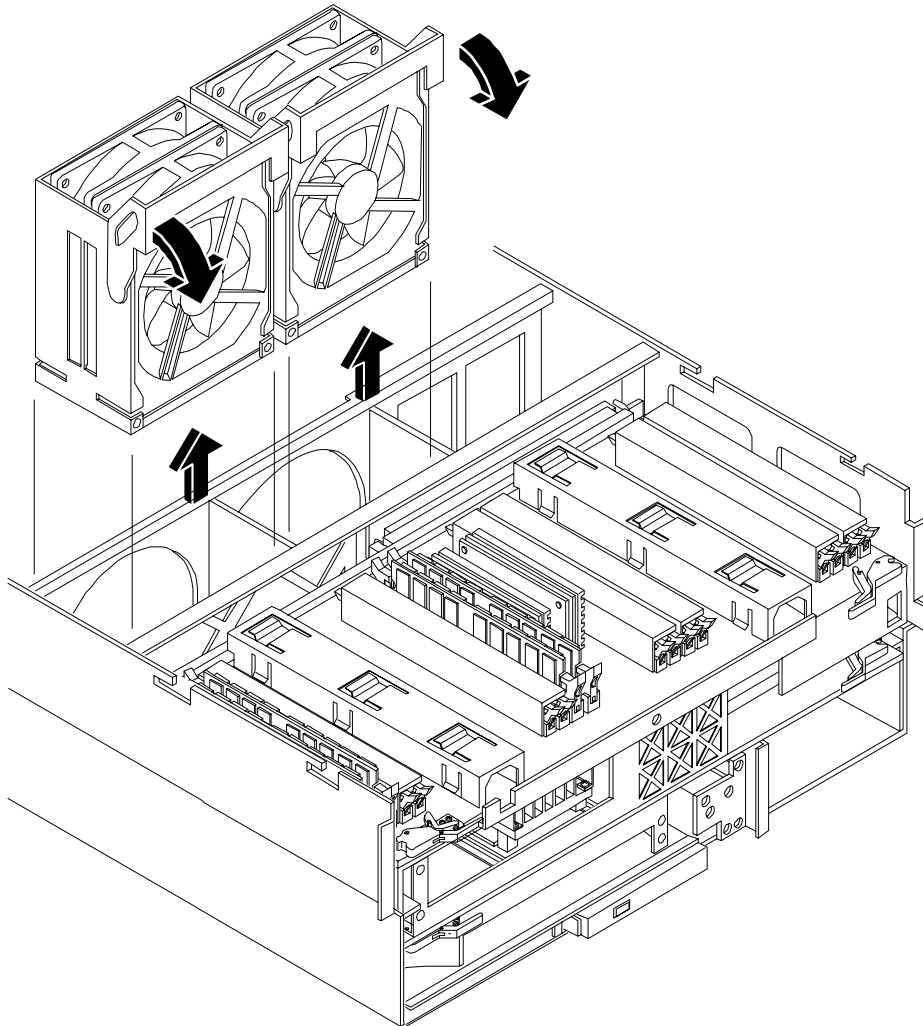
CAUTION Observe all ESD safety precautions before attempting this procedure. Failure to follow ESD safety precautions could result in damage to the server.

NOTE A hot-swap device does not require interaction with the operating system before the device is removed from or installed into the server.

The AC power to the server does not have to be off to remove or replace a hot-swap chassis fan unit.

Removing a Hot-Swap Chassis Fan Unit

Figure 1-8 Hot-Swap I/O Chassis Fans Removal and Replacement



To remove a hot-swap chassis fan unit, perform the following steps:

- Step 1.** If rack mounted, slide the hp Server out from the rack until it stops. See “Accessing a Rack Mounted Server” on page 9.
- Step 2.** Remove the top cover. See “Front and Top Covers” on page 14.
- Step 3.** Grasp the fan unit locking handle, tilt it up, and pull out the fan from the chassis.

Installing a Hot-Swap Chassis Fan Unit

To install a hot-swap chassis fan unit, perform the following steps:

- Step 1.** Orient the fan units by aligning the appropriate icon on the fan unit handle to the identical icon on the chassis wall. Fan units 0 and 1 have “triangle” icons and fan unit 2 has a “square” icon.
- Step 2.** Push the fan unit firmly into the housing and close the handle until flush to the top of the chassis—the fan unit will plug into the power outlet on the I/O baseboard.

CAUTION If the fan unit handle does not close completely it is misaligned. Remove the fan unit and check that the alignment icons are oriented correctly.

- Step 3.** Check the QuickFind diagnostic board LED indicating the replaced fan unit.
- When the fan is functioning normally, the LED is off.
 - When the fan fails, the LED is lit.
- Step 4.** Replace the top cover.
- Step 5.** Replace the front bezel.
- Step 6.** If rack mounted, slide the hp Server into the rack until it stops.

2 Upgrade Procedures for 1.3 GHz (A7158A) or 1.5 GHz (A7159A) Processors

Introduction

This chapter presents procedures for implementing the update of your server to an hp Integrity rx4640 AB383A Server configuration. The server operating system must be installed after incorporating this server upgrade. Refer to the OS documentation for installation procedures. 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 replace/install new hardware. After performing these procedures, you will be directed to start up your server and resume operation.

Required Tools

The hp 9000 rp4440 Server Upgrade Kit contains the tools needed to perform this procedure, including an ESD-safe workstation. When performing this upgrade, you must use a static-dissipating work surface and a wrist strap.

Back Up Your System

Before performing the server upgrade, protect yourself by backing up all data. In the event of interruptions (i.e. power failure, interference, etc.), 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.

Software/Firmware Requirements

Prior to installing hardware, install the latest hp 9000 rp4440 Server to hp Integrity rx4640 Server system firmware patch from <http://itrc.hp.com>. This site provides patches to update rp4440 firmware and rp4440 to rx4640 firmware patches. Take care to download and install the hp 9000 rp4440 Server to hp Integrity rx4640 Server firmware patch. Failure to do so will result in a non-bootable system.

Download Firmware and Shutdown the Server

To download firmware and shutdown the server, proceed as follows:

- Step 1.** Make sure that all users are logged off and that the server is not in use.
- Step 2.** Perform an orderly shutdown of the server operating system.
- Step 3.** Download hp 9000 rp4440 server to hp Integrity rx4640 server firmware. Current revisions of firmware and utilities, together with download instructions are available the ITRC and from <http://hpitrc.hp.com>.
- Step 4.** Update the server firmware following update instructions included with the firmware.
- Step 5.** Press the power switch on the server front panel. Verify that the power LED goes off.
- Step 6.** Disconnect the AC power cords from the server rear panel.

Removng Server Components

To upgrade the server, remove the following components:

- Step 1.** Extend the server from the rack. See “Extend the Server from the Rack” on page 9.
- Step 2.** Remove the front bezel. See “Removing the Front Bezel” on page 13.
- Step 3.** Remove the front and top covers. See “Removing the Front Cover” on page 15 and “Removing the Top Cover” on page 17.
- Step 4.** Remove the processor extender board. See “Removing the Processor Extender Board” on page 18.
- Step 5.** Remove the center hot-swap chassis fan to access the IO baseboard. See “Removing a Hot-Swap Chassis Fan Unit” on page 21.

Replacing the Processor Module(s)

This section provides information about removing the processor extender board from the chassis, replacing the CPU module or modules, and reinstalling the processor extender board. The processor extender board is located under the top cover of the server.

A processor extender board may contain one, two, three or four CPU modules. When upgrading a server to include new processors, all CPU modules of the server must be upgraded together. You must not mix CPU modules that include different types of processors.

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 system 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.

CAUTION Do not operate the server without the top cover in place. Operation of the server without the top cover in place will result in server failure. Operation of the server without the top cover in place will make the server susceptible to EMI problems.

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

Installing Processors

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

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

Introduction**Processor Load Order**

Processor modules are housed on the processor extender board located under the top cover in the top service bay. The processor extender board can hold between one and four processor modules. CPU 0 and CPU 1 are located on the top of the processor extender board, and CPU 2 and CPU 3 are located on the bottom. Processors must be installed in a specific order.

Table 2-1 Processor Load Order

Processor Modules	Socket
First	CPU 0
Second	CPU 1
Third	CPU 2
Fourth	CPU 3

CAUTION Do not modify the settings of the DIP switches located on the processor extender board. These switches are for factory use. Failure to observe this caution will result in system failure.

Removing a Processor

To remove a processor on the processor extender board, perform the following steps:

- Step 1.** Unplug the processor cable from its socket on the extender board.
- Step 2.** Using a Torx T15 driver, loosen the 6, T15 shoulder screws that attach the sequencer frame on the heatsink, until the sequencer frame is free.
- Step 3.** Remove the sequencer frame from the heatsink.
- Step 4.** Unlock the assembly to the socket by rotating the cam on the socket 180 degrees clockwise, using a 2.5 MM driver (Allen wrench).
- Step 5.** Ensure the cam on the processor socket lock is in the unlocked, counterclockwise position.
- Step 6.** Carefully remove the processor, from the processor socket.

Installing a Processor

To install a processor on the extender board, perform the following steps:

Prior to installing a processor into your system, read the following instructions carefully and refer to Figure 2-3, “Installing Processor on Extender Board,” for a complete understanding of this process.

- Step 1.** Ensure the cam on the processor socket lock is in the unlocked, counterclockwise position.
- Step 2.** Carefully lower the processor, without the sequencer clamp, onto the processor socket. Align the pins on the bottom of the heatsink to the slots in the retention frame on the extender board.

CAUTION Test the alignment of the assembly to the socket by gently moving the assembly back and forth with the palm of your hand—you should feel little or no sideplay. However, because the assembly is not yet tightened, it may tilt slightly towards the center of the extender board—this is acceptable.

CAUTION Before locking the processor assembly into its socket, ensure that the power cable is not pinched between the heatsink and sheet metal frame of the extender board. Also, ensure that the two power cable ends attached to the CPU assembly do not come

Introduction

unplugged from their sockets when you move the cable into place under the heatsink. See Figure 2-1, “Processor Cable Placed Correctly,” and Figure 2-2, “Processor Cable Placed Incorrectly.”

Figure 2-1 Processor Cable Placed Correctly

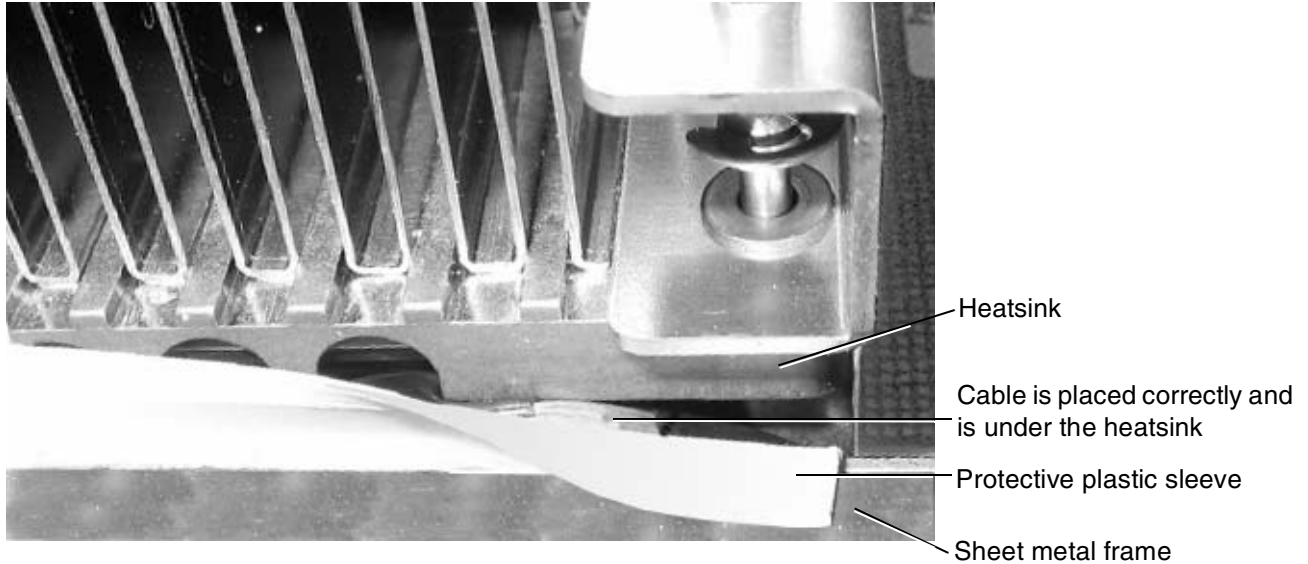
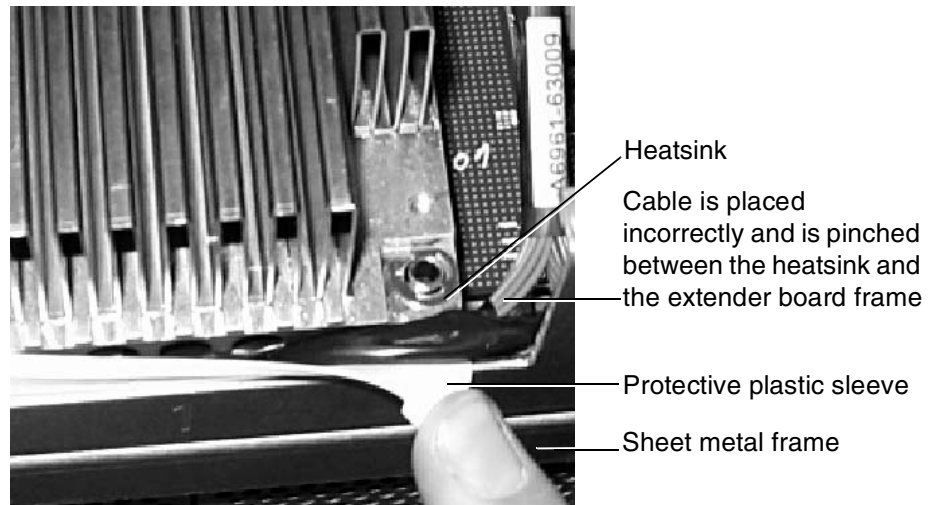


Figure 2-2 Processor Cable Placed Incorrectly



Step 3. Lock the assembly to the socket by rotating the cam on the socket 180 degrees clockwise, using a 2.5 mm driver (Allen wrench).

CAUTION When rotating the locking cam, hold the palm of your hand on top of the assembly and exert light pressure. This ensures that the assembly stays flush and level to the socket while it is being tightened.

Step 4. Plug in the processor cable to its socket on the extender board.

Step 5. Place the sequencer frame over the processor.

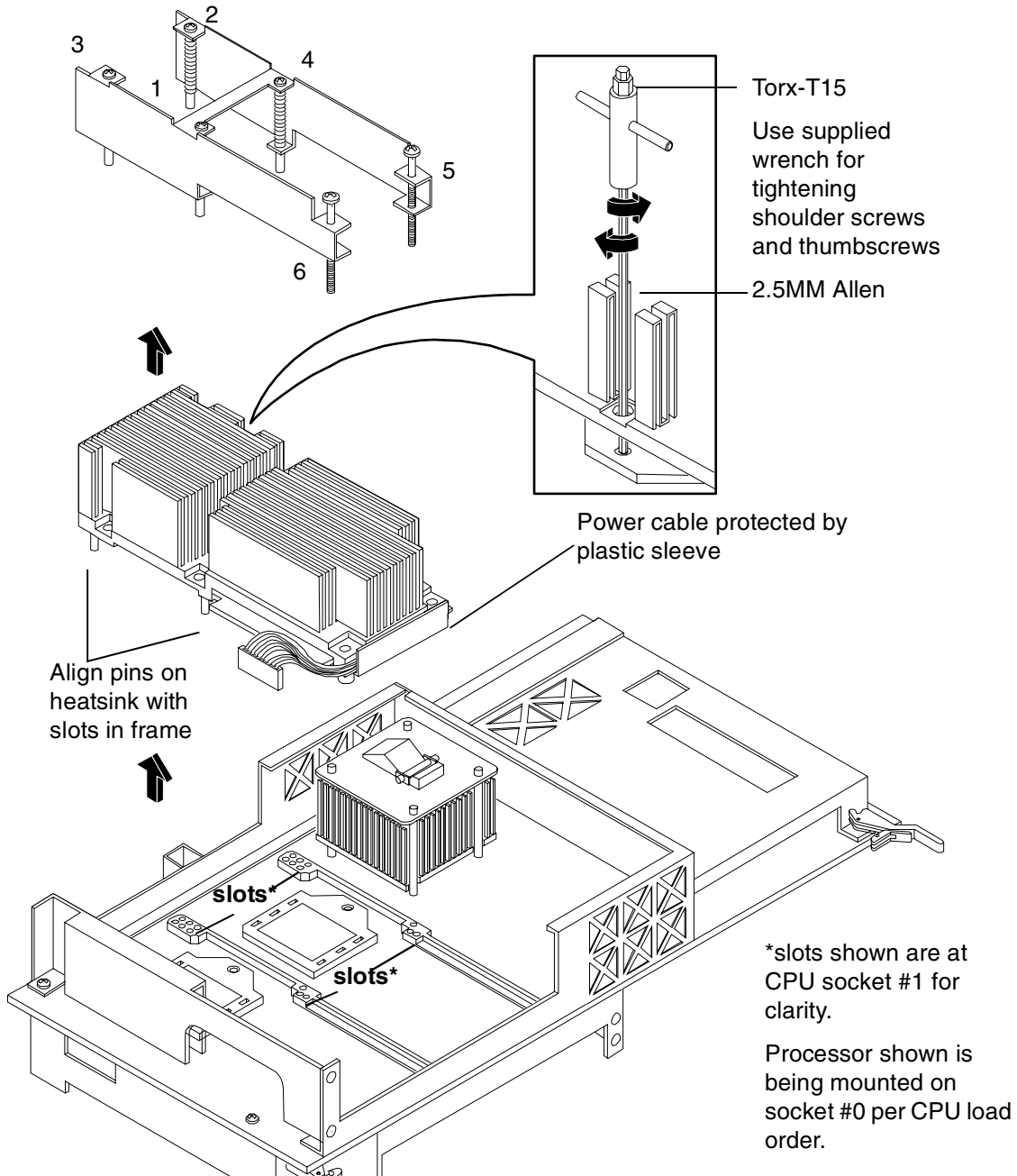
Introduction

Step 6. Using the supplied Torx T15 driver, tighten the 6 T15 shoulder screws until they just bottom out. Follow the tightening sequence shown in Figure 2-3, “Installing Processor on Extender Board.”

Figure 2-3 Installing Processor on Extender Board

Tightening sequence for 6-shoulder screws is:
1,2,3,4,5,6

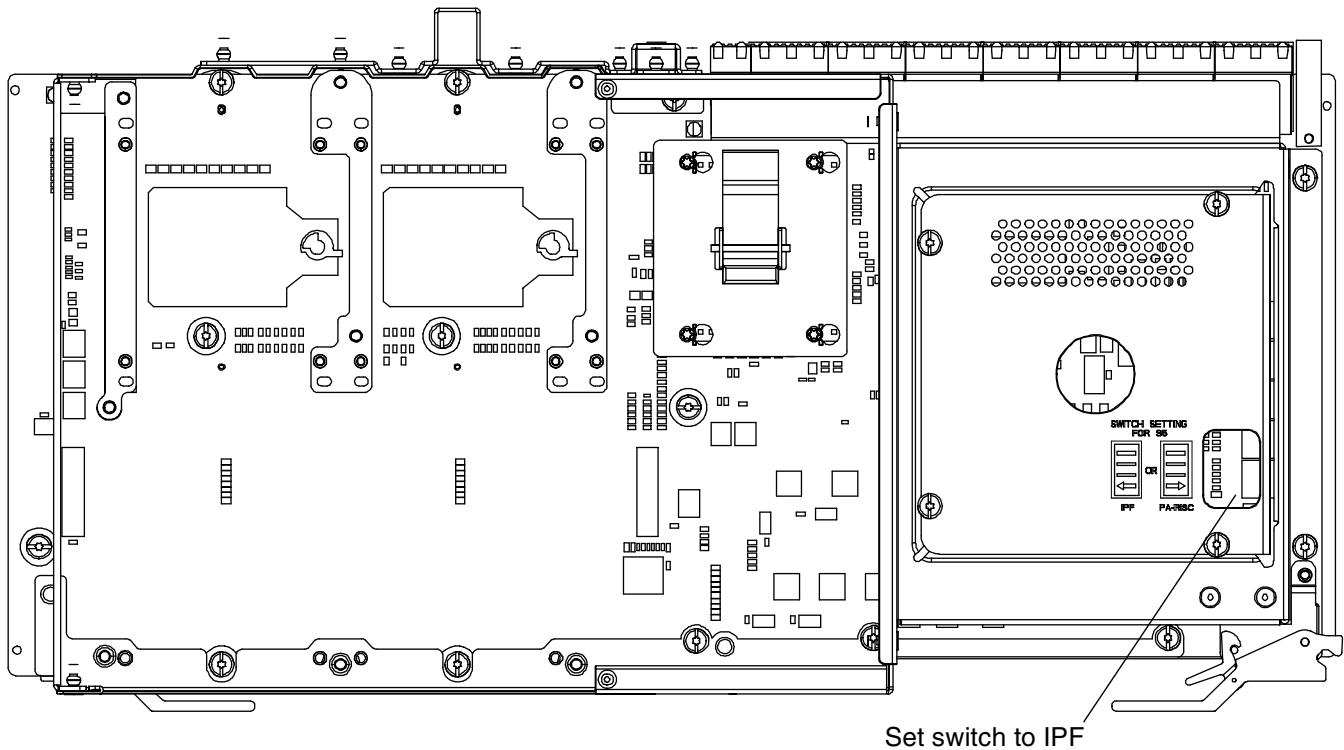
DO NOT OVERTIGHTEN!



CAUTION Do not overtighten the 6 shoulder screws—they may shear off if overtightened. Stop tightening the shoulder screws when you feel them just bottom out.

Step 7. On the Processor Extender Board, set the IPF/PA switch to the IPF position. Refer to Figure 2-4, “Processor Extender Board Switches.”

Figure 2-4 Processor Extender Board Switches



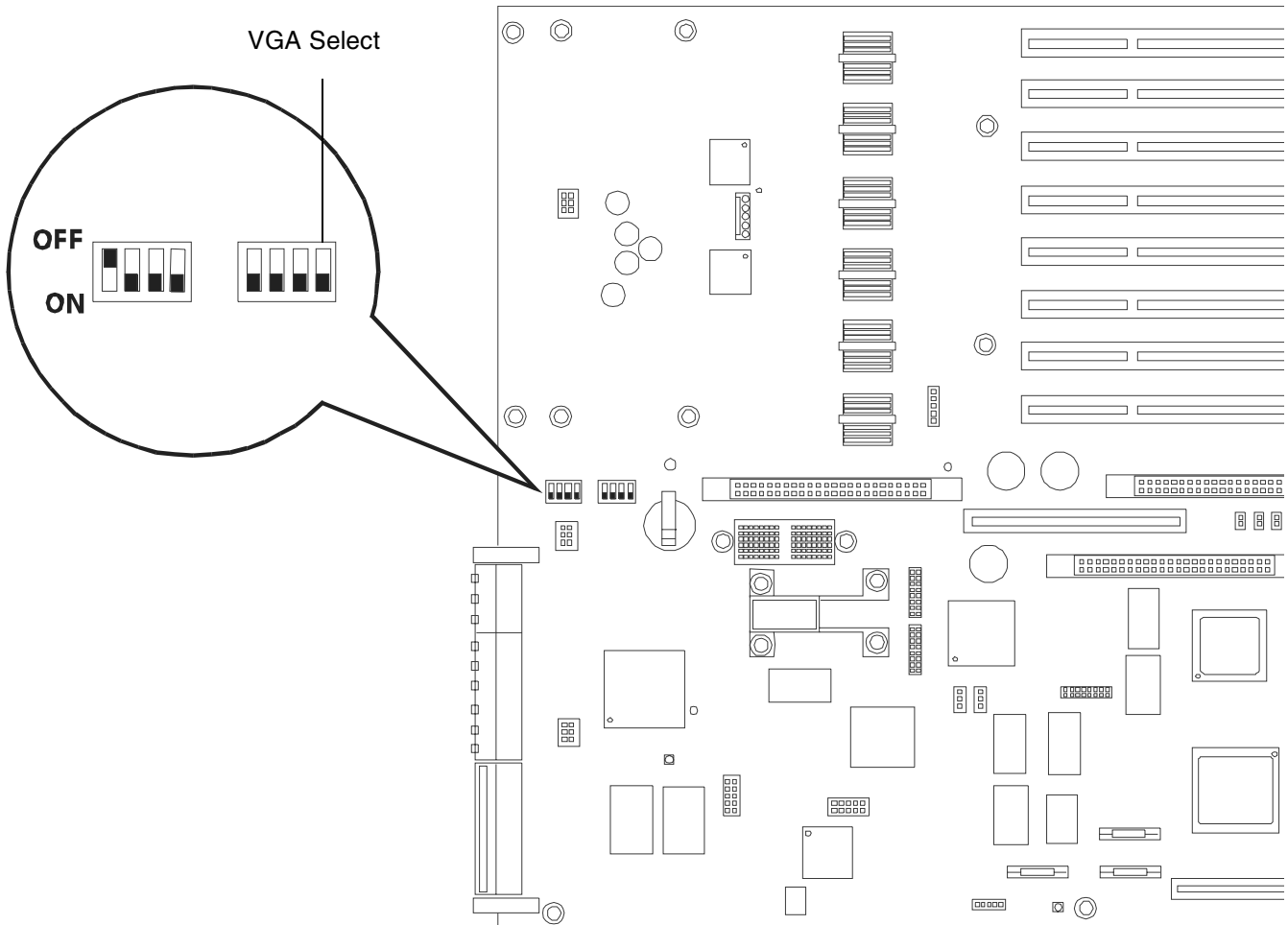
Enabling the Onboard VGA

To enable the onboard VGA, perform the following steps:

Introduction

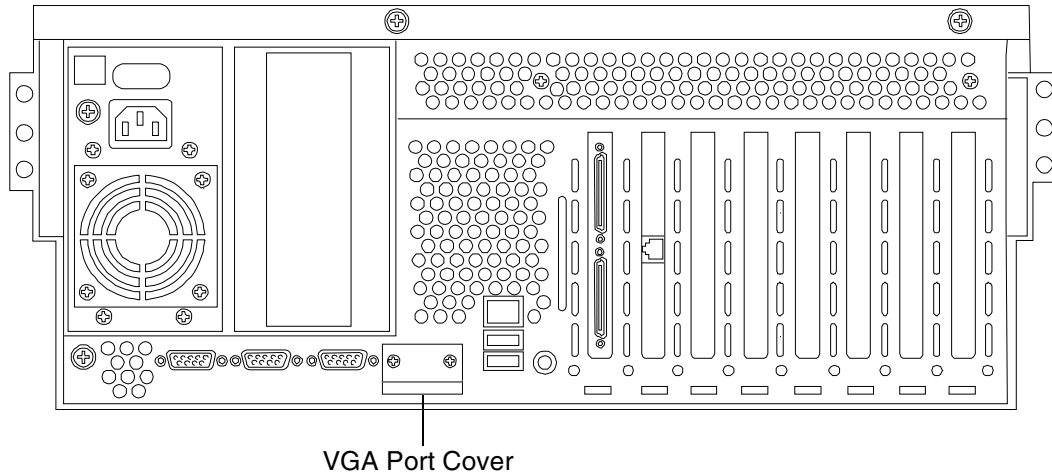
- Step 1.** On the IO baseboard, set the VGA Select Switch on as shown in Figure 2-5, “IO Baseboard Select Switches.”

Figure 2-5 IO Baseboard Select Switches



- Step 2.** Remove the two screws securing the VGA port cover from the rear panel as shown in Figure 2-6, “VGA Port Cover Panel.”

Figure 2-6 VGA Port Cover Panel



Installing Server Components

Install the following components in the server chassis:

- Step 1.** Install the center hot-swap chassis fan unit. See “Installing a Hot-Swap Chassis Fan Unit” on page 22.
- Step 2.** Install the processor extender board. See “Installing the Processor Extender Board” on page 20.
- Step 3.** Install the front and top covers. See “Installing the Top Cover” on page 17 and See “Installing the Front Cover” on page 15.
- Step 4.** Install the front bezel. See “Installing the Front Bezel” on page 13.

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.
- Step 4.** Answer **Yes** to prompts regarding copying system information between primary and secondary locations.
- Step 5.** Boot the EFI shell.
- Step 6.** At the EFI shell prompt, enter the **Info CPU** command. Verify that all newly installed processors are recognized and are responding correctly.

PROCESSOR MODULE INFORMATION

Introduction

Module	# of CPUs	Logical Speed	L3 Cache Size	L4 Cache Size	Family/Model (hex.)	Rev	Processor State
0	1	1.3 GHz	3 MB	None	1F/01	B1	Active

Note 1 CPU per CPU slot

Step 7. Enter the **Info sys** command. Verify that all fields have values.

Step 8. If the Product Name displays (Magic), then change the product name by entering:

- a. **sysmode service**
- b. **Sysset Server rx4640**

Step 9. Install the OS and monitor the operation. Check for error messages. Check the System Event Log for erroneous system events

Step 10. Install the drivers and firmware.

3 Upgrade Procedures for 1.1 GHz mx2 Dual Processor Modules (A9730A)

Introduction

This chapter presents procedures for installing hp 1.1 GHz mx2 dual processor modules. The server operating system must be installed when incorporating this server upgrade. Refer to the OS documentation for update procedures. 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 replace or install new hardware. After performing these procedures, you will be directed to start up your server and resume operation.

Required Tools

The hp 9000 rp4440 Server Upgrade Kit contains some of the tools needed to perform this procedure, including an ESD-safe workstation. Additionally, a long flat blade screwdriver is required. When performing this upgrade, you must use a static-dissipating work surface and a wrist strap.

Back Up Your System

Before performing the server upgrade, protect yourself by backing up all data and your server OS. In the event of interruptions (such as, 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. You can obtain a copy from your HP-Information Resource Center (ITRC) or download the Windows™ or HP-UX™ OS from <http://www.hp.com/support/itaniumservers>.

Software/Firmware Requirements

Newer versions may be available, and should be used. Download the current software and firmware at: www.hp.com/support/itaniumservers.

Download Firmware and Shutdown the Server

To download firmware and shutdown the server, proceed as follows:

- Step 1.** Make sure that all users are logged off and that the server is not in use.
- Step 2.** Perform an orderly shutdown of the server operating system.
- Step 3.** Download server firmware. Current revisions of firmware and utilities, together with download instructions are available from the ITRC and from <http://www.hp.com/support/itaniumservers>.
- Step 4.** Update the server firmware following update instructions included with the firmware.
- Step 5.** Press the power switch on the server front panel. Verify that the power LED goes off.

Introduction

Step 6. Disconnect the AC power cords from the server rear panel.

Removng Server Components

To upgrade the server, remove the following components:

Step 1. Extend the server from the rack. See “Extend the Server from the Rack” on page 9.

Step 2. Remove the front bezel. See “Removing the Front Bezel” on page 13.

Step 3. Remove the front and top covers. See “Removing the Front Cover” on page 15 and “Removing the Top Cover” on page 17.

Step 4. Remove the processor extender board. See “Removing the Processor Extender Board” on page 18

Step 5. Remove the center hot-swap chassis fan. See “Removing a Hot-Swap Chassis Fan Unit” on page 21.

Replacing the Processor Module(s)

This section provides information about removing the processor extender board from the chassis, replacing the CPU module or modules, and reinstalling the processor extender board. The processor extender board is located under the top cover of the server.

A processor extender board may contain one, two, three or four CPU modules. When upgrading a server to include new processors, all CPU modules of the server must be upgraded together. You must not mix CPU modules that include different types of processors.

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 system 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.

CAUTION Do not operate the server without the top cover in place. Operation of the server without the top cover in place will result in server failure. Operation of the server without the top cover in place will make the server susceptible to EMI problems.

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

Installing Processors

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

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

Processor Load Order

Processor modules are housed on the processor extender board located under the top cover in the top service bay. The processor extender board can hold between one and four processor modules. CPU 0 and CPU 1 are located on the top of the processor extender board and, CPU 2 and CPU 3 are located on the bottom. Processors must be installed in a specific order.

Table 3-1 Processor Load Order

Processor Modules	Socket
First	CPU 0
Second	CPU 1
Third	CPU 2
Fourth	CPU 3

CAUTION Do not modify the settings of the DIP switches located on the processor extender board. These switches are for factory use. Failure to observe this caution will result in system failure.

Removing a Processor

To remove a processor on the processor extender board, perform the following steps:

- Step 1.** Unplug the processor cable from its socket on the extender board.
- Step 2.** Using the CPU install tool that came with the processors, loosen the 6, T15 shoulder screws that attach the sequencer frame on the heatsink, until the sequencer frame is free.
- Step 3.** Remove the sequencer frame from the heatsink.
- Step 4.** Unlock the assembly to the socket by rotating the cam on the socket 180 degrees counterclockwise, using the CPU install tool that came with the processors.
- Step 5.** Ensure the cam on the processor socket lock is in the unlocked, counterclockwise position.
- Step 6.** Carefully remove the processor, from the processor socket.

Installing a Processor

To install a processor on the extender board, perform the following steps:

Prior to installing a processor into your system, read the following instructions carefully and refer to Figure 3-3, “Installing Processor on Extender Board,” for a complete understanding of this process.

- Step 1.** Ensure the cam on the processor socket lock is in the unlocked, counterclockwise position.
- Step 2.** Carefully lower the processor, without the sequencer clamp, onto the processor socket. Align the pins on the bottom of the heatsink to the slots in the retention frame on the extender board.

Introduction

CAUTION Test the alignment of the assembly to the socket by gently moving the assembly back and forth with the palm of your hand—you should feel little or no sideplay. However, because the assembly is not yet tightened, it may tilt slightly towards the center of the extender board—this is acceptable.

CAUTION Before locking the processor assembly into its socket, ensure that the power cable is not pinched between the heatsink and sheet metal frame of the extender board. Also, ensure that the two power cable ends attached to the CPU assembly do not come

unplugged from their sockets when you move the cable into place under the heatsink. See Figure 3-1, “Processor Cable Placed Correctly,” and Figure 3-2, “Processor Cable Placed Incorrectly.”

Figure 3-1 Processor Cable Placed Correctly

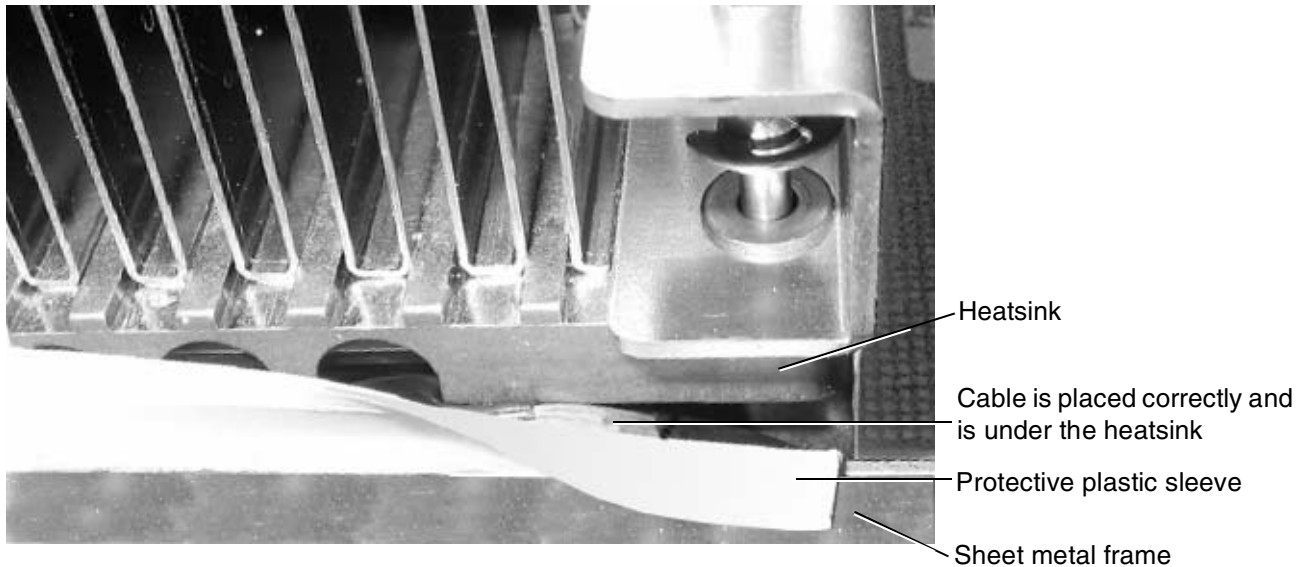
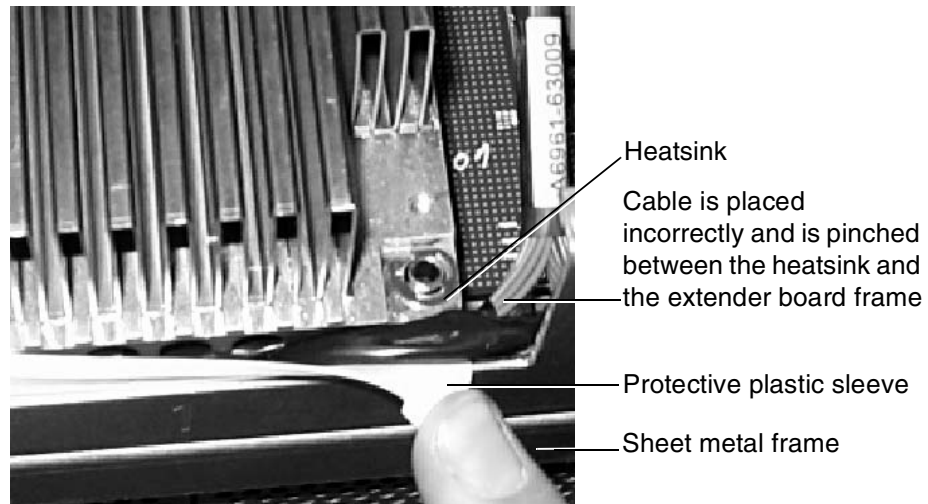


Figure 3-2 Processor Cable Placed Incorrectly



Step 3. Lock the assembly to the socket by rotating the cam on the socket 180 degrees clockwise, using the CPU install tool.

CAUTION When rotating the locking cam, hold the palm of your hand on top of the assembly and exert light pressure. This ensures that the assembly stays flush and level to the socket while it is being tightened.

Introduction

Step 4. Plug in the processor cable to its socket on the extender board.

Step 5. Place the sequencer frame over the processor.

Step 6. Using the CPU install tool, tighten the T15 shoulder screws 1, 2, 3, and 4 until they just bottom out. Follow the tightening sequence shown in Figure 3-3, “Installing Processor on Extender Board.”

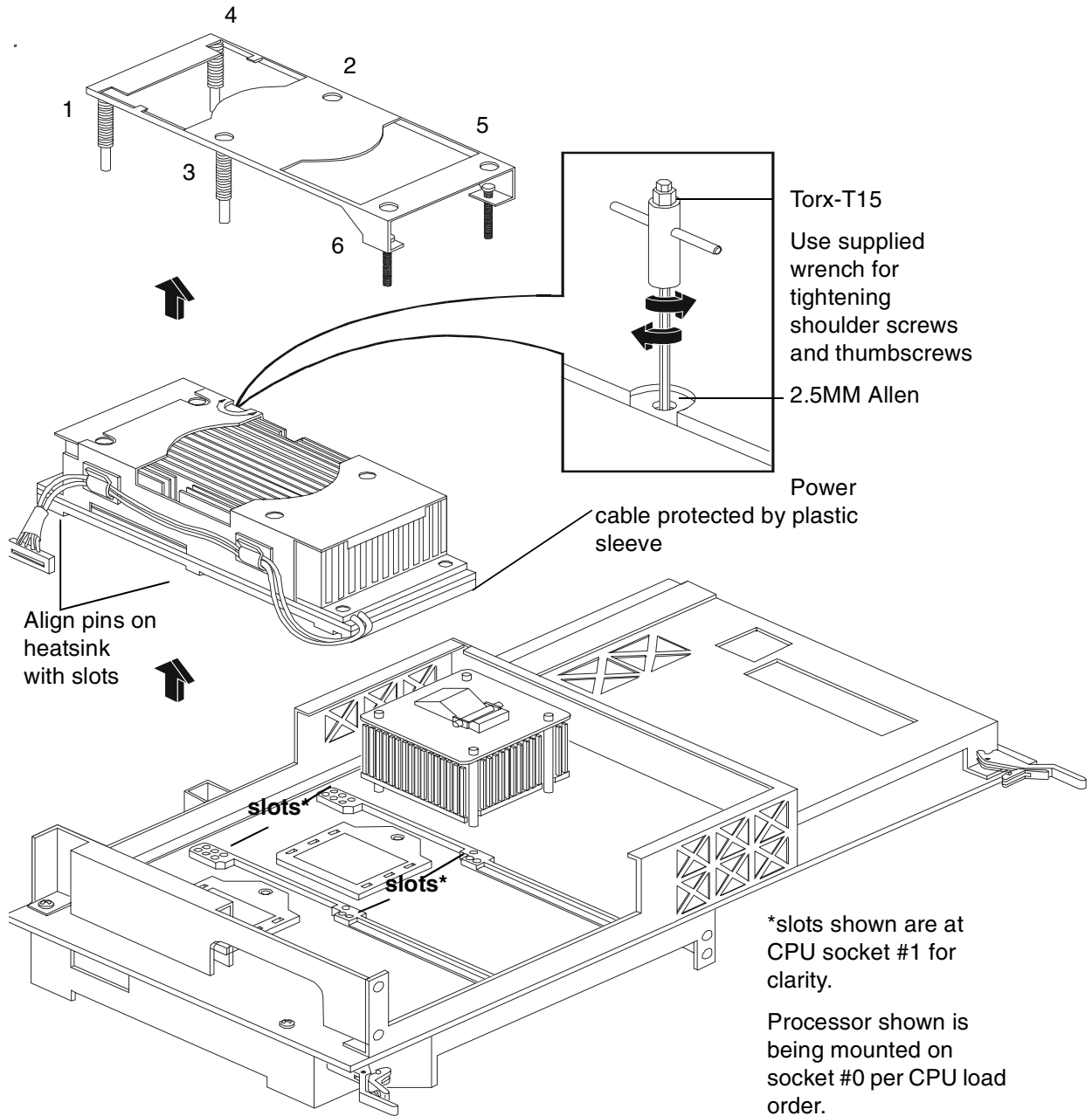
CAUTION Do not overtighten the 6 shoulder screws—they may shear off if overtightened. Stop tightening the shoulder screws when you feel them just bottom out.

Introduction

Figure 3-3 Installing Processor on Extender Board

Tightening sequence for 4-shoulder screws is:
1,2,3,4,5,6

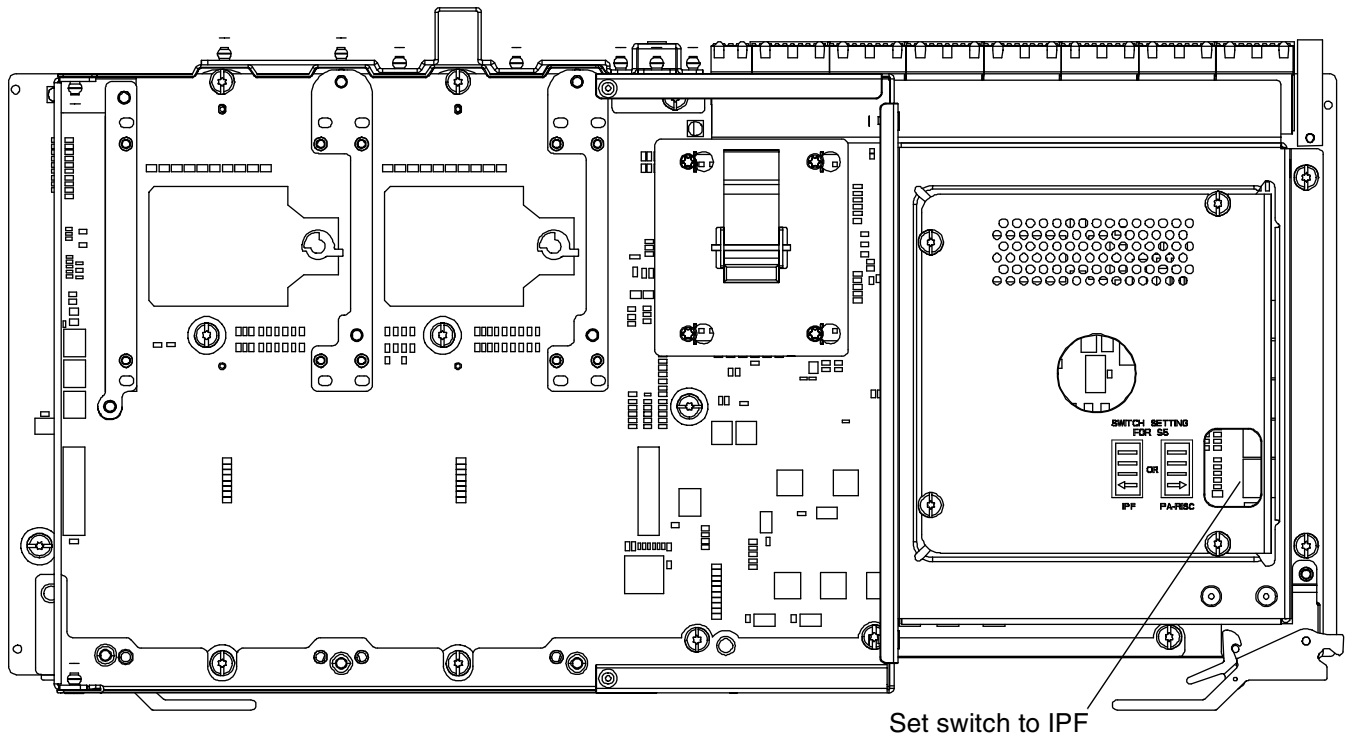
DO NOT OVERTIGHTEN!



Step 7. Use a long flat blade screwdriver to tighten screws 5 and 6 shown in Figure 3-3, “Installing Processor on Extender Board.”

- Step 8.** On the Processor Extender Board, set the IPF/PA switch to the IPF position. Refer to Figure 3-4, “Processor Extender Board Switches.”

Figure 3-4 Processor Extender Board Switches



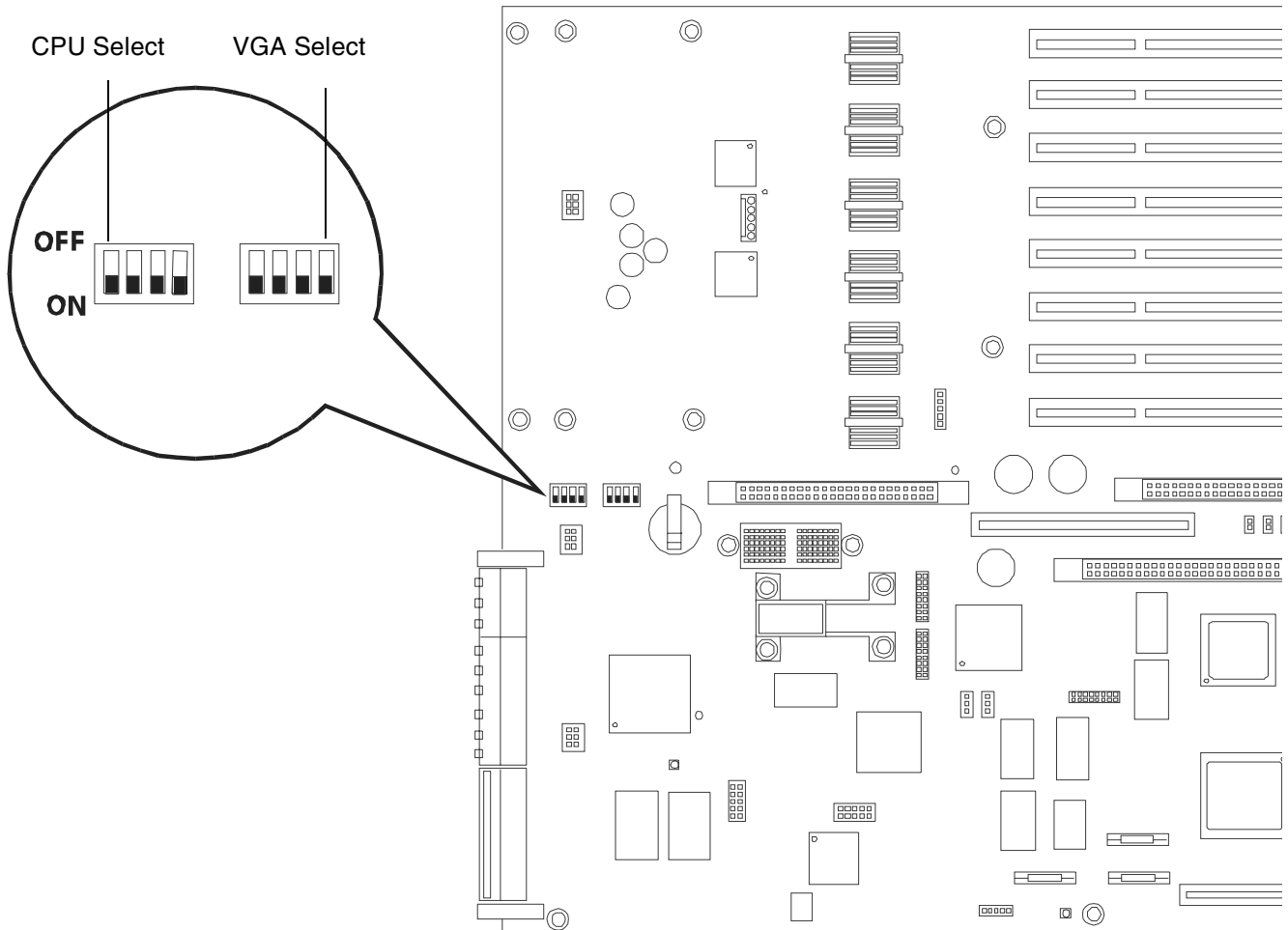
- Step 9.** On the IO baseboard, set the CPU select switch on as shown in Figure 3-5, “IO Baseboard Select Switches.”

Enabling the Onboard VGA

To enable the onboard VGA, perform the following steps:

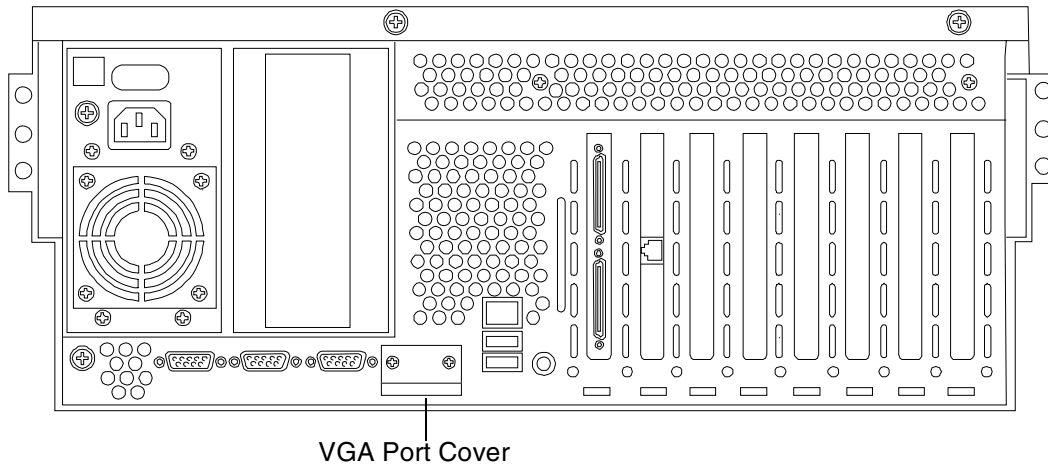
- Step 1.** On the IO baseboard, set the VGA Select Switch on as shown in Figure 3-5, “IO Baseboard Select Switches.”

Figure 3-5 IO Baseboard Select Switches



- Step 2.** Remove the two T15 Torx screws securing the VGA port cover from the rear panel as shown in Figure 3-6, “VGA Port Cover Panel.”

Figure 3-6 VGA Port Cover Panel



Installing Server Components

Install the following components in the server chassis:

- Step 1.** Install the center hot-swap chassis fan units. See “Installing a Hot-Swap Chassis Fan Unit” on page 22.
- Step 2.** Install the processor extender board. See “Installing the Processor Extender Board” on page 20.
- Step 3.** Install the front and top covers. See “Installing the Top Cover” on page 17 and See “Installing the Front Cover” on page 15.
- Step 4.** Install new the front bezel from the upgrade kit. See “Installing the Front Bezel” on page 13.

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.
- Step 4.** Answer **Yes** to prompts regarding copying system information between primary and secondary locations.
- Step 5.** Boot the EFI shell.
- Step 6.** At the EFI shell prompt, enter the **Info CPU** command. Verify that all newly installed processors are recognized and are responding correctly.

PROCESSOR MODULE INFORMATION

of L3 L4 Family/

Introduction

CPU Slot	Logical CPUs	Speed	Cache Size	Cache Size	Model (hex.)	Rev	Processor State
0	2	1.1 GHz	4 MB	None	1F/01	B1	Active

^

Note 2 CPUs' per CPU slot

- Step 7.** Enter the **Info sys** command. Verify that all fields have values.
- Step 8.** If the Product Name displays (Magic), then change the product name by entering:
 - a. sysmode service**
 - b. Sysset Server rx4640**
- Step 9.** Install the OS and monitor the operation. Check for error messages. Check the System Event Log for erroneous system events

4 Upgrade Procedures for 1.5 GHz (A9731AX) or 1.6 GHz (A9732AX or A9733AX) Dual Processors

Introduction

This chapter presents procedures for implementing the update of your server to an hp Integrity rx4640 AB383A Server configuration. The server operating system must be installed after incorporating this server upgrade. Refer to the OS documentation for installation procedures. 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 replace/install new hardware. After performing these procedures, you will be directed to start up your server and resume operation.

Required Tools

The hp 9000 rp4440 Server Upgrade Kit contains the tools needed to perform this procedure, including an ESD-safe workstation. When performing this upgrade, you must use a static-dissipating work surface and a wrist strap.

Back Up Your System

Before performing the server upgrade, protect yourself by backing up all data. In the event of interruptions (i.e. power failure, interference, etc.), 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.

Software/Firmware Requirements

Prior to installing hardware, install the latest hp 9000 rp4440 Server to hp Integrity rx4640 Server system firmware patch from <http://itrc.hp.com>. This site provides patches to update rp4440 firmware and rp4440 to rx4640 firmware patches. Take care to download and install the hp 9000 rp4440 Server to hp Integrity rx4640 Server firmware patch. Failure to do so will result in a non-bootable system.

Download Firmware and Shutdown the Server

To download firmware and shutdown the server, proceed as follows:

- Step 1.** Make sure that all users are logged off and that the server is not in use.
- Step 2.** Perform an orderly shutdown of the server operating system.
- Step 3.** Download hp 9000 rp4440 server to hp Integrity rx4640 server firmware. Current revisions of firmware and utilities, together with download instructions are available the ITRC and from <http://hpitrc.hp.com>.
- Step 4.** Update the server firmware following update instructions included with the firmware.
- Step 5.** Press the power switch on the server front panel. Verify that the power LED goes off.
- Step 6.** Disconnect the AC power cords from the server rear panel.

Removng Server Components

To upgrade the server, remove the following components:

- Step 1.** Extend the server from the rack. See “Extend the Server from the Rack” on page 9.
- Step 2.** Remove the front bezel. See “Removing the Front Bezel” on page 13.
- Step 3.** Remove the front and top covers. See “Removing the Front Cover” on page 15 and “Removing the Top Cover” on page 17.
- Step 4.** Remove the processor extender board. See “Removing the Processor Extender Board” on page 18.
- Step 5.** Remove the center hot-swap chassis fan to access the IO baseboard. See “Removing a Hot-Swap Chassis Fan Unit” on page 21.

Replacing the Processor Module(s)

This section provides information about removing the processor extender board from the chassis, replacing the CPU module or modules, and reinstalling the processor extender board. The processor extender board is located under the top cover of the server.

A processor extender board may contain one, two, three or four CPU modules. When upgrading a server to include new processors, all CPU modules of the server must be upgraded together. You must not mix CPU modules that include different types of processors.

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 system 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.

CAUTION Do not operate the server without the top cover in place. Operation of the server without the top cover in place will result in server failure. Operation of the server without the top cover in place will make the server susceptible to EMI problems.

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

Installing Processors

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

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

Introduction**Processor Load Order**

Processor modules are housed on the processor extender board located under the top cover in the top service bay. The processor extender board can hold between one and four processor modules. CPU 0 and CPU 1 are located on the top of the processor extender board and, CPU 2 and CPU 3 are located on the bottom. Processors must be installed in a specific order.

Table 4-1 Processor Load Order

Processor Modules	Socket
First	CPU 0
Second	CPU 1
Third	CPU 2
Fourth	CPU 3

CAUTION Do not modify the settings of the DIP switches located on the processor extender board. These switches are for factory use. Failure to observe this caution will result in system failure.

Removing a Processor

To remove a processor on the processor extender board, perform the following steps:

- Step 1.** Unplug the processor cable from its socket on the extender board.
- Step 2.** Using a Torx T15 driver, loosen the 6, T15 shoulder screws that attach the sequencer frame on the heatsink, until the sequencer frame is free.
- Step 3.** Remove the sequencer frame from the heatsink.
- Step 4.** Unlock the assembly to the socket by rotating the cam on the socket 180 degrees clockwise, using a 2.5 MM driver (Allen wrench).
- Step 5.** Ensure the cam on the processor socket lock is in the unlocked, counterclockwise position.
- Step 6.** Carefully remove the processor, from the processor socket.

Installing a Processor

To install a processor on the extender board, perform the following steps:

Prior to installing a processor into your system, read the following instructions carefully and refer to Figure 4-3, “Installing Processor on Extender Board,” for a complete understanding of this process.

- Step 1.** Ensure the cam on the processor socket lock is in the unlocked, counterclockwise position.
- Step 2.** Carefully lower the processor, without the sequencer clamp, onto the processor socket. Align the pins on the bottom of the heatsink to the slots in the retention frame on the extender board.

CAUTION Test the alignment of the assembly to the socket by gently moving the assembly back and forth with the palm of your hand—you should feel little or no sideplay. However, because the assembly is not yet tightened, it may tilt slightly towards the center of the extender board—this is acceptable.

CAUTION Before locking the processor assembly into its socket, ensure that the power cable is not pinched between the heatsink and sheet metal frame of the extender board. Also, ensure that the two power cable ends attached to the CPU assembly do not come

Introduction

unplugged from their sockets when you move the cable into place under the heatsink. See Figure 4-1, “Processor Cable Placed Correctly,” and Figure 4-2, “Processor Cable Placed Incorrectly.”

Figure 4-1 Processor Cable Placed Correctly

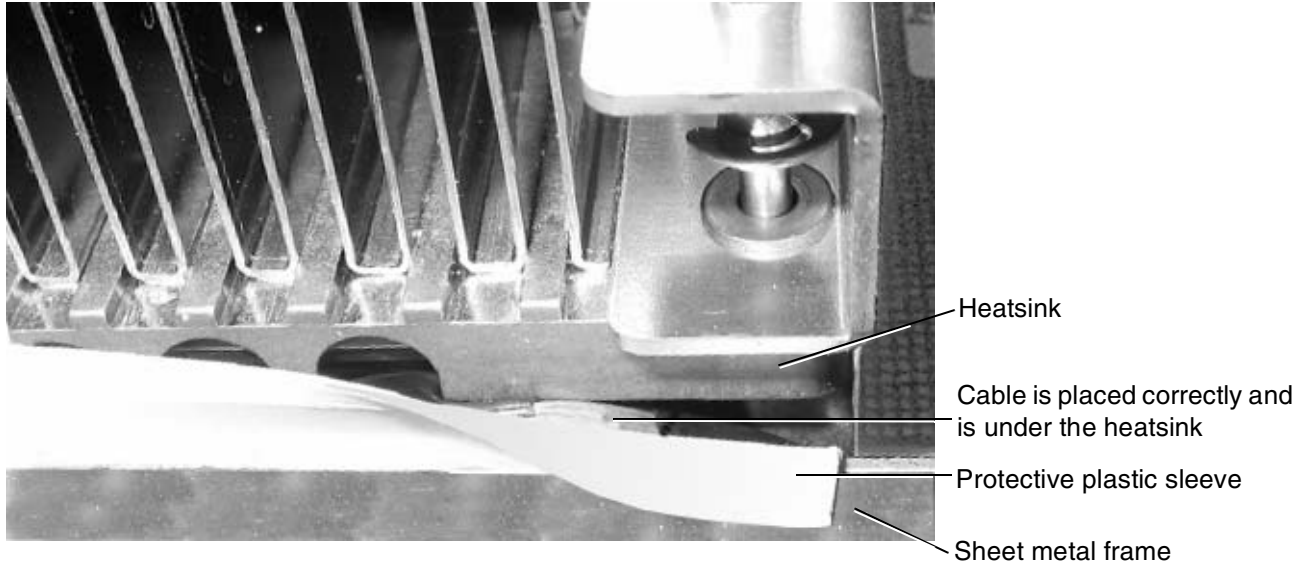
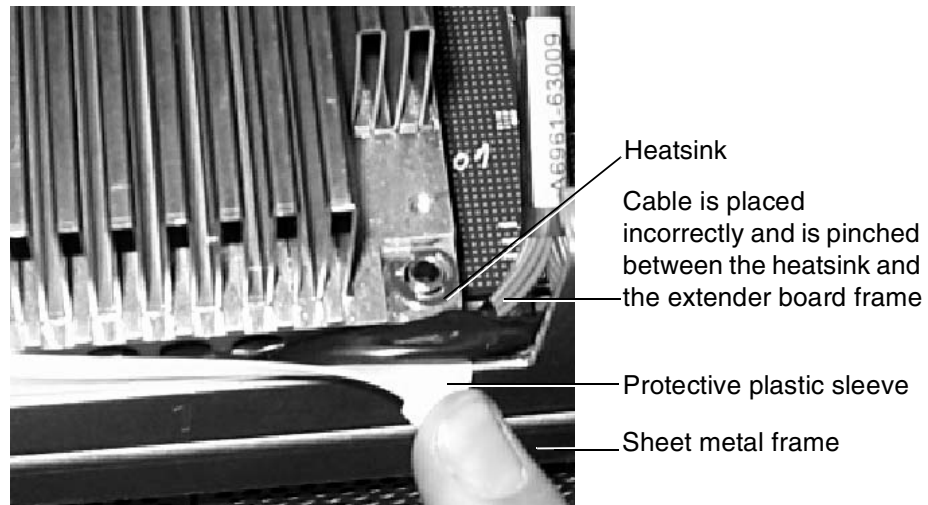


Figure 4-2 Processor Cable Placed Incorrectly



Step 3. Lock the assembly to the socket by rotating the cam on the socket 180 degrees clockwise, using a 2.5 mm driver (Allen wrench).

CAUTION When rotating the locking cam, hold the palm of your hand on top of the assembly and exert light pressure. This ensures that the assembly stays flush and level to the socket while it is being tightened.

Step 4. Plug in the processor cable to its socket on the extender board.

Step 5. Place the sequencer frame over the processor.

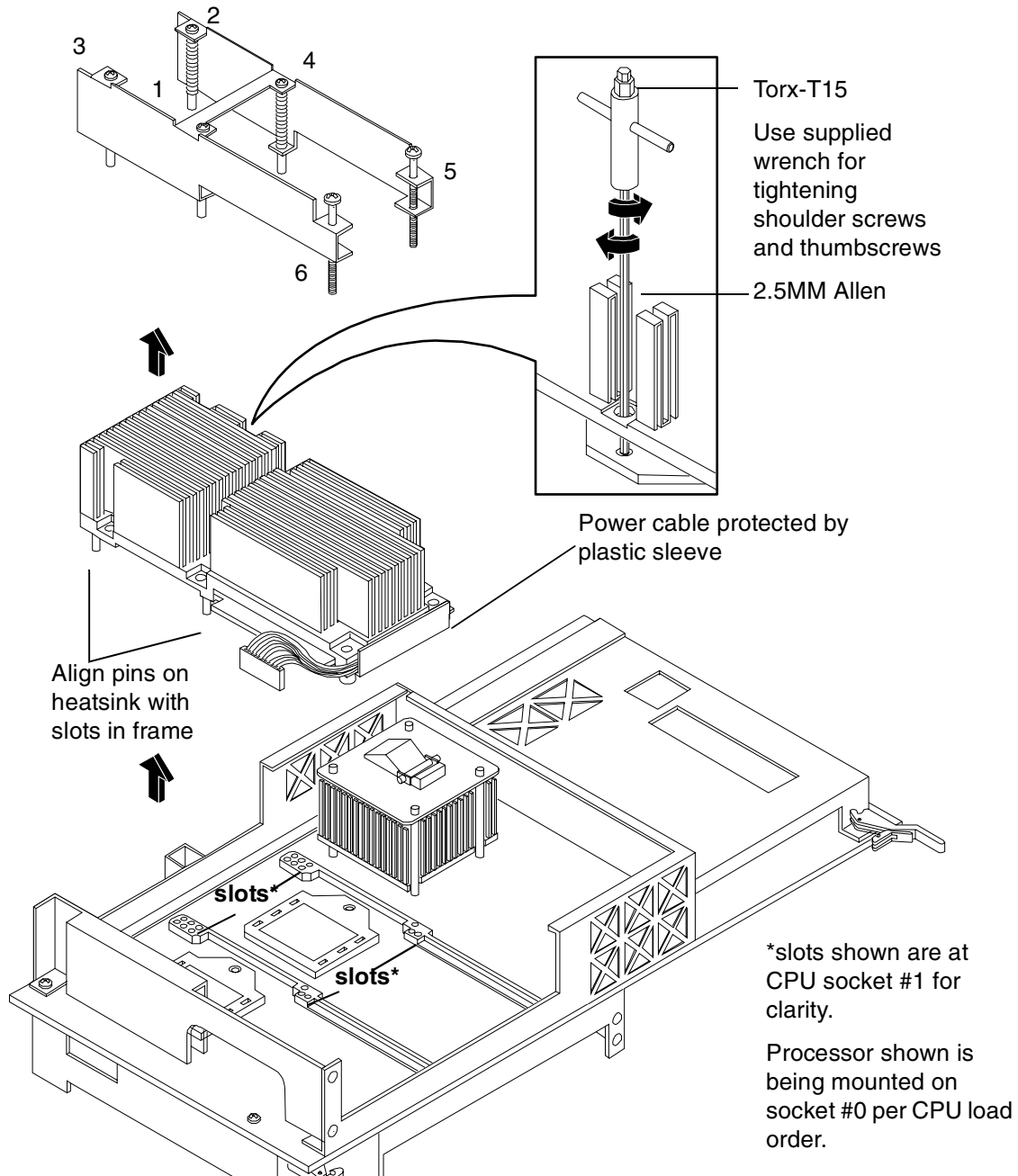
Introduction

Step 6. Using the supplied Torx T15 driver, tighten the 6 T15 shoulder screws until they just bottom out. Follow the tightening sequence shown in Figure 4-3, “Installing Processor on Extender Board.”

Figure 4-3 Installing Processor on Extender Board

Tightening sequence for 6-shoulder screws is:
1,2,3,4,5,6

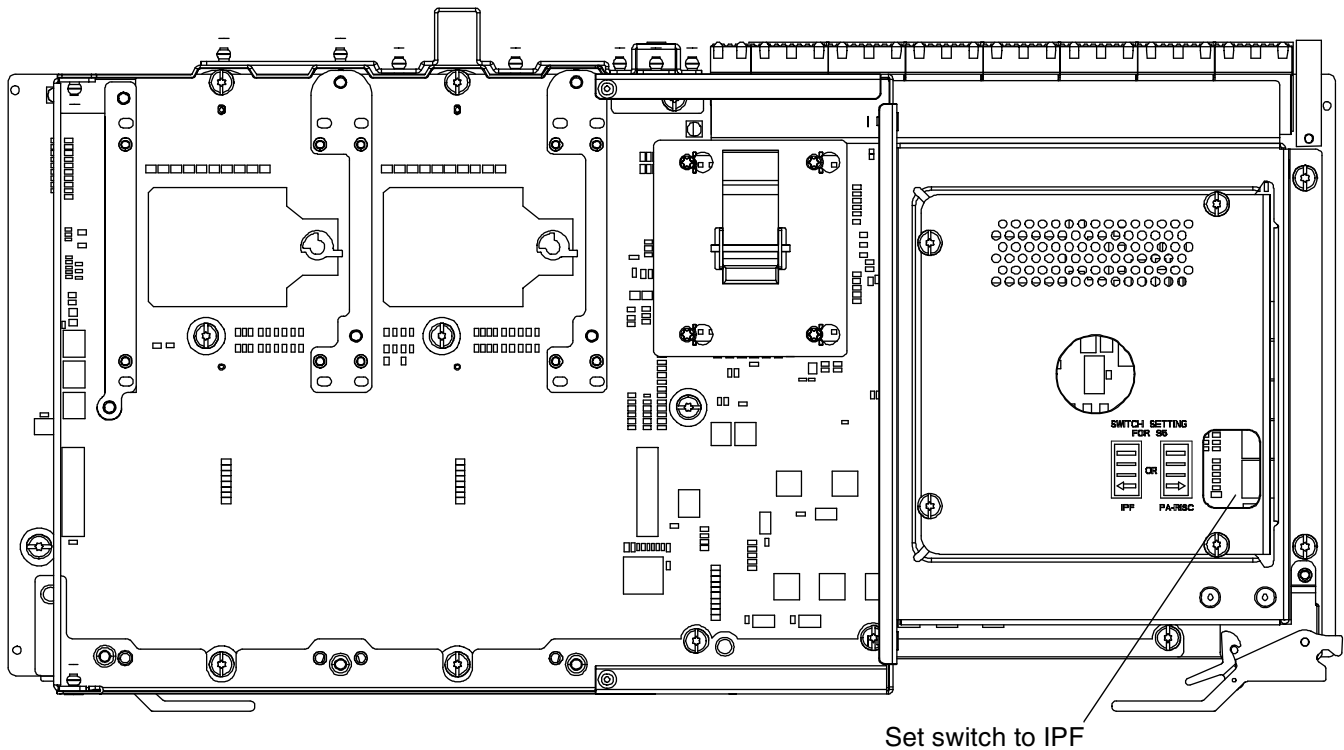
DO NOT OVERTIGHTEN!



CAUTION Do not overtighten the 6 shoulder screws—they may shear off if overtightened. Stop tightening the shoulder screws when you feel them just bottom out.

Step 7. On the Processor Extender Board, set the IPF/PA switch to the IPF position. Refer to Figure 4-4, “Processor Extender Board Switches.”

Figure 4-4 Processor Extender Board Switches



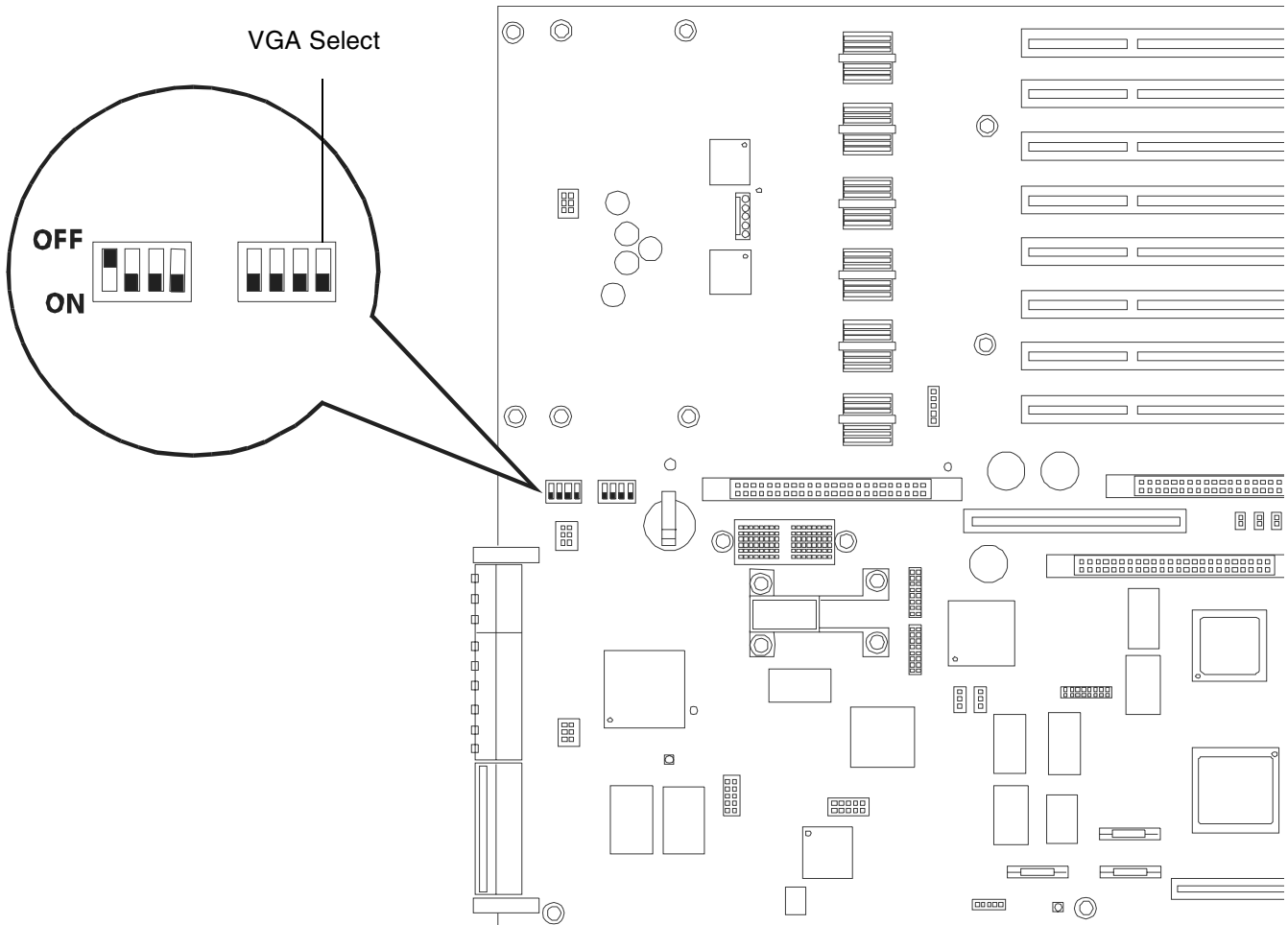
Enabling the Onboard VGA

To enable the onboard VGA, perform the following steps:

Introduction

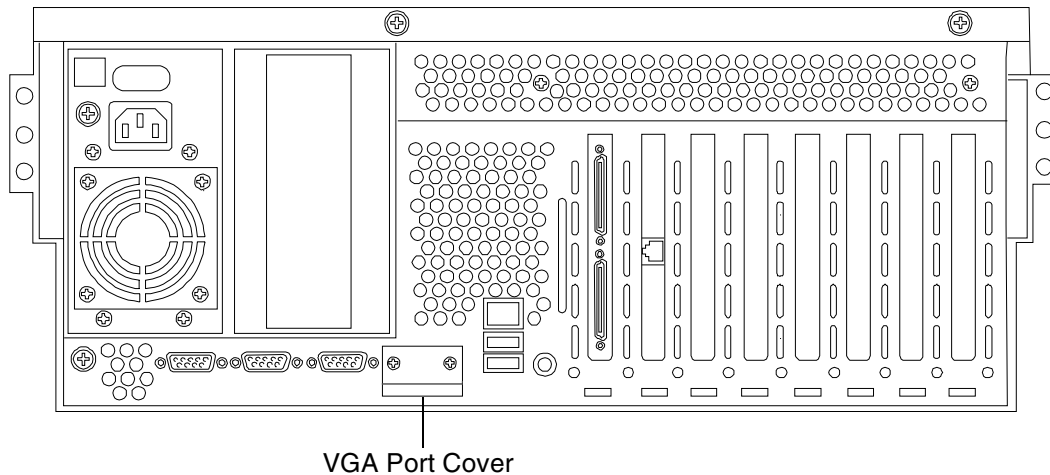
- Step 1.** On the IO baseboard, set the VGA Select Switch on as shown in Figure 4-5, “IO Baseboard Select Switches.”

Figure 4-5 IO Baseboard Select Switches



- Step 2.** Remove the two screws securing the VGA port cover from the rear panel as shown in Figure 4-6, “VGA Port Cover Panel.”

Figure 4-6 VGA Port Cover Panel



Installing Server Components

Install the following components in the server chassis:

- Step 1.** Install the center hot-swap chassis fan unit. See “Installing a Hot-Swap Chassis Fan Unit” on page 22.
- Step 2.** Install the processor extender board. See “Installing the Processor Extender Board” on page 20.
- Step 3.** Install the front and top covers. See “Installing the Top Cover” on page 17 and See “Installing the Front Cover” on page 15.
- Step 4.** Install the front bezel. See “Installing the Front Bezel” on page 13.

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.
- Step 4.** Answer **Yes** to prompts regarding copying system information between primary and secondary locations.
- Step 5.** Boot the EFI shell.
- Step 6.** At the EFI shell prompt, enter the **Info CPU** command. Verify that all newly installed processors are recognized and are responding correctly.

PROCESSOR MODULE INFORMATION

Introduction

	# of		L3	L4	Family/		
CPU	Logical		Cache	Cache	Model	Processor	
Module	CPUs	Speed	Size	Size	(hex.)	Rev	State
-----	-----	-----	-----	-----	-----	---	-----
0	1	1.5 GHz	4 MB	None	1F/01	B1	Active
	^						

Note 1 CPU per CPU slot

Step 7. Enter the **Info sys** command. Verify that all fields have values.

Step 8. If the Product Name displays (Magic), then change the product name by entering:

a. sysmode service

b. Sysset Server rx4640

Step 9. Install the OS and monitor the operation. Check for error messages. Check the System Event Log for erroneous system events

Step 10. Install the drivers and firmware.

C

- Chassis fan
 - remove and replace, 20
- Covers, front and top
 - remove and replace, 14

F

- Front Bezel
 - remove and replace, 12

P

- Processor extender board
 - remove and replace, 18
- Processors
 - installing, 25, 26, 36, 37, 49, 50
 - load order, 26, 50
 - removing, 26, 37, 50