

hp Integrity rx4640 Upgrade Guide



**Manufacturing Part Number : upgr-rx4640
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U.S.A.

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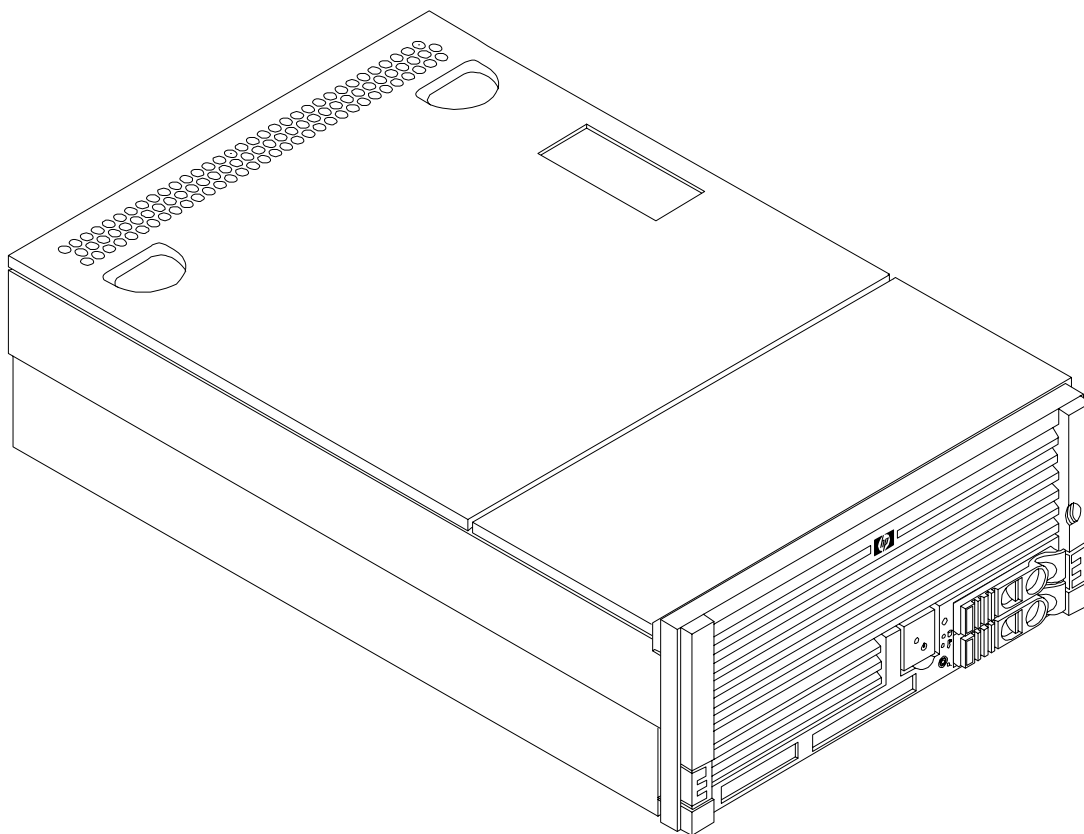
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1 Overview—Server Upgrade

Overview

This guide presents instructions for upgrading the hp Integrity rx4640 Server. This guide includes separate procedures for replacing the processor, memory extender board, the SCSI backplane and duplex PCA card, and updateing server firmware.

Figure 1-1 **hp Integrity rx4640 Server**



Time Required

Upgrading the hp Integrity rx4640 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 following upgrade tasks are described in this guide:

Processor Upgrade

The processor upgrade procedure is accomplished as follows:

- Step 1.** Back up your data.
- Step 2.** Back up the existing operating system (OS).
- Step 3.** Download and initialize new server firmware from <http://www.hp.com/support/itaniumservers>.
- Step 4.** Update the OS (if applicable), then shutdown the OS.
- Step 5.** Shut down your server (disconnect AC power) and remove the processor extender board.
- Step 6.** Remove old processors and install new processors on the processor extender board.
- Step 7.** Select the processor type on the IO baseboard.
- Step 8.** Reinstall the processor extender board.
- Step 9.** Power up the server and resume operation.

Memory Extender Board Upgrade

The memory extender board upgrade procedure is accomplished as follows:

- Step 1.** Back up your data.
- Step 2.** Back up the existing operating system (OS).
- Step 3.** Download and initialize new server firmware from <http://www.hp.com/support/itaniumservers>.
- Step 4.** Update the OS (if applicable), then shutdown the OS.
- Step 5.** Shut down your server (disconnect AC power) and remove the processor extender board chassis.
- Step 6.** Remove the memory extender board from the chassis and remove the system memory DIMMs.
- Step 7.** Install the system memory DIMMs on the upgrade memory extender board.
- Step 8.** Install the memory extender board in the chassis.
- Step 9.** Power up the server and resume operation.

SCSI Board Upgrade

The SCSI upgrade is procedure is accomplished as follows:

- Step 1.** Back up your data
- Step 2.** Shutdown your server (disconnect AC power)
- Step 3.** Remove server components
- Step 4.** Remove the SCSI duplex board in duplex configured servers
- Step 5.** Replace SCSI backplane board
- Step 6.** Install the replacement SCSI duplex board in duplex configured servers
- Step 7.** Install Server Components
- Step 8.** Verify the upgrade installation

This section also includes an optional procedure to convert the server from duplex to simplex operation.

Common Procedures

The procedures in this section are for removing and replacing server components for the upgrades in this guide.

Accessing a Rack Mounted Server

The hp Integrity rx4640 Server is designed to be rack mounted. The following procedure explains how to gain access to your hp Integrity rx4640 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

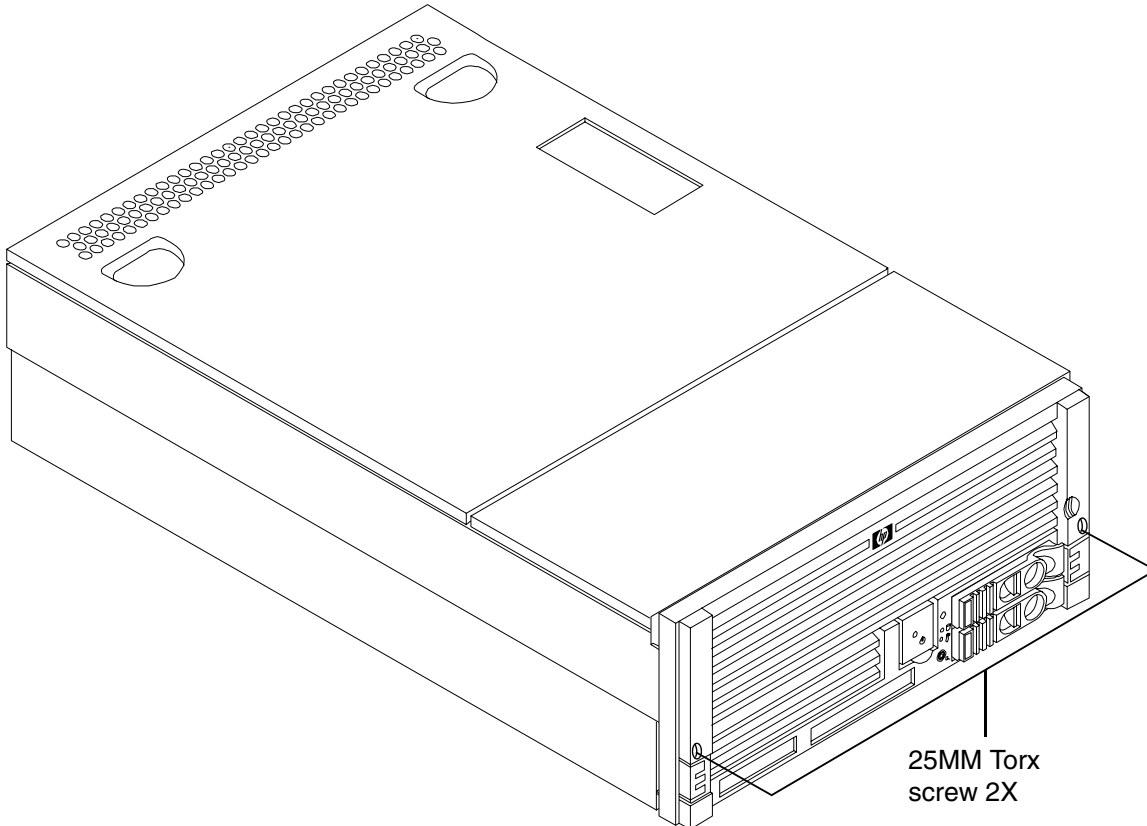
NOTE Ensure that there is enough area (Approximately 1.5 meters [4.5 ft.]) to fully extend the server out the front and work on it.

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.”

- 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:

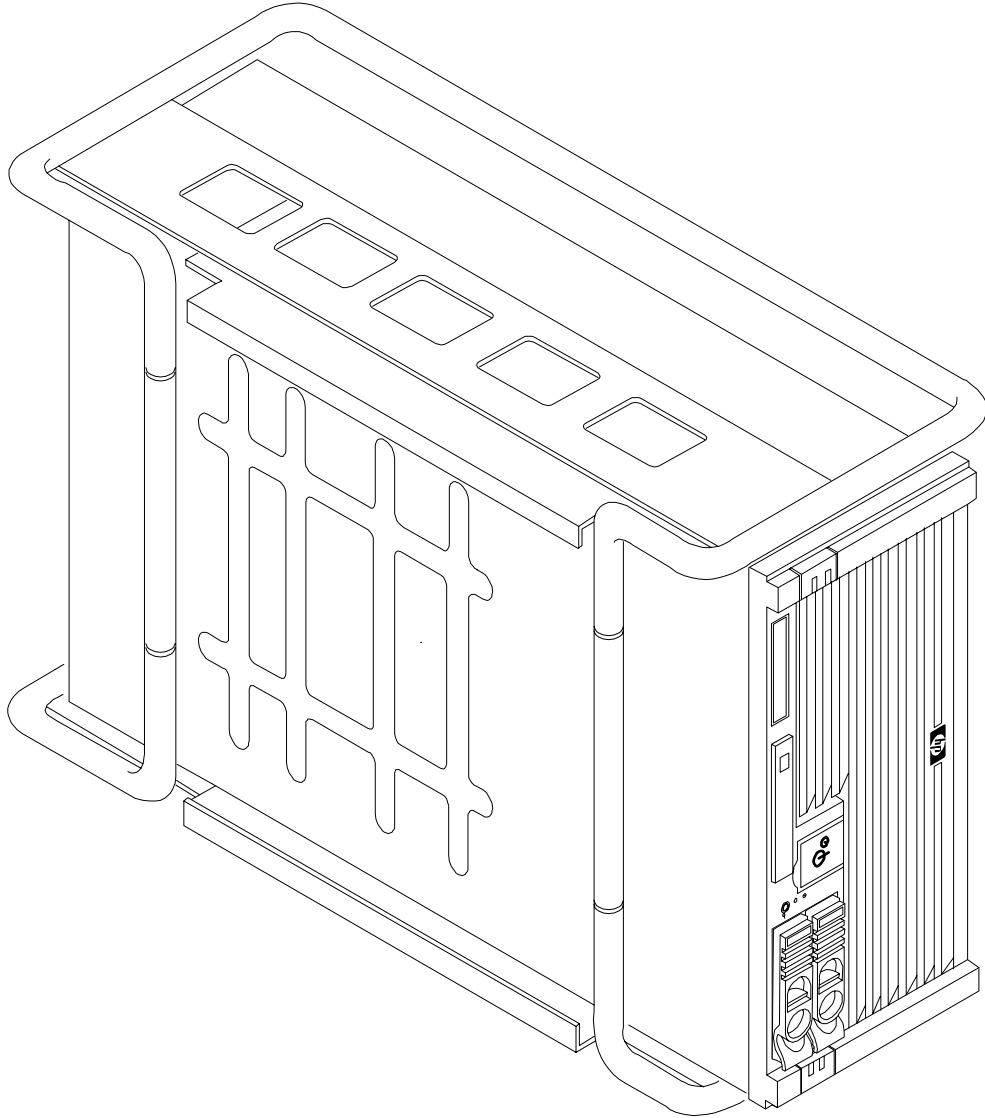
- Step 1.** Press the rail clips on either side of the server inward and push the server into the rack until it stops.
- Step 2.** Replace the T-25 screws that fasten the server to the rack.

Accessing a Pedestal Mounted Server

The hp Integrity rx4640 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.

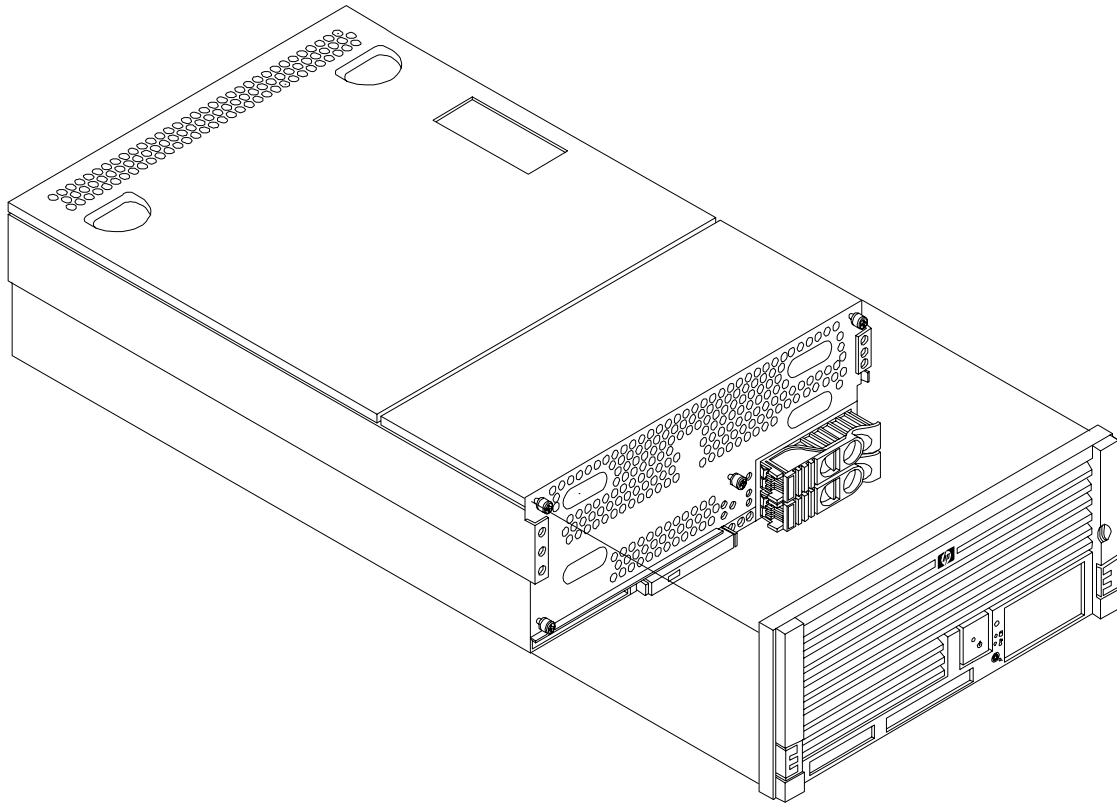
WARNING Ensure that the hp Server is properly grounded when performing remove-and-replace procedures. Use an antistatic wrist strap and grounding mat similar to those found in the hp Electrically Conductive Field Service Kit.

Figure 1-3 Pedestal mounted hp Integrity rx4640 Server



Front Bezel

Figure 1-4 Removing and Installing the Front Bezel



Removing the Front Bezel

To remove the front bezel, perform the following steps:

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

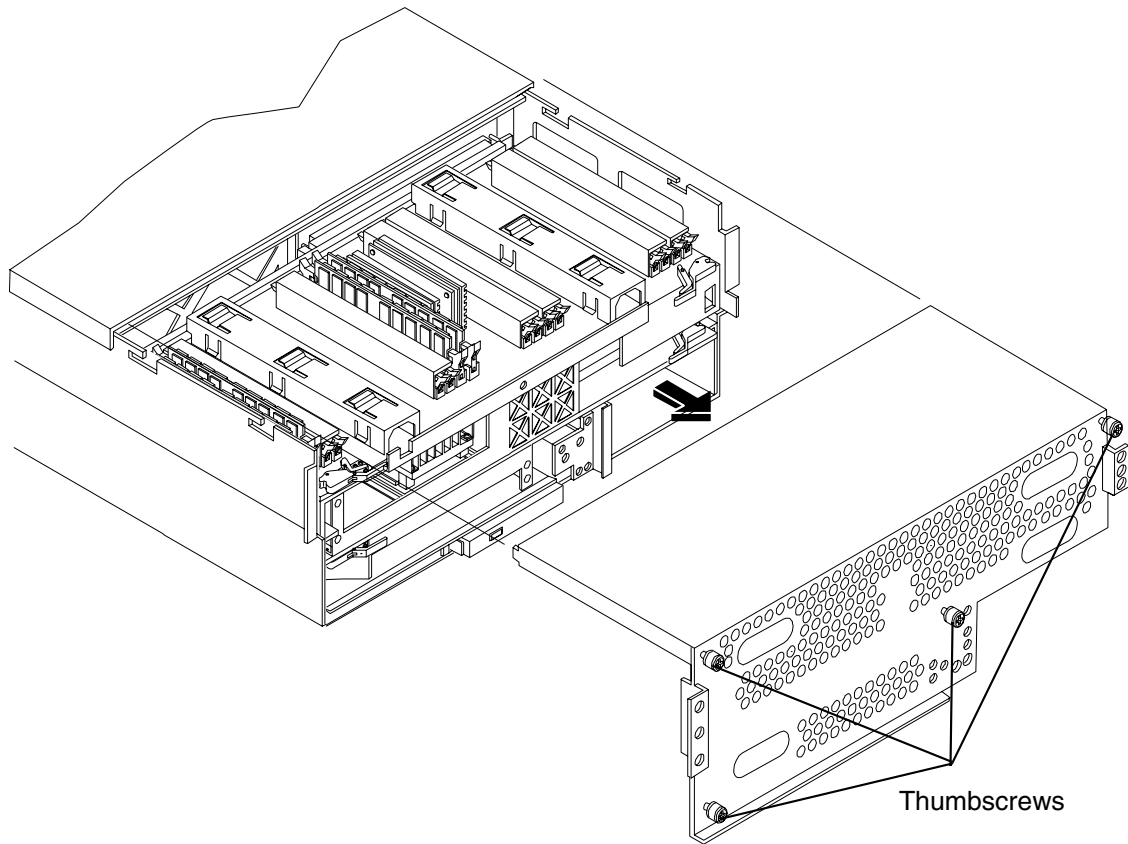
Installing the Front Bezel

To install the front bezel, perform the following steps:

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:

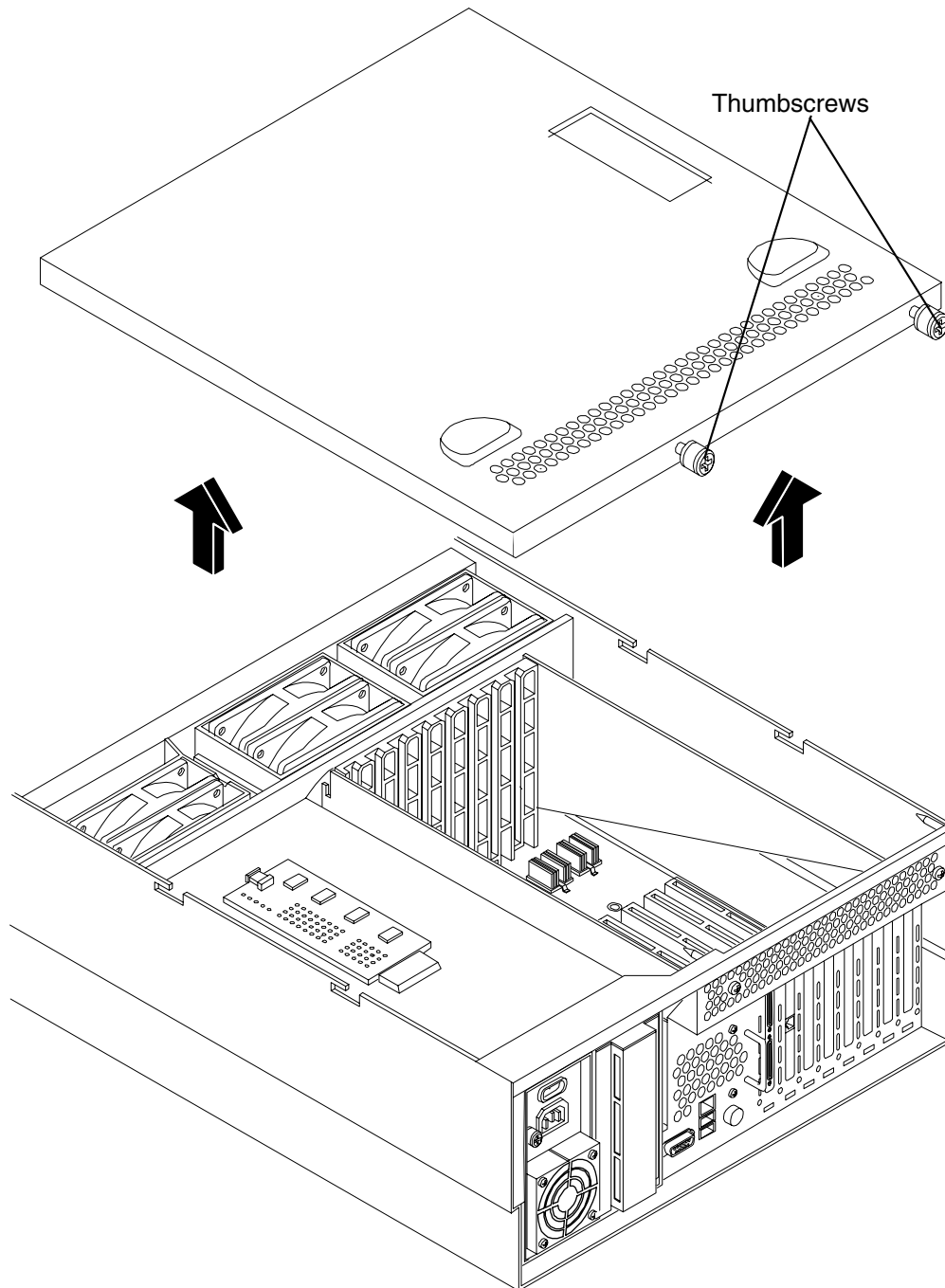
- Step 1.** If rack mounted, slide the hp Server out from the rack until it stops. See “Accessing a Rack Mounted Server” on page 12.
- Step 2.** Remove the front bezel. See “Front Bezel” on page 15.
- Step 3.** Using a Torx T15 driver, loosen the four captive thumbscrews that hold the front cover in 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 12.
- Step 2.** Loosen the two captive thumbscrews that hold the top cover in place.
- Step 3.** Pull 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 12.

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

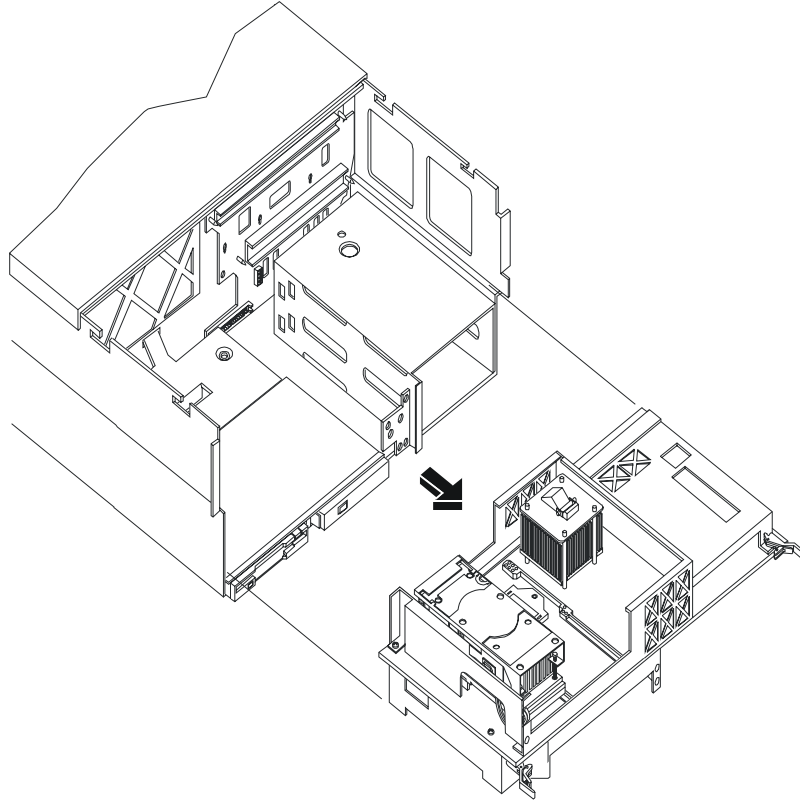
Step 2. Remove the front bezel. See “Front Bezel” on page 15.

Step 3. Remove the front cover. See “Front and Top Covers” on page 17.

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.

Memory Extender Board

The memory extender board is located directly under the front cover of the chassis. The standard memory extender board can hold up to 16 DIMMs. The high capacity memory extender board can hold up to 32 DIMMs.

WARNING **Ensure that the system is powered down and all power sources have been disconnected from the server prior to removing or replacing a memory 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 Observe all ESD safety precautions before attempting this procedure. Failure to follow ESD safety precautions could result in damage to the server.

Removing a Memory Extender Board

To remove a memory 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 12.

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

- Step 2.** Remove the front bezel from the chassis. See “Front Bezel” on page 15.

- Step 3.** Remove the front cover from the chassis. See “Front and Top Covers” on page 17.
- Step 4.** Press each latch on the two extraction levers located on each side of the memory extender board.
- Step 5.** Pull on the extraction levers to unplug the memory extender board from the socket located on the midplane riser board and remove the memory extender board from the chassis.

Figure 1-8 Memory Extender Board Latches

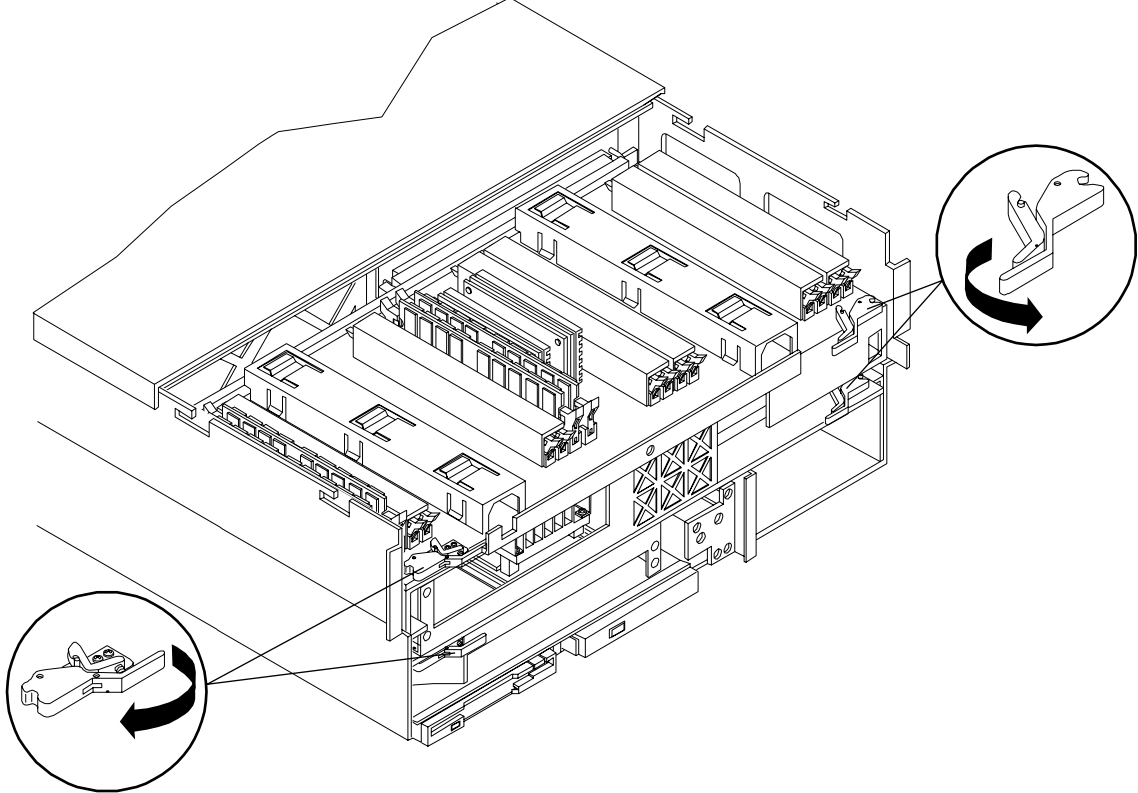
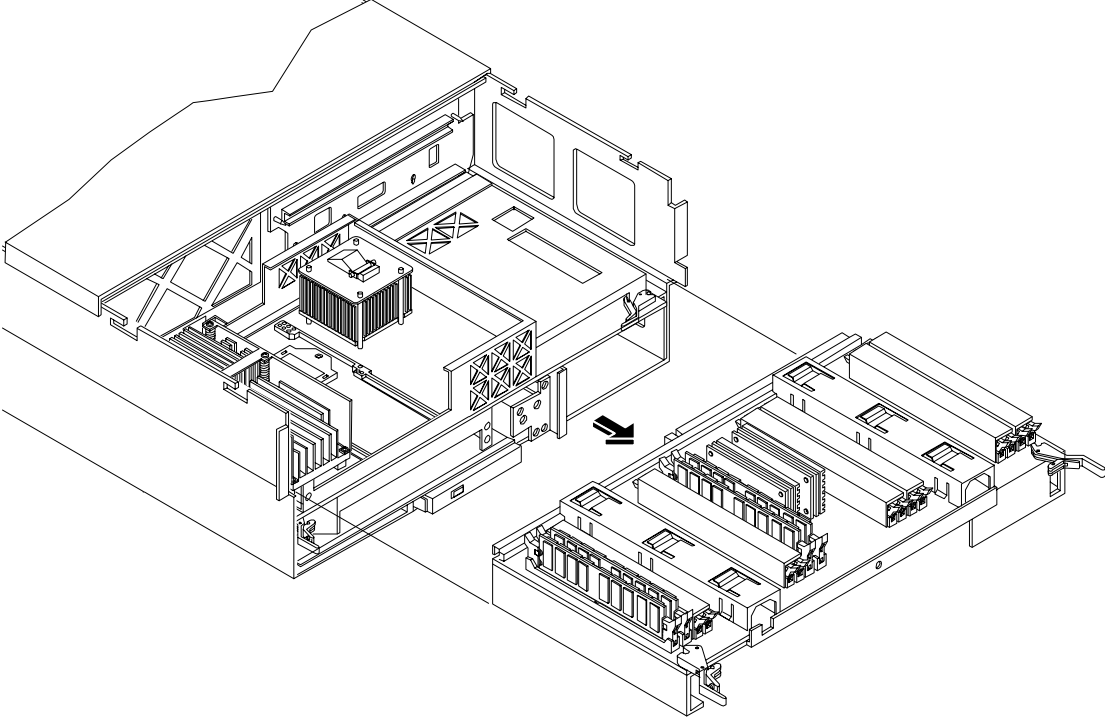


Figure 1-9 Memory Extender Board



Installing a Memory Extender Board

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

- Step 1.** Ensure the extraction levers are positioned in the outward, unlocked position.
- Step 2.** Align the memory extender board with the front and rear chassis guide slots.
- Step 3.** Slide the memory extender board in until it begins to seat in the socket located on the midplane board.
- Step 4.** Push the extraction levers inward to the locked position in order to plug in the memory extender board into 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).

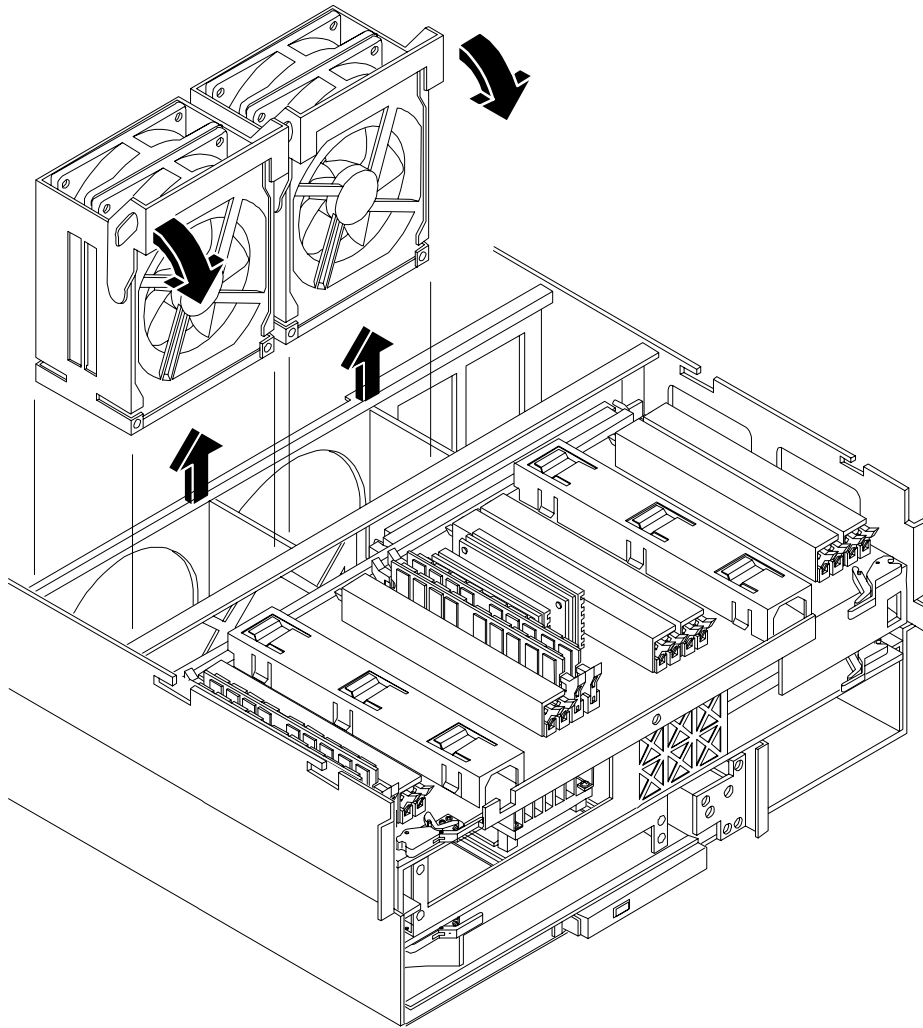
CAUTION Observe all ESD safety precautions before attempting this procedure. Failure to follow ESD safety precautions could result in damage to the server.

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 1-10 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 12.
- Step 2.** Remove the front bezel. See “Front Bezel” on page 15.
- Step 3.** Remove the top cover. See “Front and Top Covers” on page 17.
- Step 4.** Grasp the fan unit locking handle, tilt it up, and pull out the fan from the chassis.

NOTE When one fan unit is removed from the server, the remaining fan units operate at full speed for two minutes. After two minutes a “soft-shutdown” will occur.

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 1.1 GHz mx2 Dual Processors (A9730A)

Introduction

This chapter presents procedures for installing hp mx2 dual processor modules. This change replaces the processor and updates server firmware. 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 Integrity rx4640 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 (for example power failure, interference, and so on.), 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

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

- Management Processor (MP) firmware E.02.23
- VGA/Bus card ROM Firmware. Revision 106
- System Firmware greater than 1.13
- IPF Offline Diagnostics 0403, March 2004

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 your ITRC and from <http://www.hp.com/support/itaniumservers>.

Introduction

Step 4. Update the server 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.

Removing 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 12.

Step 2. Remove the front bezel. See “Removing the Front Bezel” on page 16.

Step 3. Remove the front and top covers. See “Removing the Front Cover” on page 18 and “Removing the Top Cover” on page 20.

Step 4. Remove the processor extender board. See “Removing the Processor Extender Board” on page 21.

Step 5. Remove the center hot-swap chassis fan. See “Removing a Hot-Swap Chassis Fan Unit” on page 27.

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 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 the CPU install tool from the upgrade kit, 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 from the upgrade kit.
- 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

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

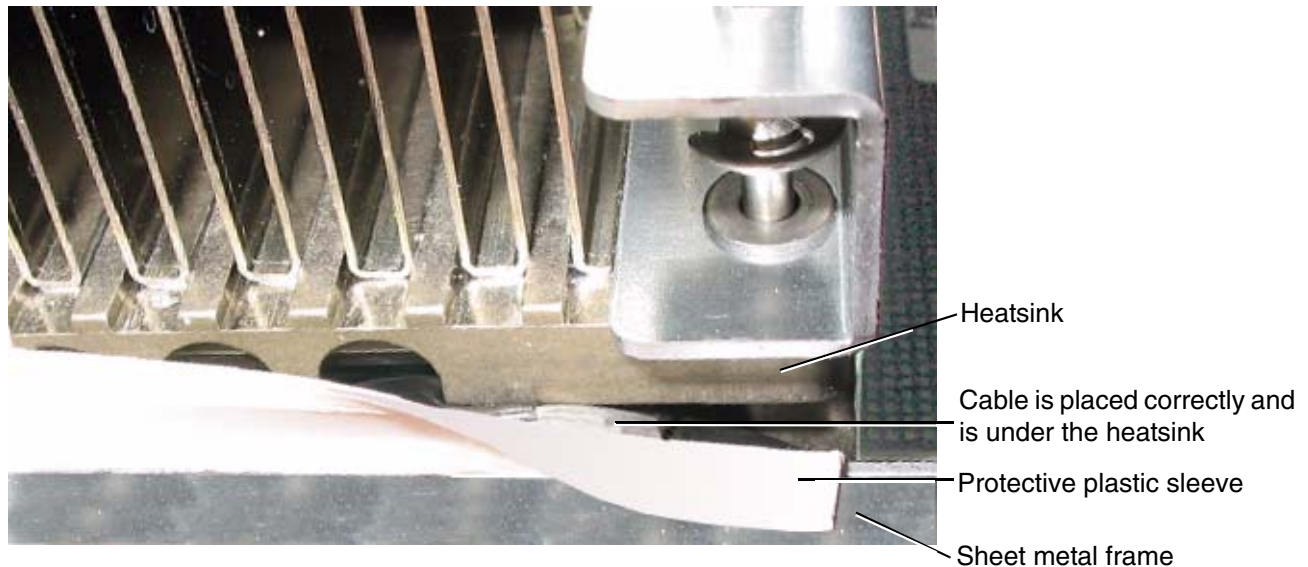
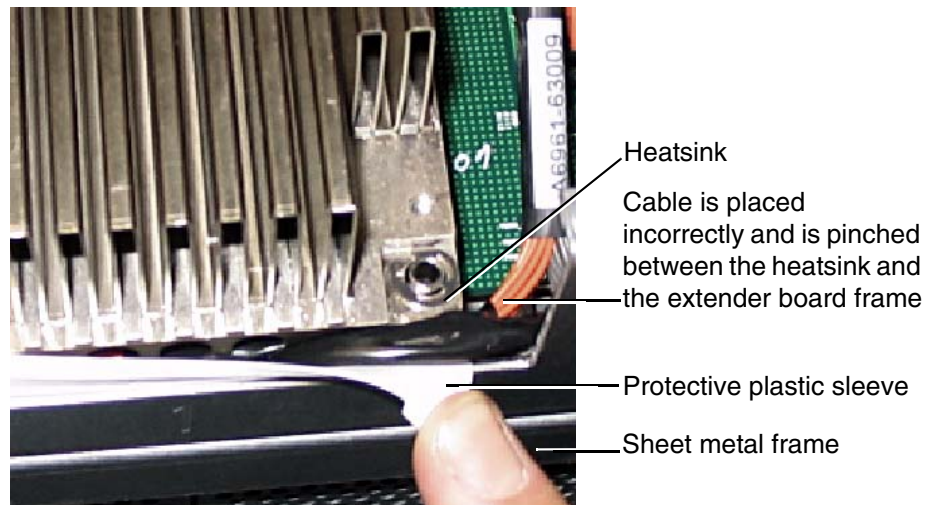


Figure 2-2 Processor Cable Placed Incorrectly



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

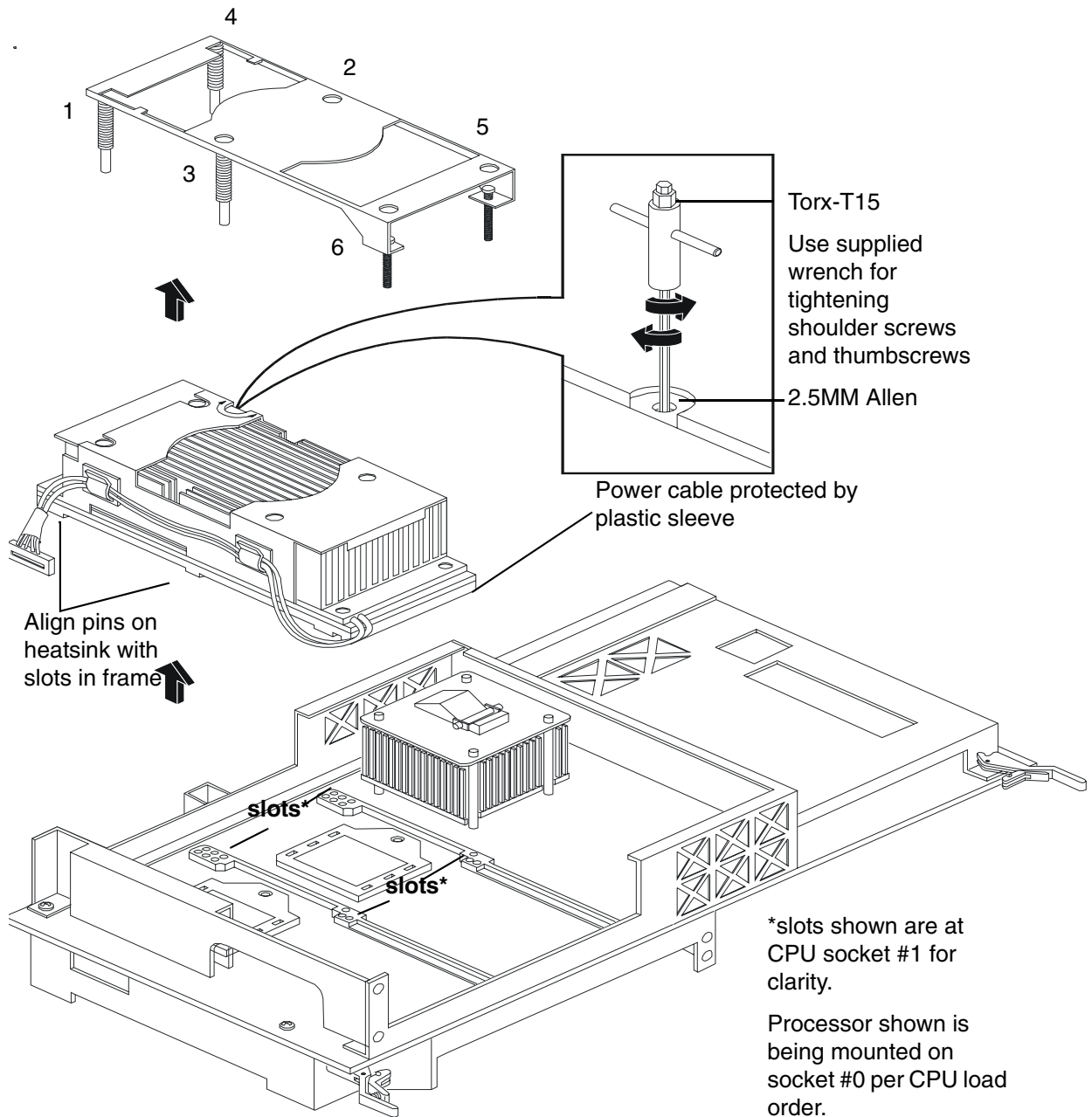
Step 6. Using the supplied CPU install tool, tighten the T15 shoulder screws 1, 2, 3, and 4 until they just bottom out. Follow the tightening sequence shown in Figure 2-3, “Installing Processor on Extender Board.”

CAUTION Do not overtighten the 4 shoulder screws—they may shear off if overtightened. Stop tightening the shoulder screws when you feel them just bottom out.

Figure 2-3 Installing Processor on Extender Board

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

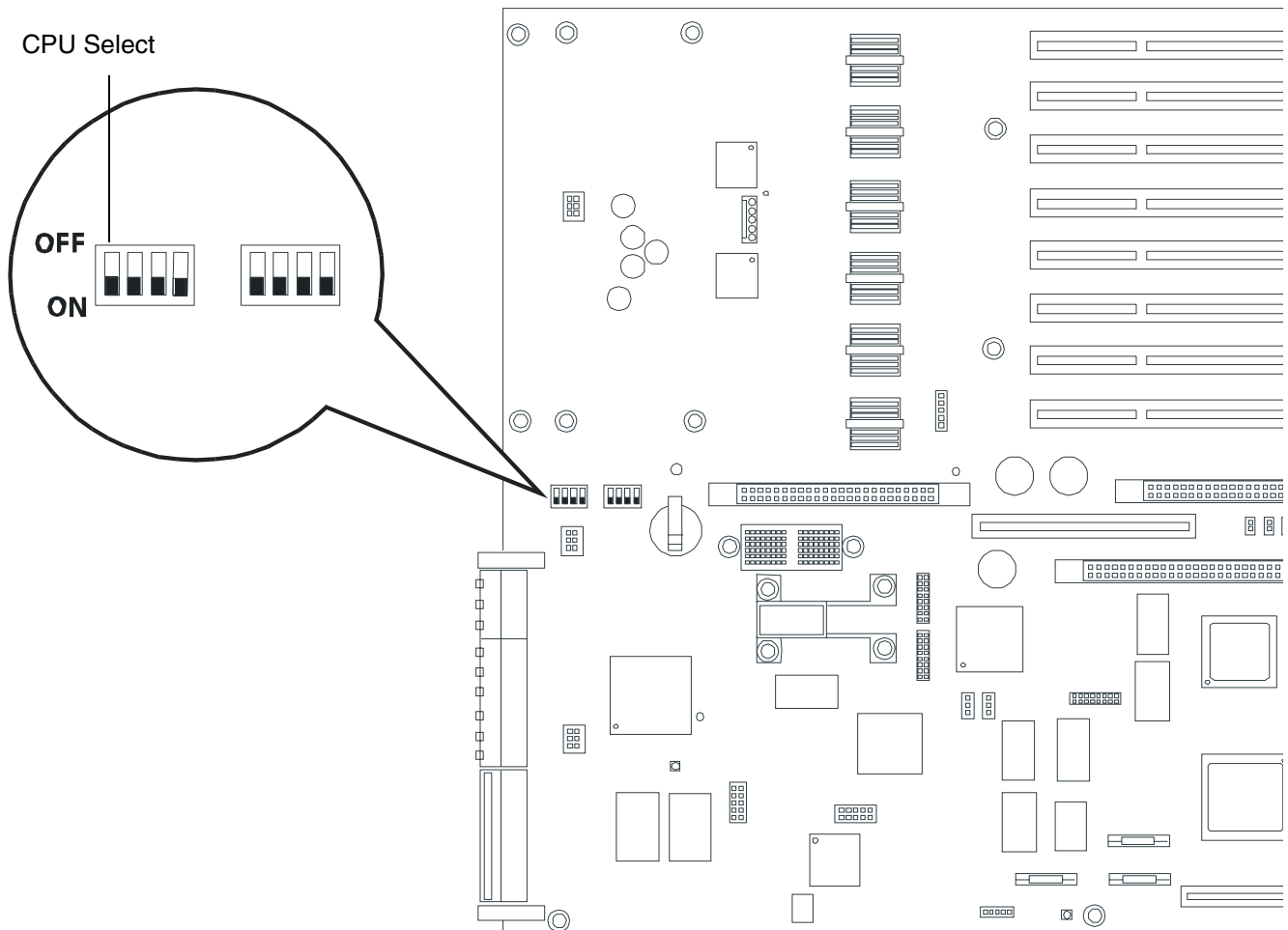
DO NOT OVERTIGHTEN!



Step 7. Using a flat blade screwdriver, tighten screws 5 and 6 shown in Figure 2-3, “Installing Processor on Extender Board.”

- Step 8.** On the IO baseboard, set the CPU select switch on as shown in Figure 2-4, “IO Baseboard Select Switches.”

Figure 2-4 IO Baseboard Select Switches



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 29.
- Step 2.** Install the processor extender board. See “Installing the Processor Extender Board” on page 23.
- Step 3.** Install the front and top covers. See “Installing the Top Cover” on page 20 and See “Installing the Front Cover” on page 18.
- Step 4.** Install the front bezel. See “Installing the Front Bezel” on page 16.

Verification of Upgrade Installation

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

Introduction

- 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.** At the EFI/OS selection, select the EFI shell and enter the **Info CPU** command. Verify that all newly installed processors are recognized and are responding correctly.

PROCESSOR MODULE INFORMATION

	# of		L3	L4	Family/		
CPU	Logical		Cache	Cache	Model	Processor	
Slot	CPUs	Speed	Size	Size	(hex.)	Rev	State
0	2	1.1 GHz	4 MB	None	1F/01	B1	Active
	^						

Note 2 CPUs' per CPU slot

- Step 5.** Initiate the OS and monitor operation. Check for error messages. Check the System Event Log for erroneous system events

3 Upgrade Procedures for 1.5 GHz (A9731A) or 1.6 GHz (A9732A, or A9733A) Processors

Introduction

This chapter presents procedures for installing hp processor modules. This change replaces the processor and updates server firmware. 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 Integrity rx4640 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 (for example power failure, interference, and so on.), 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 TM or hp-UX TM OS from <http://www.hp.com/support/itaniumservers>.

Software/Firmware Requirements

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

- Management Processor (MP) firmware E.03.05
- VGA/Bus card ROM Firmware. Revision 106
- System Firmware greater than 2.13
- IPF Offline Diagnostics 0409, September 2004

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.

Introduction

Step 3. Download server firmware. Current revisions of firmware and utilities, together with download instructions are available from your ITRC and from <http://www.hp.com/support/itaniumservers>.

Step 4. Update the server 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.

Removing 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 12.

Step 2. Remove the front bezel. See “Removing the Front Bezel” on page 16.

Step 3. Remove the front and top covers. See “Removing the Front Cover” on page 18 and “Removing the Top Cover” on page 20.

Step 4. Remove the processor extender board. See “Removing the Processor Extender Board” on page 21.

Step 5. Remove the center hot-swap chassis fan. See “Removing a Hot-Swap Chassis Fan Unit” on page 27.

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 from the upgrade kit, 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 from the upgrade kit.
- 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:

Introduction

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.

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

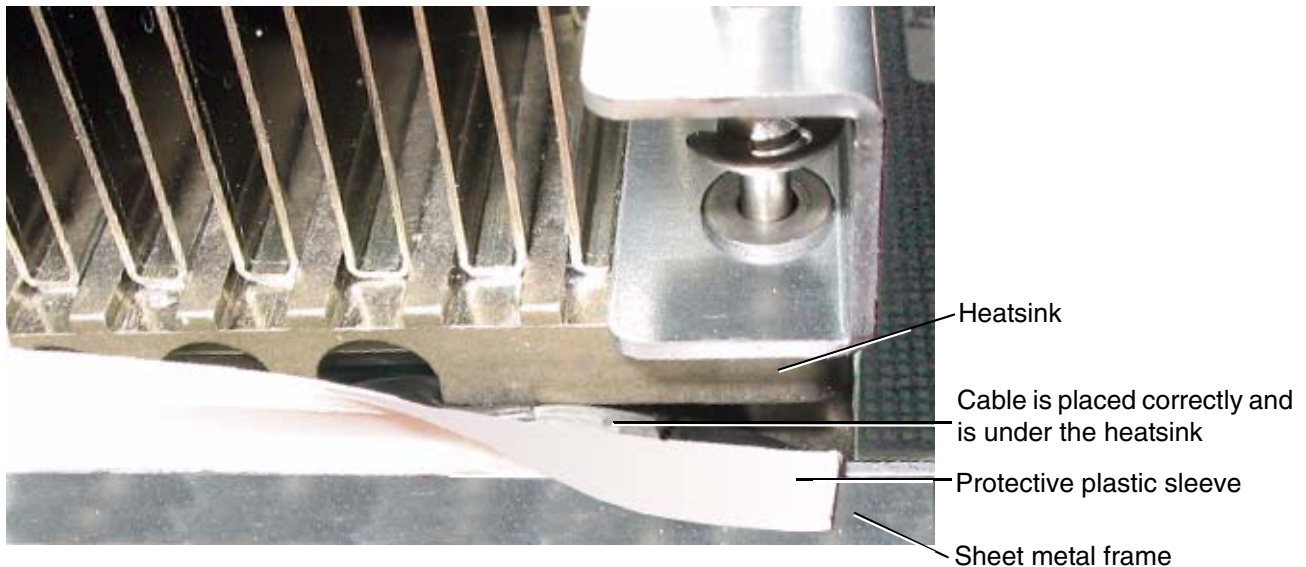
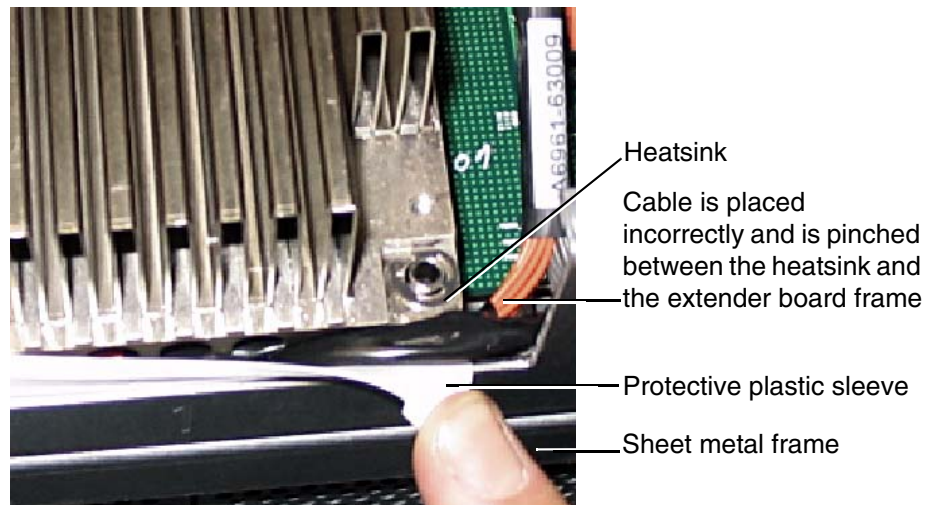


Figure 3-2 Processor Cable Placed Incorrectly



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.

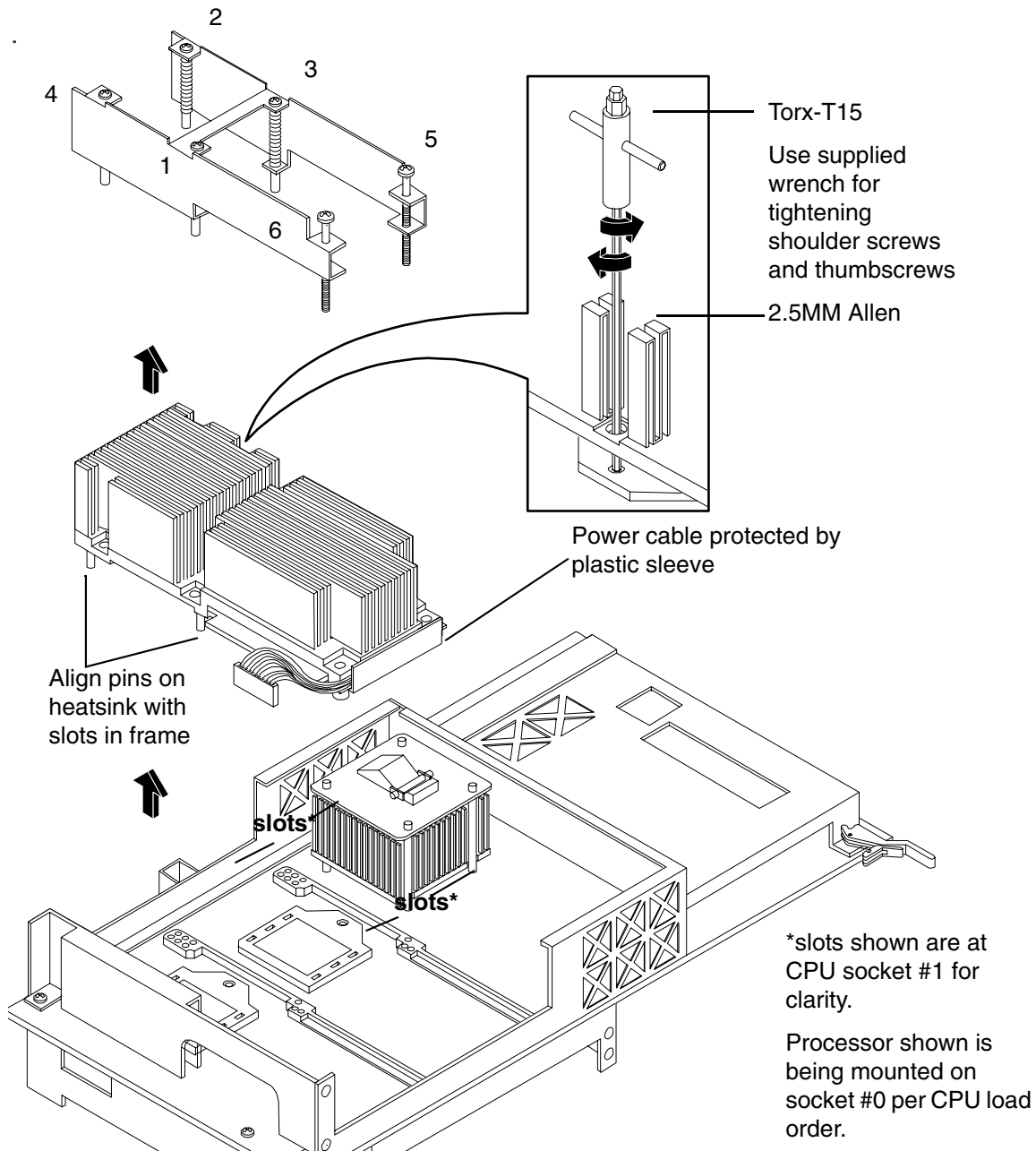
Step 6. Using the supplied CPU install tool, tighten the T15 shoulder screws 1, 2, 3, and 4 until they just bottom out. Follow the tightening sequence shown in Figure 3-3, “Installing Processor on Extender Board.”

CAUTION Do not overtighten the 4 shoulder screws—they may shear off if overtightened. Stop tightening the shoulder screws when you feel them just bottom out.

Figure 3-3 Installing Processor on Extender Board

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

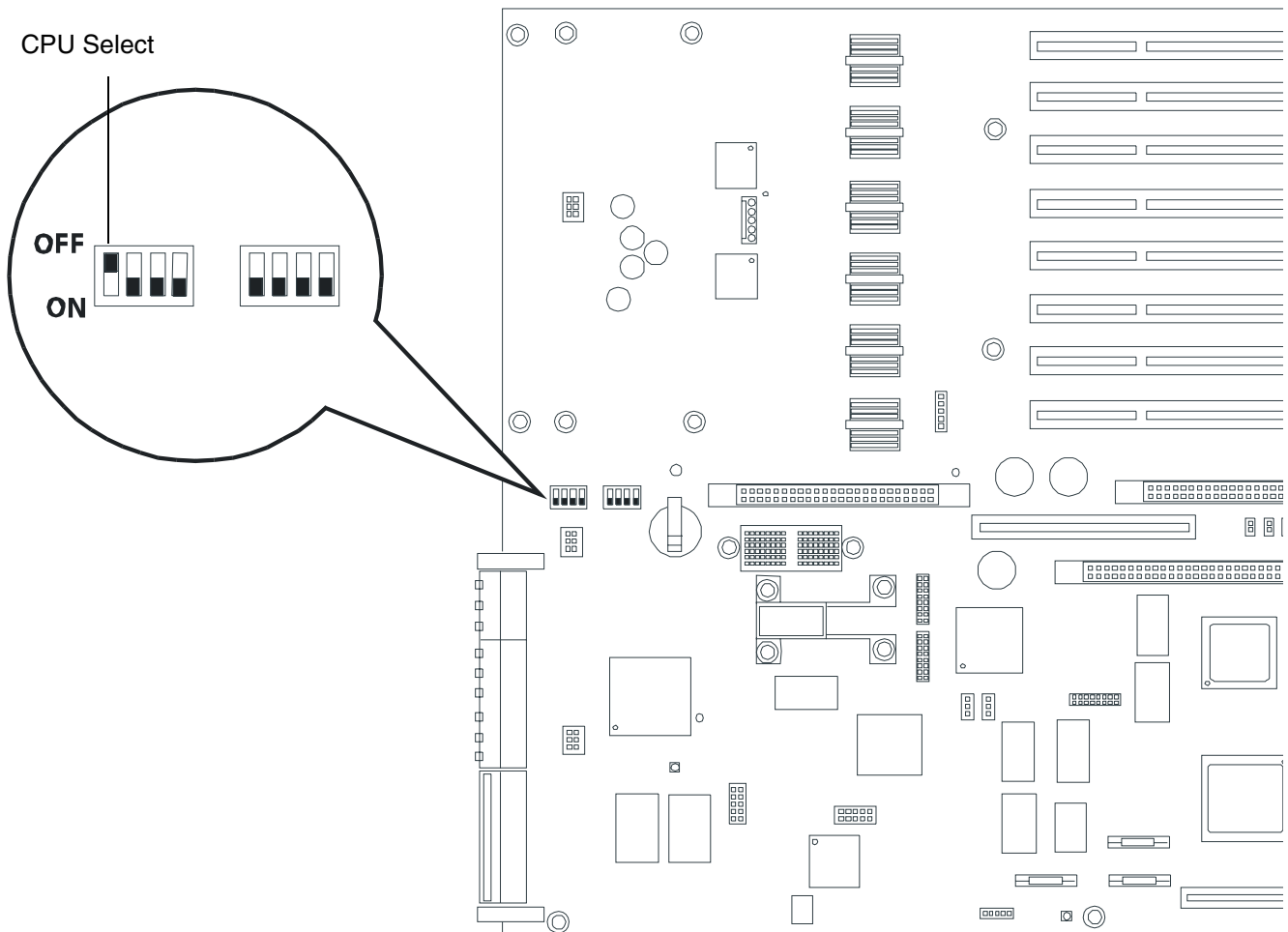
DO NOT OVERTIGHTEN!



Introduction

- Step 7.** Using a flat blade screwdriver, tighten screws 5 and 6 shown in Figure 3-3, “Installing Processor on Extender Board.”
- Step 8.** On the IO baseboard, set the CPU select switch on as shown in Figure 3-4, “IO Baseboard Select Switches.”

Figure 3-4 IO Baseboard Select Switches



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 29.
- Step 2.** Install the processor extender board. See “Installing the Processor Extender Board” on page 23.
- Step 3.** Install the front and top covers. See “Installing the Top Cover” on page 20 and See “Installing the Front Cover” on page 18.
- Step 4.** Install the front bezel. See “Installing the Front Bezel” on page 16.

Verification of Upgrade Installation

After completing the upgrade, verify that the server 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.** At the EFI/OS selection, select the EFI shell and enter the **Info CPU** command. Verify that all newly installed processors are recognized and are responding correctly.

PROCESSOR MODULE INFORMATION

	# of		L3	L4	Family/		
CPU	Logical		Cache	Cache	Model	Processor	
Slot	CPUs	Speed	Size	Size	(hex.)	Rev	State
----	-----	-----	-----	-----	-----	---	-----
0	2	1.5 GHz	4 MB	None	1F/01	B1	Active
	^						

Note 2 CPUs' per CPU slot

- Step 5.** Initiate the OS and monitor operation. Check for error messages. Check the System Event Log for erroneous system events

Introduction

4 Memory Extender Board Upgrade Procedures

Introduction

This chapter presents procedures for updating the memory extender board in your hp Integrity rx4640 server. This change replaces the memory extender board and updates server firmware. 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 Integrity rx4640 Memory Extender Board 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.

You may also need the following tools:

- T25 driver for screws holding the server to the rack column
- T15 or medium sized flat blade driver for panel removal

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 (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.

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

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

- Management Processor (MP) firmware E.02.23
- VGA/Bus card ROM Firmware. Revision 106
- System Firmware greater than 1.13
- IPF Offline Diagnostics 0403, March 2004

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.

Introduction

- 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 your ITRC and from <http://www.hp.com/support/itaniumservers>.
- Step 4.** Update the server 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.

Removing 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 12.
- Step 2.** Remove the front bezel. See “Removing the Front Bezel” on page 16.
- Step 3.** Remove the front cover. See “Removing the Front Cover” on page 18.

Removing the Memory Extender Board

The memory extender board is located directly under the front cover of the chassis. The standard memory extender board can hold up to 16 DIMMs. The high capacity memory extender board can hold up to 32 DIMMs.

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

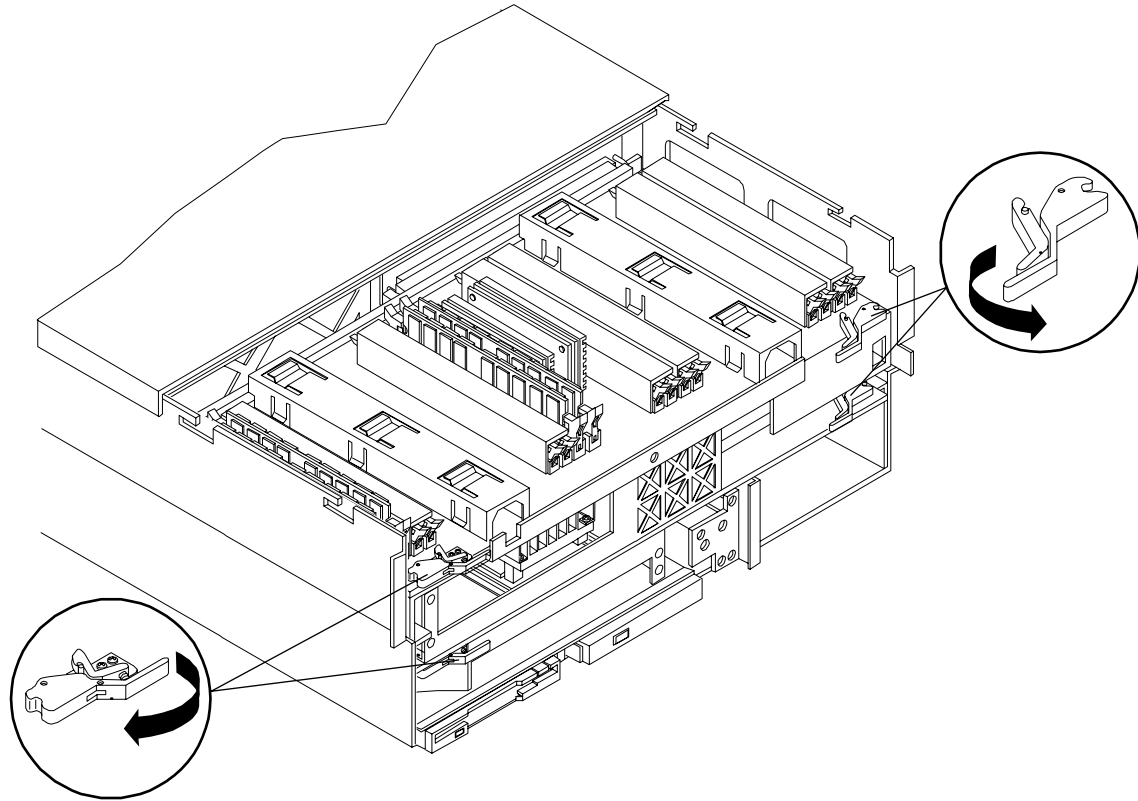
Failure to observe this warning could result in personal injury or damage to equipment.

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

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

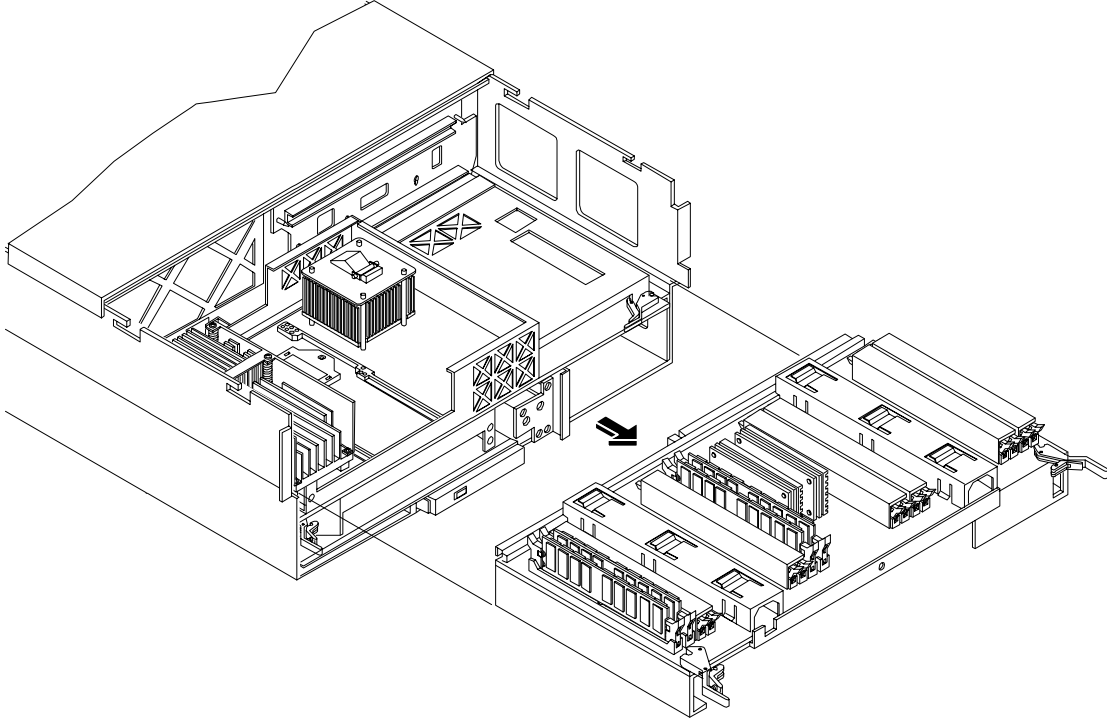
- Step 1.** Press each latch on the two extraction levers located on each side of the memory extender board. See Figure 4-1, “Memory Extender Board Latches.”

Figure 4-1 Memory Extender Board Latches



- Step 2.** Pull on the extraction levers to unplug the memory extender board from the socket located on the midplane riser board and remove the memory extender board from the chassis. See Figure 4-2, “Memory Extender Board.”

Figure 4-2 Memory Extender Board



Removing System Memory DIMMs

Remove the system memory DIMMs to reuse on the upgrade memory extender board.

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

To remove system memory, perform the following steps:

Step 1. Identify the DIMM to be removed and push the appropriate extraction levers found on either side of the DIMM slot outward to the open position. The DIMM will eject from the slot.

Step 2. Remove the DIMM from the socket.

Installing Memory DIMMs

You may insert additional DIMMs into both sixteen and thirty-two DIMM boards. When adding DIMMs, you must use a minimum of four like sized DIMMs in the next available quad.

Supported DIMM Sizes

Supported DIMM sizes are 256MB, 512MB, 1GB, 2GB, or 4GB. Dissimilar DIMM sizes may be used across the entire extender board but all four DIMMs in each quad must match. For cooling purposes, DIMM fillers must be used in some unused slots.

DIMM Slot Fillers

Both the sixteen and thirty-two DIMM extender boards have DIMM slot filler boards placed over all unfilled DIMM slots. As you fill DIMM quads with additional memory you must remove the DIMM slot fillers covering the affected slots. All remaining DIMM fillers in unused slots must remain in place to maximize internal cooling. See Table 4-1, “DIMM Filler Requirements for 16 DIMM Extender Board.”

NOTE One DIMM filler board covers two adjacent DIMM slots. As a general rule, only remove DIMM slot fillers as you add memory and the correct configuration will always remain.

Table 4-1 DIMM Filler Requirements for 16 DIMM Extender Board

16 DIMM Extender Board	
DIMMs Loaded	Fillers Required ^a
4 DIMMs in quad 0	6 fillers total: 2 fillers in quads 1, 2, and 3 (all quads filled)

Table 4-1 DIMM Filler Requirements for 16 DIMM Extender Board (Continued)

16 DIMM Extender Board	
DIMMs Loaded	Fillers Required^a
8 DIMMs in quads 0 and 1	4 fillers total: 2 fillers in quads 2 and 3 (all quads filled)
12 DIMMs in quads 0, 1, and 2	2 fillers total: 2 fillers in quad 3 (all quads filled)
16 DIMMs in quads 0, 1, 2, and 3	No fillers required

a. One DIMM filler board covers two adjacent DIMM slots.

Table 4-2 DIMM Filler Requirements for 32 DIMM Extender Board

32 DIMM Extender Board	
DIMMs Loaded	Fillers required^a
4 DIMMs in quad 0	12 fillers total: 2 fillers in quads 1, 3, 4, 5, 6, and 7 (quad 2 remains unfilled)
8 DIMMs in quads 0 and 1	8 fillers total: 2 fillers in quads 4, 5, 6, and 7 (quads 2 and 3 remain unfilled)
12 DIMMs in quads 0, 1, and 2	8 fillers total: 2 fillers in quads 4, 5, 6, and 7 (quad 3 remains unfilled)
16 DIMMs in quads 0, 1, 2, and 3	8 fillers total: 2 fillers in quads 4, 5, 6, and 7 (all quads filled)
20 DIMMs in quads 0, 1, 2, 3, and 4	4 fillers total: 2 fillers in quads 5, 7 quad 6 remains unfilled
24 DIMMs in quads 0, 1, 2, 3, 4, and 5	No fillers required
28 DIMMs in quads 0, 1, 2, 3, 4, 5, and 6	No fillers required
32 DIMMs in quads 0, 1, 2, 3, 4, 5, 6, and 7	No fillers required

a. One DIMM filler board covers two DIMM adjacent slots.

Figure 4-3 16 DIMM Extender Board Slot IDs

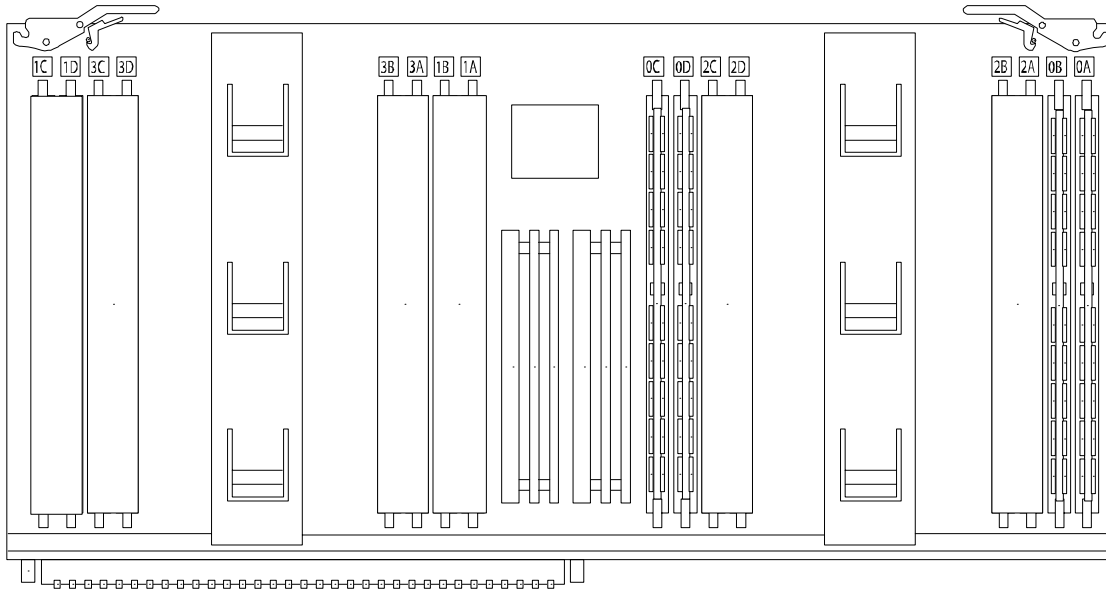
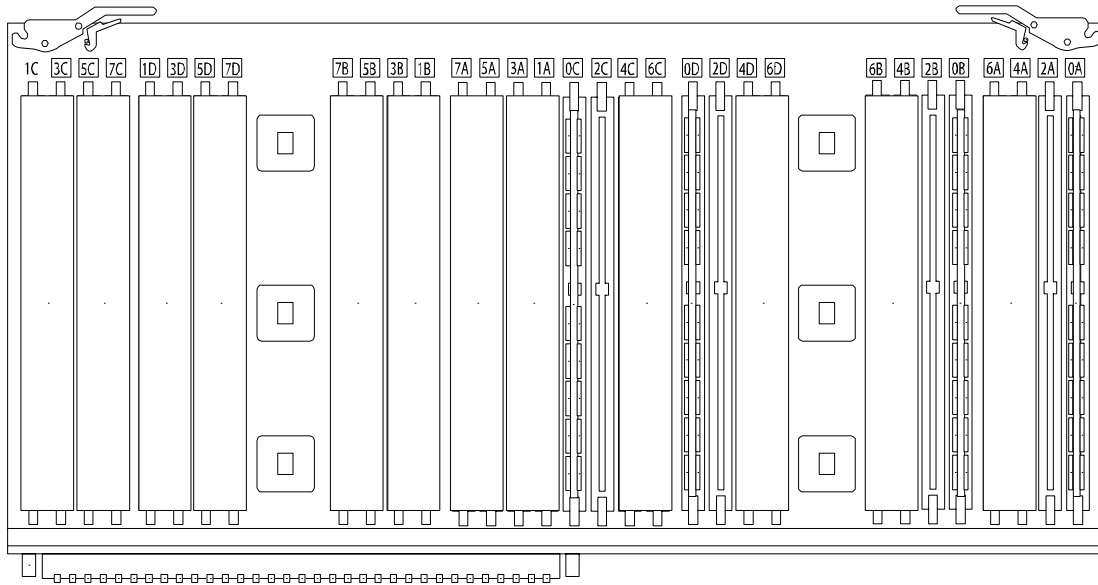


Figure 4-4 32 DIMM Extender Board Slot IDs

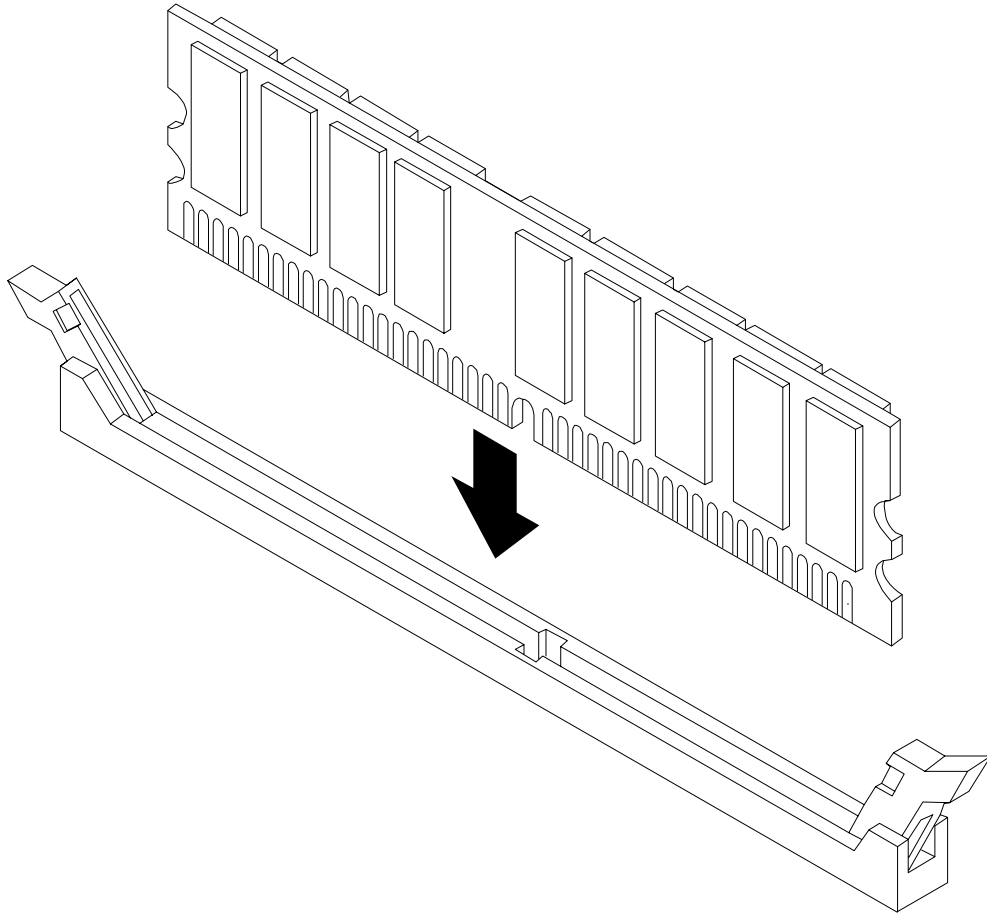


Installing DIMMs

To install DIMMs in the upgrade memory extender board, perform the following steps:

- Step 1.** Align the DIMM with the socket located on the memory extender board.
- Step 2.** Gently and evenly push on each side of the DIMM until it seats in the socket. Ensure that the extraction levers are in the closed position.

Figure 4-5 **Inserting DIMM into Extender Board Slot**



Replacing a Memory Extender Board

To replace the memory extender board, perform the following steps:

- Step 1.** Ensure the extraction levers are positioned in the outward, unlocked position.
- Step 2.** Align the memory extender board with the front and rear chassis guide slots.
- Step 3.** Slide the memory extender board in until it begins to seat in the socket located on the midplane board.
- Step 4.** Push the extraction levers inward to the locked position in order to plug in the memory extender board into the midplane riser board.
- Step 5.** Install the front top cover. See “Installing the Top Cover” on page 20.

Step 6. Install the front bezel. See “Installing the Front Bezel” on page 16.

Step 7. If rack mounted, slide the hp Server into the rack until it stops.

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. At the EFI/OS selection, select the EFI shell and enter the **Info Mem** command. Verify that all installed memory is recognized and is operating correctly.

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

5 U320 SCSI Enablement and Conversion Procedures

Introduction

This chapter explains how to upgrade the SCSI cards to enable U320 operation and how to optionally change the SCSI configuration (duplex to simplex) in your hp Server. The U320 enablement process involves replacing the duplex PCA card (duplex configuration only) and the SCSI backplane (simplex and duplex configurations). Refer to the *hp Integrity rx4640 Server Installation Guide* for instructions to convert your server from simplex to duplex operation. After performing these procedures, you will be directed to start up your server and resume operation.

The embedded backplane for internal SCSI hard disks drives in the hp integrity rx4640 server may be configured in either simplex or duplex mode.

In simplex mode, both embedded internal hard disks are on SCSI channel A. SCSI channel B may be used for external devices. Remove the cover from channel B prior to connecting external devices. Do not connect external devices to SCSI channel A.

In duplex mode, each hard disk is on a separate SCSI bus. Do not connect external devices to either SCSI channel A or B.

Time Required

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

Upgrade Tasks

Upgrade tasks depend on whether the server is configured for simplex or duplex operation. The upgrade procedures are accomplished as follows:

Simplex Configuration Upgrade

- Back up your data
- Shutdown your server (disconnect AC power)
- Remove server components
- Replace SCSI backplane board
- Install Server Components
- Verify the upgrade installation

Duplex Configuration Upgrade

- Back up your data
- Shutdown your server (disconnect AC power)
- Remove server components
- Remove the SCSI duplex board
- Replace SCSI backplane board

Introduction

- Install the replacement SCSI duplex board
- Install Server Components
- Verify the upgrade installation

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 (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.

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 TM or hp-UX TM OS from <http://www.hp.com/support/itaniumservers>.

Removing Server Components

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

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.

To upgrade the server, remove the following components:

- Step 1.** Make sure 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.** Press the power switch on the server front panel. Verify that the power LED goes off.
- Step 4.** Disconnect the AC power cords from the server rear panel.
- Step 5.** Extend the server from the rack. See “Extend the Server from the Rack” on page 12.
- Step 6.** Remove the front bezel. See “Removing the Front Bezel” on page 16.
- Step 7.** Remove the top and front cover. See “Front and Top Covers” on page 17.

Step 8. Remove the memory extender board. See “Removing a Memory Extender Board” on page 23.

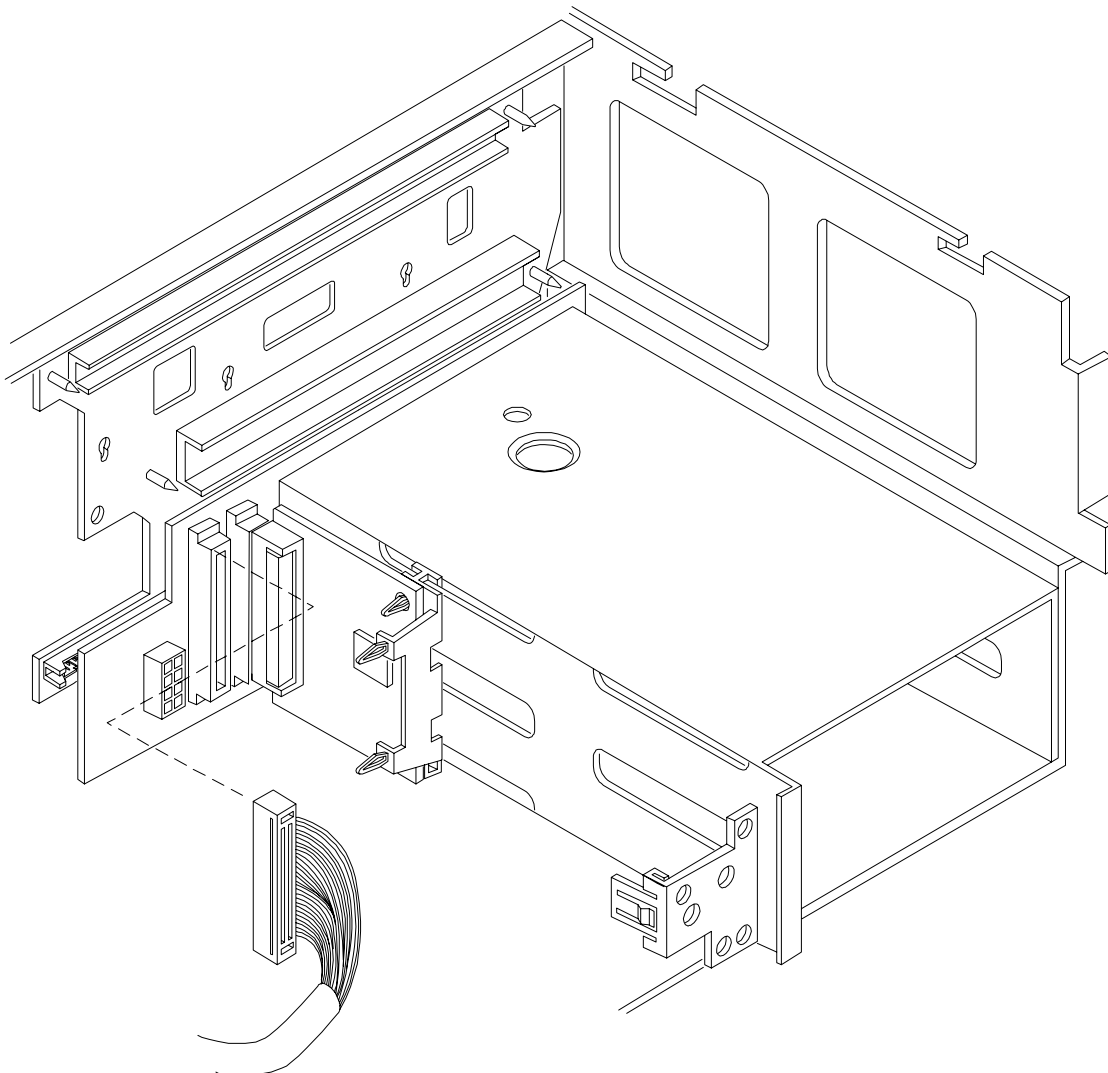
Step 9. Remove the processor extender board. See “Removing the Processor Extender Board” on page 21.

Removing the SCSI Duplex Board

The SCSI Duplex board is only installed if the server is configured for duplex operation. The duplex board is secured to the disk drive cage by a bracket and connected to the SCSI backplane board. To remove the SCSI duplex board, perform the following steps:

Step 1. Disconnect the SCSI cable B to the SCSI backplane board. See Figure 5-1, “SCSI Cable B Connection to the SCSI Backplane.”

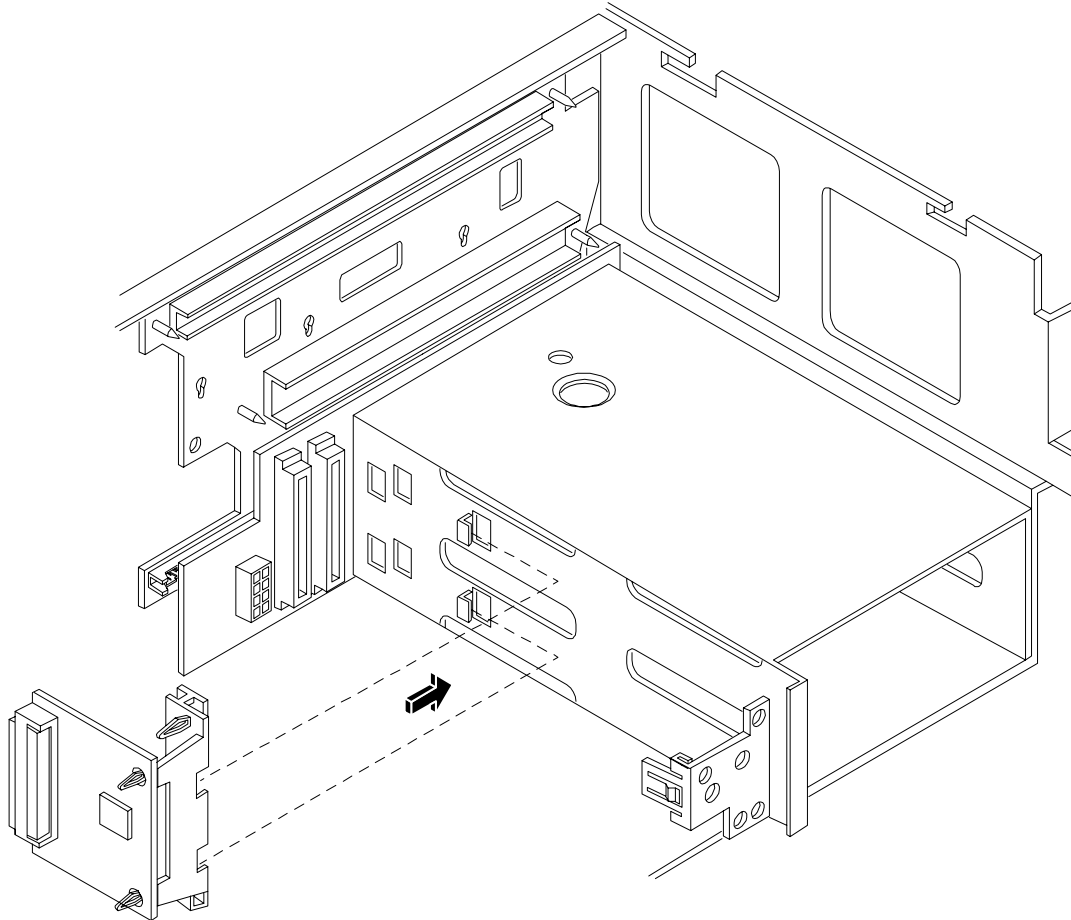
Figure 5-1 SCSI Cable B Connection to the SCSI Backplane



Step 2. Remove the duplex board. Pull the SCSI duplex board forward to disconnect the backplane connector and release it from the disk drive cage. See Figure 5-2, “Replacing the SCSI Duplex Board.”

Continue the upgrade by replacing the SCSI backplane board. The upgrade SCSI duplex board is installed after the SCSI backplane board is replaced.

Figure 5-2 Replacing the SCSI Duplex Board



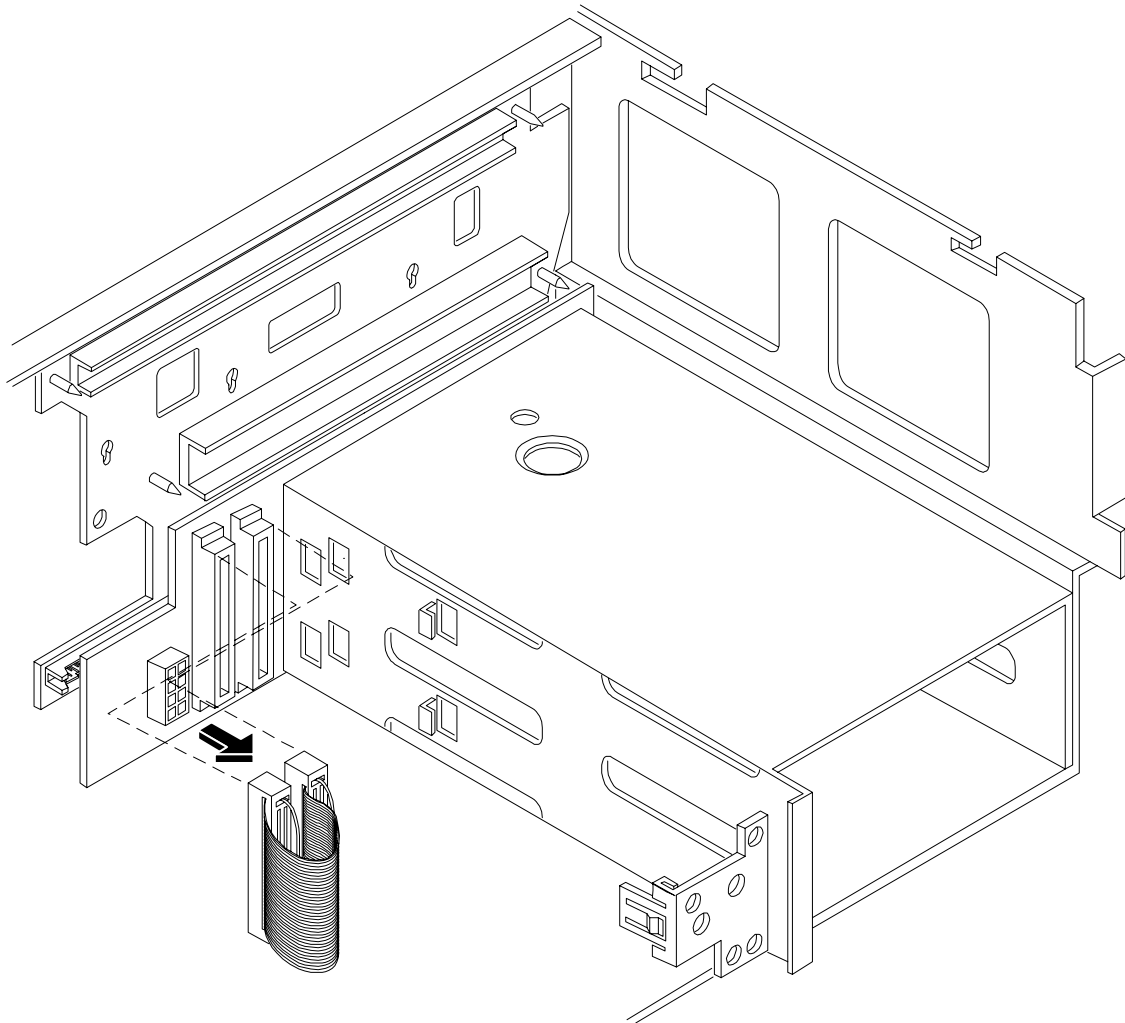
Removing the SCSI Backplane Board

The SCSI backplane board is replaced for both simplex and duplex configurations. To remove the SCSI backplane, perform the following steps:

- Step 1.** Unplug the internal SCSI cable(s) from the SCSI backplane board.
- Step 2.** Unplug the SCSI backplane-to-midplane riser cable from the SCSI backplane.
- Step 3.** If the server is configured for simplex operation, remove the SCSI Jumper Cable. See Figure 4-1, “Removing the SCSI Jumper Cable.”

NOTE The SCSI jumper cable bridges the two SCSI connectors on the SCSI backplane when the server is configured for simplex operation. The SCSI jumper cable is not installed in duplex configurations.

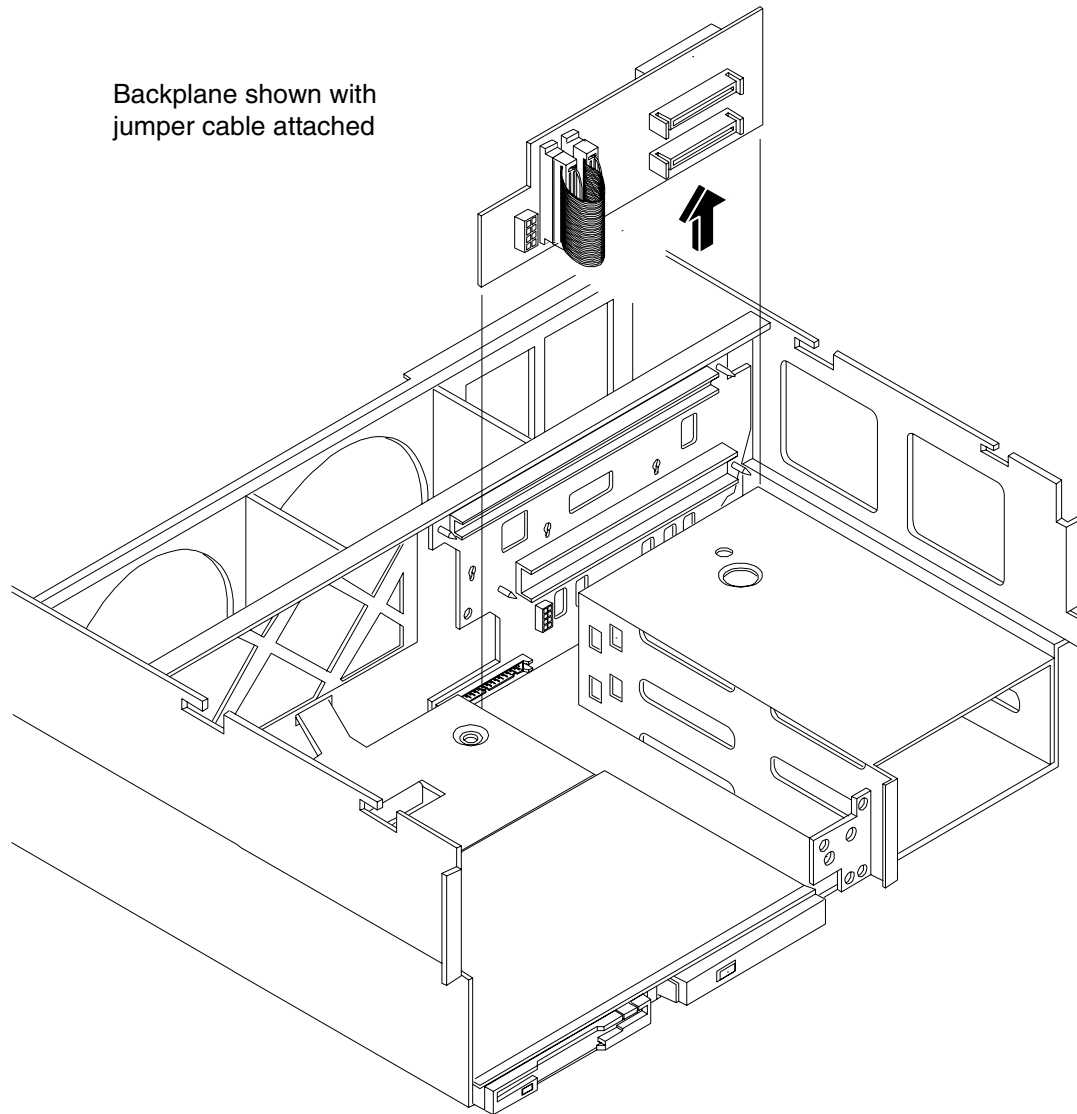
Figure 5-3 Replacing the SCSI Jumper Cable



- Step 4.** Using your finger, turn the swivel latch on top of the hot-plug hard disk drive cage to unlatch the SCSI backplane board from the hard disk cage.
- Step 5.** Grasp the top edge of the SCSI backplane board and pull up until it releases from the keyway slots on the back of the hot-plug disk drive cage.

Step 6. Push the SCSI backplane board away from the disk drive cage and lift it up and out of the chassis.

Figure 5-4 SCSI Backplane Removal and Replacement



Replacing the SCSI Backplane

To replace the SCSI backplane, perform the following steps:

- Step 1.** Replace the SCSI backplane to the rear of the disk drive cage.
- Step 2.** If your system is configured for simplex operation, connect the SCSI jumper cable to the SCSI backplane connectors. See Figure 5-3 on page 65
- Step 3.** Re-plug the SCSI backplane-to-midplane cable back into the SCSI backplane.
- Step 4.** Re-plug the internal SCSI cable into the SCSI back plane.

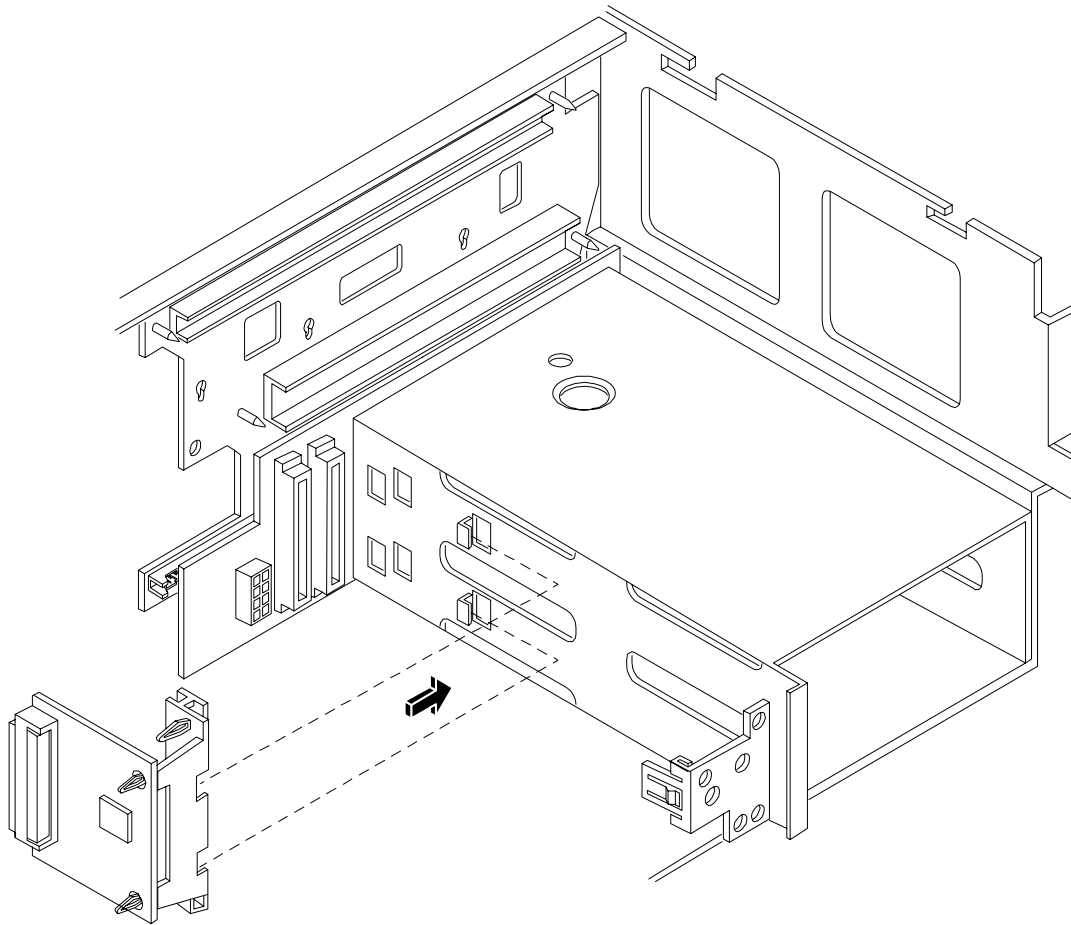
If your server is configured for simplex operation, continue the upgrade at “Installing Server Components” on page 68

Installing the SCSI Duplex Board

Install the SCSI duplex board only if your system is configured for duplex operation. To install the duplex board, perform the following steps:

- Step 1.** Align the bracket tabs with the slots on the side of the disk drive cage. See Figure 5-5, “Installing the SCSI Duplex Board.”

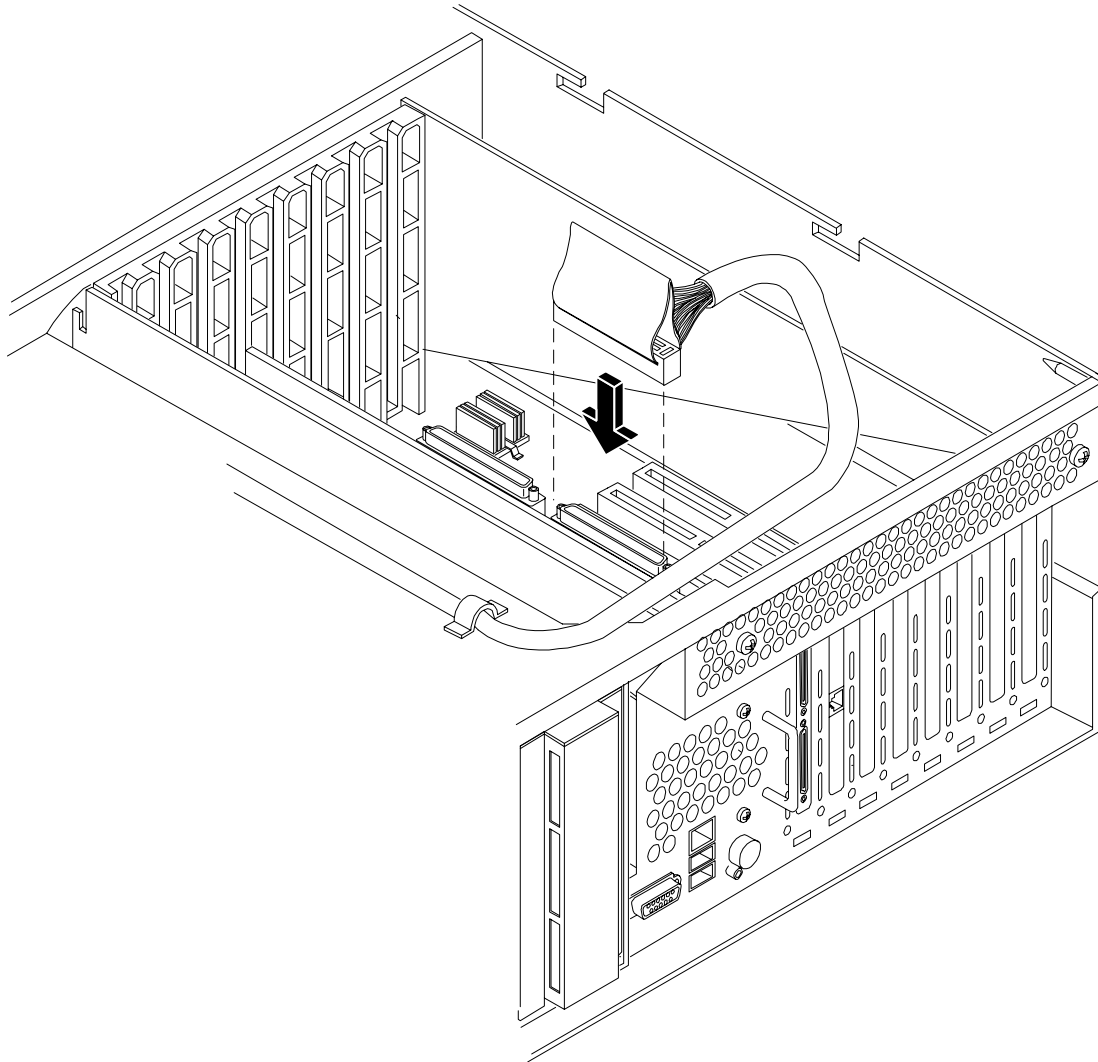
Figure 5-5 Installing the SCSI Duplex Board



- Step 2.** Press the bracket against the disk drive cage until the bracket locks into place.
- Step 3.** Align the connector of the duplex board with the connector on the SCSI backplane.
- Step 4.** Press the board connector into the backplane connector.
- Step 5.** Plug the SCSI cable B connector into the SCSI connector located on the backplane next to the duplex board. See Figure 5-1, “SCSI Cable B Connection to the SCSI Backplane.”

- Step 6.** Verify the other end of SCSI cable B is connected to the SCSI B channel connector on the SCSI adapter board. See Figure 5-6, “Installing SCSI Cable B to the SCSI Adapter Board.”

Figure 5-6 Installing SCSI Cable B to the SCSI Adapter Board



Installing Server Components

Install the following components in the server chassis:

- Step 1.** Replace the two hot-plug disk drives into the disk drive cage.
- Step 2.** Install the processor extender board. See “Installing a Memory Extender Board” on page 26.
- Step 3.** Install the memory extender board. See “Installing the Processor Extender Board” on page 23.
- Step 4.** Install the front and top covers. See “Installing the Top Cover” on page 20 and See “Installing the Front Cover” on page 18.
- Step 5.** Install the front bezel. See “Installing the Front Bezel” on page 16.

Verification of Upgrade Installation

After completing the upgrade, verify that the server 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.** At the `EFI/OS` selection, select the `EFI` shell and enter the `Info io` command. Verify that all installed disk drives are recognized and operating correctly.
- Step 5.** Initiate the OS and monitor operation. Check for error messages. Check the System Event Log for erroneous system events

Converting SCSI From Duplex to Simplex Operation

This optional section explains how to convert your server from duplex to simplex operation. The procedure requires unplugging and stowing the SCSI B cable, removing the SCSI duplex board, and installing a jumper cable on the SCSI backplane.

Safety Information

Follow the procedures listed below to ensure safe handling of components and to prevent harm to both you and the hp Server:

- 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.

WARNING **Hazardous voltages are present inside the hp Server. Always remove AC power from the server and associated assemblies while working inside the unit. Serious injury may result if this warning is not observed.**

Accessing the SCSI Backplane Board

Prior to adding the accessories required to convert your server from duplex to simplex you must remove outer components to access the SCSI backplane board. To gain access to the SCSI backplane 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 12.

NOTE If your hp Server is pedestal mounted, you need not remove the pedestal to perform the duplex to simplex conversion. Proceed directly to the next step.

Step 2. Remove the front bezel. See “Front Bezel” on page 15.

Step 3. Remove the front cover. See “Removing the Front Cover” on page 18.

Step 4. Remove the memory extender board. See “Memory Extender Board” on page 23.

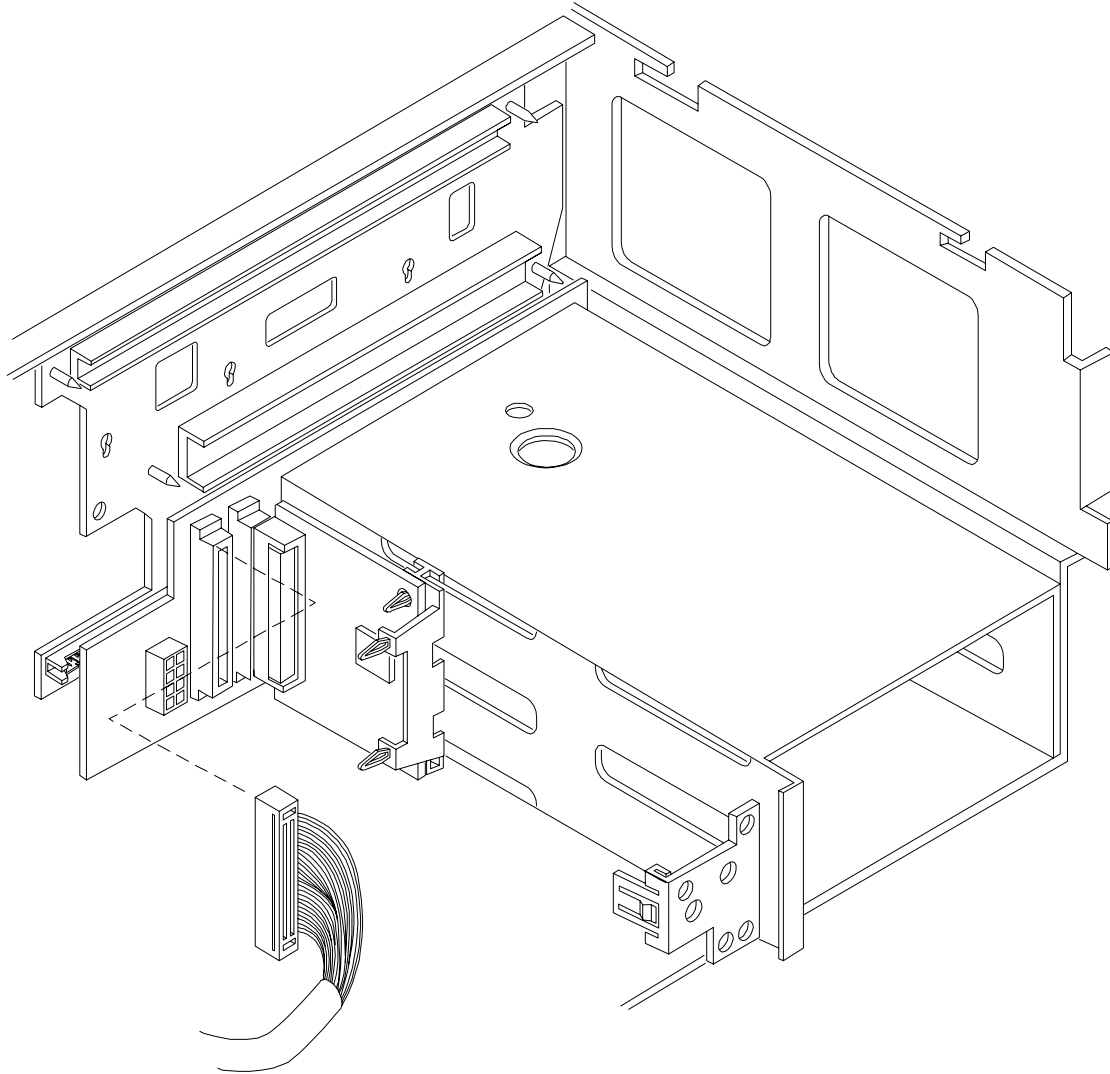
Step 5. Remove the processor extender board. See “Processor Extender Board” on page 21.

Convert to Simplex

To convert to duplex, perform the following steps:

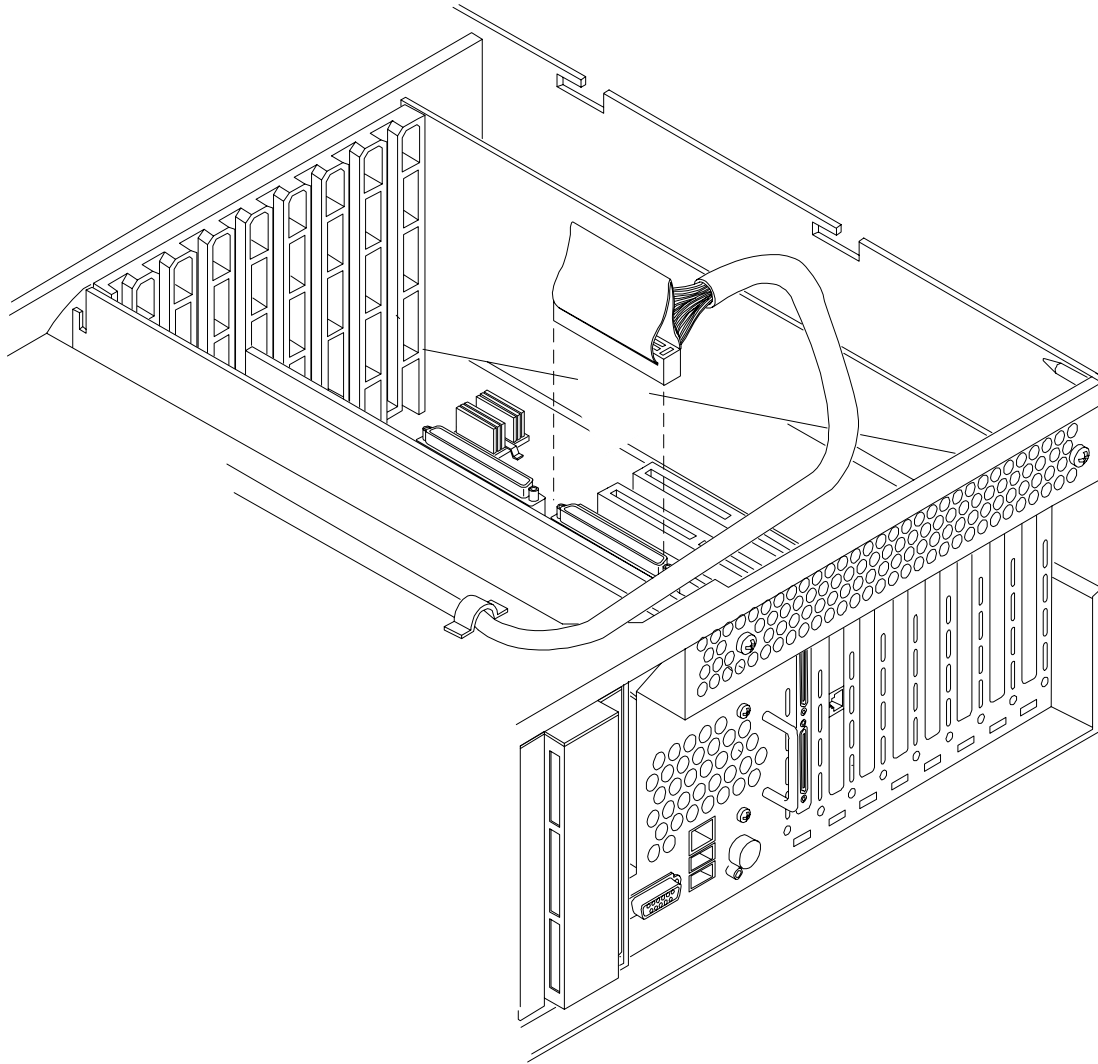
- Step 1.** Unplug the SCSI B cable from the backplane. See Figure 5-7, “Unplugging SCSI B Cable from the SCSI Backplane.”

Figure 5-7 Unplugging SCSI B Cable from the SCSI Backplane



Step 2. Unplug the SCSI B cable connector from the SCSI Adapter board. See Figure 5-8, “Unplugging SCSI B Cable from the SCSI Adapter Board.”

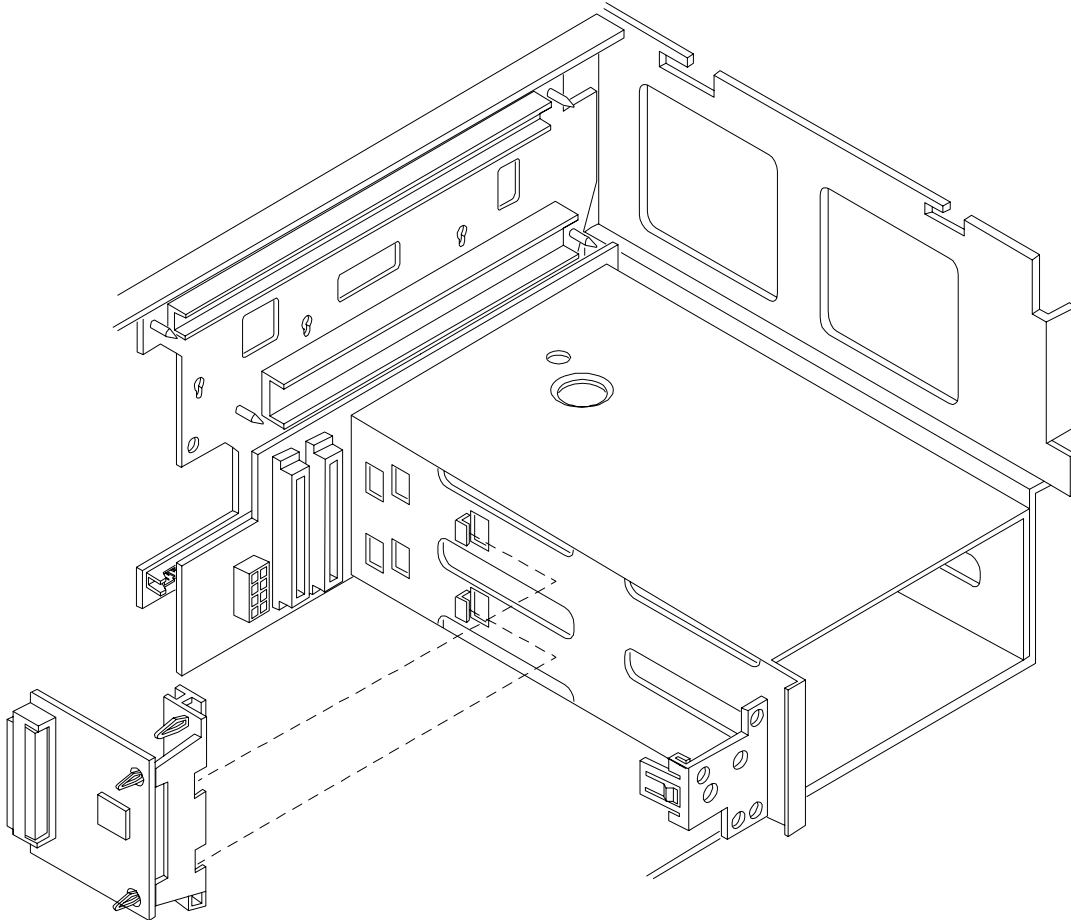
Figure 5-8Unplugging SCSI B Cable from the SCSI Adapter Board



Step 3. Secure the SCSI Channel B cable within the chassis.

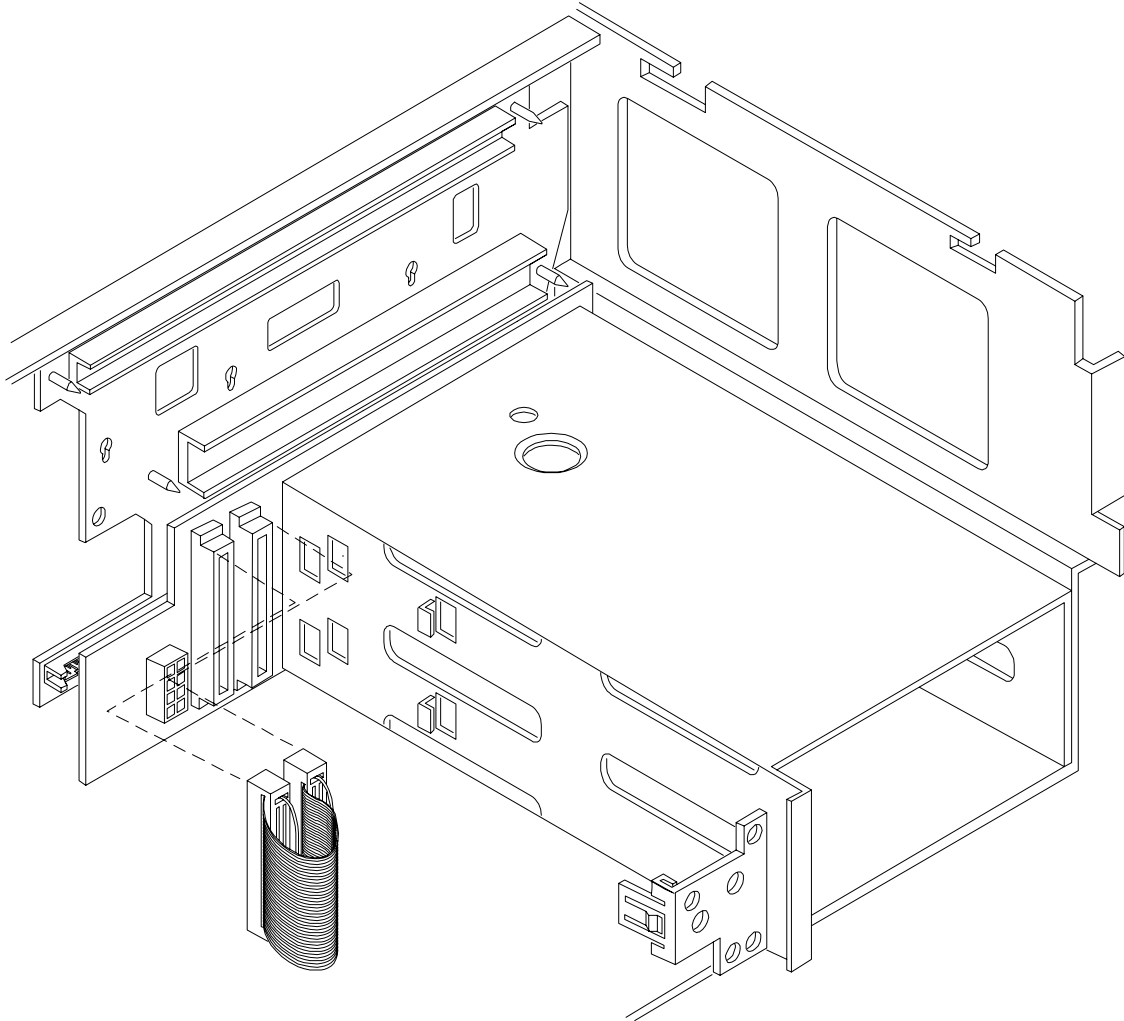
- Step 4.** Remove the SCSI duplex board. Pull the SCSI duplex board forward to disconnect the backplane connector and release it from the disk drive cage. See Figure 5-9, “Removing the Duplex Board.”

Figure 5-9 Removing the Duplex Board



Step 5. Connect the SCSI jumper cable to the SCSI backplane connectors. See Figure 5-10, “Installing the SCSI Jumper Cable.”

Figure 5-10 Installing the SCSI Jumper Cable



Installing Server Components

Install the following components in the server chassis:

- Step 1.** Replace the two hot-plug disk drives into the disk drive cage.
- Step 2.** Install the processor extender board. See “Installing a Memory Extender Board” on page 26.
- Step 3.** Install the memory extender board. See “Installing the Processor Extender Board” on page 23.
- Step 4.** Install the front and top covers. See “Front and Top Covers” on page 17.
- Step 5.** Install the front bezel. See “Installing the Front Bezel” on page 16.

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.** At the `EFI/OS` selection, select the `EFI` shell and enter the `Info Sys` command. Verify that all installed disk drives are recognized and operating correctly.
- Step 5.** Initiate the OS and monitor operation. Check for error messages. Check the System Event Log for erroneous system events

6 Removing and Replacing Core I/O Cards

Safety Information

Follow the procedures listed below to ensure safe handling of components and to prevent harm to both you and the HP Server:

- 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.

WARNING Ensure that the system is powered down and all power sources have been disconnected from the server prior to removing and replacing the core I/O cards. 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.

Service Tools Required

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

- Electrically Conductive Field Service Kit (P/N 9300-1155)
- 1/4 inch Flat Blade Screwdriver
- ACX-15 torx Screwdriver

Accessing a Rack Mounted Server

The hp Integrity rx4640 Server is designed to be rack mounted. The following procedure explains how to gain access to your hp Integrity rx4640 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.

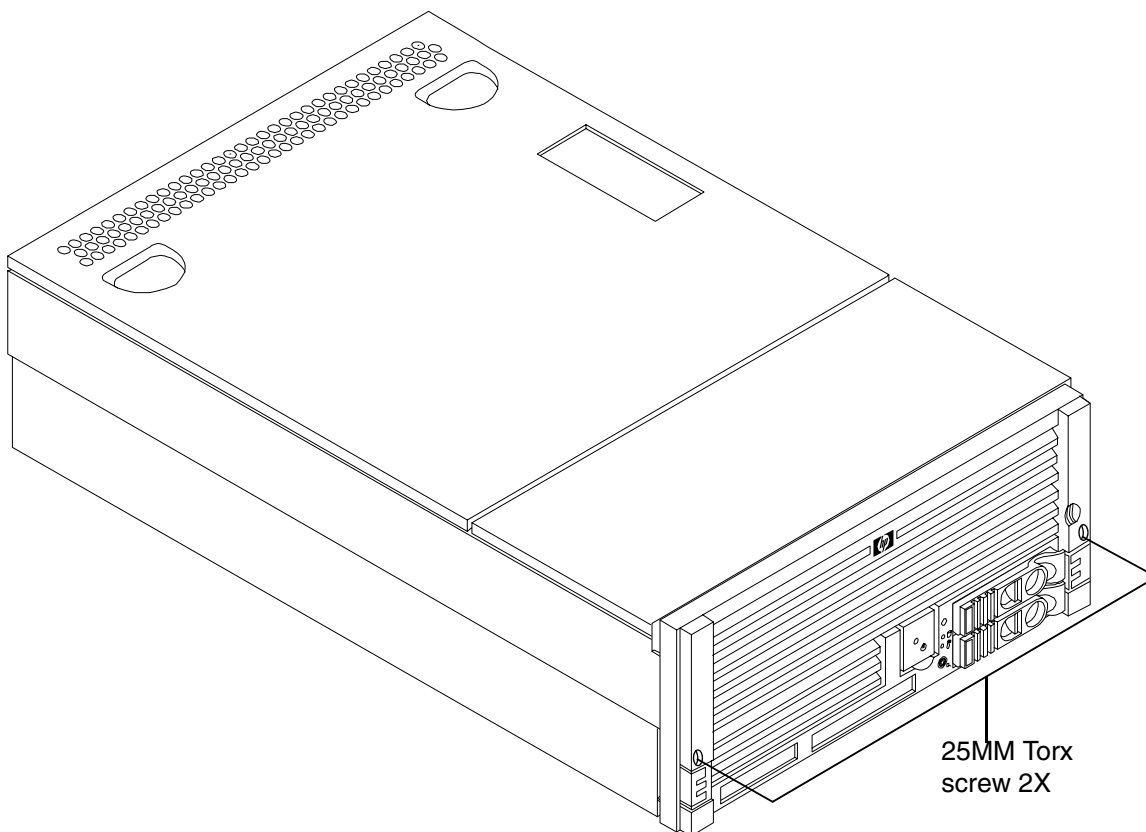
Extend the Server from the Rack

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 6-1, “Accessing 25MM Torx Screws.”
- 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 6-1 Accessing 25MM Torx Screws



Insert the Server into the Rack

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

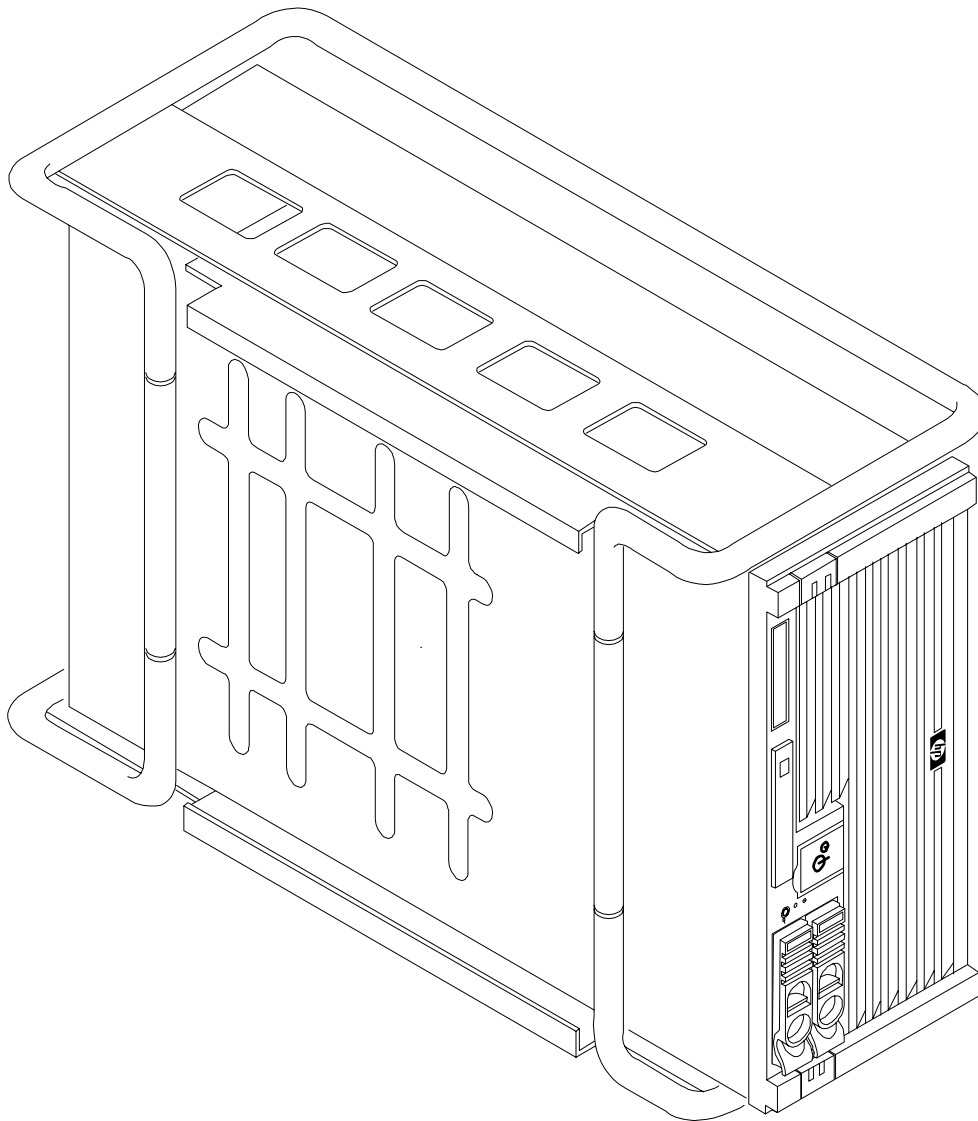
- Step 1.** Press the rail clips on either side of the server inward and push the server into the rack until it stops.
- Step 2.** Replace the T-25 screws that fasten the server to the rack.

Accessing a Pedestal Mounted Server

The hp Integrity rx4640 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 6-2 Pedestal Mounted hp Integrity rx4640 Server



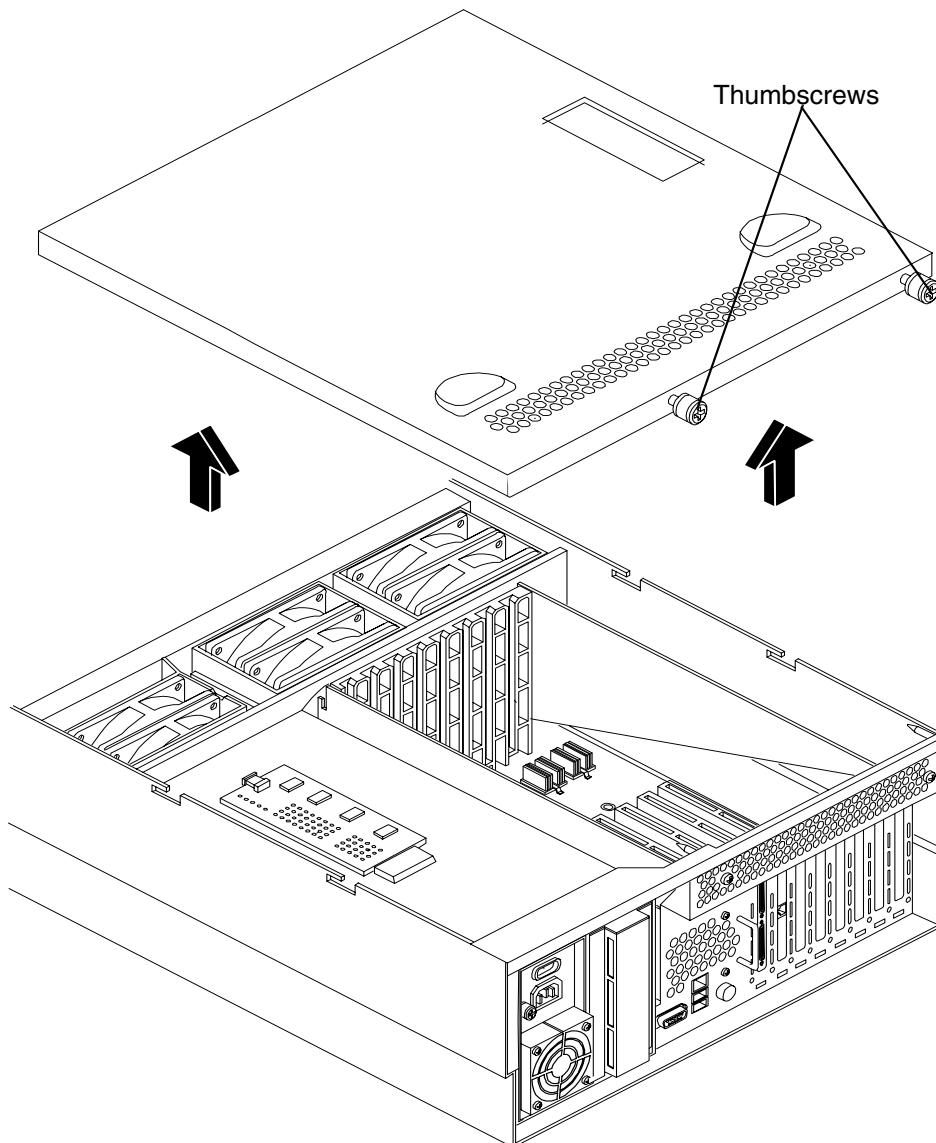
Top Cover

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 77.
- Step 2.** Loosen the two captive thumbscrews that hold the top cover in place.
- Step 3.** Pull 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.

Figure 6-3 Removing and Replacing the Top Cover



Replacing the Top Cover

To replace 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.

Remove and Replace the LAN Core I/O Card

The hp Integrity rx4640 Server has two I/O card slots that are dedicated for core I/O cards.

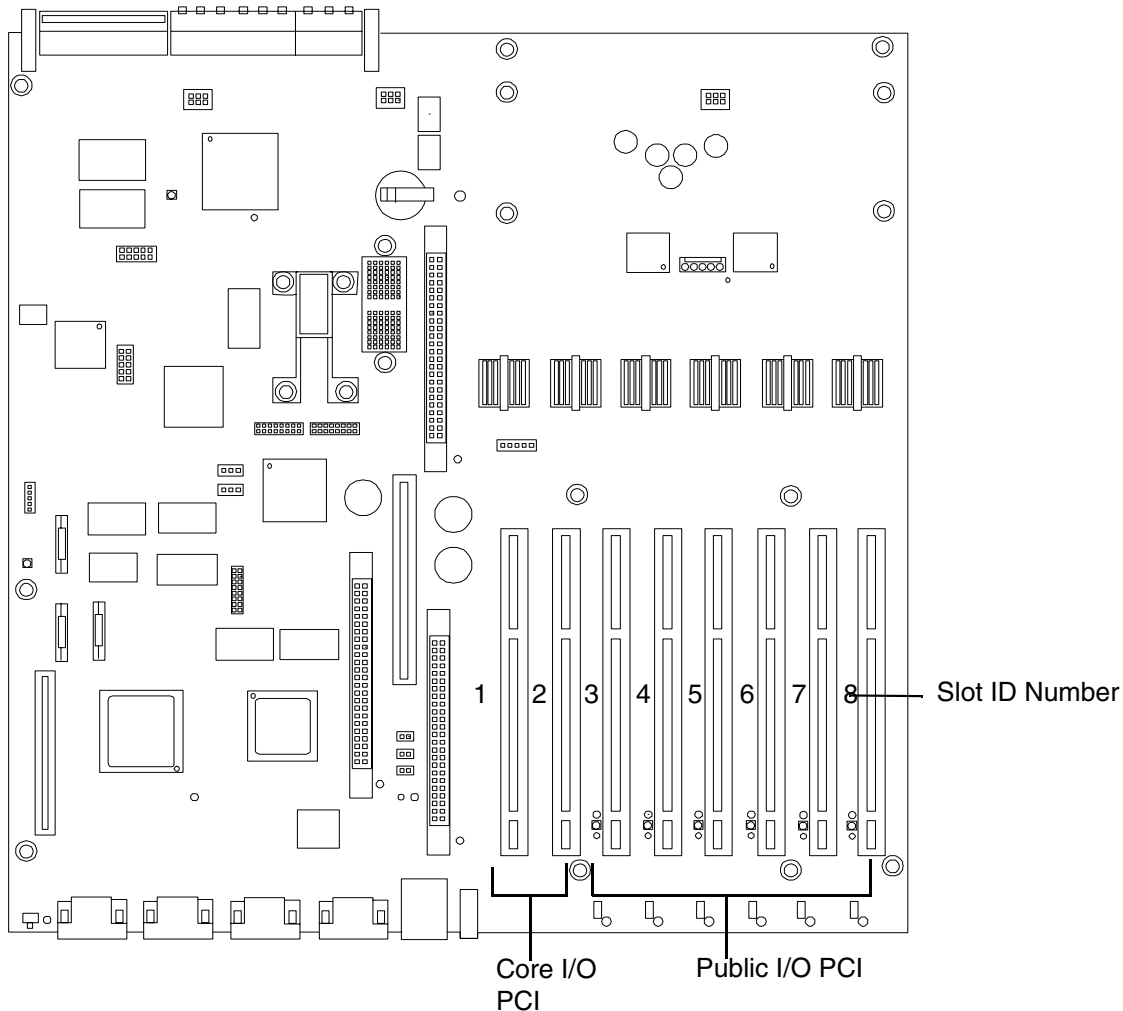
PCI Slot Locations and Configurations

PCI slots are numbered from 1 through 8 in your HP Server. See Figure 6-4, “Slot ID Numbering.” The dedicated core I/O card slots are slots 1 and 2.

The following describes configuration requirements for slots 1 and 2:

- PCI slot 1 is dedicated for use by a SCSI HBA card. Slot 1 is not hot-plug capable. Additional PCI expansion cards may not be placed in slot 1.
- PCI slot 2 is dedicated for use by a LAN card. Slot 2 is not hot-plug capable. Additional PCI expansion cards may not be placed in slot 2.

Figure 6-4 Slot ID Numbering

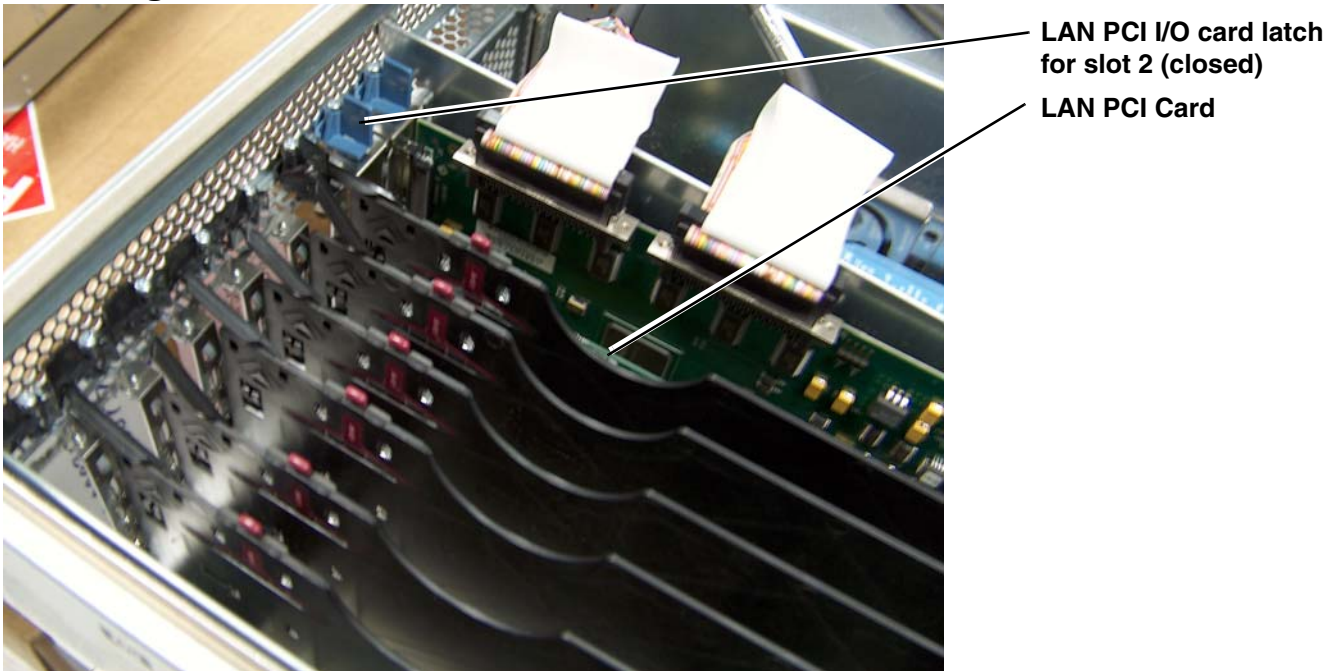


Removing the LAN Core I/O Card

To remove the LAN core I/O card in slot 2, 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 77.
- Step 2.** Remove the top cover from the chassis. See “Top Cover” on page 80.
- Step 3.** Disconnect any LAN cables connected to the LAN core I/O card.
- Step 4.** Open the blue PCI card latch for slot 2 by twisting it clockwise.

Figure 6-5 LAN I/O Card Latch Location

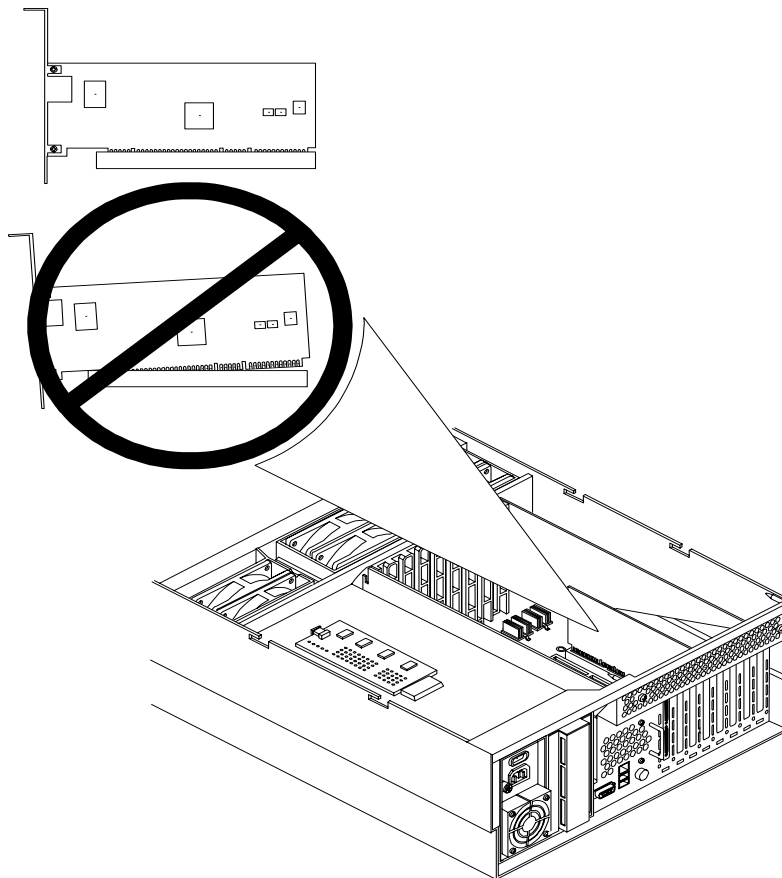


- Step 5.** Remove LAN I/O card.
- Step 6.** Install replacement LAN I/O card.

CAUTION Always handle I/O cards by their edges. Failure to comply with this precaution may result indamage to the card.

Ensure that you fully seat the card into the slot or the card may be damaged when power is re-applied to the slot.

Figure 6-6 Inserting LAN I/O Card



- Step 7.** Close the blue PCI card latch for slot 2 by twisting it counter-clockwise.
- Step 8.** Reconnect the LAN cable(s) to the LAN core I/O card.
- Step 9.** Replace the top cover.
- Step 10.** Push the HP Server back into the rack until it stops.

Remove and Replace the SCSI Core I/O Card

The hp Integrity rx4640 Server has two I/O card slots that are dedicated for core I/O cards.

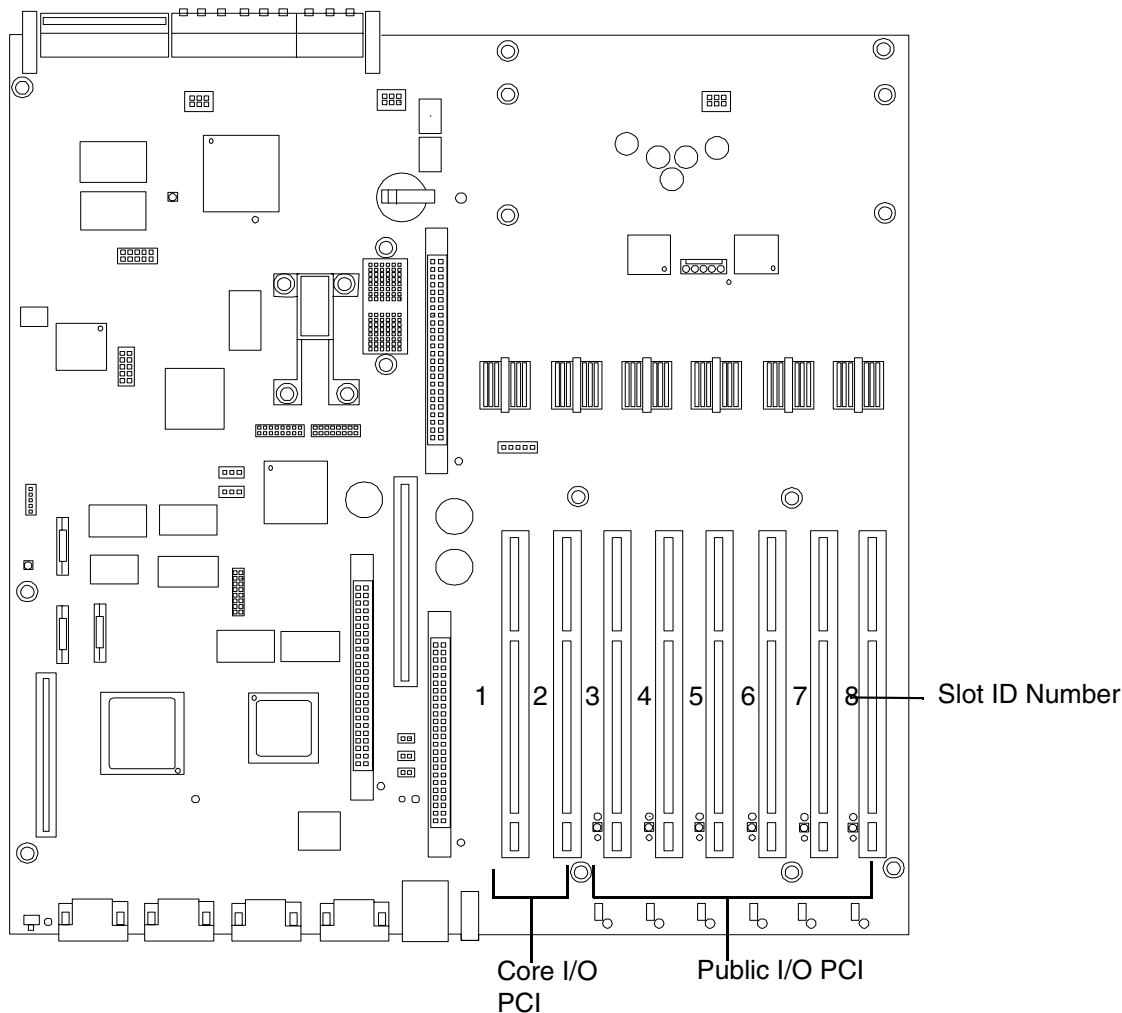
PCI Slot Locations and Configurations

PCI slots are numbered from 1 through 8 in your HP Server. See Figure 6-7, “Slot ID Numbering.” The dedicated core I/O card slots are slots 1 and 2.

The following describes configuration requirements for slots 1 and 2:

- PCI slot 1 is dedicated for use by a SCSI HBA card. Slot 1 is not hot-plug capable. Additional PCI expansion cards may not be placed in slot 1.
- PCI slot 2 is dedicated for use a LAN card. Slot 2 is not hot-plug capable. Additional PCI expansion cards may not be placed in slot 2.

Figure 6-7 Slot ID Numbering

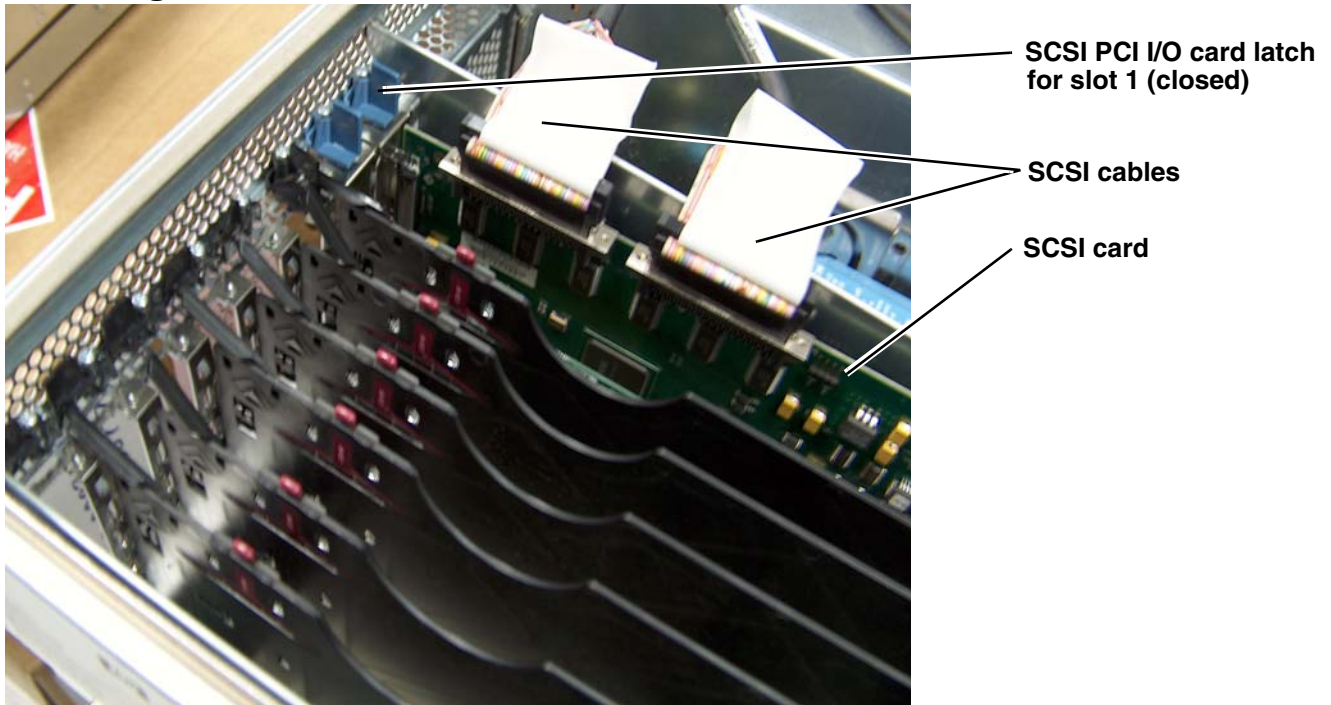


Removing the SCSI Core I/O Card

To remove the SCSI core I/O card in slot 1, 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 77.
- Step 2.** Remove the top cover from the chassis. See “Top Cover” on page 80.
- Step 3.** Disconnect any internal and external SCSI cables connected to the SCSI core I/O card.
- Step 4.** Open the blue PCI card latch for slot 1 by twisting it clockwise.

Figure 6-8 SCSI I/O Card latch Location



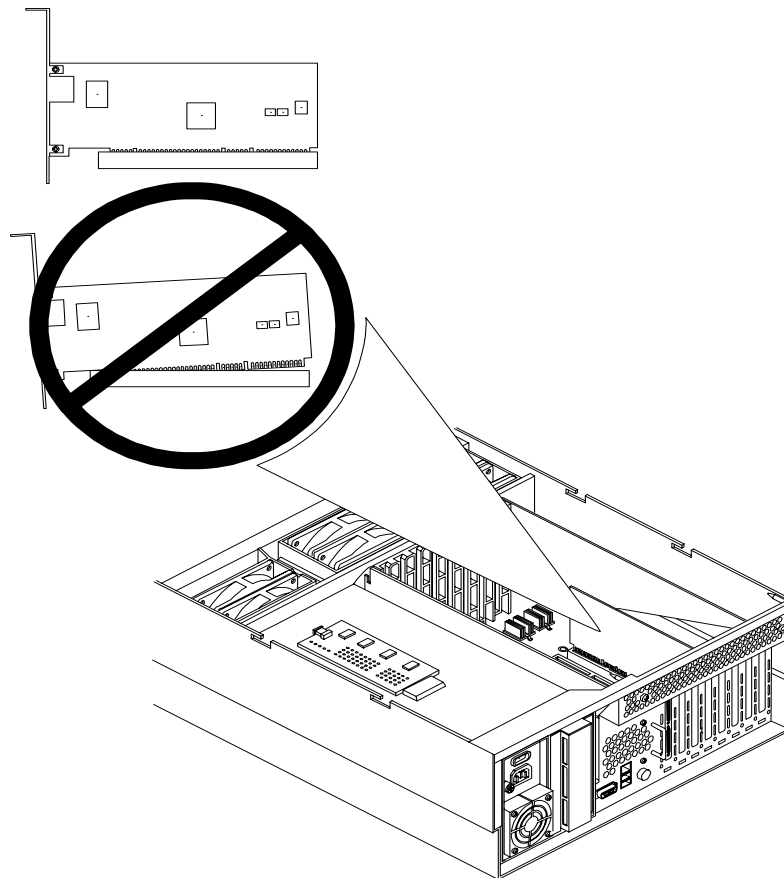
Step 5. Remove SCSI I/O card.

Step 6. Install replacement SCSI I/O card.

CAUTION Always handle I/O cards by their edges. Failure to comply with this precaution may result in damage to the card.

Ensure that you fully seat the card into the slot or the card may be damaged when power is re-applied to the slot.

Figure 6-9 Inserting SCSI I/O Card



Step 7. Close the blue PCI card latch for slot 1 by twisting it counter-clockwise.

Step 8. Reconnect the internal and external SCSI cable(s) to the SCSI core I/O card.

Step 9. Replace the top cover.

Step 10. Push the HP Server back into the rack until it stops.

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